Computerisation of Southern African Herbaria

Living Collections: Karoo Desert NBG and Munda Wanga

Herbaria: Swaziland and Zambia

Threatened Plants Programmes

Invasive Aliens: Myrtaceae

Publishing Your Work

Brachystegia
Cover Stories
92 Computerisation of Southern African Herbaria
120 Living Collections: Karoo Desert NBG
124 Living Collections: Munda Wanga
134 Southern African Herbaria: Swaziland
136 Southern African Herbaria: Zambia
131 Threatened Plants Programmes
106 Invasive Alien Plants in Southern Africa Part 4: Myrtaceae
103 Publishing for Young Botanists
110 A Second Species of Brachystegia for South Africa

Features
90 Profile: David Chuba
91 Profile: Moretloa Polaki
105 Farewell Carina…
111 12th SABONET Steering Committee Meeting
117 SABONET Horticultural Course
118 SABONET’s Students 2002
119 Thanks for Your Hard Work, Nikaya!
127 Workshop on Plants Threatened with Extinction
127 Propagation Techniques for Southern Africa’s Threatened Plants

Book Reviews
145 Structure and Condition of Zambezi Valley Dry Forests and Thickets
146 Living on the land: Change in forest cover in north-central Namibia 1943–1996

Forum Botanicum
157 From The President’s Desk
157 Highest NRF Accolade for SAAB Stalwart
157 Richard Pienaar: A Botanist of Note
158 Haarlem Honeybush Sweet Smell Of Success

Regulars
87 Editorial
88 Letters to the Editors
138 The Paper Chase
147 Regional News Update
150 E-mail Addresses

SABONET News Vol. 7 No. 2 September 2002
Computerisation of southern Africa herbaria has been a core activity within the SABONET Project since 1997 and we have published regular updates on the progress of this important output. Maps showing the geographical distribution of specimens computerised by several southern Africa herbaria were included in both the August 1998 and December 1999 editions, and bar graphs were included in the August 1998, December 1999, and December 2000 editions of SABONET News. In this issue, we evaluate the current status of data capturing in the participating herbaria of southern Africa and investigate some of the problems that can occur.

We are very happy to announce the publication of the SABONET Southern African Plant Red Data Lists book, the first such list for the southern African region. The book represents several years of hard work from many contributors, both within and outside the SABONET Project. If you haven’t ordered your copy of this milestone publication yet, see the order details on page 100. You can also learn more about the companion database—available on CD—on page 100.

Another interesting article in this issue addresses some of the issues that postgraduate students may find confusing or problematic when it comes to publishing their research work in scientific journals, based on a recent discussion held by postgraduate students and academics at the University of Cape Town (page 103). Speaking of publishing, we have received another three articles based on data collected during the SABONET Southern Mozambique Expedition.

In addition, this issue includes all our regular items—Profile, Living Collections, Southern African Herbaria, The Paper Chase and Regional News. Lesley Henderson has written another instalment in our series on invasive alien plants, this time dealing with the Myrtaceae (page 106). We have two book reviews in this issue, starting on page 145. The Forum botanicum supplement is filled with interesting articles on current developments in South African botany.

Finally, some news from the Regional Office: Lorna Davis has joined the SABONET Regional Office as Financial Officer, replacing Carina Haasbroek, who has moved to KwaZulu-Natal.

—Stefan Siebert & Marthina Mössmer
LETTER FROM SEYCHELLES

Thanks for the last issues of SABONET News although I have not been writing much, I have been a keen reader of the newsletter and I am very happy to have seen it grow from strength to strength. Congratulations!

I received a shock when I read about Paseka’s sudden death. I met him at the first SABONET Herbarium Technique Course in 1996 and over the five weeks that we spent together, we became friends. I have always looked forward to meeting him again, but it seems that it was not meant to be. Like many others who have come to know him, I will miss him.

—Didier Dogley
boga@seychelles.net

FAREWELL!

It is with regret and sadness that I have to say farewell to the SABONET family after being part of the project for nearly five years. I would like to take this opportunity to thank the SABONET Secretariat—Stefan, Nyasha, and Janice (although she is no longer part of the team)—for their support and kindness. It was great being part of such a dynamic team. I also wish to extend my appreciation and gratitude to the SABONET Steering Committee chairman, Prof. Brian Huntley, all the National Coordinators in the ten countries and all other co-workers in the financial field. I could not have done my job without your contributions and support. I also wish to extend a word of thanks to the UNDP office in Pretoria for their active role in making my life a lot easier.

My motto is that life is a journey and not a destination. I am therefore looking forward to my journey through the green fields of KwaZulu-Natal.

For the SABONET team, keep up the team spirit and the good work!

—Carina Haasbroek

BOTANICAL ART COURSE

It was great to participate in the Botanical Art Course held at Velcich House in the Pretoria National Botanical Garden, South Africa, in April 2001. Botanical art is the process of illustrating plants to clarify concepts and provide visual orientation, and it forms an essential part of scientific publications. Botanical illustrations can illustrate more than one diagnostic character and also clarify the descriptive phrases of keys. Botanical art involves a lot of creativity, and as a result, artists discover different methods to suit the plant that they are going to draw.

The aims of the course were to pass on information acceptable in botanical art used in publications, and to promote and build botanical art expertise in the southern African region. After attending the course, I embarked on a project to illustrate some of the trees in the Botanical Gardens in Zomba in order to practice my painting methods. See the sample of Bauhinia petersiana, which I have already started working on. These botanical drawings will act as a reference to the Quick Field Guide of Zomba Botanical Garden that is used by visitors. I will strive to achieve something immediately recognisable to species level and that links with botanical descriptions of characters.

Although I am an amateur in this field, I strongly believe that I am going to be useful to both my insti-

Bauhinia petersiana. (Drawing by Edwin Kathumba.)
Many, many thanks for our latest copy of SABONET News. It is always exciting to find the newsletter in the mail. We are very exited about the forthcoming “Conservation Checklist of the Plants of the Nyika”. The Nyika Expedition was definitely a worthwhile exercise. We were also pleased to hear that a regional collecting trip was undertaken to the coastal areas of southern Mozambique. During our years in Malawi it was never feasible to go there. Those mountains Namuli (Serra do Guru) and Chiperone, which were so tantalising near, remained incognita for us. I don’t think the forest flora on either of these mountains is more than superficially known whereas the bird fauna, of Mt. Namuli at least, is now known reasonably well. Mt. Namuli, particularly, has scope for exploration. We know that Faurea racemosa occurs both there and on Mt. Mulanje. But what of, for example, Rawsonia burtt-davyi and Canthium chapmani up to now known only from the Mulanje Massif? And who knows what other tree species still await discovery on Mt. Namuli? I do so much hope that future SABONET Collecting Expeditions will include these two mountains of southern Mozambique.

One of the many highlights of a recent trip to Tasmania (fascinating vegetation, quite different from New Zealand, although so near) was a visit to the Tasmanian Herbarium at the University of Tasmania in Hobart. Here we were warmly welcomed by the Curator of Phanerogamic Botany, Dr Andrew Rozefelds (Tasmanian Herbarium, University of Tasmania, PO Box 252-04, Hobart, Tasmania 7001). They are very short on southern (let alone tropical) African material. However, we did see a De Winter collection, a Zizyphus species Andrew would welcome duplicates of, particularly, southern African Erica-ceae; also, I think Cunonia capensis, this family being especially interesting to him. He would be pleased to send you Epacridaceae and indeed anything in which you might have a special interest.

—Jim & Betty Chapman
II Koromiko Crescent
R.D.L. Lyttelton
New Zealand

Collecting at the beach at Ponta Milibangalala. (Photo: Stefan Siebert)
David Chuba was born in 1969 in the Kasama District of the Northern Province of Zambia. He started his primary schooling in Lusaka at Burma Road Primary School, where he did Grades 1 and 2. His family then moved to Kasama, where he completed Grades 3 and 4 at Kasama Primary School. Again the family moved, to Kitwe, where he completed Grades 5 to 7 at Kitwe Primary School. David then went to Kitwe Boys Secondary School, obtaining a G.C.E. ‘O’ level certificate in 1987. He was then admitted to the University of Zambia in Lusaka and completed his BSc degree (Biology major) in 1994. His high academic performance earned him an appointment as a Staff Development Fellow at the University of Zambia.

Upon being appointed as a Staff Development Fellow, David made up his mind to take up further studies in Botany. As a Staff Development Fellow, he assisted in the demonstration of laboratory practicals, as well as tutoring the undergraduate students. It was not easy to secure sponsorship for MSc degree studies, as the University of Zambia had suspended the provision of funding for postgraduate studies and depended on external funding to support its Staff Development Fellows. In 1996, however, David was awarded a DANIDA scholarship to study for a Postgraduate Diploma in Research Methodology at the Dansk Bilharzirose Laboratorium in Denmark. This course strengthened his research proposal and execution skills, which were useful during his subsequent BSc Honours and MSc degree studies at UCT. In Denmark David also attended his first lessons in computer software, such as Windows 95, DOS computing, Microsoft Excel, Pegasus Mail, Microsoft Word, Reference Manager, and Win SPIRS.

Early in 1997, David was incorporated into the SABONET project to replace Ms Tasila Banda (now Sakala), who had taken up a Fulbright Masters scholarship in the USA. Later in the year, he attended two SABONET courses that were run concurrently—the Database Managers course and the Threatened Species (Red data List) course.

In 1999, David was offered a SABONET scholarship to study for both a BSc Honours and an MSc degree at the University of Cape Town in South Africa. He obtained the BSc Honours in Botany (first class) in 1999 and his MSc in Systematics and Biodiversity Science (cum laude) in 2001. His postgraduate performance has since added pride to the SABONET steering committee (as principal sponsors), University of Zambia management, and his own country.

His two BSc Honours degree projects were entitled “The Phylogeny of Brachycorythis Lindl. and Neobolusia Schltr.” and “The comparative distribution of C3 and C4 species of Cyperaceae in relation to climatic factors and phylogeny”. His Masters thesis was entitled “Phylogenetic relationships of the genus Andreea Hedw. (Andreeaceae) as inferred from rps4 and trnL-F sequences and morphology”.

After his return from his BSc Honours and Masters studies, David attended a number of short courses, including the Tropical Bryology and Lichenology course in Kenya and the SABONET Herbarium Managers’ Course. All these courses have contributed further to equipping him for the present and future responsibilities and challenges within his institution, the country, as well as the southern African region.

David has recently done work for the SPGRC on fruit and nut trees of the southern African countries. He has also, with Mount Makuru Research Station staff, carried out a survey of edible orchids of the Central and Northern Provinces of Zambia; he hopes to extend the survey to the Luapula Province. In addition, David was part of the SABONET-Zambia team that visited Livingston's Gorges, Victoria Falls, Songwe Gorges, and Kazungula area to search for Selaginella imbricata and to collect seedlings of indigenous plants for the development of a Teaching Botanic Garden at the University of Zambia.

David collects Zambian bryophytes whenever he has an opportunity. So far he has a few collections from the eastern part of Lusaka Province near the Chinyunyu area, Livingston, and Serenje, around the Kabumba area, overlooking the Luangwa Valley. Bryophyte surveys were pioneered by his senior academic colleague Dr P.S.M. Phiri in the early 1980s.

David has now been officially appointed as lecturer and is currently working in the Department of Biological Sciences at the University of Zambia. Regarding botanical collections, taxonomy, and systematics, he feels that whatever information is available on the current status of such fields in Zambia is not yet easily accessible to Zambians. He is therefore currently thinking of working on a guide to botanical literature on Zambia’s botanical diversity, which can be made available to all relevant institutions of higher learning such as universities, forestry and agricultural colleges, and also to other interested individuals.

In 1997, David married his beautiful wife, Ruth Precious Phiri, and God has already blessed them with two wonderful children, Yuri (3 years) and Debra (3 months). His hobbies include playing the music keyboard, jogging, and learning anything he can about auto-mechanics. David is a devout Christian.
Moretloa Polaki was born on 9 June 1966 in Mokema, Lesotho. He is the last-born of a family of eight children. Moretloa grew up in Mokema and attended Mokema Primary School and thereafter moved to St Joseph’s Primary School (Korokoro). He completed his secondary education at ‘Mabathoana High School in 1984. Thereafter he worked as a Work Study Observer at Libanon Gold Mines in South Africa. He was admitted to the National University of Lesotho (NUL) in 1986. He enrolled for a BSc Degree in Biology (Botany Option) and Physical Geography. It is here that his keen interest in plants developed, largely spurred by the dedication and enthusiasm shown by his botany lecturer, Dr Bruce Hardegeaves—“parasitologist-turned-botanist”. Moretloa completed his degree in 1990. His final-year dissertation was on “Distribution of bryophytes and pteridophytes at Roma Valley”.

After completing his degree, Moretloa worked as a District Land Use Planner in the Ministry of Agriculture. In 1991 he was appointed Teaching Assistant in the Biology Department at NUL, where under the Staff Development Programme, the only option available to him then was to pursue plant physiology. Although Moretloa’s original interest was plant taxonomy, he had to take physiology because of a shortage of staff in that field. In September 1991, Moretloa undertook a Masters Degree in Plant Physiology at the University of Reading, United Kingdom, which he received in 1992. His thesis was entitled “Changes in proline levels in maize varieties under cool night temperatures,” under the supervision of Prof. Philip John. His post-graduate studies covered some aspects of Agricultural Botany, Plant Biochemistry, Applied Environmental Science, Fresh Water Studies, as well as Biological Diversity Conservation and Utilization Studies. He took additional courses in Research Methodology and Experimental Techniques in Plant Sciences. In 1993, Moretloa was promoted to the position of Lecturer at NUL, teaching Plant Physiology, Plant Anatomy, and Biochemistry.

During 1995, Moretloa was attached to the School of Biological Sciences at Queen Mary & Westfield College (QMWC), University of London, under the QMWC–NUL link. Here he acquainted himself with techniques in freshwater biology, specifically aquatic weed infestations and their impact on standing water bodies.

Moretloa has been fully engaged in teaching and research since his return from the United Kingdom. His research interests cover general plant physiology with emphasis on metabolic stress physiology in crop plants. He supervises final-year undergraduate projects, particularly those in Applied Environmental Sciences.

Although trained as a plant physiologist, he is now a “physiologist-turned-systematist,” the legacy of his undergraduate lecturer. He has participated in several plant rescue missions and their documentation around the Lesotho Highlands Water Project (LHWP) area before inundation. He was also involved in the Biological Resource Monitoring in the same area, in order to assess the subsequent inundation impact on the vegetation. He is currently working on a research project on conservation and mapping of Thannocalamus tessalatus (Berg Bamboo) in Lesotho.

Moretloa has participated actively in promoting the necessity of indigenous knowledge systems in Lesotho. He has also been involved in setting up the national and international strategies to implement the Convention on Biological Diversity. He is involved in the establishment and upgrading of the Botanical Sanctuaries in the country, namely, Katse Afro-Alpine Botanical Garden, Lesotho National Botanical Garden, and the NUL Botanical Garden. Moretloa has been involved in the overall coordination, and physical and scientific curation of herbarium activities in Lesotho’s three herbaria—ROML (National University of Lesotho Herbarium), MASE (Agricultural Research Herbarium), and SNPH (Sehlabathebe National Park Herbarium).

Moretloa has also been involved in the implementation of the SABONET Project policies and facilitating its smooth running in the country. Since the inception of the Project, Moretloa has contributed to the tremendous growth of the herbarium collection by participating in several plant collection trips. Moretloa and his team of devoted colleagues and SABONET staff intend to make a mammoth contribution to the understanding of the local flora and cultivate botanical interest in the Basotho nation at large.

Apart from his consistent interest in general botanical issues, Moretloa enjoys the outdoor scenic beauty of and botanising in the “Kingdom in the Sky”. 
Computerisation of Southern African Herbaria: Regional Update

Did you know …

...that currently the annual computerisation rate in the 16 participating herbaria stands at 150,000 per annum, which means an average of 600 specimens are computerised per working day with SABONET funding. Every participating herbarium computerises approximately 38 specimens per day.

Computerisation of southern Africa herbaria has been a core activity within the SABONET Project since 1997 and we have published regular updates on the progress of this important output. Maps showing the geographical distribution of specimens computerised by several southern Africa herbaria were included in both the August 1998 and December 1999 editions, and bar graphs were included in the August 1998, December 1999, and December 2000 editions of SABONET News (Arnold & Willis 1998, Willis & Arnold 1999, Siebert & Willis 2000).

The importance of computerisation was emphasised during the Project’s Midterm Review in 2001 (Timberlake & Paton 2001). The herbarium specimens computerised by the participating herbaria of the region are of great importance to southern Africa, as this is the first attempt ever to compile a comprehensive, organised database of all known plant taxa housed within selected herbaria of the sub-continent. As the SABONET Project is coming to a close, we will have to look at improving our computerisation rate during the final months. Indeed, Decision 2 of the Tripartite Review Recommendations of August 2000 and Recommendation G of the Midterm Review of February 2001, requested that IT issues be given priority and speeded up and that the level of training be addressed where possible. This activity has become a major priority for the 2001–2002 period.

We define computerisation of a southern African herbarium as the process whereby the information on the data labels of herbarium specimens is entered into the PRECIS Specimen Database. A Data Entry Clerk is responsible for removing specimens from the herbarium cabinets and typing the relevant information on the specimen label into the database. The encoded information is then stored and managed in computer databases throughout the region. However, the computerisation process to capture, encode, or digitise herbarium specimen information is obviously prone to problems as a consequence of human error.

The purpose of this article is to evaluate the current status of data capturing in the participating herbaria of southern Africa and to investigate some of the problems that can occur, and that negatively affect the quality...
of the data or hamper the computerisation process.

**Computerisation Report**

Considerable progress has been made with the total number of specimens computerised since the start of the Project. To date, the participating herbaria have computerised a total of 375 000 specimens as part of SABONET. Up to May 2002, the best progress was made by SRGH (National Herbarium of Zimbabwe)—they had computerised 104 000 specimens. WIND (National Herbarium of Namibia) have finished computerising all their specimens, approximately 75 000. NBG (Compton Herbarium, South Africa), MAL (National Herbarium of Malawi), and NH (Natal Herbarium, South Africa) have also made excellent progress and have computerised 55 000, 28 000, and 27 000 respectively. The National Herbarium of South Africa (PRE) started computerising their specimens long before SABONET was initiated and currently has the largest database of computerised specimens. They have computerised 65% of a total of ca 1 200 000 specimens. The National Herbarium of Swaziland will probably become the second herbarium to complete the computerisation of their collections, as they have already entered the information of approximately 6 800 of a total of 7 400 specimens. We believe that these statistics show that the computerisation initiative is successfully developing into a major taxonomical capacity-building programme.

**Poaceae Databases**

A regional decision was taken at the Fourth SABONET Steering Committee meeting held during September 1997 in Zomba, Malawi, to focus initially on computerising the grass specimens (Poaceae) in the participating southern African herbaria. Although many problems are hampering the computerisation process, approximately 160 000 grass specimens (94% of the total number) housed at participating SABONET herbaria, have so far been encoded. Of the 16 participating herbaria, 11 have already computerised all the grass specimens of collections made in their own countries; three have computerised more than 90%. The remaining two herbaria have computerised 25% and 35%, respectively—the reasons for the low percentage of computerised Poaceae specimens by these two herbaria is that LUAI (Angola) prioritised another group for computerisation and PSUB (Botswana) did not regard computerisation as a priority.

As the computerisation of the Poaceae is a policy decision and of regional interest as self-acquired knowledge, the following proposal was made by the Midterm Review and endorsed by the SABONET Steering Committee at the 10th meeting in Windhoek, Namibia (February 2001): countries should also produce Poaceae checklists for their countries before the end of the Project. As a result, three National Poaceae Checklists are being developed and published by Lesotho (Mr Khotso Kobisi), Namibia (Ms Esmerialda Klaassen), and Zimbabwe (Mr Christopher Chapano).

**Computerisation Problems**

Data quality is of the utmost importance to deliver high-quality outputs at the end of the project, and even beyond. However, from time to time errors occur in the database, and these need to be cleaned up before any project can make use of the available data. Many of the errors that occur are a result of human error and could have been fixed immediately if quality control procedures had been implemented since the start of the computerisation phase.

Although there are many kinds of errors in the database, experience tells us that there are two major problems that occur during the computerisation
process:
• Duplication of plant names
• Extension of data dictionaries

Duplication of plant names happens when Data Entry Clerks enter a species name into the database twice, resulting in the use of two different genspec codes (a genspec code is a serial comprising of two sets of numbers, one for the genus and one for the species). When information concerning a species is called up, say *Acacia karroo*, only the specimens encoded under one genspec are accessed and the specimens of the same species, but under the additional genspec, are not picked up. This problem is created when clerks do not double-check their work.

