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NEWS-LETTER OF THE SOUTH AFRICAN ASSOCIATION OF BOTANISTS
NUUSBRIEF VAN DIE SUID-AFRIKAANSE GENOOTSKAP VAN PLANTKUNDIGES

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COURSE ON THE USE OF COMPUTERS IN NATURE CONSERVATION RESEARCH

A third course on the use of computers as a tool in nature conservation research will be presented by Mr Peter Retief in the Kruger National Park during October. Once again it will be run jointly by the National Parks Board and FRD.

The course will take place at the brand new Bateleur Camp in the northern Kruger National Park from Sunday evening, 22 October until Friday morning, 27 October 1989. TSM computers are being provided and installed for the use of participants.

As promised after last year's course at Pilanesberg National Park this will be a more advanced course than those of the previous two years. Dr Dave Salz, Colorado State University, has been invited as co-presenter.

As there has already been tremendous interest shown in the course and accommodation is extremely limited, applications will be handled on a strictly 'first come, first served' basis.

All enquiries should be directed to Mrs Diana Banyard, FRD, P.O. Box 395, Pretoria 0001. Telephone : (012) 841 3688 (before 13h00 please).

ANNUAL REPORT OF THE PRESIDENT OF SAAB FOR 1988

Once again this has been a successful year for the Association and I have received the support of the local executive and numerous other members in conducting the affairs of SAAB. From the many reports that we have received I have pleasure in reporting on the activities of the Association for 1988.

1. VERGADERINGS VAN DIE RAAD EN UITVOERENDE KOMITEE

1.1 Raadsvergaderings

- (a) 'n Kort raadsvergadering om die nuwe raadslede te verwelkom, is na die Algemene Jaarvergadering op 14 Januarie 1988 aan die Universiteit van Kaapstad gehou.
- (b) Die halfjaarlikse Raadsvergadering is op 1 Augustus 1988 by die Nasionale Botaniese Tuin, Kirstenbosch gehou.
- (c) Die derde Raadsvergadering is op 9 Januarie 1989 by die Universiteit van Pretoria gehou.

1.2 Uitvoerende Komitee

Een volle Uitvoerende Komiteevergadering is op 16 Junie 1988 by die Universiteit van Rhodes gehou. Die President, Ere-Tesourier en Ere-Sekretaris het ook dikwels gedurende die jaar byeengekom en besprekings oor die Genootskap gehou.

2. MEMBERSHIP

Membership of the Association is well documented now on the dBase system and programmes have been devised by our honorary treasurer, Professor Ted Botha, so that all the accounting and membership records can easily be updated. The number of ordinary members during the last year has stayed more-or-less the same but the number of student members has increased. My thanks to the staff at universities for recruiting these members and it is hoped that they will encourage students to become full members when their student membership expires.

Membership as of 21 December 1988 is:

	Honorary	Retired	Life	Institutional	Ordinary	Affiliate	Student	Total
1987	16	4	12	14	467	62	82	657
1988	18	4	12	15	466	63	103	681

3. MEDALS AND AWARDS

South African botanists continue to excell in the academic and research fields and nominations were received for a number of awards this last year.

3.1 No South African medal for Botany is to be awarded.

3.2 SAAB Senior Medal

The SAAB Senior Medal for 1989 is awarded to Prof. J.A. Coetzee.

3.3 SAAB Certificate of Merit

Council decided not to award the certificate this year in spite of receiving nominations.

3.4 SAAB Junior Medal

Again excellent Ph.D. theses were contributed for adjudication. The medal is awarded to Dr J.J. Midgeley of the Department of Botany, University of Cape Town for his thesis entitled 'Aspects of the evolutionary biology of the Proteaceae, and its phylogeny with emphasis on the genus Leucadendron'. Dr Midgeley is presently employed at the Forestry Research Centre in Saasveld.

3.5 Honorary Members

Honorary membership was granted to one member: Prof. N. Grobbelaar.

3.6 National Botanic Gardens Plant Sciences Prize for Research

SAAB was asked to adjudicate the award of this prize which was initiated last year. The prize is to be awarded every five years mainly on the basis of research publications over the previous five year period. It was extremely encouraging to see the standard of the research publications submitted by those nominated for this award. Unfortunately only one prize could be awarded but I would like to encourage those who did not receive recognition by saying that all of the nominations were of an exceptional standard and they should continue to persevere in their chosen directions. The winner of the award will be announced by the Director of the National Botanic Gardens, Prof. J.N. Eloff.

4. CONGRESSES

The 14th Annual Congress which was held from 11 - 16 January 1988 in Cape Town was organized by the National Botanic Gardens under the chairmanship of Gill Scott. The Congress was an excellent start to 1988 and we appreciate the work involved by the organising committee and the participation of so many members. One problem in Cape Town was

that a number of members who booked accommodation did not appear or did not stay for the full period of the congress. We hope that in the future participants will be more accommodating so that these matters do not become a financial embarrassment to the Association.