The second, but not less frequently occurring error, is the extension of data dictionaries (a data dictionary is a list of variables of a specific database field such as habitat, growth form, or flower colour). Adding variables to the fields results in them being mixed up; for example, an additional 60 variables have been added to the habitat field of the database. Of the 60 additions, only 1% are true habitat types. This problem is a result of incorrect interpretation of specimen label information, because Data Entry Clerks usually don’t have a strong botanical background.

These problems were addressed at database courses for beginners, where botanical concepts and interpretation were taught to the Data Entry Clerks from the participating herbaria of southern Africa. To appreciate the quality of the information contained in the database, they were taught to extract and present information with Microsoft Access queries and reporting facilities. Queries and reports forced them to go into the database, which enabled them to determine the extent of the errors. It was hoped that such training exercises would lessen the problems and hone the clerks to enter accurate data. Clerks were also encouraged to get approval from scientific personnel before any changes or additions were made to the database.

Quality control, when exercised by the Data Entry Clerk, slows the rate of computerisation. Yet, despite this larger workload being placed on some of the clerks in the region, the computerisation process has increased tremendously during the past four years owing to the increased productivity of the participating herbaria. Currently, the annual computerisation rate stands at 150 000 specimens per annum (versus 34 000 in 1998), which means 600 specimens are computerised per working day in the southern African herbaria. This means that, on average, every participating herbarium computerises some 30 specimens per day.

However, although we have reached the highest computerisation rate since the start of the project, certain problems have negatively influenced the rate of the process:
• In many instances, Data Entry Clerks do not understand the terminology under the fields in the database and subsequently waste time contemplating and adding new variables. As discussed earlier, this leads to extension of data dictionaries with invalid fields.
• Data Entry Clerk positions have a high turnover and new clerks are usually appointed long before the next database training course (approximately one course every 10 months). In addition, knowledge transfer is inadequate in some of the participating institutions. Clerks therefore remain unproductive until they have attended a course.
• Project management did not place enough emphasis on the importance of captured specimen data for both the institution and the region. Participating institutions, owing to lack of commitment, did not see this activity as a primary objective and resources were concentrated elsewhere. In addition, participating herbaria did not understand the magnitude of the task of computerising thousands of specimens.
• No quality control process was put in place and it was wrongly assumed that the way data was entered was correct. Untrained Data Entry Clerks were responsible for many wrongly encoded entries, which will have to be corrected later and subsequently waste a lot of time.
• Certain countries in the region use different georeferencing systems and these need to be translated while the herbarium specimen labels are encoded. Lack of resources in participating herbaria forces Data Entry Clerks to conduct this activity themselves and this slows down the computerisation process considerably.
• Misspelt information is sometimes entered and needs to be corrected at a later stage, which stretches the...
existing resources and slows down the encoding activities.

- Many participating institutions do not adequately make use of local computer service providers to repair the systems when the computers break down. Countries have on many occasions waited weeks for SABONET IT to fix their “faulty” database, when in fact the problem was of a technical nature and could have been fixed within a day by a service provider.

- Networking problems have created major breakdowns during the current phase of the project. Simple actions, such as improper logon, disrupt the networking systems and workstations become unable to capture data onto the server.

- Service providers in the participating countries often do not load the correct software, which creates clashes and deficient hardware. This usually goes undetected by participating institutions, resulting in confusion and unproductive periods.

- SABONET database courses have always stressed the importance of backing up data on a daily basis. Despite the warnings and reminders, many countries still fail to do so and up to a month’s captured data have been lost on many occasions when hard disks crashed.

- The involvement of SABONET in the SECOSUD project created a lot of confusion about responsibilities and, as a result, in certain institutions much time was spent on activities not related to SABONET.

### Computer Systems

All the SABONET herbaria, except the Peter Smith Herbarium (PSUB), have now had their programmes updated with the latest versions of the PRECIS Specimen Database. Five years ago the PRECIS database was run on Access 2, followed by an upgrade to Access 97 with a Delphi front-end (BDE-link). The database has recently been upgraded to an ADO-link between the Delphi front-end and both Access 97 and 2000.

SABONET IT has visited all the participating countries in the region at least twice and has upgraded the data capturing computers at the participating herbaria. Once all the countries have each received one more new computer and the latest office software as part of the Project’s Exit Strategy, we hope that the computerisation rate will increase even further.

#### The Way Forward

Once we are set for the Exit Strategy with all the latest software and hardware in place, we can adhere to Decision 7 of the Tripartite Review Recommendations of April 1999, and become more pro-active in biodiversity issues (Minutes of the Ninth SABONET Steering Committee meeting). As SABONET countries we should find ways to use our newly acquired knowledge to address issues surrounding plant diversity, such as manipulation of our databases for conservation actions, compilation of Red Lists, regional planning, research proposals, and networking. The development of future in-country projects can be based on a country’s computerised herbaria. Relevant comparative statistical data sets will assist us to determine key plant groups that need to be computerised to ensure that outputs match the requirements of the stakeholders in the region.

Computerised information will, however, only have relevance in future for data manipulation techniques if serious thought is given to georeferencing. At the moment, attention is focused on attaching quarter-degree grid square references to specimens that have none. This task is the responsibility of individual SABONET herbaria, where time and money are spent on developing capable staff to complete the work. The Poaceae is the first group prioritised in this regard. The main idea is to link the distribution data of this family with the MAPPIT programme, or a GIS system, in order to run specific queries that will be of use to end-users in the region (Fish & Steyn

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**Figure 2.** Number and percentage of grass specimens computerised by each of the participating southern African herbaria using the PRECIS Specimen Database (May 2002).
These value-added products will be one of the foremost future projects to flow from the computerisation process. The captured locality data can then be used to plot the distribution of specific taxa (see Henderson (2002) for an example of a direct implementation of this tool). A database on a compact disk with all the electronic distribution data of a specific plant group in southern Africa can also be produced. A second step would be to link these plant distribution databases to habitat information, plant uses, flowering times, and so on.

Conclusion

SABONET is striving to enhance the outputs of the computerisation process and to illustrate the relevance of the encoding process through quality publications and databases. Improved collaboration and partnerships in the region are needed to implement the widespread application of the herbarium specimen databases among all stakeholders, such as research institutions, universities, the private sector, governments, and networks. We hope that the SABONET computerisation effort has contributed considerably towards the task to inventory our region’s plant diversity and to prepare southern Africa for even more ambitious botanical endeavours in the future.

To conclude—and to emphasise its importance—the following points of the Chairman’s Text for Negotiation of the Commission on Sustainable Development Acting as the Preparatory Committee for the World Summit for Sustainable Development (Fourth Session) are directly met by the SABONET computerisation process:

- Provides affordable local access to botanical information to improve and strengthen monitoring and early warning related to desertification and alien plant invasions.
- Improves the use of science and technology for environmental monitoring, assessment models, accurate database and integrated information systems.
- Incorporates and mainstreams the objectives of the CBD into regional and national sectoral and cross-sectoral programmes, in particular that of the donor funding agencies.
- Supports international, regional, and national actions to implement programmes to address and invest in applied research and capacity building.
- Assists southern African countries in building capacity to access more equitable multilateral and global research and development programmes.
- Promotes knowledge transfer to Africa as part of the New Partnership for Africa’s Development (NEPAD) and further develops knowledge available in African centres of excellence.
- Promotes and supports initiatives of stakeholders for the conservation of hotspot areas and promote the development of national and regional networks.
- Urges countries to become parties of biodiversity related international agreements to encourage the exchange of data.
- Enhances environmental responsibility and accountability, including workplace-based partnerships, and training programmes.

Figure 3. A comparison of total number of plant specimens computerised by participating southern African herbaria during each of the past four years of the Project (1998-2001).

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SABONET’s long-awaited Southern African Plant Red Data Lists book was published during August 2002, to coincide with the World Summit held in South Africa. A CD version of the database on which the book is based will be released simultaneously as the Southern African Plant Red Data Lists Database.

The Southern African Plant Red Data Lists database contains information on 4100 taxa, and not only provides all the information contained in the Southern African Plant Red Data Lists book, but also lists additional data, such as extent of occurrence, population size, past decline, and future decline. A user-friendly interface makes it easy to search the database for relevant taxa. After performing a search, you can view and print your search results, or export results to Microsoft Excel or Microsoft Word.

Botanists who have already tested the database were very impressed with how easy to use the database was compared to others, and how quickly they could find the information they were looking for.

Marthina Mössmer and Janice Golding designed the SABONET Plant Red Data Lists Database, based on data collected by all the participants in the SABONET Southern African Plant Red Data List Programme. The database runs in Microsoft Access 2000 and Microsoft Office xp. However, users don’t need to have Microsoft Access installed on their computers to use the database—the CD includes free Microsoft Access Runtime software, which is installed automatically with the database.

Searching the Database

The database offers you four different search options to help you track down specific taxa:
- General search using a keyword you type in
- Search within a single country
- Search more than one country at the same time
- Advanced search using any combination of fields

General Search

The general search finds records containing a keyword you type in. This search is useful if you want to find, for example, all taxa that are listed as grassland species in the notes. In this case, you would type in grassland.

“All search options were very useful!”

Single Country Search

The single country search makes it easy for you to find records within a specific country. Once you have selected a country from the list, the program automatically lists only the families that occur in the chosen country. After you select a family, the program displays a list of Red List assessments for plants within the family you chose. This makes it easier for you to search without getting empty search results all the time. In addition to Red List status, you can also search for a specific taxon and/or endemicity within a specific family in your chosen country.
This option works well if you want to find, for example, all vulnerable Fabaceae taxa in Zambia; in this case you would choose **Zambia**, **Fabaceae**, and **Vulnerable** as search terms. You could narrow down this search to a specific genus by typing, for example, **Crotalaria**, under Taxon Name. Alternatively, you could view all vulnerable Fabaceae taxa in Zambia that are also endemic by choosing **Endemic** from the Endemicity list.

**Multiple Country Search**

If you want to find records for a specific category or family in two or more countries, you should use the multiple country search option, which enables you to choose any number of countries from a list. You can also specify a family, Red List status, and/or taxon name to search for within the countries you have chosen.

For example, if you want to produce a list of all Red-listed endemic taxa in the FSA region, you would choose **Botswana**, **Lesotho**, **Namibia**, **South Africa**, and **Swaziland** in the country list and **Endemic** from the Endemicity list.

**Viewing Search Results**

After performing a search, the database displays a dialog box that tells you how many records matching your criteria were found.

"The printed search results look great!"

"The different views of results were all useful and they will suit a wide range of end-users who wish to use these outputs for different purposes."

**Advanced Search**

The advanced search option enables you to choose any combination of fields in which to search. This option is useful if you want to search the entire region, and also if you want to search for a broad assessment category (Threatened, Lower Risk or Data Deficient) or a full Red List assessment.

For example, if you want to find all southern African taxa that have a VUD2 assessment, you would leave the country field blank and type **VUD2** under Full Assessment.

"The search facility is far better than I’ve ever used—IUCN and WCMC can learn from this."

"The Results dialog box displays the number of records found in your search and enables you to view, print, or export the results."
You can view the results of your search in any of the following ways:

- Display the search results in spreadsheet form
- Display a list of the species found by your search
- Display all the data for the species found in your search

You can sort search results according to any column in the spreadsheet. You can also print or export your search results.

You can print the results of a database search as an attractively formatted double-column species list or in a detailed report format that includes all the information the database contains for the taxa in your search. The detailed report includes much additional information not found in the *Southern African Plant Red Data Lists* book.

A detailed report printout, showing the first page and a close-up of one taxon.

**Exporting Results**

Instead of printing directly from the database, you can export the results of your search to Microsoft Word or Microsoft Excel. These options allow you to further refine or expand the information gathered from the database.

When you export to Microsoft Word, the database automatically creates a Rich Text File (.rtf), which you can include in a Microsoft Word document,

**Southern African Plant Red Data List**

**Species List**

Results for search: Orchidaceae

Countries: Botswana, Lesotho, Malawi, South Africa, Swaziland

Number of reports found: 252

**Botswana**

- Anseria africana Lindl.
- Euphorbia angolensis (Rchb.f.) Summerr.
- Euphorbia latifolia Summerr.
- Habenaria praemorsa O.Will.
- Zeuxine africana Rchb.f.

The species list printout, showing a full page and a close-up of a single country.

**Printing Results**

You can print the results of a database search as an attractively formatted double-column species list or in a detailed report format that includes all the information the database contains for the taxa in your search. The detailed report includes much additional information not found in the *Southern African Plant Red Data Lists* book.

A detailed report printout, showing the first page and a close-up of one taxon.
for example, to create a checklist for a specific area. You can then edit the information to include the data you want, or change the formatting as you like.

When you export to Microsoft Excel, the database creates a spreadsheet file (.xls), with the data sorted into rows and columns. This format allows you to do additional sorting on the taxa in ways not available in the database, where you can sort on only one field at a time. Microsoft Excel enables you to sort on multiple fields; for example, you can sort according to country, then family, and then category. As the Microsoft Excel file contains all the data available in the database for your search results, you can delete columns or move them around to tailor the data to your needs.

“Order your FREE copy now!”

To order either the Southern African Plant Red Data Lists book or the Southern African Plant Red Data Lists Database on CD—or both—do one of the following:

- Send an email message to reddatalist@sabonet.org, including the phrase “Red Data List Order” in the subject line, and your name and mailing address in the body of the message. Remember to specify whether you want the book or the CD, or both.
- Send a fax with the same information to (27) 12 804-5979.
- Write to Red Data List Orders, SABONET, National Botanical Institute, Private Bag X101, Pretoria 0001, South Africa, including the same information.

“The mouse tips that appear when you hold your cursor over an item on the screen are very helpful.”

Exporting data also makes it possible to create compound results from two or more searches, for example, when you would like to combine results for both endemic and near-endemic taxa, or present the results for a few specific families.

Help File

To make using the database easier, the program includes a detailed Help file, as well as pop-up screen tips that are displayed when you hold your mouse cursor over any item in a dialog box for a second or two.

As mentioned elsewhere, the database contains much more information than the printed book; the following information fields are included:

- AOO
- Broad IUCN Category
- Common Name
- Conservation Status
- Country
- Current Decline
- Distribution
- Endemism
- EOO
- Family
- Fragmented
- Full IUCN Status
- Future Decline
- Habitat
- Notes
- Number of Individuals
- Number of Populations
- Number of Sites
- Past Decline
- Taxon Name
- Threats
- Number of records

“I liked the online help and the electronic version of the book.”

Pop-up screen tips give short descriptions of items in a dialog box.

The Help file contains detailed instructions on using the database.

---Marthina Mössmer
SABONET Consultant

Data

The Help file includes a comprehensive Troubleshooting section, which answers common queries and problems. Through the Help file, users can also view an online version of the Southern African Plant Red Data Lists book in PDF format.

---Marthina Mössmer
SABONET Consultant

The Help file contains detailed instructions on using the database.
Announcing the new Built-in Orderly Organised Knowledge device (BOOK).

The BOOK is a revolutionary breakthrough in technology—no wires, no electrical circuits, no batteries, and nothing to be connected or switched on. It’s so easy to use even a child can operate it. Compact and portable, it can be used anywhere—even sitting in an armchair by the fire—yet it is powerful enough to hold as much information as a CD-ROM disk. Here’s how it works...

Each BOOK is constructed of sequentially numbered sheets of paper (recyclable), each capable of holding thousands of bits of information. These pages are locked together with a custom-fit device called a binder, which keeps the sheets in their correct sequence. Opaque Paper Technology (OPT) allows manufacturers to use both sides of the sheet, doubling the information density and cutting costs in half. While experts are divided on the prospects of further increases in information density, at the moment BOOKs with more information simply use more pages. This makes them thicker and harder to carry, and has drawn some criticism from the mobile computing crowd.

You can also make personal notes next to BOOK entries with an optional programming tool, the Portable Erasable Nib Cryptic Intercommunication Language Stylus (Pencils).

Portable, durable, and affordable, the BOOK is being hailed as the entertainment wave of the future. The BOOK’s appeal seems assured and thousands of content creators have committed to the platform. Look for a flood of new titles soon.

—Source Unknown

Erratum

In the article “Drift Seeds of the Maputaland Coast” in SABONET News 7(1), pages 20 and 21, we placed the caption under the wrong drawing and it should be as follows:

Field drawing of Scaevola plumieri (Goodeniaceae) by Sandie Burrows. Drawn at Milibangalala, Maputo Elephant Reserve, Mozambique.

Thank ‘Kew’

Royal Botanic Gardens Kew recently donated a consignment of approximately 15 sets of the Flora zambesiaca to SABONET. On behalf of the SABONET Steering Committee and the participating herbaria, the Regional Office sincerely thanks Kew, and especially Dr Gerald Pope, for this generous donation and for Kew’s continuous support in the documentation of the Flora zambesiaca region’s flora. SABONET will ensure that each of the participating SABONET herbaria receives a complete set.
The Advanced Database and Networking Course, the last official course of the SABONET Project, was held in Pretoria, South Africa, from 13 to 22 May 2002. Trevor Arnold (NBI Data Section) and Franco Alberts (SABONET) developed this course specifically to link into the Exit Strategy of the Project, namely to provide countries with the necessary tools to become self-sufficient in their management of the PRECIS Specimen Database. Fourteen Database Managers from all ten countries were trained to manage and set up networks, as well as to run queries and manage the database. The course applied the finishing touches to five years of training during which Trevor Arnold prepared and presented eight tailor-made courses to suit the requirements of SABONET. The first course was presented in March 1997 and since then exactly 100 participants from the ten SABONET countries attended these courses.

The 2002 course included the following modules:
- Computer network set-up and configuration
- General network management
- Installing zip-drives and printer drivers
- Troubleshooting and using the Help function
- Running queries
- Building reports
- Managing the PRECIS database.

The course also included a day trip to the annual Gauteng Computer Fare at Gallagher Estates to provide the course participants with the opportunity to interact with service providers on hardware and software issues.

Once again the feedback from the participants was most favourable and they stressed how important this course was to ensure sustainability in the functioning of the databases at their institutions. We thank the staff of the IT Section of South Africa’s National Botanical Institute for sparing time in their busy schedules to prepare course material and present numerous courses over the years. Their dedication, enthusiasm and patience are greatly appreciated by all!

—Stefan Siebert & Nyasha Rukazhanga-Noko

SABONET Database Course participants. (Photo: Hans Heilgendorff)

BACK: Dr Stefan Siebert (SABONET), Ms Ludo Matenge (Botswana), Mr Bongani Dlamini (Swaziland), Mr Khotso Kobisi (Lesotho), Mr Shaibu Kananji (Malawi)

MIDDLE: Ms Nyasha Rukazhanga-Noko (SABONET), Mr Donald Mpali (Malawi), Ms Silke Bartsch (Namibia), Ms Iva Vaz (Mozambique), Mr Andre Dombo (Angola)

FRONT: Ms Monicah Kabelo (Botswana), Ms Florence Nyirenda (Zambia), Ms Fatima Parker (South Africa), Mr Anthony Mapaura (Zimbabwe), Mr Christopher Chapano (Zimbabwe), Ms Meeta Nathoo (South Africa)
I
n all the botanical institutions of southern Africa, botanists are in some way or another expected to publish the results of the research they are conducting. Why should we publish? For one thing, it is our responsibility to society—someone out there is paying for our research! As scientists, our aim is to increase knowledge and to influence policy and management; therefore, we need to put scientific findings out for discussion, to challenge old or current views, and to inform others (even if this means reporting negative results). Botanists also publish for professional gain, whether in academia or other professions. Finally, the personal satisfaction of seeing one’s work published, especially when it stimulates further research, is a motivation to publish.

However, many students avoid publishing in scientific journals, because of the effort and difficulties attached, or simply owing to a lack of awareness of the need to publish. Many prefer to publish in popular literature, which provides exposure and recognition for work done; authors are often also paid for their articles. It seems to be common for students to focus on completing their thesis and think about publishing afterwards—but sometimes the work is never published at all once the thesis is completed. This is in contrast with universities in Europe and the USA, where students are expected to publish their results during their degree work. PhDs are increasingly being published in the form of a series of papers, published in international scientific journals. The situation in southern Africa differs between universities, but generally the more traditional approach to writing a thesis prevails.

Notwithstanding which model a university follows, there is in most cases room for improvement in the publishing culture among students, and a need for structures to encourage this. The aim of this column is to address a few of the issues that postgraduate students may find confusing or problematic when it comes to publishing their research work in scientific journals, based on a recent discussion held by postgraduate students and academics at the University of Cape Town. I hope their views on these issues will encourage other young botanists to see publishing for what it is, a set of unwritten rules which were put in place to create a dynamic scientific environment of a high standard.

Getting Started: Choosing Your Journal

Many students tend to publish in local journals, often because they are unsure of whether their research is of sufficient calibre to make it into the international literature. However, when choosing a journal in which to publish, it is important to consider how big a readership it reaches and where your paper is most likely to get cited by other researchers. This information is reflected in a journal’s impact factor—the higher the impact factor, the more frequently the papers in it are cited. ISI—the company that publishes the Science Citation Index, Current Contents, and the Web of Science—also compiles information on impact factors. Their website (www.isinet.com) contains information about their products, but users need to subscribe to and pay for their services. The libraries at major research institutions should have access to the Web of Science, and students should familiarise themselves with what is available at their institution.

The ISI Web of Science (now under Web of Knowledge) is the most commonly used electronic database for finding references and citations, and it is therefore desirable to publish in a journal that is included in the ISI database so that your paper can be found in literature searches. The Department of Education subsidises universities on the basis of the number of papers published in accredited journals, and the selection of these is strongly based on ISI ratings. Some South African journals, including the South African Journal of Botany and the South African Journal of Science are already included in the database. More southern African journals are being reviewed and one hopes more will be included on the database in the near future. Encouragingly, the number of South African papers in the internationally accredited literature has increased dramatically in the last few years.

Being familiar with the literature and journals in your field will give you a feel for the kind of article the different journals tend to publish, and where a good place for your own research would be. Many researchers aim to publish in the journals that they themselves read most often, and where the debates around their research interests take place. Sometimes, when a piece of research is particularly applicable in a local context, a local or regional journal may turn out to be a better and more influential vehicle for the paper.

Some journals charge the author a certain fee per page for publishing a paper. These page charges vary greatly and can be substantial, and are therefore something to consider when selecting journals for publication. Local journals are more likely to have page charges (which creates another incentive to publish internationally!), owing to their more limited distribution and, hence, income. Lately there has been an increase in electronic access to journals. This will reduce publishers’ profits, and page charges may well increase as a result. Researchers will need to build this increase into their research funding proposals. However, some funding agencies specifically state that their funding does not cover page charges. When a student publishes, the supervisor generally covers the page charges from research funds, but this should be clarified before a paper is submitted.

Co-authorship

It is accepted that the person who does the most work, and in particular the writing-up of the manuscript for submission, receives first authorship. But how do you determine co-authorship? There is no set “rule” regarding the inclusion or exclusion of co-authors.
and the order in which they are listed. In general, anyone who has contributed to the science has a right to be included, in the order of the magnitude of their contribution. The approach adopted may depend on the institution; for example, some institutions insist on the head of the laboratory or department concerned to be included as last author. On occasion a footnote can be used to denote that all authors contributed equally.

Publications are critical to academics, playing a role in their rating, salary, and opportunities for promotion. An important source of publications for academics is their graduate students, and students are usually expected to include their supervisors as co-authors on publications arising from their thesis work. The situation may become more complicated where part of a student’s work has been done independently of the supervisor, or in collaboration with other colleagues. How these scenarios are resolved depends on the individuals and institutions involved.

In the same vein, there is also some debate over whether people who have secured the funding—often the supervisor in the case of student research—should automatically be included as co-authors. It is argued that fundraisers do so on the basis of their scientific status, which is enhanced through publication. In order to continue successfully raising funds, they need to publish. Also, they invariably had some input into the project proposal that was put together to obtain the funds in the first place. Students may underestimate the effort and input required to obtain the research funding that eventually supports their projects.

The question of authorship is especially important because the institutions listed receive funding from the Department of Education for publications in accredited journals. Some universities use this funding as an incentive to encourage their staff to publish, though in most cases the money is not distributed directly back to the authors, but to their faculty or department. If authors from more than one institution co-author a paper, the money is split between their institutions.

Co-authorship can become a contentious issue. As there are no hard and fast rules, there needs to be good communication between the different parties involved in the planning, funding, and execution of the research, ideally at the outset of a project. Should a problem arise regarding co-authorship, an academic not involved in the situation should be able to offer advice. Experience tells us that working in large internationally-funded groups can greatly complicate the issue of co-authorship. If in doubt, one should err on the generous side in considering co-authors for inclusion.

### Writing, Submitting and Reviewing an Article

When preparing your manuscript, ensure that you have a good start by carefully following instructions to authors; failure to do so will not endear you to the editor. Consult a style manual! The CBE style manual (see references) is very useful, and should be available in your library. It covers the whole writing and publishing process and contains information on writing conventions, abbreviations, and so on. In addition, pass your paper around among colleagues prior to submission to help with writing style. Remember to write a covering letter, and depending on the journal, you might have to motivate why they should consider your paper. Generally it is best to keep it simple.

Expect rejection! Or ready yourself to make lots of changes. If your manuscript is rejected, carefully read the comments before submitting the paper to another journal or attempting to resubmit it to the same journal. When you have been advised to make changes, make sure the covering letter accompanying the revised manuscript addresses each comment and whether a change has been made and if not, why not. Be prepared to enter into dialogue with editors. If you feel strongly, push your view, particularly if you feel that a reviewer has failed to understand your research owing to a lack of understanding of a local system. Note that it is acceptable to ask editors to exclude or include specific reviewers if you have a good reason. If a reviewer has not signed their comments then it is assumed they wish to remain anonymous, which they are entitled to.

Students are cautioned in signing over copyright when you publish in a journal and how this affects your chances of including the work in a book.

Students should attend and present posters and talks as many meetings and conferences as possible. This will help them to gain confidence in their work, get feedback on their research, meet other people in their field, and find out what other research is currently happening. Unfortunately, not all students are lucky enough to be with supervisors who have access to large research budgets. These students should keep their eyes open for sponsorship offered to students at conferences. When you are planning to submit work for presentation at a conference, and for inclusion in conference proceedings, take advice on how this will impact the future publication potential of your work.

### Conclusion

A lot of very good scientific work is being published in popular literature, because students do not have the necessary support to go the extra step! We need to support our young generation of botanists and to encourage them to publish. We live in a botanist’s paradise in southern Africa; it is time to inform the scientific community of the unique issues, fascinating systems, and interesting plants of this species-rich subcontinent.

—Ms Susanne Vetter
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This article was prepared from the proceedings of a postgraduate meeting on publishing held at the University of Cape Town. Ms Susanne Vetter and Dr Clare van der Willigen organised and ran the workshop and Ms Pippin Anderson prepared the notes.


Carina Haasbroek has been the longest-serving member of the SABONET Regional Office staff and the notice of her resignation was a blow for us. The rest of the Secretariat being administrators and botanists, we were terrified at the thought that we might have to run the project’s expenditure and budget for a couple of months. Carina, together with Gort Hughes, NBI’s Director of Finance, had developed a unique system to serve the specific needs of the SABONET Project. The system links into the NBI budget in such a way that we are part of the NBI, but also independent. This system, when considering financial bookkeeping, implies that SABONET does not exist! If you understand this philosophy, you are welcome to apply for the job!

Carina started as the SABONET Financial Officer at the National Herbarium, Pretoria, on 1 August 1997. Carina was committed to SABONET’s objectives, and very enthusiastic about her work. Over the past five years she impressed with her particularly effective working capacity, and her ability to manage the bookkeeping and financial management of a ten-country, USD 4.7m (R40m), donor-funded project. Not only has the SABONET Project recognised the quality of her work and management, but the external auditors of the project, KPMG, have never written an unfavourable report on the work she has done.

As Financial Officer, Carina attended various SABONET Steering Committee meetings where she presented the financial reports of the project in a format even botanists could understand! She was also part of three Logframe Meetings with UNDP, where she played an active role in the revision of the Project logframe and the allocation of the budget. In addition, Carina also managed the funds of SABONET’s Plant Red Data List project and attended financial management courses of the NETCAB Programme in Harare, Zimbabwe. Her experience with finances also enabled her to present a module on Costing and Budgeting during SABONET Management Courses.

As a person, Carina is always friendly and willing to assist with any problems. She contributed substantially to the team spirit of the Secretariat and will leave her mark on the project. Thanks for your enthusiasm and hard work, Carina!

Carina will be moving with her husband to Pietermaritzburg, KwaZulu-Natal, at the end of June 2002, where he will advance his career in engineering. We are sure that she will rise to this new challenge with all the inspiration and commitment she has shown as a member of SABONET.

We wish her the best of luck with her future career and will surely miss her a lot!

—Stefan Siebert & Nyasha Rukazhanga-Noko
Sixteen of the 198 species (8%) listed as declared plants in South Africa belong to the Myrtaceae. This group of plants is unusual in that almost half of the listed species are regarded as both a threat to the natural resources and as valuable commercial and utility trees. Legislation concerning their control, cultivation, and trade are contained in the Conservation of Agricultural Resources Act (CARA), Act 43 of 1983, and amended in 2001.

The Myrtaceae is predominantly a woody family of the subtropics and tropics, particularly Asia, America, and Australia. Leaves are usually opposite, simple, and glandular-dotted. The Eucalyptus species, however, are unusual in having adult leaves that are apparently alternate. Flowers have many showy stamens and the ovary is usually inferior. The fruit is usually a berry or capsule and is tipped with the remains of the calyx.

**Eucalyptus**

The genus Eucalyptus has the highest number of invasive species in the myrtle family in South Africa. The eucalypts are best known for their commercial use as timber trees and windbreaks. They are also cultivated for ornament, shade, firewood, and honey production. The South African public is often surprised to hear that some species are invasive and a threat to the natural resources of the country. The listed species are:

- **Eucalyptus camaldulensis** (Red River Gum)
- **E. cladocalyx** (Sugar Gum)
- **E. diversicolor** (Karri)
- **E. grandis** (Saligna Gum)
- **E. lehmannii** (Spider Gum)
- **E. paniculata** (Grey Ironbark)
- **E. sideroxylon** (Black Ironbark)

They originate from Australia and are invading watercourses, forest margins, forest gaps, and fynbos. With the exception of Spider Gum, all are recognised as being valuable commercial or utility trees and may be cultivated in demarcated areas under controlled conditions. They are prohibited outside demarcated areas. Spider Gum has been listed as a Category 1 Plant (prohibited) in the Western Cape, as it is a serious threat to coastal fynbos and its use as a sand-binder and windbreak could be performed by other, non-invasive species. The common name probably alludes to the spider-like inflorescence with its strange elongated, curved bud caps covering the stamens.

Eucalypts are well known for their ability to use large volumes of water, which increases with growing availability of water, for example, along watercourses. All the declared eucalypts invade watercourses and according to CARA, they should be removed from these habitats. Red River Gum, in particular, can form extensive stands along watercourses and is one of the primary target species for removal by the Working for Water programme, South Africa’s largest and most costly alien plant control programme. Red River Gum is the most widespread eucalypt in Australia, growing along and near watercourses, and potentially has a very wide distribution in South Africa. Sugar Gum and Karri have been cultivated mainly in the Western Cape and it is here that they are invasive. Saligna Gum is better suited to the more tropical regions of KwaZulu-Natal and the northern provinces and is invasive in these regions. Grey Ironbark is suited to the warm and humid summer rainfall zone but little data is available of its naturalised distribution. Black Ironbark is adapted to the dry and cold interior; its naturalised distribution is also likely to be wider than shown on the map.

**Myrtle**

Leptospermum laevigatum (Australian Myrtle) has a similar distribution to Spider Gum, invading sandy coastal areas of the Western and Eastern Cape. It is a large, densely branching shrub or small tree up to 8 m high, and is used as a windbreak and hedge. It is an aggressive invader forming dense stands that exclude indigenous fynbos and...
forest species. In places this invader is replacing another invasive species, Acacia saligna (Port Jackson), which has been brought under bio control by a gall-forming rust fungus (Gordon 1999). Fortunately a bio control programme against Australian Myrtle is progressing well and should help to curb its further spread.

**Metrosideros**

Metrosideros excelsa (New Zealand Bottlebrush or Christmas Tree) is a popular ornamental tree and hedge plant in coastal areas of the Western Cape. In its native New Zealand, it is known as “Pohutukawa” meaning “spray-sprinkled”, as it rarely grows far from the sea or an inland lake. It is so well adapted to sea conditions that oysters may even be found on branches that dip into the sea (Laing & Blackwell 1907)! In South Africa this species is invading hygrophilous fynbos (fynbos on moist peaty soils) at Betty’s Bay and Kleinmond. Similar habitat types are threatened between Hermanus and Gordon’s Bay, and on the Cape Peninsula. Large plants are difficult to eradicate because they coppice when cut and the wood is very tough; roots can penetrate rocky crevices and cracks. It produces large quantities of fine, wind-blown seed. Moist conditions are necessary for seed germination and establishment.

**Guavas**

Psidium guajava (Guava) is a shrub or small tree of tropical American origin. It is grown commercially in the warm, frost-free parts of South Africa for its edible fruit. It is also one of the most aggressive invasive species in these regions, rivaling even Lantana camara in the coastal belt of KwaZulu-Natal and the lowveld of Mpumalanga. Its fruit is eaten by birds and mammals, which spread the seed far and wide. P. guineense (Brazilian Guava) is an ornamental species whose fruits are bitter and resinous but still attractive to birds and other animals, who help to disperse its seed. Psidium X durbanensis is a hybrid between P. guajava and P. guineense and is found around Durban and on the southern KwaZulu-Natal coast. It is apparently sterile and spreads by suckering. P. cattleianum (= P. littorale var. longipes, Strawberry or Cherry Guava), native to Brazil, is grown for both ornament and its edible fruit. This species is invasive on the KwaZulu-Natal coast and probably also in the lowveld of Mpumalanga.

**Eugenia**

Eugenia uniflora (Pitanga or Surinam Cherry) is another Brazilian tree that has been cultivated for ornament, hedging, and its edible fruit. It is an aggressive invader of riverbanks, coastal bush, forest edges, and forest understories in KwaZulu-Natal. It is likely to invade similar habitats in Mpumalanga and Limpopo Province. It has been declared a Category 1 Plant (prohibited) in all these regions. Pitanga can be easily distinguished from other Eugenia and Syzygium species by its very distinctive eight-ribbed fruits, which are yellow turning deep crimson when ripe.

**Syzygium**

Syzygium cumini (Jambolan) and S. jambos (Rose Apple) are evergreen trees of Asian origin that have been cultivated as ornamentals and for their edible fruit. They invade coastal bush and savanna in frost-free areas. Jambolan can easily be confused with the indigenous S. guineense (Water Pear); however, Jambolan can be distinguished by its longer leaves (up to 150 mm) with many closely spaced lateral veins, abruptly tapering leaf apex, oval to pear-shaped fruits, and much-branched sub-terminal inflorescence, usually arising from old leaf scars. Jambolan fruits are purplish-black when ripe; those of Rose Apple are creamy yellow tinged with pink.
Unlisted Species

Three additional myrtaceous species have been proposed as declared plants, but more information is required before they can be listed. They are Callistemon rigidus (Stiff-leaved Bottlebrush), a popular ornamental shrub, which has been seen to invade fynbos and forest edges, Leptospermum scoparium (Manuka Myrtle or New Zealand Tea Tree), and Syzygium paniculatum (=Eugenia myrtifolia; Australian Brush-cherry). Australian Brush-cherry is a popular ornamental tree and hedge plant with edible fruits. Birds in many parts of the country favour it; judging by the prolific seedling establishment in urban gardens, it is likely to become invasive beyond the urban environment.

Other myrtaceous species that have been recorded as naturalised in the Western Cape, but have not yet been proposed as declared plants, are Melaleuca hypericifolia (Red-flowering Tea Tree), M. wilsonii (Violet or Wilson’s Honeymyrtle), and Callistemon citrinus (Lemon Bottlebrush).

Next Instalment

The next article in this series deals with the Solanaceae (potato family), a family well known for its many edible species which are important crop plants. However, all 12 declared species, belonging to the genera of Cestrum, Datura, Nicotiana, and Solanum in South Africa, are poisonous to humans and other mammals. They are also important invaders of indigenous inland and coastal forests, forestry plantations, watercourses, and agricultural crop lands.


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Myrtaceae: Eucalypts and Myrtles
Declared Plants Belonging to the Myrtaceae in South Africa

N.B. The regulations concerning categories 1, 2 and 3 are briefly summarised here. To avoid any misunderstanding the reader should consult the full regulations given in the Government Gazette, Vol 429, No. 22166 of 30 March 2001 or Henderson (2001).

**Category 1:** Prohibited; must be controlled, or eradicated where possible.
*Eucalyptus lehmannii* (only in Western Cape)
*Eugenia uniflora* (only in Limpopo Province, Mpumalanga, and KwaZulu-Natal)
*Leptospermum laevigatum*

**Category 2:** Allowed only in demarcated areas under controlled conditions; prohibited within 30 m of the 1:50-year flood line of watercourses or wetlands.
*Eucalyptus camaldulensis*
*Eucalyptus cladocalyx*
*Eucalyptus diversicolor*
*Eucalyptus grandis*
*Eucalyptus lehmannii* (excluding Western Cape)
*Eucalyptus paniculata*
*Eucalyptus sideroxylon*
*Psidium guajava*

**Category 3:** No further planting or trade of propagative material allowed; existing plants may remain but must be prevented from spreading; prohibited within 30 m of the 1:50-year floodline of watercourses or wetlands.
*Eugenia uniflora* (excluding Limpopo Province, Mpumalanga and KwaZulu-Natal)
*Metrosideros excelsa*
*Psidium cattleianum*
*Psidium X durbanensis*
*Psidium guineense*
*Syzygium cumini*
*Syzygium jambos*

Proposed category 3 plants: More information is required before they can be listed.
*Callistemon rigidus*
*Leptospermum scoparium*
*Syzygium paniculatum (= Eugenia myrtifolia)*
In November 2000, Troos van de Merwe and I travelled to the newly discovered Brachystegia woodland in the Soutpansberg. During this first visit I became aware of some interesting leaf variation within the lower western section of the Brachystegia woodland. On closer investigation, it became apparent that the Brachystegia spiciformis leaf form is dominant and the B. utiliss/torreif leaf form is rare. In addition various intermediate forms were also observed suggesting that B. utiliss/torreif is being assimilated into the dominant B. spiciformis genome.

Unfortunately, we have so far been unable to obtain flowering material of the typical B. utiliss/torreif leaf form, notwithstanding various additional expeditions by Troos van de Merwe and myself.

In addition, the following species are associated with a tropical floristic element, which reaches its southern distribution within the Soutpansberg: Brackenridgea zanguebarica, Milletia stuhlmannii, Oxytenanthera abyssinica, Trilepisium madagascariensis and Syzygium masukuense. These species are not associated with the central Zimbabwe Miombo floristic element, but rather with the Eastern Highlands floristic element, especially its foothills. This isolated community of Brachystegia woodland would therefore not constitute a relic of the Miombo Woodland, but is rather a relic of an ancient tropical floral element that extended across the Eastern Highlands of Zimbabwe into the Soutpansberg.

Curiously, the Venda common name for the plant is “mutsiwa”, meaning “the one that is left behind”—the locals are well aware of the fact that this is an isolated community of Brachystegia woodland with its main distribution being north of the Limpopo River. As far as can be ascertained the tree is not used ethnobotanically.

Further studies are pending to resolve the identity of the second species of Brachystegia. Any material of Brachystegia would be much appreciated and can be sent to the Herbarium Soutpansbergensis at the address below.

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The 12th SABONET Steering Committee (SSC) Meeting, Logframe Revision and Budget Allocation Meeting, and the Exit Strategy Workshop, were held at Ezulwini, Swaziland, during the week of 11–16 March 2002.

Logframe Revision and Budget Allocation Meeting

Dr Alan Rodgers from UNDP-GEF Regional Office for Africa, facilitated this important priority-setting meeting. Four National Coordinators, three representatives from the National Botanical Institute, and the three staff members from the SABONET Regional Office attended the meeting. The meeting was guided by the Project’s Exit Strategy; the strategy is a result of the recommendations of the Midterm Review conducted in January 2001.

SABONET has a history of working sparingly with its funds, considering that the official closing date of the Project was 31 March 2002 and the project still has approximately USD 1.7m to use. Up to April 2002, only about USD 3m of an original budget of USD 4.7m had been spent since the start of the project in 1997. However, from the logframe revision and budget allocation for 2002/2003, it was clear that SABONET has entered its last stages and that funding would soon become restrictive. It is anticipated that the Project will be able to run until the end of 2002 at full force, with restrictions and cuts here and there, but from January 2003 onwards, the Project will only have funds to complete its priority key outputs and to implement the Exit Strategy.

The committee looked at the year 2001 in detail to ascertain the budgeted expenditure against the actual expenditure. A few activities budgeted for 2001 were carried into 2002 and still have to be completed. In order to complete these activities and additional ones for 2002, certain expenses have to be met and funds need to be committed to such core activities. The committee put together what they regarded as core commitments—namely staff on contract, running of the project (for example, vehicles, SSC meetings, equipment), students at universities doing their one-year MSc degrees, recruitment of more horticulturists, national and regional checklists, Threatened Plants Programmes, and the Terminal Review. As a result, the option was taken to extend the project life into 2003 and to use that time to achieve the major project outputs.

The Midterm Review stressed the need to provide quality outputs and to encourage strong links with end-users of taxonomic information, as this would show the achievements of the project and also demonstrate how capacity-building projects like SABONET could be a success. The key issue was therefore to get the SABONET outputs done by mid-2003 before the funding runs out. Major outputs include the following:

- Speeding up the data-capturing process
- Dedicating staff to produce checklists and other SABONET-related publications
- Implementing Threatened Plants Programmes

During the last quarter of 2003, much effort and money would be put into the Terminal Review, the Terminal Report, and closing the project.

It was stressed at the meeting to view the Exit Strategy as an end to the UNDP-GEF funding process, not the end of SABONET, which, it is hoped, could continue indefinitely as a regional network.

Exit Strategy Workshop

This first workshop to develop an Exit Strategy for the current project and to plan for a future project was facilitated by Prof. Brian Huntley and was attended by all the members of the SABONET Logframe Revision and Budget Allocation committee. The workshop was called for as a result of discussions held in Maseru, Lesotho, during the 11th SSC Meeting in September 2001. Decision 8 of the Third Tripartite Review of the 11th SSC Meeting endorsed the proposal for an Exit Strategy to be developed for the project and Decision 9 encouraged the development of a Concept Document for a follow-on regional project to address the integration of taxonomy and conservation activities.

The workshop looked at the remaining two years of the current project and developed guidelines with regard to the publications, staffing, showcasing, terminal evaluations, and networking of SABONET. Discussions surrounding a future project looked at the current project’s impacts and immediate future in the light of macro trends followed by donor institutions. It was decided that a follow-on project should consider bioregional planning as an important possibility. The committee considered the strengths of such a project—what we can provide, where we can assist, and where we are to go from here. Another workshop will be scheduled to determine the project options and links with important organisations.

12th SSC Meeting

The SSC meeting was hosted by Mr Titus Dlamini, National Coordinator of SABONET-Swaziland, and chaired by Prof. Brian Huntley, Chairperson of the SABONET Steering Committee. Mr Christopher Nkwanyama, Under-Secretary of the Ministry of Agriculture & Cooperatives, made an opening speech and SABONET was welcomed to the Kingdom of the Swazi. All ten countries were represented at the meeting, which included eight of the ten National Coordinators. Ms Marta Manjate from Mozambique and Mr Moretloa Polaki from Lesotho attended the meeting as alternate coordinators. Mr Nonqo Mosesane attended his first meeting as National Coordinator of SABONET-Botswana after he took over the leadership from Dr Moffat Setshobo. In addition, the following individuals also attended the meeting:

- Dr Alan Rodgers, UNDP-GEF, Arusha, Tanzania
- Mr Solomon Gamedze, Senior Forestry Officer, Ministry of Agriculture & Cooperatives
- Mr Steven Zuke, Senior Environmental Officer, Ministry of Agriculture & Cooperatives
- Ms Thandi Lupupa, Curator, National Plant Genetic Resource Centre
- Ms Federica Battista, UNDP-South Africa
- Ms Brenda Ndziniza, UNDP-Swaziland

continued overleaf
Major issues discussed at the meeting related to National Checklists, progress with the computerisation of herbarium specimens, Threatened Plants Programmes, and a SABONET Sustainability Strategy for 2002 and beyond. All the decisions taken at the Logframe Revision Meeting and the Exit Strategy Workshop were accepted by the SSC as a true reflection of what the region expects and wishes to achieve during the remaining months of the project.

Date and venue for the next SSC Meeting: 29–31 August 2002 at the National Herbarium, Pretoria, South Africa, to coincide with the World Summit on Sustainable Development.

—Stefan Siebert & Titus Dlamini

Pan are sporadically scattered throughout Maputaland, where they usually occur in the shallow depressions between the ancient dune ridges, or in the vicinity of rivers, where they have been isolated over time from the original river’s course to create what are known as oxbow lakes. These pans may be permanent or seasonal and they usually support a unique vegetation type derived from an aquatic-dominated environment. This aquatic environment hosts a wide diversity of frog species—Davis et al. (1994) report that approximately 45 frog species or subspecies have been recorded for the broader Maputaland region. As only 129 frog species are recorded for the entire southern African sub region (Carruthers 2001), Maputaland is incredibly rich in amphibian diversity.

Together with Wayne Mathews, we were able to record 21 frog species in the area immediately around a small pan near the Licuati Forest Reserve during the December 2001 SABONET Expedition to Maputaland. (It was from this pan that water was pumped for washing and showers during the expedition.) The area immediately around the pan can be described as a sand thicket–woodland transition. The woody patches are characterised by Psidixdrax moggii, Lagynias monteiroi, Sapium integrerrimum, Strychnos madagascariensis and Anonna senegalensis. The grasslands contained suffrutes such as Eugenia capensis and Salacia rehmanniana (the well-known “bangalala” of the muthi trade). As a result of the latter’s aphrodisiac popularity, the over-harvested grassland looked a bit like a minefield.

Most of the SABONET participants accompanied me to the pan on our last night at Licuati. The cacophony of calls was deafening, but we were also treated to a visual display of frogs calling from various vantage points. The Reed Frogs were on reeds, the Water Lily Frogs were on the nymphaeas, and the Leaf-folding Frogs were calling from leaf blades just above the water’s edge. The toxic Banded Rubber Frogs were heard, but could not be found. Participants were treated to a display from the Foam Nest Frog (Chiromantis xerampelina) on their foam nest, into which the female deposited her eggs. Three terrestrial species were recorded calling around our Licuati campsite early in December 2001, whereas 18 water-dependent frog species were recorded at the pan’s edge. Basic taxonomic and ecological aspects of amphibian biology were discussed along the banks of the pan. Everybody was given a chance to hold a Red-legged Kassina amongst mixed expressions of revulsion and excitement, but the experience was nevertheless unforgettable.

It is a debate as to which frog has evolved as the most “advanced” frog in southern Africa. Is it the Giant Bullfrog (Pyxicephalus adspersus), which displays parental care and has tooth-like projections in its lower jaw? Or is it the ingenious Foam Nest Frog (Chiromantis xerampelina), of which numerous males eventually fertilize a
single female’s eggs, thereby increasing the genetic diversity of her offspring? This is also the only species that is capable of producing the protective and insulating foam nest in which the eggs develop into tadpoles before breaking through into the water below and swimming away.

Indeed, not all frogs require standing water in which to lay their eggs—terrestrial breeders have evolved to progress quickly through the process of egg development into tadpoles (as long as eggs are protected and damp) and finally juvenile frogs. These species can usually be heard in environments far from any surface water.

The amazing amphibian diversity in Maputaland was a joy to investigate—the wonder of the plant diversity, within this botanical centre of endemism, is mirrored in the extraordinary frog diversity. For in three nights, at one pan, we were able to record 16% of southern Africa’s frog species. And that’s coming from amongst a group of botanists!

—Mervyn Lötter
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### Maputaland Frogs

<table>
<thead>
<tr>
<th>Terrestrial species recorded at Licuati</th>
<th>Water-dependent species recorded at Licuati</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arthroleptis stenodactylus</strong></td>
<td><strong>Shovel-footed Squeaker</strong></td>
</tr>
<tr>
<td><strong>Brevieps adspersus subsp. adspersus</strong></td>
<td><strong>Bushveld Rain Frog</strong></td>
</tr>
<tr>
<td><strong>Leptopelis mossambicus</strong></td>
<td><strong>Brown-backed Tree Frog</strong></td>
</tr>
<tr>
<td><strong>Afrixalus delicatus</strong></td>
<td><strong>Delicate Leaf-folding Frog</strong></td>
</tr>
<tr>
<td><strong>Afrixalus fornasinii</strong></td>
<td><strong>Greater Leaf-folding Frog</strong></td>
</tr>
<tr>
<td><strong>Bufo garmani</strong></td>
<td><strong>Eastern Olive Toad</strong></td>
</tr>
<tr>
<td><strong>Bufo gutturalis</strong></td>
<td><strong>Guttural Toad</strong></td>
</tr>
<tr>
<td><strong>Chiromantis xerampelina</strong></td>
<td><strong>Foam Nest Frog</strong></td>
</tr>
<tr>
<td><strong>Hildebrandtia ornata</strong></td>
<td><strong>Ornate Frog</strong></td>
</tr>
<tr>
<td><strong>Hyperolius argus</strong></td>
<td><strong>Argus Reed Frog</strong></td>
</tr>
<tr>
<td><strong>Hyperolius marmoratus subsp. taeniatus</strong></td>
<td><strong>Painted Reed Frog</strong></td>
</tr>
<tr>
<td><strong>Hyperolius nasutus</strong></td>
<td><strong>Long Reed Frog</strong></td>
</tr>
<tr>
<td><strong>Hyperolius pusillus</strong></td>
<td><strong>Waterlily Reed Frog</strong></td>
</tr>
<tr>
<td><strong>Hyperolius tuberilinguis</strong></td>
<td><strong>Tinker Reed Frog</strong></td>
</tr>
<tr>
<td><strong>Kassina maculata</strong></td>
<td><strong>Red-legged Kassina</strong></td>
</tr>
<tr>
<td><strong>Kassina senegalensis</strong></td>
<td><strong>Bubbling Kassina</strong></td>
</tr>
<tr>
<td><strong>Phrynobatrachus mababiensis</strong></td>
<td><strong>Dwarf Puddle Frog</strong></td>
</tr>
<tr>
<td><strong>Phrynomantis bifasciatus</strong></td>
<td><strong>Banded Rubber Frog</strong></td>
</tr>
<tr>
<td><strong>Ptychadena mascareniensis</strong></td>
<td><strong>Mascarene Grass Frog</strong></td>
</tr>
<tr>
<td><strong>Ptychadena oxyrhyynchus</strong></td>
<td><strong>Sharp-nosed Grass Frog</strong></td>
</tr>
<tr>
<td><strong>Xenopus muelleri</strong></td>
<td><strong>Tropical Platanna</strong></td>
</tr>
</tbody>
</table>

The unfortunate Red-legged Kassina (Kassina maculata) that everyone got a chance to hold. (Photo: Mervyn Lötter)
My first impression when I was nominated to be the Botswana representative on the expedition was “what an opportunity to go and see Maputaland”. Little did I foresee that we would be camping in tents before we experienced real comfort—that is, sleeping on proper beds! During the first night of the expedition at Ponto Malongane, it rained and rained, but it did not dampen our spirits and we still went out to collect the following day. The subsequent days at Malongane saw a lot of rain and by this time some participants were beginning to complain about headaches and little aches and pains from sleeping on damp bedding!

Things began to improve when we moved to Millibangalala in the Maputo Elephant Reserve, although the mosquitoes were waiting for us. It was humid, but quite often in the early mornings and evenings, we would go for walks along the beach to get some cool fresh air. The best time of the day to “network” was in the evenings after dinner; then all the “lady participants” would congregate outside one of the tents and come up with a controversial topic for discussion. We kept our voices low, hoping no-one would be listening, but to our surprise the following morning some men in the group were curious to know what the laughter and giggles had been about the previous night, letting us know that some people had been eavesdropping! These little gatherings kept us going and at some stage the discomfort issue was forgotten.

During one of our discussions we discovered that the Chief of the villages on the edge of the forest had to be informed. I was nominated to go with a Portuguese-speaking colleague, Samira Izidine, to inform the Chief. I was very pleased to be nominated, because I was then undertaking a medicinal plant project, and I was hoping that, if there were any traditional doctors where we went, I would be able to ‘kill two birds with one stone’, which was fine by me. Unfortunately, the Chief was not available at that time, but we were able to speak to his younger brother, who provided us with the relevant information regarding the use of the Licuati Forest Reserve. He was convinced that the villagers valued the reserve and agreed it was important to conserve the forest. He also mentioned that they were allowed to cut many of the trees to produce charcoal, but had to purchase a license from the Chief. Those who were caught smuggling trees from the Licuati paid heavy fines and the wood was confiscated. The Chief’s brother also informed us that children grew up knowing that the Licuati was not to be interfered with, that even their great great grandparents knew it, and that they were left to teach the younger generation. They were only allowed to harvest such things as honey, fruits, medicinal plants, and small animals. Samira and I prepared a report and presented it to the expedition members that same evening.

During our visit to the Chief’s village, we had a funny encounter when we stopped at one of the nearby villages and met up with one of the residents, called Lucas “Two-Bob” Tembe. The guy was drunk, as we might have expected from his very “intelligent” answers to our questions about medicinal plants! When we asked him what plants people in the area used to cure malaria, he told us in his drunken stupor that most people in the area died of malaria because the mosquitoes bit snakes, and then the snakes bit people, causing malaria. This explanation was narrated with utmost seriousness, so we had to pretend it agreed with medical books! Anyway, on the same issue, but concerning HIV/AIDS and medicinal plants, he said it did not exist in their area because he had not seen anyone who had lost weight! Another of his “brilliant” explanations...

During the expedition I was in constant contact with one very knowledgeable gentleman from the Mozambican delegation, Mr Carlos Boane, to assist me with specimen and medicinal information. Every-time he came across a medicinal plant, he would call me and with the little Portuguese I had learnt I would jot down something. A proper compilation of notes for each medicinal plant was obtained on arrival in Maputo, when I asked Samira to translate for me, since she is fluent in both English and Portuguese. The results are summarised in the accompanying table.

I am grateful to GEF-UNDP for providing me with a chance to be part of the SABONET 2001 Mozambique Expedition, and all those who shared their knowledge in their different fields with me. I would like to thank the Government of Botswana for allowing me to go on the SABONET expedition. I extend my sincerest gratitude to Mr Carlos Boane for providing me with the information on the Mozambican medicinal plants and Ms Samira Izidine for the translations.

—Ms Queen Turner
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A charcoal production line in the Licuati Forest Reserve. (Photo: S. Siebert)
### Maputaland Medicinal Plants

Sources of traditional medicine for different ailments in southern Mozambique

<table>
<thead>
<tr>
<th>Plant name</th>
<th>Ailment/Disease</th>
<th>Preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vernonia colorata</td>
<td>Diarrhoea</td>
<td>Mix fresh leaves and roots and boil. Drink three times a day in a small cup.</td>
</tr>
<tr>
<td>Dicercaryum eriocarpum</td>
<td>Relieves dandruff</td>
<td>Rub the leaves on the hair daily.</td>
</tr>
<tr>
<td>Hibiscus spp.</td>
<td>Gives appetite</td>
<td>Boil fresh roots and drink when required.</td>
</tr>
<tr>
<td>Dichrostachys cinerea</td>
<td>Cures ring-worm</td>
<td>Dry fruits/seeds are placed on red-hot charcoal to burn, then mixed with a bit of oil, the mixture is then applied to the ring-worm.</td>
</tr>
<tr>
<td>Momordica balsamina</td>
<td>Edible, but also alleviates high sugar levels (sugar diabetes)</td>
<td>The leaves are boiled and the decoction drunk three times a day.</td>
</tr>
<tr>
<td>Catunaregam spinosa</td>
<td>Cleanses the stomach</td>
<td>The fruits are dried, pounded, and mixed with cold water. Drunk three times a day.</td>
</tr>
<tr>
<td>Ochna natalitia</td>
<td>Used for fractures</td>
<td>The roots are dried and pounded and incisions are made and mixture applied to the fracture.</td>
</tr>
<tr>
<td>Solanum panduriforme</td>
<td>Used to cure toothache</td>
<td>Boil roots and gargle.</td>
</tr>
<tr>
<td>Abrus precatorius</td>
<td>Impotence</td>
<td>It gives men strength, probably the juice in the leaves gives them the power, “African Viagra”. The fresh leaves are chewed.</td>
</tr>
<tr>
<td>Synaptolepis kirkii</td>
<td>Used to abort embryos</td>
<td>The roots are scraped, mixed with cold water, left for a while to infuse, then the mixture is drunk.</td>
</tr>
<tr>
<td>Psydrax locuples</td>
<td>Relieves headaches</td>
<td>Fresh leaves are crushed, then placed on the forehead, tied with a head scarf.</td>
</tr>
<tr>
<td>Cladostemon kirkii</td>
<td>Relieves rheumatism</td>
<td>The fresh roots are cut into small pieces, placed in a sealable bottle with cold water, and left to infuse for 2-3 days, drink three times a day. The leaves are left in hot water to infuse for a few minutes, then applied to the joints.</td>
</tr>
<tr>
<td>Bridelia cathartica</td>
<td>Cleanses the stomach</td>
<td>Fresh leaves are boiled in water. Drink one cup three times a day.</td>
</tr>
<tr>
<td>Aloe marlothii</td>
<td>Used to cure sexually transmitted diseases</td>
<td>The leaves are cut into pieces, boiled thoroughly for 1-2 hours with Bridelia leaves. Drink one cup daily.</td>
</tr>
</tbody>
</table>
The Maputaland Centre of Endemism lies between the tropics in the north and subtropical coastal conditions to the south. It experiences hot summers and cool to warm winters with no frost. The mean temperature in January is 27°C and the climate has been described as warm to hot, humid and subtropical (Siebert et al. 2002).

The SABONET Southern Mozambique Expedition was conducted during November–December 2001, a time of year during which the area receives a lot of rain. Day temperatures reach 35°C and humidity levels are high: the mean relative humidity along the coast is 55% in August and 90% in February. The annual average rainfall along the coast is 1 100 mm/year.

Although to some this might sound like a part of paradise, conditions proved quite detrimental to the drying of plant material. It is important that plants dry out fairly quickly, otherwise parts may become infested with fungus. On one really wet morning, we awoke to find many of our plant presses soaked. We could not manage to dry the material in either the sun or the wind—the wet, humid conditions actually made the drying papers absorb moisture!

The excessive rain, high humidity levels, wet plants, and the fact that we were only halfway through our trip, forced us to turn to field dryers. However, when choosing a dryer there are several points that need to be taken into account (Fish 1999):

- Size or capacity: there should be enough space to accommodate all the presses or material brought in at one time.
- Efficiency: specimens should dry quickly, but should not be overdried and become too brittle.
- Ease and speed with which the material can be deposited straight from the press into the dryer-compress type.
- Possibility of a fire hazard: remember that the contents of a plant press can easily ignite.

Luckily for us, our very resourceful Logistics Team came to the rescue! We made use of Sandie Burrows’s bread oven for drying our flimsies, blotters, and cardboard. These were placed both inside and on top of the oven, which had a fire burning underneath it. This proved highly effective, but had to be staffed by at least two people at all times to prevent the paper being burned. Flimsies, blotters, and cardboard were dry within 3–4 minutes, depending on the heat and the thickness of the paper.

Mervyn Lötter and David Goyder devised the second method we used. This was an adaptation of a regular field dryer. First, a hole was dug in the ground. A burning gas cylinder was placed into the hole and the hole was covered with metal boxes. The whole plant press was then placed inside the metal box. The heat and the contents were monitored to prevent the plants from becoming brittle. Even with our careful monitoring, we still managed to get a few frightfully large flames. Luckily, they were easy to extinguish and didn’t cause any damage to the plant press.

In conclusion I must state that innovation saved us a lot of trouble with the drying of our plant material in the wet, rainy weather of southern Mozambique. It would be advisable to try one of these methods if you find yourself in similar conditions. Where there is a will, there is a way.

My appreciation to Ms Nikaya Govender and Ms Coleen Mannheimer for comments and proofreading this article.


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From 8 to 20 April 2002, a two-week training course was presented to 27 horticulturists from nine southern African countries (Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe). The horticulturists represented 18 southern African botanical gardens. The course was held at the Durban Botanic Gardens, South Africa, and was hosted by SABONET and the Durban Parks Department. This tailor-made course forms part of the ongoing capacity-building activities SABONET Project, and was developed as a result of the need expressed by southern African botanical garden representatives during a regional workshop held in March 2001.

The course included the following modules:
- Propagation
- Soil mixes and growing media
- Pest control
- Nursery management and layout
- Irrigation and structures
- Fertilization
- Interpretation
- Machinery
- Turf management
- Bedding design and landscaping
- Staff management
- Plant collections
- Record keeping
- Field collecting techniques
- Herbarium collections
- Letter and report writing
- Communications

The course included several practical sessions, as well as field excursions to local nurseries, the Durban muthi market, Zimbali Nature Reserve, and the Natal National Botanical Garden in Pietermaritzburg.

We thank the staff of the SABONET Regional Office, Durban Botanic Gardens, and Durban Parks Department, for the assistance in the organisation and smooth running of the course. Their dedication, enthusiasm, and effort are greatly appreciated.

—Christopher Willis & Christopher Dalzell

Course participants discussing the indigenous wetland garden of the Durban Botanic Gardens. (Photo: S. Siebert)

The entrance to the new Visitor Complex and NBS Education Centre of the Durban Botanic Gardens. (Photo: S. Siebert)

Course participants visiting the gardens of Mitchell Park, Durban. (Photo: S. Siebert)
To build southern Africa’s botanical capacity, SABONET provides support to postgraduate students who show commitment to the Project’s goals and objectives. Nine individuals hold SABONET scholarships to pursue higher degrees in systematics during the 2002 academic year.

Congratulations to all those SABONET students who successfully completed their degrees in 2001. Five students were awarded BSc Hons degrees and they are all pursuing MSc degrees in 2002. In addition, five students were awarded MSc degrees:

- Ms Lerato Kose from Lesotho (University of Stellenbosch)
- Ms Patricia Craven from Namibia (University of Stellenbosch)

All of the best with your future careers as plant diversity specialists!

*S* Received BSc Hons degree in 2001 with SABONET sponsorship.
Nikaya Govender has been with the SABONET project since July 1998, when she was appointed as the SABONET Research Officer at the Natal Herbarium, Durban. Since then she has impressed all with her particularly effective working capacity and leadership characteristics. Not only has the SABONET Project recognized the quality of her work and leadership, but the National Botanical Institute rated her as one of their top young researchers by involving her in the institute’s Leadership Academy Programme.

Sadly, Nikaya is leaving us—she is moving with her husband to London to pursue, we hope, more botanical endeavours. We are sure that she will rise to this adventurous challenge with all the inspiration and commitment she has shown as a member of SABONET.

Nikaya is extremely competent with computers and was in charge of the Natal Herbarium’s Specimen Database. She attended a SABONET Advanced Database Management Course in August 1999 and was invited as a demonstrator to the PRECIS Database Course for Beginners in December 2000. She also attended a SABONET Herbarium Management Course and a Plant Identification Course. In addition, Nikaya took part in the Project’s Regional Botanical Expedition to southern Mozambique in 2001.

Nikaya was committed to SABONET’s objectives, and published several articles in SABONET News on selected plants of southern Africa and related herbarium and database activities. She was also a mentor to the new SABONET staff at the Natal Herbarium and has motivated them to excel in their work and to publish on relevant topics. Nikaya also represented SABONET and the National Botanical Institute at several institutional meetings and academic conferences.

As a person, Nikaya has impressed us with her strong motivation to succeed in whatever task she embarks on. She really made a difference and will leave her mark on the project. Thanks for your dedication and hard work, Nikaya! We wish you the best of luck.

—Stefan Siebert & Rose Williams

Nikaya Govender (right) with her SABONET colleagues at Natal Herbarium, Zoleka Dimon (left) and Meeta Nathoo (centre). Here they are examining *Kniphofia* specimens during the preparation of their article, which was published in SABONET News 7(1).
The Breede River Valley is well-known to many visitors for its fine wines, fruit, and beautiful mountains. Not so well-known is the Karoo Desert National Botanical Garden in Worcester, capital of the Breede River Valley. It is probably one of the only truly indigenous South African succulent gardens and is one of only a handful of outdoor succulent gardens in the world. In August and September each year it becomes a magnificent carpet of colourful flowers. The garden is also the gateway to the floral delights of Namaqualand—and is only an hour’s drive from Cape Town.

History

The Karoo National Botanical Garden was originally established in 1921 on 20 morgen of land at Whitehill, near Matjiesfontein. It was known as the Logan Memorial Garden and Mr J. Archer, succulent lover and former station master at Matjiesfontein, was the first curator; he was appointed on 1 January 1925. Unfortunately, owing to lack of water and the re-routing of the national road, the garden was eventually closed.

In late 1944, Professor Compton, then the Director of the National Botanic Gardens, decided to look for a more suitable location for the garden. Two sites were investigated—one near Robertson and the other just outside Worcester. The site chosen was 36 morgen of land just north of Worcester and the first curator, Mr J. Thudicum, was appointed in August 1945. He was responsible for laying out the roads and pathways and for the planting out of many railway truck loads of plants from the old garden at Whitehill. Many of these plants, especially specimens of Aloe dichotoma (Kokerboom), still survive in the original area on a hillock to the right of the main entrance. Mr Thudicum watered all the plants with buckets suspended from a wooden shoulder harness or balanced on the handlebars of his trusty bicycle! Mr Thudicum was memorialised in the name of a showy yellow mesemb, Drosanthemum thudichumii.

Subsequently, Mr R.C. Littlewood was appointed as the Garden’s first horticulturist in 1957, serving with great dedication until his death in 1968. Drosanthemum littlewoodii is named in his honour. Mr Frank Stayner curated the Karoo Garden from 1959 until his retirement in July 1973. During this time, many buildings and plant houses were built and the irrigation systems (some still in use today) were installed. A monotypic succulent genus, Stayneria, was named after him.

Some 80 years after the garden’s inception, the name was officially changed to Karoo Desert National Botanical Garden, in keeping with other desert gardens throughout the world. The name emphasises that this garden cultivates and displays plants from an arid environment.

Living Plant Collections

Bruce Bayer, previously a technical assistant at the garden, was appointed as Curator in 1973 and really put the Karoo Desert Garden on the international succulent map. The scientific collections were increased and local and international succulent taxonomists made use of the living specimens in the plant houses. Bruce Bayer is internationally known for his work on haworthias, having published four books and numerous scientific publications on the subject. The floral displays in the garden were also extended, making the garden famous for its masses of colour in spring. Some plants named in honour of Bayer’s work include Tylecodon bayeri, Haworthia bayerii, and Anacampseros bayeriana.

The garden has approximately 2 000 species in the index collections. In total there are nearly 3 700 taxa under cultivation, of which 65% are succulents. This includes species in the index nursery, production nursery, garden, and estate. The garden’s main living plant collections comprise the following families:

- Apocynaceae
- Asclepiadaceae (now known as Apocynaceae)
- Aizoaceae
- Amaryllidaceae
- Asphodelaceae
- Hyacinthaceae
- Oxalidaceae
- Portulacaceae
Karroid phytogeographic beds, introduced by Bruce Bayer, in front of the main administrative offices displaying various regions of the Karoo, have proved to be immensely popular with visitors. Here plants from karroid (semi-desert) habitats are grown in small beds, each representing its own unique phytogeographical area. To date, 30 karroid phytogeographic areas have been identified. This 1 160 m² area houses nearly 900 plant species.

The garden is internationally known for collections of the following succulent genera:
- Conophytum
- Huernia
- Avonia
- Anacampseros
- Gasteria
- Haworthia
- Gibbaeum
- Lithops
- Stapelia
- Tylecodon

The succulent collections are cultivated and displayed in four glasshouses with a total area of 330 m².

The garden also has extensive geophyte (bulb) collections, including:
- Brunsvigia
- Haemanthus
- Lachenalia
- Ixia
- Sparaxis
- Strumaria
- Boophane
- Crossyne

The bulb collections are grown in raised beds, 1.5 m in height. Each plant has its own compartment, allowing the plants to develop fully. Some of the more shade-loving plants have a wooden slatted roof over the individual specimens, giving much-needed shade during the very hot summer. Compared to the cramped growth restrictions of a plastic pot, the raised beds work very well, because the plants are grown under cooler conditions.

The Garden Through the Seasons

The Karoo Desert NBG is 154 ha in extent, with a developed area of 11 ha, and falls within the winter rainfall area of South Africa. Summers are hot, up to 40°C, whereas winters are cool and wet, with light frost in the lower reaches of the garden. Minimum temperatures of 2°C have been recorded.
A hiking trail in the Karoo Desert Garden. There are approximately 8 km of hiking trails. (Photo: M.J. Wells)

Constant wind is experienced, especially during the winter.

The garden has a number of sections for displaying the horticultural potential of the various desert plants. These are mainly plants grown for their brilliant flower colour or sculptural forms. Nearly 90% of plants grown are of a waterwise nature!

The best time to visit the Karoo Desert Garden is in spring, when Namaqualand daisies (Dimorphotheca), Bokbaai vygies (Dorotheanthus), Gazania, Ursinia, Felicia, and Arctotis all look their best. The following spring bulbs are also in flower:

- Freesia
- Tritonia
- Lachenalia
- Ornithogalum
- Sparaxis
- Babiana
- Bulbinella

The actual peak flowering time depends very much on the rain—when it falls and how much falls—but generally August to early September are the best months. The perennial vygies, Drosanthemum and Lampranthus, are at their best in early October. By November most of the annuals and vygies are past their prime.

Spring and early summer are ideal times to take advantage of the garden's many nature walks. December to February are the dry, hot months of the year, but many hardy karroid trees have been planted in the car park and on the upper lawns. These in time will give shade to the weary visitor. During summer, some of the red and pink Crassula species are in full flower. It is during these hot months, when the natural Karoo veld takes on a pale green hue, that fires become our biggest threat. The Karoo veld, when devastated by fire, can take up to 30 years to recover!

Autumn is the time when many of the dormant summer bulbs push out their massive round heads of flowers. From March until May the following bulbs flower:

- Brunsvigia
- Boophane
- Cyrtanthus
- Haemanthus
- Nerine
- Amaryllis

From early March until the end of May, the following genera are in flower and characterized by their smell of rotten meat, very noticeable on hot, balmy afternoons:

- Stapelia
- Duvalia
- Piaranthus
- Hoodia
- Huernia

Autumn is also the time when many of the mesemb species are in flower. These chunky succulent plants, all of which make ideal pot plants, look their best after the hot, dry summer months. Their iridescent flowers are spectacular against the stone-like leaves:

- Lithops (stone plants)
- Conophytum (resembling stone plants)
- Pleiospilos (liver plant)
- Dinteranthus

Some of the vygie species start flowering from early winter through to spring. The mat-forming Cephalophyllum species provide especially vivid displays with their metallic red, magenta, yellow, and pink flowers.

**Natural Vegetation**

According to Dr Tim Hoffmann in the *Vegetation of South Africa, Lesotho and Swaziland*, the Karoo Desert Garden falls within the Little Succulent Karoo. The region occurs in the hot, dry valleys between the two parallel east–west trending mountains of the Cape Fold Belt. The physical geography, locality, climate, geology, and soil create the ideal conditions for a succulent-rich flora.

The natural vegetation is characterised by small karroid bushes, hardy geophytes, and succulents. Some 422 species grow naturally on the estate; most are succulents. Beautiful geophytes are abundant:

- Nerine species
- Massonia species
- Ornithogalum species
- Brunsvigia josephinae

The shrubby plants are mainly of the family Asteraceae. They include the perennial shrubs:

- Pteronia
- Elytropappus (Rhino Bush)
- Galenia
- Rhus
- Eriocephalus
- Euclia (Gwarribos)
Plants of a succulent mesemb nature include:
- Antimima mucronata
- Conophytum ficiforme
- Drosanthemum bicolour
- D. speciosum
- D. micans
- D. striatum
- D. thudichumii
- D. barkwickii
- Ruschia caroli
- R. multiflora
- R. pygmaea

Other notable succulents are:
- Aloe microstigma
- Cotyledon orbiculata
- Crassula (25 species)
- Euphorbia burmannii
- E. mauritanica
- Haworthia herbacea var. herbacea
- H. pumila
- Orbea variegata
- Othonna retrofracta
- Senecio radicans
- Quaqua mammilaris
- Tylecodon paniculatus

Some of the succulent pelargoniums are:
- Pelargonium abrontanifolium

- P. alternans
- P. carnosum
- P. karooicum

**Trails**

There is a network of pathways in the natural areas, approximately 8 km long. These pathways are connected to the Fairy Glen hiking trail. There are three trails with information/story/picture boards:

- The Braille trail, 400 m long
- The Shale trail, 1,000 m long
- The Karoo Adventure trail (including the new Bushmanland section of 2 ha)

**Future Development Plans**

- 5,000 m² Aloe dichotoma (Quiver Tree) forest/Bushmanland area. The garden has received financial support of R40,000 for this project from the Kirstenbosch Branch of the Botanical Society. The project is well under way with 300 young Aloe dichotoma plants having been planted. We plan to rescue another 200 young Quiver Trees during 2002/2003, bringing this project to its conclusion.
- 1,000 m² Aloe barberae (Bains Aloe) forest. These will be grown from cuttings or seed if available, and will be planted during the winter of 2002.
- Further development of Karroid phytogeographical areas.
- Development of a Pelargonium hill-ock, featuring mainly succulents and species from arid areas.
- Automated irrigation on all lawned areas.
- Arboretum featuring the trees from the dry areas with emphasis on Acacia.
- Re-establishment of Aloe pillansiën South Africa and Namibia (Rich tersveld). Mortality is extremely high, with a large percentage of mature trees dying. Recruitment of new seedlings has been sparse in places. This is a joint NBI/NBRI (Windhoek) project.
- Construction of an additional glass house for cultivation of Aloe species.

**Rare and Endangered Species**

Of the 3,700 taxa growing in the Garden, 340 species are recorded as rare or endangered. Over 60% are succulents. Rare and endangered plants are propagated and offered for sale in an attempt to take the pressure off populations in the wild.

**Visitors**

The Karoo National Botanical Garden has a lot to offer visitors. It must surely be one of South Africa’s largest waterwise gardens. Some of our special features include the following:

- Display of arid plants, indigenous to southern Africa
- One of South Africa’s biggest waterwise gardens
- The Index collections of succulents
- The Xhosa herb garden
- The Nama cooking shelter and herb garden
- Portulacaria africana and plant maze
- Karroid phytogeographic sections
- Collections of caudiciform plants
- Spring colour (annuals and vygies)
- Shop and plant sales where unusual desert plants, seed, and botanical books are available for sale
- Largest artificial Quiver Tree forest in the world

The Garden receives approximately 34,000 visitors per year, and staff members conduct guided tours for 85 groups per annum. Of these, approximately 60% are international visitors.

---


—Ian Oliver
Curator
Karoo Desert National Botanical Garden
karroid@intekom.co.za

**Conophytum flavum**, one of the many mesems growing in the Index collections at the Karoo Desert NBG. (Photo: National Botanical Institute)
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Vol. 3 No. 2  August 1998
Vol. 3 No. 3  December 1998
Vol. 4 No. 1  April 1999
Vol. 4 No. 2  August 1999
Vol. 4 No. 3  December 1999
Vol. 5 No. 1  April 2000
Vol. 5 No. 2  August 2000
Vol. 5 No. 3  December 2000
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<th>No. 5:</th>
<th>No. 6:</th>
</tr>
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<tbody>
<tr>
<td>No. 7:</td>
<td>No. 8:</td>
<td>No. 9:</td>
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</tr>
<tr>
<td>VOL.3 NO.1</td>
<td>REPORT NO.10</td>
</tr>
<tr>
<td>VOL.4 NO.1</td>
<td>REPORT NO.12</td>
</tr>
<tr>
<td>VOL.4 NO.3</td>
<td>REPORT NO.13</td>
</tr>
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<td>VOL.5 NO.1</td>
<td>REPORT NO.14</td>
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<th>SABONET Report Series</th>
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<tbody>
<tr>
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<td>REPORT NO.15</td>
</tr>
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<td>VOL.6 NO.2</td>
<td>REPORT NO.8</td>
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<td>VOL.7 NO.2</td>
<td>REPORT NO.13</td>
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<td>REPORT NO.14</td>
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Mail your order form to SABONET ORDERS, National Botanical Institute, Private Bag X101, Pretoria 0001, South Africa, or fax to (27) 12 804-5979 or e-mail to nrn@nbipre.nbi.ac.za
Munda Wanga Botanical Gardens, Zambia's only botanical garden, is located 15 km south of the capital, Lusaka. Originally established by Ralph Sander in 1950 as a private garden, it has undergone many different phases. The latest chapter in its history started in December 1998, when the current management team took control after years of instability and a lack of resources. At the time, the 5-ha garden was derelict: bougainvilleas swamped trees, Queen Palms grew wherever their seeds fell, lawns were neglected and bare, water features lay empty. Nevertheless, it was still possible to get an idea of the former glory of the garden.

Munda Wanga means 'My Garden' in Nyanja, one of the Zambian languages. Munda Wanga Botanical Gardens is largely exotic, with perhaps only 10–20% of indigenous species. The past three years have been devoted to strengthening capacity, establishing facilities to support the work in the future, and re-establishing horticultural control. This has included the construction of shade houses and propagation areas, staff training, restoration of irrigation systems, and the development of income-generating facilities for example, the Terrace Café and Bar, Plant Sales and Function Hire.

Although Munda Wanga is owned by the State, Munda Wanga Trust receives no financial support from the Government. The support for the redevelopment of the Botanical Gardens has largely come from the British and Dutch Governments (through their diplomatic missions); significant gifts and donations have come from a wide range of organisations, for example, Lasher Tools and the National Botanical Gardens of South Africa.

Education

One of the greatest threats to our environment is a lack of awareness and knowledge. Zambia has a very urbanised population, which leaves large tracts of land with very low population densities and some of the best national parks in Africa. Few Zambians, however, will ever get the chance to visit the national parks or have the opportunity to learn about their natural heritage. The Munda Wanga Trust aims to change this state of affairs by developing a holistic environmental education and interpretation service. By utilising the Botanical Gardens and the Wildlife Park, we are able to provide an accessible outdoor classroom dedicated to raising awareness and stimulating interest. We also plan to add a Cultural Centre to Munda Wanga, to illustrate the interactions and interdependence between society and the environment.

Botanical Collections

The work of the last three years has strengthened the Gardens and enables us to start establishing new botanical collections. No plant collections survived the difficult period in Munda Wanga’s history, and all that remained was a disorderly collection of exotic plants—mainly common street trees and garden shrubs. This gave us the opportunity to redirect the Garden towards a more indigenous and Zambian future.

People and Plants Garden

One of the main principles of the new collections policy is to highlight and promote appreciation for the inextric-
cable links between society and the environment. With this in mind, a significant new collection is the People and Plants Garden. Both Zambian and non-Zambian plants will be displayed to demonstrate and highlight the numerous interactions between society and the environment.

**Succulent Garden**

The new botanical collection that has made the most progress is the Succulent Garden. The collection is located in an area of the garden with ideal conditions for succulents, but where pines, *Acrocarpus*, and Queen Palms had been allowed to germinate and grow unhindered. After these weed trees were removed, regionally indigenous succulent species, particularly aloes and euphorbias, were planted here. The exotic succulents (*Opuntia, Agave, cacti*) that were dominant in the garden three years ago, have now been restricted to form a small sub-collection within the Succulent Garden.

The National Botanical Garden (Harare), Ewenrigg Botanical Garden (Zimbabwe), and the Karoo Desert National Botanical Garden (South Africa) donated many of the new plants that form this collection; additional specimens were obtained on plant collecting trips within Zambia.

**Cycad Garden**

After a generous donation of cycads from Kirstenbosch, and also the support of the British Government, we were able to establish a Cycad Garden. Munda Wanga now has 15 species of cycad, predominantly *Encephalartos* species, in two garden sections—the Cycad Garden and the Living Fossil Garden, where the cycads are joined by a *Ginkgo biloba* and a collection of petrified wood.

**Other Collections**

We also have some smaller collections in the early stages of development, including epiphytic Zambian orchids, herbs, and two small geographic collections. We hope to establish additional collections later this year, for example, a collection of plants that are

The Munda Wanga Trust, an independent not-for-profit Zambian Trust, operates Munda Wanga Environmental Park on behalf of the Government of Zambia. The Environmental Park consists of the Botanical Gardens and a Wildlife Park (a former zoo), and forms an important educational and recreational resource for Zambia. The Wildlife Park is being redeveloped to meet international standards of living conditions and animal welfare.
Threatened Plants Programme

Munda Wanga Trust will also start a Threatened Plants Programme (TPP) later this year. The project will be established on an adjacent 12 ha plot of derelict land, called Simuyaka. Along with providing the space to develop a TPP, this plot will also provide us with the opportunity to develop a completely indigenous collection of plants and extend the recreational facilities of Munda Wanga by adding nature trails.

This new aspect of the work at Munda Wanga will be carried out in association with several other Zambian organisations interested in plant conservation and with the support of donor funding. Other interested organisations or individuals are welcome to get involved in Munda Wanga; our contact details are given below.

The Future

We hope that 2002 will be another remarkable year for Munda Wanga. Since our first year of operation in 1999, our visitor numbers have grown from under 20 000 to an anticipated 60 000 this year. This is important as it means that we are getting closer to becoming a self-supporting and viable institution. Half of our visitors are children, many of who come as organised groups to benefit from the new education programme.

Another significant change planned for this year is the replacement of the current Botanical Manager with a Zambian botanist. A UK charity, Voluntary Services Overseas, provided the Munda Wanga Trust with a Botanical Manager to establish the redevelopment of the Gardens, with the hope of thereafter attracting suitable Zambian botanists. This has largely been achieved; however, funds to support this change in management are still being sought, but it is hoped that an external donor will shortly be found.

With the Gardens in a prime state for new collections to be established and the new threatened plants programme starting, the new Botanical Manager will no doubt be very busy for a long time.

—Douglas Gibbs
Munda Wanga Trust Botanical Gardens, Lusaka Zambia
gardens@zamnet.zm
A first-ever workshop on plants that are threatened with extinction was held in Luanda, Angola, on 28 and 29 May 2002. This activity formed part of the Plant Red Data List Project of SABONET, and more specifically, the Angola Red Data List initiative. The workshop was a joint undertaking between SABONET, Agostinho Neto University, and the Angolan Ministry of Wildlife and Environment.

Prof. Esperança Costa from the Agostinho Neto University organised this very successful workshop. Ms Janice Golding from the National Botanical Institute of South Africa and Ms Samira Izidine from the National Institute of Agronomic Research of Mozambique, were both invited as key persons to facilitate certain topics and to lead some of the discussions. They were also the organisers and convenors of a very successful Plant Red Data List Workshop in Maputo, Mozambique, from 29 to 31 August 2001 (see SABONET News 6(3): 170–171).

The following main topics were covered at the Angola Plant Red Data List Workshop:

- The role of herbaria and specimen information in the development of Red Data Lists
- What the Convention of Biological Diversity means to a country like Angola
- A national vision for the conservation of Angola’s flora
- The legislative context for the conservation of threatened species in Angola
- The IUCN Red Data List system of categories
- The experiences of the SABONET Red Data List Project in the southern African region
- The experiences of the SABONET Red Data List Project in Mozambique

The workshop created awareness of Red Data Lists and stimulated much discussion on threatened plants in Angola. A more detailed report on the workshop will be featured in a later edition of SABONET News.

—Prof. Esperança Costa
Luanda
Angola

As part of the various activities associated with the Southern African Botanical Diversity Network (SABONET), funding has been made available by the Regional Steering Committee to prepare and publish, by the end of December 2002, a manual on the propagation and cultivation of southern Africa’s threatened plants. This publication will be particularly useful for horticulturists working on threatened plant collections in southern Africa’s botanical gardens.

Many botanical gardens world-wide grow southern African plants as part of their collections, and we would like to offer an opportunity for any staff from botanical gardens around the world to contribute towards the publication. If you or one of your staff are involved in cultivating threatened southern African plants, we would encourage you to contribute some of these techniques. A list of southern African threatened plants can be found on the SABONET website: www.sabonet.org/reddatalist/database.html.

Should you be willing to share some of the techniques developed and experience gained over the years in cultivating southern African threatened plants, please contact Geoff Nichols directly at the following address:

Digital Muthi
8 Larch Road
Durban
4001
grnicho@iafrica.com
The Department of Botany at the University of Pretoria and the National Botanical Institute of South Africa are pleased to invite you to the 29th Conference of the South African Association of Botanists, which will convene jointly with the 7th Congress of the International Society for Ethnopharmacology.

Date & Venue

The combined conference will be held 7 to 11 January 2003 at the University of Pretoria’s Conference Centre, Pretoria, South Africa.

Scientific Programme

The role that Africa has played in the development of modern medicine, as well as the specific needs of African nations to further develop their phytomedical systems, will be addressed. Much will be learned about phytomedicines in primary health care in Africa and the continent’s cultural and biological diversity.

All other botany-related fields will be covered in the scientific programme and will include themes such as Anatomy, Biogeography, Biotechnology, Ecology, Genetics, Morphology, Physiology, Taxonomy/Systematics, Phytodiversity and Natural Product Chemistry.

Pre-Conference Symposia

A symposium on the Apiales will be held on 6 and 7 January 2003 and one on the Asteraceae on 7 and 8 January 2003.

Plenary Speakers

Dr A. Cunningham (independent consultant in Ethnobotany)
Prof. N. Etkin (ethnobotanist from the United States of America)
Prof. A.E. van Wyk (taxonomist from the Botany Department, University of Pretoria)
Prof. M. Iwu (ethnobotanist from Nigeria)

Registration

Delegates can register online at http://www.up.ac.za/academic/botany.

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At a workshop held in March 2001, it was decided that one of the key outputs of the botanical garden initiative of the SABONET Project would be the development of Threatened Plants Programmes in each of the participating gardens. Subsequently, the SABONET Project has allocated USD 3,000 to each of its 22 participating botanical gardens in southern Africa. It was hoped that the provision of these funds will encourage each of the participating botanical gardens to initiate a Threatened Plants Programme.

Participating botanical gardens were to apply for the funding and were to submit a project proposal and budget. Applications were then circulated to SABONET Steering Committee members for comment and they evaluated the proposals according to the following main criteria:

- A threatened species from a Plant Red Data List must be targeted.
- The selected species must have horticultural potential.
- Cultivation techniques must be developed for the selected species.
- A viable *ex situ* population must be established in the garden.

Currently three botanical gardens’ project proposals have been successful and they are developing their projects further. Natal National Botanical Garden of South Africa is working on the Hilton Daisy (*Gerbera aurantiaca*, Asteraceae), Katse Botanical Garden of Lesotho is working on *Berg Bamboo* (*Thamnocalamus tesselatus*, Poaceae), and Harold Porter National Botanical Garden of South Africa is working on two orchids (*Santyrium carneum* and *S. hallackii* subsp. *Hallackii*, Orchidaceae).

**Hilton Daisy**

The Hilton Daisy (*Gerbera aurantiaca*) is a long-lived KwaZulu-Natal mistbelt grassland endemic with spectacular red flowers. This plant is an ideal flagship species for the conservation programme at the Natal National Botanical Garden for the following reasons:

- It has considerable horticultural potential because of its showy blooms and compact growth habit. Its appearance makes it one of our most sought-after indigenous plants for gardens. It is, however, extremely difficult to cultivate, and this requires investigation. A high priority conservation action is the propagation of plants to provide an *ex situ* reserve of propagules (Scott-Shaw 1999).

- It is endangered (listed as *Vulnerable* by Hilton-Taylor (1996)) due to habitat destruction and subsequent fragmentation resulting from agriculture and forestry. The populations are also under pressure from collectors, who remove plants from the wild. The development of readily available, easily grown plants would alleviate this threat.

- It has an emotive association with the village of Hilton and in particular with Hilton College, where traditionally the boys wore a Hilton Daisy buttonhole on Spring Day before the decline of the population on the college estate.

The aim of the Threatened Plant Programme is to contribute to the *ex situ* conservation of the species by establishing representative *ex situ* populations for implementation of a species recovery plan, and the selection and propagation of desirable horticultural forms to relieve pressure due to unscrupulous collecting in natural areas.

To meet these aims, the project has the following objectives:

**Part 1**

- Investigate the status of *in situ* populations in respect of genetic variation.
- Select and collect representative material.
- Propagate plants from seed, tissue culture, and other vegetative means.
- Establish *ex situ* populations in the botanical garden and other selected areas.

**Part 2**

- Investigate the status of *in situ* populations in respect of horticultural desirability.
- Select and collect desirable plant forms.
- Establish the most effective propagation methods.
- Establish horticultural requirements for optimal growth under cultivation.
- Make available selected clones to interested parties.
- Make available the findings of the investigation in published media.
- Build partnerships conservation agencies and landowners in the execution of a recovery plan for the species.

The Natal National Botanical Garden will collaborate with KZN Conserva-
Berg Bamboo

Berg Bamboo (*Thamnocalamus tesselatus*) is found along streams at an elevation of 1 800 m above sea level in association with the shrub *Leucosidea sericea* and is endemic to southern Africa. Its global conservation status is Rare and its national status is Vulnerable (Talukdar 2002), although more information is required on the distribution and abundance of this species to confirm its status. Specimens housed at the Roma Herbarium come from only three localities in Lesotho. Recent reports cite other sites, but these have not yet been confirmed.

Berg Bamboo is a perennial plant known to flower after a number of years, after which it dies. It can, however, easily be propagated using rhizomes. The species is also the host/habitat for the Red Data Book listed butterfly *Metisella syrinx*. Threatened butterflies are vulnerable and if their habitat is destroyed or disturbed they can become locally extinct. Major threats to Berg Bamboo include collection by local people and wildfires.

Berg Bamboo is an ideal flagship species for the conservation programme at Katse Botanical Garden for the following reasons:

- It has great economic importance for the local communities where it is found (crafts and basketry).
- It has broad traditional uses and these need to be explored further.
- It is a host to a Red Data Book listed butterfly.

The Katse Botanical Garden will collaborate with the local communities, conservation agencies, government ministries (National Environment Secretariat), and the National University of Lesotho to confirm its status. Specimens housed at the Roma Herbarium come from only three localities in Lesotho. Recent reports cite other sites, but these have not yet been confirmed.

The aim of this Threatened Plant Programme is to cultivate Berg Bamboo in large quantities and to reintroduce the plant to areas where it has gone extinct. Local communities will also be supplied with young plants to cultivate their own resources of bamboo. It is hoped that this will develop a sustainable balance that will allow the harvesting of the plants in the wild. To meet these objectives, the project has the following objectives:

- Investigate the status of in situ Berg Bamboo populations, as there is inadequate information available to make an assessment of its risk of threat based on its distribution.
- Investigate its uses (cultural practices associated with the genetic material) and main threats to the plants occurring in situ.
- Propagate plants for the ex situ conservation programme, the recovery plan, and re-introduction to the natural habitats.
- Explore the plant’s local economic potential and assist local communities to grow their own stock.

The Katse Botanical Garden will collaborate with the local communities, conservation agencies, government ministries (National Environment Secretariat), and the National University of Lesotho to confirm its status. Specimens housed at the Roma Herbarium come from only three localities in Lesotho. Recent reports cite other sites, but these have not yet been confirmed.

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The Katse Botanical Garden will collaborate with the local communities, conservation agencies, government ministries (National Environment Secretariat), and the National University of Lesotho.

**Satyrions**

*Satyrium carneum* and *S. hallackii* subsp. *hallackii* are listed in both Red Data Lists for southern Africa. *S. carneum* was listed as Indeterminate in the 1996 list and is now assessed as Lower Risk–Near Threatened in the 2002 list. *S. hallackii* subsp. *hallackii* was listed as Rare in the 1996 list and is assessed as Endangered in the 2002 list (Hilton-Taylor 1996; Victor 2002). *S. carneum* is a Western Cape species that occurs amongst dune vegetation, fynbos on coastal hills, and sand/lime-stone ridges. *S. hallackii* subsp. *hallackii* is a coastal species of Western and Eastern Cape and occurs in moist, saline soils inland from the shoreline (Linder & Kurzweil 1999).

The satyrions are ideal flagship species for the established Threatened Plants Programme at the Harold Porter National Botanical Garden for the following reasons:

- They are threatened by housing developments on vacant properties where they occur naturally.
- They are difficult to cultivate, because animals regularly feed on their tubers.
- They have showy inflorescences and could be introduced in the horticultural trade once optimum growing conditions have been determined.
- They can easily be propagated through tissue culture techniques.
- They could form part of a well-planned partnership with local landowners to re-establish threatened species in protected areas where they have become extinct.
populations to estimate the number of plants of the two Satyrium species that are threatened by development.

- Establish where threatened in situ populations occur, and select and collect representative genetic material.
- Propagate plants from seed and tissue culture.
- Establish and maintain ex situ populations within the botanical garden and other selected areas.
- Investigate whether other factors are contributing to the rarity of these species.
- Locate alternative sites that could be used to relocate viable in situ populations that are under immediate threat of housing developments.
- Build partnerships with local authorities, conservation agencies, and landowners to remove or conserve plants that are threatened by immediate development.
- Publish the research findings on the propagation of these species and the introduction of cultivated plants back into the wild.
- Incorporate the Satyrium species into the garden’s existing Threatened Plants Programme, which is involved with the successful propagation of a rare member of the Iridaceae, Nivenia stokoei.

The Harold Porter National Botanical Garden will collaborate with Cape Nature Conservation, the Conservation Division of the Overstrand Municipality, the Orchid Society of South Africa, Compton Herbarium, and local landowners.

—Ms Berenice Carolus
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**Obituary**

**Eduard Meine van Zinderen Bakker**

We are deeply saddened by the passing of Eduard van Zinderen Bakker in Somerset West on 19 March 2002, at the age of almost 95. After suffering two strokes within five years, he bore the progressive deterioration of his health with great courage.

Eduard was born in Friesland, on 15 April 1907. After graduating with a PhD in Botany at the University of Amsterdam, he taught Biology at the Grammar School and Royal College in Apeldoorn. His inspiration, according to recent letters from old students in Holland, had directed the course of many lives in various fields of Science and Medicine.

During World War II with the occupation of the Netherlands, he was engaged in the underground resistance movement at the risk of his life, while continuing with ecological research. In 1947—at the age of 40—he emigrated with his wife and two sons to South Africa, as he had always been fascinated by the mysteries of the ancient African continent.

Eduard was attached to the University of the Orange Free State from 1947 to 1972, first as lecturer and later as Professor in Botany. After an illustrious career, respected nationally and internationally, the University honoured him by establishing the Institute for Environmental Sciences with Eduard as Director: he held this position until 1976 and had a staff of dedicated national and international scientists. From 1976 to 1988, he worked as Research Officer.

One of Eduard’s main interests was the application of fossil pollen analytical (palynological) methods to the problems of the Quaternary of Africa, stressing the temperature factor as the primary cause of profound palaeoenvironmental changes. Having introduced this discipline to the subcontinent as early as 1951, he mentioned in the *Archaeological Bulletin*, that palynology was “South Africa’s latest archaeological weapon” and emphasised that there was indeed a treasure trove of palynological information on the palaeoenvironments of early humankind. In this connection, he worked at several desert sites and the sub-Antarctic islands, Marion and Prince Edward. For this extensive research he was granted a Palynology Unit by the CSIR. In 1965 he initiated the first major biological expedition to the islands. Under his guidance, scientists from various countries studied subjects like palynology, glacial geology, volcanology, limnology, mineral cycling, and bioenergetics. A voluminous monograph in co-operation with 35 specialists was produced in 1971.

Eduard also held the following positions:

- Chairman of the International Scientific Committee for Antarctic Research (SCAR)
- President of the Archaeological Society of South Africa
- Fellow of the Royal Society of South Africa
- Honorary membership of INQUA, the Deutsche Quaternarvereinigung, the Society of Quaternary Research of South Africa (SASQUA), and the South African Association of Botanists

He was recipient of a number of awards, among which were the South African Gold Medals for Antarctic Research and for Botany. He also received the Senior Captain Scott Medal for Biology and the Havenga Prize for Biology from the South African “Akademie”. For his outstanding career, the University of the Orange Free State conferred a D.Sc. Honoris Causa on him.

Besides his scientific work he was Honorary Consul of the Netherlands for 20 years and for this service the Queen appointed him Officer in the Netherlands Order of Orange-Nassau.

Eduard distinguished himself as a dynamic personality with high principles, vision, and an intense interest in scientific explanations for the intricacies of biological problems. Professor Hugues Faure of Marcella sent the following tribute: “INQUA loses one of its most eminent Honorary Members, and Africa its first palynologist, and a great Quaternary scientist and palaeoecologist”. 

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The history of plant collecting in Swaziland dates back to 1886 when Ernest E. Galpin made collections soon after the start of gold mining in the eastern Transvaal. He entered Swaziland at the narrow pass in the Bulembu Mountains near Barberton.

In 1956 Professor R.H. Compton, formerly a Professor of Botany at the University of Cape Town and Director of the National Botanical Gardens in South Africa, arrived in Swaziland to do a botanical survey. His work was wrapped up in 1966 and eventually led to the publication of the *Flora of Swaziland* in 1976. His herbarium was located where the veterinary offices are today, in Mbabane, the capital city of Swaziland. In 1968, Professor Compton left Swaziland and his collections were taken to the Botanical Research Institute in Pretoria where they were kept until 1975, when Mrs Ellen Kemp—an American Peace Corps volunteer—was asked by the Swaziland Government to re-establish the Herbarium. The collections were returned from Pretoria and the new Herbarium offices were housed in Millers Mansions in Mbabane. The work of Mrs Kemp continued until 1979, when she had to return to the United States to attend to some family matters. She returned in 1983 and resumed her work, finally accumulating more than 1 500 specimens and publishing *A Flora Checklist for Swaziland*.

The current Curator, Mr Gideon Dlamini, joined the herbarium in 1979. In 1984 he moved the Herbarium to the headquarters of the Ministry of Agriculture. In the late 1980s it was moved to the Malkerns Research Station, where it is today.

**Purpose and Functions**

The mission statement of the Swaziland National Herbarium is: “To accumulate and disseminate botanical knowledge, to promote sustainable utilization of Swaziland’s Plant heritage and to protect the ecosystems in which plants occur through research, awareness campaigns, and displays in herbaria, botanical gardens, and publications”.

The Swaziland National Herbarium currently holds more than 8 000 specimens of higher plants, representing about 3 400 species in 771 genera and 135 families. The classification system follows Dyer (1976) and Engler’s numbering system of families and genera, which is elaborated by De Dalla Torre and Harms (1958). Under each genus species are arranged alphabetically.

**Activities and Services**

The purpose of the herbarium is to collect and identify all plants occurring in the Kingdom of Swaziland. As a service to the scientific community and general public, SDNH also identifies plants collected by individuals and institutions. For expert identification of difficult taxa, SDNH relies on larger herbaria outside Swaziland; the main institution used for this purpose is PRE.

In recent times, Environmental Impact Assessment (EIA) and Comprehensive Mitigation Plans (CMP) procedures have been adopted by Swaziland as standard practice for major development works such as road construction, dam excavation, and agricultural expansion. Therefore, in development activities one of the purposes of collecting (sometimes, but not always undertaken by SDNH) is to identify threatened plants so that proper mitigation measures for them are outlined in the EIA reports. The Red Data List work done for the SABONET project has had a very significant impact in this respect.

The Herbarium is engaged in several collaborative efforts within Swaziland, working closely with the Plant Genetic Resource Centre, National Trust Commission, Environmental Authority, University of Swaziland, and the Forestry Section of the Ministry of Agriculture and Cooperatives.

The Herbarium is participating in the development of a national strategy for the control of alien invasive plants, as well as the formulation and implementation of the criteria and indicators for sustainable forestry management in Swaziland, under the auspices of the National Forest Policy and Legislation Project.

In addition, the Herbarium is part of the Swaziland National Biodiversity
Databank Unit (NBDU), which is one of the components of the national Clearing House Mechanism, an information-sharing facility supported by the Convention on Biological Diversity. Other institutions involved in the NBDU are the Swaziland Environmental Authority and the University of Swaziland.

**Policy and Legislative Support**

Various policy documents support the work of the Herbarium, including the Forest Policy now awaiting approval from the Cabinet. In addition, the New Flora Protection Act of 2002 empowers the Minister responsible for Flora to take certain measures to conserve plants, including selecting particular areas as Flora Reserves, Botanic Gardens, and Special Habitats.

**SDNH Administration and Staffing**

Administratively, the Swaziland National Herbarium falls under the Forestry Section of the Ministry of Agriculture and Cooperatives. Permanent staff members are:
- Mr G.M. Dlamini, Herbarium Curator
- Mr T.S. Dlamini, Assistant Herbarium Curator
- Mr B.A. Dlamini, Herbarium Technical Assistant

Temporary staff members funded by SABONET are:
- Mr C.V. Shabalala, Research Officer
- Mr C.Z. Nhleko, Technician/Data Capturer

**Future Plans**

The following activities have been identified as goals and objectives to be targeted for the near future in Swaziland:
- Establish a permanent Herbarium and a Botanical Garden.
- Promote studies and research on plants in the country by having a Botanical Garden.
- Update the herbarium library.
- Collect plants from the various eco-geographical areas of Swaziland.
- Review information on plants threatened with extinction (Red Data List) so as to protect them.
- Compile an updated list on plants in Swaziland (Checklist).
- Participate in national and international programmes of the control of invasive alien plants.
- Continue the botanical survey of the flora of Swaziland to facilitate publication of a revised version of Compton’s Flora of Swaziland.

**Conclusion**

The Swaziland National Herbarium is a small institution both in its number of staff and the size of the herbarium and library. Efforts are underway to increase the staff and establish a permanent Herbarium and Botanical Garden. Collaboration with various botanical institutions within and outside continues to provide support technically and otherwise. Participation in regional projects such as SABONET and SECOSUD has played a very vital role in improving the situation at the herbarium.

—Christopher Shabalala, Gideon Dlamini & Titus Dlamini
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Chris Tshabalala examining specimens in the Herbarium.
(Photo: Comfort Nhleko)
The University of Zambia Herbarium (UZL) is one of four herbaria in the country and one of two located in Lusaka Province. UZL is a teaching and research herbarium and was founded by the late Professor Dewan Mohinder Nath Nair in 1967, shortly after the University of Zambia was established. The herbarium was then located in the Department of Botany, which was merged with the Department of Zoology in 1972 to form the Department of Biology. In 1995, this department was renamed the Department of Biological Sciences. The UZL Herbarium initially consisted mainly of specimens collected within a 50-mile (75-km) radius around Lusaka. This initial collection was later boosted by duplicate specimens donated by the Forest Herbarium (NDO), the Mount Makulu Herbarium (MRCS), the Lusaka Natural History Club, and institutions in India and New Zealand.

In 1971, Dr P.S.M. Phiri became the curator of the herbarium, after the untimely death of Professor Nath Nair. Shortly afterwards, in the mid-1970s, the International Red Locust Control Service (IRLCS), whose headquarters were located in Mbala, offered about 10,000 herbarium specimens to the University of Zambia. These were collections made partly by the IRLCS’s resident botanist L.D.E.F. Vesey-Fitzgerald, who collected a large number of specimens with the assistance of Mr Wilfred Siame. In addition to the establishment of a reference herbarium for the IRLCS, Vesey-Fitzgerald also published excellent accounts on the grasslands of central Africa. Another notable contributor to the collections of IRLCS Herbarium was Mary Alice Eleanor Richards, often referred to as Mrs H. Mary Richards, who recorded several new species in Mbalwa District. The genus *Richarsiella* (Poaceae) and the species *Monopetalanthus richardsiae* (Fabaceae) have been named after her in recognition of her extensive plant collections made in this part of central Africa.

The Collections

Today the UZL Herbarium contains about 25,000 specimens of vascular plants and bryophytes. There are also a few specimens of lichens, algae, and fungi, mostly preserved for teaching purposes. However, the lichen and bryophyte collections are currently being boosted by deliberate efforts made by departmental staff—field trips are planned to include collection of these lower cryptogams. A few pickled specimens are available, though unfortunately not very well maintained at the moment. Plans are underway to improve the status of this aspect of the herbarium collection, with emphasis on the preservation of reproductive parts for anatomical and morphological studies in the area of systematics.

UZL is the most active botanical centre in the country and provides identification services to research institutions, as well as local and foreign post-graduate students affiliated to the University of Zambia. The herbarium also provides teaching facilities to undergraduate students and short-term regional workshops in Plant Genetic Resources programmes.

Classification Systems

The families of higher plants in the herbarium are arranged according to a phylogenetic system devised by George Ledyard Stebbins, also employed in Heywood’s *Flowering Plants of the World*. Pteridophyte families are arranged using R.E. Pichi-Sermolli’s system, whereas the bryophytes are arranged according to A.J.E. Smith’s system, employed in his textbook, *The Moss Flora of Britain and Ireland*. The genera under Poaceae have been classified using the Clayton–Renvoize numbering system, which places specimens of related genera in close proximity. The genera and species in each of the other angiosperm families are arranged alphabetically.

Important Collections

Important collections at UZL include specimens collected by the following people:

- Andrew Angus, a plant pathologist who was based at Mount Makulu Central Research Station.
- William L. Astle, a Pasture Research Officer (Mt. Makulu) and later Chief Wildlife Research Officer (Chilanga).
- Dennis Basil Fanshawe, Principal
Forest Research Officer (Kitwe) who collected woody taxa countrywide.

- Raymond M. Lawton, forest ecologist who carried detailed studies on miombo in Northern Province of Zambia.
- B.L. Mitchell, wildlife biologist who collected extensively in the Kafue National Park.
- J.M. Mutimushi, a forester who collected plants countrywide.
- Dewan M. Nath Nair carried out many collections of specimens in the Lusaka District.
- Edward A. Robinson collected specimens of Cyperaceae.
- Specialised groups of plants include specimens of orchids by Graham Williamson and pterido-phytes by Jan Kornas.
- P.S.M. Phiri, who has covered the Luangwa Valley, Muchinga Escarpment, and Nyika Plateau with David Chuba, has made recent additions to the herbarium.
- Excellent specimens of pteridophytes have been donated by John Burrows of Buffelskloof Private Nature Reserve in South Africa.

UZL staff members maintain collaborative contacts with National Herbaria of Pretoria (PRE), Zimbabwe (SRGH), Kew (K), and Missouri (MO) to ensure authentic determination of the specimens. Curation of botanical specimens and studies in plant systematics are usually enhanced by availability of taxonomic literature. In this regard, the SABONET Secretariat has on a regular basis provided useful taxonomic literature on southern Africa. The Head of SRGH also recently donated several back issues of *Kirkia*. Gerald Pope, in his capacity as editor, continues to donate copies of *Flora Zambesiaca* to the herbarium. The herbarium has also received a donation from Professors Inga and Olov Hedberg of Uppsala University, of some published theses and reprints on plant systematics. However, further appeals are being made to other botanical institutions to extend the donations of more literature on African Botany, and in particular publications on central and southern Africa.

The Botanic Garden

In recent years the SABONET Project has been instrumental in the supply of curatorial materials to the herbarium. Through the auspices of this regional project, programmes are already underway to develop a teaching botanic garden within the university campus, and sited near the main entrance. A number of plants have been collected for planting on the campus grounds. It is envisaged that the majority of plants to be established in this garden, as a form of *ex situ* conservation, will be drawn from the wild. The focus will be on the cultivation of rare plants and species of ecological, economic, and medicinal value. It is also hoped to cultivate perennial tropical crops to enhance the teaching of economic botany. However, the botanic garden is expected to act as a living collection of plants to exhibit the growth habits that cannot be displayed by specimens mounted on herbarium sheets. It is for this reason that the linking of the herbarium to the botanic garden will improve the taxonomic determination of plants.

**Staff**

Dr P.S.M. Phiri: Senior Lecturer in the Department of Biological Sciences, Herbarium Curator and SABONET-Zambia National Co-ordinator. His interests cover Fabaceae, Poaceae, pteridophytes and mosses.

Mr D.K. Chuba: Lecturer in the Department of Biological Sciences, Assistant Curator. Research interests in orchids, bryophytes and lichens.

Ms Florence C. Nyirenda: Herbarium Research Officer (a SABONET-sponsored position). She is being guided to specialise in legume systematics.

Ms Angela Gono Bwalya: Herbarium Research Officer, currently studying for her Master of Science degree in plant systematics at Witwatersrand University under the auspices of SABONET.

Ms Maureen Kalusa: Data Entry Clerk employed under the auspices of SABONET. She is also involved in the general curation of herbarium specimens.

—David Chuba & Patrick S.M. Phiri
University of Zambia
Lusaka
Zambia
The object of this column is to keep an eye open for literature which SABONET users may find useful. This will mostly be new publications, but may well include older information in answer to questions such as “what’s the best key to …?”. It is neither possible nor desirable that the flow of such information should be one-way, from Pretoria outwards, so please feel free to submit notes and useful information to the address at the end of this column.

The citation of an item here does not imply any guarantee of its contents or even its existence; very often the compiler has not seen the documents referred to.

Mary Gunn Library: Theses


Mary Gunn Library: New Books


Pitta starts by regarding the garden as an ecosystem, and shows how natural control of pests works, is cheaper than using all the “aids” in the garden centre, and attracts desirable residents to the garden. She also writes great good sense about designing the right garden for each biome in southern Africa (fynbos won’t grow in the bushveld, so rather use the beautiful plants of your own region). There are chapters on attracting birds and butterflies, and on propagating your own plants. Then the meaty part begins, with individual descriptions of numerous plants and how to grow them. There are icons for shape, what the plants attract, growth requirements, flower colour and other characters. Pictures of the habit, flowers, fruit, and leaves are complemented by a thumbnail distribution map. The text includes a description, and notes on uses, cultivation, and generalities.


This book gives what is in many ways an artist’s-eye view of botanical art, which makes it a mind-stretching and, at times, difficult read for a botanist. There is a chapter on the history of botanical art in southern Africa (by John Rourke), which covers familiar ground. A chapter by Dee Snijman starts with the development of descriptive terminology before covering the history of botanical study in southern Africa and a general survey of the science behind the art. John Manning and Peter Goldblatt describe flower form and function, which leads them into a consideration of pollination ecology. Unusually, this chapter includes a few photographs among its illustrations; these are by Colin Paterson-Jones, and leave one wondering how on earth he persuaded the insects to stay still long enough for him to make such visually stunning studies. The introduction, postscript, and a chapter on plant portraiture by the editor demonstrate the divide between the two cultures which botanical art implicitly brings together. Finally, there is a biographical dictionary of southern African botanical artists.


This is the proceedings of the fourth International Conference on Cycad Biology, held in Panzhihua, Sichuan, China, in 1996. The contents indicate that in five days, the delegates were exposed to 56 papers plus the obligatory VIP speeches. The biodiversity session yielded 13 papers, systematics and phylogeny 15, ecology 6, reproductive biology 7, physiology 4, and conservation 11 papers. The presentation does no credit to the reputation of Chinese book production: one section is unattached to the rest of the book, there are numerous typographical errors and the reproduction of photographs leaves much to be desired.

Recent work on cultivated plants has given me great respect for the thoroughness and accurate detail of Leeuwenberg's series of revisions of Apocynaceae. His influence is clearly visible in this book, and it is all beneficial. The taxonomic section of this book recognises 23 species—18 from Madagascar and five from Africa (all of the latter being endemic to the SABONET area.) This section has all that one could want in a taxonomic work, including nomenclatural synopses, line drawings, distribution maps, no less than three fully working keys to species, and immensely detailed and directly comparable descriptions. The colour plates have been laid out for economy, and so occupy single sheets wrapped around sections of letterpress. Regrettably, this means that some of the plates are far from the descriptions of the species they represent. Other sections detail the ecology and cultivation of plants in this genus. The cultivation system includes growers’ summary descriptions of species, as well as the expected cultural notes.

By all accounts a gripping read, this is the story of one man's search for wild orchids in Borneo, and their breeding through to their eventual appearance in commercial cultivation.
papers in total record the importance of documenting phytodiversity (3 papers), continuing to collect specimens (2 papers), collecting images (4 papers), preservation of materials (4 papers), and storage of materials (2 papers); a final contribution offers a conclusion. Fortunately, the session on collecting images also addresses indexing (or databasing) them so that users can find the one they want.


If I were a foreign tourist visiting southern Africa for the first time, or a very new beginner exploring the world of plants, I should bless John Manning’s name for these. They are brief, clear, well-illustrated accounts of the few commonest succulents or wild flowers one is likely to see with no experience to guide one. These books also make great tourist souvenirs or come-ons to send overseas to family or friends one would like to persuade to visit our region.


Calling this a pocket Flora lends a new dimension to one’s concept of Indian clothing; I don’t own a pocket large enough to house this one! But it is much smaller than the same institution’s esteemed Flora of the Tamilnadu Carnatic and Flora of the Palni Hills. It is much closer to the idea of an excursion-Flora than its predecessors, and eliminating the supporting material that occupied several supplementary volumes of each of the other Floras has saved bulk. Eliminating all illustrations except a few diagrams and one map, and most of the nomenclatural details, and ruthlessly pruning the descriptions, has saved more space.

Mary Gunn Library: New Parts of Floras

Flore du Cameroun


Flora Zambesiaca

Recently Published Papers

Drugs from the Desert: Spreading the Benefits from Bioprospecting. R. Wynberg. Pages 17–18.
Confirming the Global Extinction Crisis. IUCN-SSC. Pages 22–23.

Aloe 38(3,4) (2001)
Endemic euphorbias from Zambia with notes on habitat and ecology. G. Williamson. Pages 58–70.
A new Aloe from Malawi. S. Lane. Pages 72–73.
The first record of Euphorbia stapelioides from Namibia. G. Williamson. Pages 74–75.
An odd population of H. arachnoidea var. nigricans. B. Bayer. Pages 76–79.

Australian Journal of Botany 50(1,2) (2002)
Morphometric, genetic and ecological studies clarify the conservation status of a rare Acacia in Western Australia. C.P. Elliott, C.J. Yates, P.G. Ladd & D.J. Coates. Pages 63–73.


*Biological Invasions* 3(1) (2001)


*Bojanala* 1(1) (2002)

Southern Africa’s trans-frontier conservation areas. B. Manale. Pages 1 & 8.


*Bothalia* 32(1) (2002)


Campanulaceae. A new species of Merciera from Western Cape, South Africa. C.N. Cupido. Pages 74–76.


The taxonomic significance of trichome type and distribution in Melolobium (Fabaceae). A. Mateete, B-E. van Wyk & P.M. Tilney. Pages 85–90.


**Conservation Biology** 16(1) (2002)

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**South African Journal of Science** 98(1,2) (2002)


**South African Journal of Wildlife Research** 31(3,4) (2001)

The KZN region of the Wildlife and Environment Society of South Africa (WESSA) is pleased to announce that the book, Bring Nature Back to Your Garden, has been the joint winner of the Natal University prize for “Popularising Science”. The book is published by WESSA and was written by two of its members, Charles and Julia Botha.

Approximately 10 000 copies have already been sold and the book is now in its third reprint. The authors have donated all royalties from the book to WESSA. A Zulu version of the book is due soon and a “Western Edition,” dealing with gardening in the western part of the country, was published last year.

Bring Nature Back to Your Garden describes how to transform your garden into an oasis for birds, butterflies, and other small creatures, by planting indigenous vegetation and using nature-friendly gardening techniques. With this new approach, gardeners will help preserve and restore our fast-disappearing natural heritage and can actually contribute to conservation right on their own doorsteps.

For further information, please contact the authors directly on tel. (031) 209 3929.

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Charles and Julia Botha, the authors of Bring Nature Back to Your Garden. (Photo by Rob Cross for WESSA)
ANNOUNCES THE PUBLICATION OF ITS LIMITED EDITION PRINT PORTFOLIO UKHAHLAMBA DRAKENSBERG FLOWERS BY TESSA DEAN

These superb life-size, individually-signed and numbered prints of Eucomis bicolor, Gladiolus oppositiflorus, Nerine bowdenii and Agapanthus campanulatus are available in a limited edition of only 500 sets in variously-priced editions.

If you are interested in acquiring one of these superb sets, please visit our website www.floratrustkzn.com or telephone (031) 563 9481 or (031) 201 6454 for further information.

The Flora Publications Trust was established ten years ago and has become one of the most important institution of its kind in the country. It aims to:

- publish affordable books on the indigenous plants of this country
- stimulate greater awareness in and understanding of our plant life and environment
- develop resources and relationships to fund and create future publications

Structure and Condition of Zambesi Valley Dry Forests and Thickets

Published by The Zambezi Society. English. 40 pages
Ring-bound, soft cover.
210 x 300 mm.
Available from The Zambezi Society at
Tel.: +263 4 747 002/3/4/5
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Considering the need for scientific motivation for the conservation of dry deciduous lowland forests in southern Africa, this report is an extremely valuable piece of work.

This soft-cover book consists of 40 pages of text (including Appendices), suitable not only for scientists, but also for the general public. Figures are presented in full colour:

The layout of the book follows the typical scientific approach. It consists of an introduction, information on the study area, description of the methodology used, results obtained, discussion, conclusions and recommendations, a reference list, and appendices.

The Introduction gives a general overview of the state of the study area, which comprises the patches of dry deciduous lowland forest botanically classified as Xylia torreana Dry Forest. This vegetation type is rare and threatened in the Zambesi Valley and is poorly represented in protected areas. A study on its current condition is therefore considered of global importance. The study aimed to improve the knowledge of the biodiversity within dry forests, to identify indicators of forest condition, and to evaluate conservation issues associated with the forests, including the effects of disturbance and wildlife.

To meet the objectives over the short period of time allocated for the study, a rapid assessment method was used to record vegetation structure, indicators of forest health (condition), and evidence of disturbance by people and wildlife. The methodology was clearly structured and well planned. Thirty-one transects were sampled over seven sites. Five of these sites were situated in Communal Lands and two in Protected Areas (six sites in Zimbabwe and one in Mozambique). In the provisional sampling protocol, assessment was based on four categories of indicators, namely plant species, structural diversity, forest disturbance, and forest condition. Information on these indicators is presented in different tables in the Materials & Methods section; there is also a table justifying the use of woody plant species as indicators.

The Results section of the study is well presented. TWINSPLAN classification results are presented in an ordered two-way table. Structural characteristics of transects are presented in a biplot derived from principal components analysis. All other indicators are presented in neat and informative index diagrams.

The results of the study are clearly explained and evaluated in the Discussion, where it is shown that the Zambesi Valley dry deciduous lowland forests are threatened and therefore deserve to receive attention from future conservation initiatives. Current threats are mainly fires and debarking by elephants, with human impacts predicted as a future problem. In the Conclusions and Recommendations, the authors list various reasons for conserving these dry deciduous forests. The authors also put forward useful recommendations, including suggestions for future research to focus on these forests and contribute to the knowledge of this sensitive ecosystem.

Despite the short time available for this study, the authors constructed a valuable initial assessment of these threatened patches of dry deciduous forests. Not only is this report a valuable addition to the existing literature on dry deciduous forests in southern Africa, but it also provides adequate information and recommendations for research on these areas to insure their conservation.

This publication relates closely to the work being carried out by the Zambezi Society and the Biodiversity Foundation for Africa on the identification of community-based mechanisms for the conservation of biodiversity in settled lands. For more information about the Zambezi Society, access their website at www.zamsoc.org.

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Namibia has a rich diversity of ethnic groups and past political instability, resulting in the centralisation of large numbers of people in small areas, despite the country’s small population. In north-central Namibia alone, nine predominant Owambo languages and eight tribes or tribal authorities are found. The census of 1991 indicated that the Owambo area contained 44% of the Namibian population.

The Owambo region has three major vegetation types—desert, savanna, and woodlands. The semi-arid savannas of north-central Namibia comprise 13% of the total surface area of the oshana delta, which originates in the highlands of south-central Angola. Oshanas are shallow ephemeral floodwater courses, where the water either stands or flows, depending on the amount of rainfall. Considering that the mean precipitation for Namibia is 270 mm, with a potential mean annual evapotranspiration of approximately 3 000 mm, the oshana delta provides in one of the major natural resources: water. This, in combination with relatively fertile soils and abundant fish supplies during the three-year flood of the Culvelai drainage system, is the main reason why the oshana delta has become one of the most densely populated areas in Namibia. Hence, pressures on natural resources have increased severely.

The aim of this academic dissertation was to provide scientific evidence for deforestation and forest degradation of the Owambo area of north-central Namibia. This is, however, not the first report to address the problem of deforestation in this region. The earliest reports concerning degradation of wood resources in Owamboland date back to the 19th century. Already in 1931 it was reported that forest trees in north-central Namibia were being destroyed at an alarming rate. In 2001, Living on the land addressed the problem of deforestation in an analysis of forest cover change in the Owambo, with special focus on the domestic use of wood for construction on farms. Aerial photographs and satellite images, amplified by ground truth data, were used to monitor and analyse the expansion of settled areas and to determine its effect on forest cover. Long-term interaction between humans and the woody vegetation was analysed in a test area of 28 x 15 km in the Ondobe and Eenhana constituencies of the Ohangwena Region. The study area was located in the transition zone, where relatively fertile savanna changes into infertile woodland, an area that remained uninhabited until the First World War. During ground truth data recording, the author, assisted by local inhabitants, assessed different fencing methods as well as homestead construction materials. During data recording trips, the author interviewed local people to gather additional notes on local wood consumption.

Results of this study support earlier observations of high wood consumption in the Owambo area, which will inevitably result in a shortage of wood in the near future. The mean household density, percentage inhabited area, and population densities have increased remarkably. These increases explain why the consumption of wood exceeds the sustained yield. It is estimated that growth of the population by one person leads to about 1 ha of deforestation! Change in land cover from forest to non-forest was caused almost entirely by expansion of permanent agriculture and use for residential purposes. Settled areas were first expanded into the savanna and later even into the eastern woodlands. The results of this study clearly indicate the pressure on indigenous tree species. Pole fences replaced traditional brushwood fences—a major change in construction on farms. Furthermore, locally available wood resources were favoured. Colophospermum mopane was the most desired tree species in savannas, whereas Terminalia sericea, Burkea africana, and Baikiaea plurijuga were favoured in the woodlands. Ground truth data have however revealed that local farming systems have increased the number of indigenous fruit trees to some extent.
In addition to the main theme, the dissertation also provides definitions, statistics, and the history of global forest cover change. The first two chapters of the book deal with the physical environment of the Owambo area. A detailed literature review on political history, population of the Owambo area, farming practices, migration, and traditions of the native people, as well as an assessment on the domestic use of wood in the Owambo region, is given in about 45 pages. In addition to the text, information is also presented in tables, graphs, maps, and photos.

This dissertation is a remarkable presentation of the deforestation problem in the Owambo region of north-central Namibia. It strives to focus attention on the fast depleting wood resources of Owambo, which could negatively influence the rural livelihoods of the local people. A study of this kind is imperative for the evaluation of sustainable utilisation of woodlands in southern Africa. Due to its scientific basis, the dissertation is not likely to be popular among the general public; however, it will make a valuable addition to any bookshelf of researchers interested in the southern African savanna, forest, and woodland systems.

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Although Zimbabwe has quite a rich and diverse flora of around 6,000 species and probably the second largest herbarium in Africa, it, unfortunately, does not have a long and impressive track record of symposia and public lectures on botanical subjects. However, with the encouragement and motivation of a handful of amateur botanists and the enthusiastic support, assistance, and co-operation of the Officer in Charge of the National Herbarium and Botanic Garden, Miss Nozipo Nobanda, three very successful symposia have been held over the past couple of years at the Education Centre in the National Botanic Garden.

Orchids

The first symposium was on the Indigenous Orchids of Zimbabwe and was held under the joint auspices of the Zimbabwe National Herbarium and Botanic Gardens and the Zimbabwe Orchid Society.

Dr Mupawose, the Chairman of the Friends of the National Botanic Garden, officially opened the symposium and Mr Mike Kimberley of the Indigenous Orchid Group of the Zimbabwe Orchid Society introduced the speakers and chaired the proceedings. The seven-hour programme was held on a Saturday and repeated on the Sunday and attended by a total of about 180 people.

The subjects and speakers were
- Introduction to and ecology of Zimbabwe’s orchid flora by Werner Fibeck
- Zimbabwe’s 100 Epiphytic Orchids by Mike Dare
- Zimbabwe’s 80 Montane Terrestrial Orchids by Darrel Plowes
- Zimbabwe’s 150 Savanna Terrestrial Orchids by Werner Fibeck and Virginia Phiri
- Conservation and legislative protection of Zimbabwe’s Indigenous Orchids by Mike Kimberley
The talks were all illustrated by colour slides and an exhibition of live Zimbabwean epiphytic and terrestrial orchids was mounted outside the lecture room.

Cycads and Palms

The second symposium was on Cycads and Palms and was held under the joint auspices of the Zimbabwe National Herbarium and Botanic Garden, and the Cycad and Palm Branch of the Aloe, Cactus and Succulent Society of Zimbabwe.

Dr Mupawose officially opened the symposium. Mr Mike Kimberley, Chairman of the Cycad and Palm Branch introduced the speakers and chaired the proceedings. The seven-hour programme was held on a Saturday and repeated on the Sunday and attended by a total of about 120 people.

The subjects and speakers were:

- Introduction to Cycads and Palms of the World by Mike Kimberley
- Zimbabwe's Indigenous Palms and Cycads by Ian Turner
- Propagation and Cultivation of Cycads in Zimbabwe by Brian Schacter (Demonstration)
- Some Palms around the World by Erik Morris
- Some Cycads around the World by Ian Turner
- How to Grow Palms in Zimbabwe by Erik Morris (Demonstration)
- Zimbabwean Cycads and Sucessulents by Ian Turner
- How to Grow Succulents from Seed to Maturity (Demonstration) by Claude le Resche
- Hybridising Aloeos and Grafting Cactus (Demonstration) by Brian Terry
- Pests and Diseases of Cycads and how to Kill or Cure them by Ian Waters
- Succulent Orchids by Werner Fibeck
- Succulents and the Law in Zimbabwe by Mike Kimberley
- Learn more about Succulents by joining the Aloe, Cactus and Succulent Society by Mike Harvey

The talks were illustrated by colour slides and appropriate props accompanied the demonstrations. A small exhibition of succulents was mounted outside the lecture room. It is intended to have further symposia on appropriate botanical topics on an annual basis at the same venue and under the same auspices.

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News from Malawi

Advanced Database Management and Networking Course

I was delighted to be one of the participants in the SABONET Advanced Database Management and Networking Course held at the National Botanical Institute in Pretoria in May 2002. This regional course drew fourteen participants from ten southern African countries. Trevor Arnold and Franco Alberts successfully facilitated the course, which focused on network installation, configuration, troubleshooting, database design, and table structure and relationships.

Though it was a very tough course, the participants worked very hard in developing their skills in the management of networks and databases. Many modules had to be covered within a short period of time, and although we were stretched most of the time, the course has equipped me with up-to-date skills.

My newly acquired skills will assist me with the development of a current National Plant Checklist for Malawi. So far the checklist only covers the Dicots, but through the knowledge I have gained in building queries, it is now very easy to extract the Monocot specimen data from the database by myself. Very soon I will have good news on a completed Vascular Plant Checklist for Malawi.

In conclusion, thanks to the SABONET Secretariat, course facilitators, and the entire NBI staff for their great support during the wonderful time I spent in...
Relaxing after a hard day’s work.

News from Namibia

It has been a busy time at WIND since our last contribution to SABONET News. We have been checking specimen data whenever we have a spare moment (even when none seems to exist) and Esmeralda Klaassen has been obsessed with the new Poaceae Checklist for what seems to be forever. The checklist will be a valuable tool for farmers, extension officers, pasture scientists and others—it includes data such as habitat and ethnobotanical uses, amongst others. The arrival of our new herbarium cabinets necessitated reshuffling the entire collection, but at least we have (a little) breathing space. We have had two excellent courses organised under the SABONET internship programme.

The first was a course on the collection and identification of petaloid monocots, presented by Dr Dee Snijman of the Compton Herbarium in Cape Town. The theory and practical identification part of the course was followed up by fieldwork, so that we could see firsthand how the experts collect these taxa. We all came away far more enthusiastic and motivated about geophytes. In fact, Silke Rugheimen (née Bartsch) and I got quite carried away after Dee went back to Cape Town. We stayed in the field collecting for a few more days, and now poor John Manning is also getting a million queries. It’s Dee’s fault, John!

Dr. Hugh Glen of the National Herbarium in Pretoria presented the second course, on botanical nomenclature. Hugh was the essence of patience with our group, which consisted of staff at all levels of knowledge, from pretty knowledgeable through just hanging in there, down to completely confused. Senior staff benefited greatly from the course, while new staff members were at least exposed to the horrors of this subject and made aware that patience and application will get you there eventually.

Our thanks to PRE, NBG, and SABONET, and especially to Dee and Hugh for helping and motivating us.

April saw the WIND staff in the North-Central communal areas of Namibia. These areas are historically undercollected, and we target at least one every year. Esmeralda and Silke disagree on one thing about this trip—Silke says they were lost at one stage, and Essie says they were not lost, they just didn’t know where the road was. They say if you have a GPS you are never lost, you know exactly where you are, you just don’t know where that place is and how to get back to where you should be. Still, once they found themselves, they had a very successful trip. They knew they had reached the Okavango Region and it was time to turn around when Helvi Haufiku, our technical assistant from the North-Central area, didn’t understand what the local inhabitants were saying anymore. For several staff members this was their first visit to the north, and a valuable opportunity to see, alive and unsquashed, the plants they routinely have to identify and discuss.

Our most recent fieldwork was a short trip to the Aus-Rosh Pinah area. We had several items on our agenda, including collecting in new squares, Red Data assessment of certain taxa, seed...
collection for the National Plant Genetic Resources Centre, and photography for the new field guide we are putting together for the southwest of Namibia. We were very pleased to see *Babiana falcata* for the first time, and to smell its exquisite perfume.

Dr Erica Maass of the Biology Department at the University of Namibia accompanied us. Erica is a parasite enthusiast and hoped to find some new localities for *Hydnora triceps*. It was very exciting for us when she found a specimen in (subterranean) flower, and we realised that we were amongst the few people in the world to see this unusual plant alive. None of us managed to spot any, and we are convinced Erica’s success has to do with her habit of wandering around while plaintively calling “where are you?”

Other interesting collections on this trip include *Schwantesia loeschiana* and both species of *Hartmannthus*, as well as a number of live euphorbias for the National Botanic Garden.

It was encouraging to get a couple of enquiries from South Africa and overseas about the last article from Namibia in SABONET News 7(1). John Manning asked to see my *Whiteheadia bifolia*, and instantly pronounced it to be the new *Whiteheadia etesionamibensis*. This is the only record we have at WIND, as many of our sheets are on loan.

So, that’s about it from us. We hope that you are all well, and making the most of the last year of the SABONET programme. —Coleen Mannheimer

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**Southern African Botanists’ E-mail Addresses**

The following list includes the e-mail addresses of staff working in some of the national/university herbaria, botany departments, botanical gardens, and biodiversity programmes of southern Africa. Thanks to all those who have sent their e-mail addresses to the editors for inclusion in this list.

**PLEASE NOTE** that this list gets updated every issue of our newsletter. In order to avoid frustration and possible disappointment, our readers are advised to use the most recent list available. Some of the addresses listed in previous editions of the newsletter may no longer be relevant.

**SPECIAL APPEAL:** Should you be aware of any changes to one or more of the addresses listed below, or would like to be added to the list, please notify Stefan Siebert, at stefan@nbipre.nbi.ac.za so that the list can be updated on a regular basis.

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150  
SABONET News Vol. 7 No. 2 September 2002
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Botanists Working on Southern African Plant Taxa

This section lists e-mail addresses of a few of the botanists living outside southern Africa that are working with southern African plant taxa. If you would like to be included in this list, please notify one of the editors together with the names of the families/taxa you are working on.

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<th>Specialties</th>
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<td>(Fabaceae, Hyacinthaceae, Rosaceae, Verbenaceae)</td>
</tr>
</tbody>
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Last updated 26 August 2002
In 2001, the South African Association of Botanists honoured Professor Patricia Berjak’s lifelong commitment and contributions to Botany with the prestigious Silver Medal award. Consequently, we are delighted, albeit not surprised, by the NRF Evaluation Centre’s recent announcement of her A-rated status. We congratulate Pat on this important tribute to her international standing as an innovative plant scientist.

Pat’s botanical career started when, after obtaining an M.Sc. in Zoology, she discovered—and was consequently mesmerised by—the intriguing world of seeds. Her Ph.D. thesis on maize seed deterioration, which yielded five keystone papers and a book chapter, established her as an internationally recognised worker in the field. Her research at the University of Natal (Durban) over the last two decades led to several pivotal break-throughs regarding seed desiccation sensitivity, the nature of seed recalcitrance and germplasm cryopreservation. To date, she has published over 120 articles in scientific journals and books and has given a multitude of plenary lectures at international and local conferences. She has received numerous other accolades from her peers, including election as a Fellow of the University of Natal in 1994 and Fellow of the Royal Society of South Africa in 1996. She is, however, not only a gifted researcher, but is also dedicated to improving university teaching and is widely regarded as an innovative and highly effective educator. She serves on many strategic committees of the University of Natal, is a trustee of the Durban Botanical Gardens, and the Chair of its Education committee. Her impact on the advancement of Botany in South Africa is further illustrated by the professional success of her postgraduate students, many of whom hold key positions in academia and industry.

Unbelievable as it may seem, Pat still has spare time to indulge in many diverse hobbies. Apart from being proudly owned by MacBite, the most spoiled cat in the Kingdom of the Zulu, she and Norman (Professor Norman Pammenter, also a long-serving and distinguished member of our Association) have recently refurbished a classic Scimitar GTE, are both holders of pilot licences, judge international aerobatics competitions, and are accomplished ballroom dancers!

Professor Berjak’s considerable scientific prowess and generosity of spirit have and will continue to leave an indelible and inspirational mark on the international botanical landscape. The Association is proud to count her amongst its members and wishes her continued success.

—Professor J. van Staden

Richard Pienaar was educated at the universities of Natal and the Witwatersrand, beginning at the latter with his studies up to Masters level and appointment, in 1966, as a junior lecturer in the Department of Botany. The following year he took up a lecturing position at the University of Natal, Durban, but returned to Wits in 1972 to a senior lecturership and was promoted to associate professor in 1975. In August 1974 he was awarded a Wits Council Fellowship and CSIR Postdoctoral Bursary, which enabled him to spend some five months at the University of Washington Marine Station and a further seven months in the UK at the Marine Biological Association laboratory in Plymouth. Natal beckoned again, and in 1977 he was appointed Professor and Head of the Department of Botany at the Pietermaritzburg campus, where he was also Dean of the Faculty of Science during 1985 and 1986. 1987 saw his long-term reversion to Wits, when he was invited to take up the Chair of Botany (1987–2002) and headship of the Department. In addition he has served as Assistant Dean of the Faculty of Science since 1989. He has remained in academia throughout his career and has been an inspiration to staff and students during the last thirty years. He has made an ongoing and significant contribution to the advancement of Botany in South Africa.

Richard is also an outstanding teacher. Throughout his long career he has lectured to undergraduate and postgraduate students. His lectures are well prepared, challenging, and presented in a way that builds confidence in students. Professor Pienaar considers teaching to be an extremely important part of any academic’s role and sets an outstanding example to his staff.
Richard has a high research profile in South Africa and internationally with his research focus currently being on marine and estuarine nanoplankton. His publications show the breadth of his knowledge, as well as his ability to produce extremely detailed descriptions of organisms. His CV lists 114 publications in refereed journals with a further five in preparation, and presentations at 27 international and 99 South African conferences. Over the years Richard has supervised 27 MSc, PhD, and post-doctoral students. The award of a B rating by the National Research Foundation has recognized the quality of his research.

He is often invited as the keynote speaker at large international meetings. He promotes and facilitates the attendance of staff and postgraduate students at South African conferences and pays particular attention to ensuring that as many people as possible are funded to attend the annual SAAB conferences.

Over the years, Richard has made a significant contribution to the study of cryptogamic botany in South Africa. Since 1996, he has concentrated on the potentially harmful toxic algae occurring off the coastline of South Africa, as well as the potential for introduction of harmful micro-algae via shipping ballast water. Much of this work is done in collaboration with the Marine and Coastal Management programme.

Richard has dedicated his entire career to the training of botany students and the development of botany departments in the country. Richard made outstanding contributions in the Wits Department of Botany during his term as head of the department: his managerial style—a mixture of relatively tight control with high expectations—and an open-door policy allowed his staff plenty of space to develop. He was extremely popular as the Head and many younger staff members bloomed under his leadership. He also established a process for providing postgraduate students with excellent support. He created a postgraduate structure that ensured the quality of the research being undertaken, as well as a committee structure that gave ongoing advice and support to the students. This extremely efficient system allowed the number of graduate students to grow to over 100 in the Department in 2000. The University of the Witwatersrand has most recently recognized his leadership skills by promoting him to Deputy Vice-Chancellor (Academic–Internal).

Richard is a warm, friendly, caring person with a good sense of humour. His wife, Shirley, provides him with enormous support, always understanding his commitment to doing the job right. He works long hours, often being the first to arrive at work and the last to leave. As members of his staff we have all benefited enormously and feel that he is truly deserving of the Silver Medal.

―Prof. Mary Scholes & Prof. David Mycock

Haarlem Honeybush

Sweet Smell Of Success

Rural farmers in Haarlem, one of the Western Cape’s most impoverished communities, have taken their first steps towards becoming commercial growers of Honeybush, an indigenous herb tipped to become a major South African export.

The ten farmers, including three women, have produced their first Honeybush harvest following a groundbreaking project between emerging entrepreneurs and leading roleplayers in the Cape’s agricultural industry. The first harvest, consisting of 30 tons, has already been sold to commercial buyers, including Cape Natural Tea Products and Grassroots Natural Products, and is expected to bring a cash injection of more than R70 000 to the community. Although relatively small, the first crop signals the beginning of a burgeoning Honeybush industry in the area, where formal employment opportunities are extremely limited and pension or social grants are often the main source of income.

Rich in minerals and prized for its antioxidant properties, low tannin and caffeine content, Honeybush (Cyclopia species) is indigenous to South Africa and grows only in the mountainous fynbos regions of the Cape Province. For decades, local communities have supplemented their income by gathering wild Honeybush in often hazardous conditions, typically walking for many kilometers in rocky, snake-infested terrain to find and harvest the plants. As the demand for Honeybush grew, however, gatherers had to move deeper into the wilds to find adequate supplies, resulting in depleted natural stocks and putting heavy pressure on the environment.

In a bid to create self-sustaining agribusinesses through commercial Honeybush production, members of the Haarlem community joined forces with organized agriculture last year to establish the 10-hectare Haarlem Honeybush plantation. Each of ten participating farmers purchased 10 000 Honeybush seedlings for cultivation on one hectare of
land, leased long-term from the local council.

Scientific Methods, Close Collaboration

The project was coordinated by ASNAPP (Agribusiness in Sustainable Natural African Plant Products), a program of the University of Stellenbosch, formed in partnership with the US Agency for International Development (USAID) to develop and implement sustainable African natural products businesses that will provide income, employment, and economic development in rural communities.

ASNAPP conducted cultivation trials and investigated post-harvest processing and quality control methods in conjunction with Rutgers University of New Jersey in the USA. They also did the technology transfer and market research. As part of ASNAPP’s commitment to helping emerging farmers gain a foothold in the burgeoning worldwide market for botanical ingredients, they introduced the Haarlem farmers to leading exporters and international fair trade buyers. Led by horticulturalist Elton Jefthas, ASNAPP also continues researching vegetative propagation of Honeybush tea and sustainable harvesting procedures. The ASNAPP team plans to make cultivation and data available to the broader industry, which is still in its infancy compared to Rooibos, South Africa’s prime herbal tea product.

This community-driven project was also supported by other role players in the Western Cape’s agricultural sector. The Agricultural Research Council assisted with establishing the test stand, and further helped with soil analysis and preparations. Access to financial resources came in the form of a grant from the Department of Agriculture for infrastructure development, and two loans from ASNAPP and Landcare for other establishing costs. Cape Natural Tea Products partly funded the purchasing of seedlings on the condition that the farmers sell the same percentage of their first crop back to the company. Commercial farmers from the area also reached out to the new Haarlem farmers by visiting the plantation to give some practical advice.

Good Expansion Prospects

Says team leader Elton Jefthas of ASNAPP, “Our aim is to empower emerging farmers to create self-sustaining agribusinesses. We were very encouraged by the way these farmers took responsibility for the one hectare of land and the 10,000 plants under each one’s care. They should be very proud of what they have achieved to date and we believe we will see this project expand and prosper in the years to come.”

According to Jefthas, from a resource-limited farmer’s perspective, Honeybush tea offers a less expensive alternative to the more traditional crops grown in the Cape Province. Jefthas added that the Haarlem Honeybush project could serve as a model for establishing new entrepreneurs in agribusiness, not only in South Africa, but also the rest of Africa. “This was a truly community-driven venture. On the one side, we had access to financial and technical support and expertise from our project collaborators, representing government, the private sector, and commercial farmers, and on the other the Haarlem entrepreneurs’ commitment and willingness to succeed. That is a potent combination, a recipe bound for success.”

The farmers themselves agree that the four cornerstones of the project’s success were affordable access to finance, training, securing buyers for their product, as well as individual ownership and dedication.

One of the three female farmers in the group, 26-year-old Karen Hoggans, said she had previously tried, unsuccessfully, to grow flowers and vegetables. “But all the plants simply died at some stage and I really thought I would never be able to be a successful farmer. This time it was different as the people from ASNAPP helped us every step of the way. Without the training and support they gave me, I would have had just more dead plants. Now I am so proud that I can sell my harvest to a buyer.”

When asked what advice she would give to other community farmers who are interested in cultivating Honeybush, Hoggans said: “You must accept full responsibility and not expect anyone else to do the work for you. And you must take care of every single plant—treat it with love and respect. I am now ready to also try other crops, as long as ASNAPP will again show me how to do it right.”

For this group of farmers, the first Honeybush harvest was merely the beginning. They are keen to expand the plantation and to investigate the feasibility of other crops. They also hope to see more people from Haarlem getting involved in agribusinesses. In the past, half of the Honeybush farmers had to rely on pension and social grants as their main source of income. Now they are motivated and geared to change that.

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The annual SAAB Conference was held in Grahamstown in January this year. A suggestion was made at the Annual General Meeting to consider publishing the abstracts of the papers and posters presented at the Conference in the South African Journal of Botany. SAAB takes pleasure in announcing that the abstracts will be published in SAJB Volume 68, Issue 2, 2002—a first for the Conference. As we plan to do this annually, contributors are urged to pay more attention to both content and quality of abstracts submitted for future Conferences. The final product will be what has been submitted and will not be sent out for proofreading at the galley stage.
the FLORA
Publications Trust

Announces the publication of its limited edition print portfolio
uKhahlamba Drakensberg Flowers by Tessa Dean.
(see page 144 for details)
We thank the following people and organisations for help with preparing this issue of SABONET News:

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<tr>
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<td>Berenice Carolus</td>
<td>Hans Heiligendorff</td>
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<td>Jim &amp; Betty Chapman</td>
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<td>David Chuba</td>
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<td>Carina Haasbroek</td>
<td>Estelle Potgieter</td>
<td>Christopher Willis</td>
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In the November 2002 edition of SABONET News...

Profiles:
Marinda Koekemoer (South Africa)
Gladys Msekandiana (Malawi)

Living Collections:
Free State National Botanical Garden (South Africa)
Vumba Botanical Garden (Zimbabwe)

Herbaria:
UCBG and GAB (Botswana)
ROML and MASE (Lesotho)

Various articles on the Poaceae and grasslands
About SABONET

This publication is a product of the Southern African Botanical Diversity Network (SABONET), a programme aimed at strengthening the level of botanical expertise, expanding and improving herbarium and botanic garden collections, and fostering closer collaborative links among botanists in the southern African subcontinent.

The main objective of SABONET is to develop a strong core of professional botanists, taxonomists, horticulturists, and plant diversity specialists within the ten countries of southern Africa (Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe). This core group will be competent to inventory, monitor, evaluate, and conserve the botanical diversity of the region in the face of specific development challenges, and to respond to the technical and scientific needs of the Convention on Biological Diversity.

To enhance the human resource capacity and infrastructure available in the region, SABONET offers training courses, workshops, and collaborative expeditions in under-collected areas. The programme produces a series of occasional publications, the Southern African Botanical Diversity Network Report Series, and a newsletter, SABONET News.

SABONET is co-funded by:
- The United States Agency for International Development (USAID/World Conservation Union—Regional Office for southern Africa (IUCN-ROSA)
- The Global Environment Facility (GEF)/United Nations Development Programme (UNDP)

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