The January 1989 Congress at Pretoria has been well organised by Dr Elzabe Schoonraad and her committee and we look forward to a stimulating meeting once again.

The 1990 Congress is scheduled for Grahamstown but little organization has proceeded at present.

5. AMALGAMATION OF THE BOTANICAL RESEARCH INSTITUTE AND NATIONAL BOTANIC GARDENS

There was some concern expressed during the past year about the status of botany and the future of the botanical research organizations in the country because of the amalgamation of the BRI and NBG. We had to make known the views of SAAB to the committees at the highest level where decisions are being made as it appeared that there may be fragmentation of the BRI to the detriment of botany in this country. Fortunately the matter has now been satisfactorily resolved and as of 1st April 1989 the two organizations will be amalgamated with little change in the overall structure of the disciplines represented in the new institute. It is envisaged that a much stronger united institute will therefore be formed with the continued research facilities, job opportunities and guidance for young botanists in South Africa. We look forward to this added impetus to our subject that it is hoped the new institute will provide.

6. PROMOTION OF BOTANY

There has again been concern expressed about the poor publicity that botany receives especially in schools. Efforts will be made at this congress to arouse interest amongst the staff at universities to participate more in the activities at school level. In this way we may be able to attract more and better students into the subject.

A draft of the booklet 'Careers in Botany' has been circulated to the universities and the research institutes for comments. We have received back most of these and in the course of next year the booklet will be finalised for publication. If anyone would like to see a copy of the draft and make comments on it they should contact me.

7. REGIONAL ACTIVITIES OF SAAB

The regions have reported independantly on their activities and their reports will be published in Forum Botanicum.

8. REPORTS/VERSLAE

8.1 Publications

8.1.1 South African Journal of Botany

Prof. J.N. Eloff, Editor of the Journal, reports that 118 manuscripts were received during this period and 94 articles have been published in 1988. Most common subjects used:

Taxonomy	32
Ecology	11
Seed germination	10
Vegetation classification	7
Phytochemistry	6
Tissue culture	6

There has been some dissatisfaction expressed about the Journal. My only recommendation is that those who would like to see changes or improvements should become more involved in the editing of the journal as sub-editors. We hope that more active involvement can be initiated in this way.

8.1.2 Forum Botanicum

Ms W.G. Welman, editor of Forum for the last few years reports:

'Vol. 26 van 'Forum Botanicum' het in 1988 verskyn en het uit 137 bladsye bestaan; die dikste volume tot dusver. Dit lyk asof die huidige metode van publikasie nl. verspreiding met die 'S.A. Tydskrif vir Plantkunde' nog redelik goed werk. Die uitsonderings is Vol. 26, nrs. 2 en 3 waar foutiewe kopiëring en bladsynommers as gevolg van die invoeging van 'n ekstra berig voorgekom het.

Persone en instansies wat gedurende die afgelope jaar nuus en berigte ingestuur het, word baie bedank, veral dr F. Getliffe Norris. Die Raadslede, asook alle SAGP-lede, word egter vriendelik versoek om voort te gaan om verslae en items in te stuur'.

8.2 Reports of other committees, working groups and associations

SAAB is represented on the following groups and reports have been received from our representatives.

Habitat Council

National Working Group for Vegetation Ecology

South African Syntaxnomic Nomenclature Committee

Gesamentlike Raad vir Natuurwetenskaplike Verenigings (GRNV)

Flora Conservation Committee of the Botanical Society of South Africa

Herbarium Curation Working Group

Working Group for Systematic Wood Anatomy

The activities of our representatives on these committees are greatly appreciated. Much of the information in the reports will be of interest to members and these will be published in Forum Botanicum.

9. COUNCIL FOR 1989

We had a crisis in mid-year for Council as Dr Beth Gibbs Russell announced that she regrettably must resign as Vice-President as she was contemplating taking up an offer of a post in the U.S.A. It was with regret that we accepted this resignation as Dr Gibbs Russell has been a long standing member of Council and was in line to lead the Association in 1989 and 1990. However, we would like to thank her for her excellent services during the past years and wish her well in future.

At the Council meeting in August a new Vice-President was elected from the existing Council, namely Prof. Colin Johnson. Prof. Johnson will take over as president after these changes. The executive of Council thus moves to the South Western Cape and the new Council for 1989 is as follows:

President: Prof. C.T. Johnson

Vice-President: Prof. R.A. Lubke

Secretary: Dr W. Stock

Treasurer: Mr J. Aalbers

Members: Proff. E.J. Moll, G. Bredenkamp, Drs P. Linder, D. Botha, W. Bond and Mr T.H. Arnold.

10. FINAL WORDS

It has been a great privilege serving you as President of SAAB over the past two years. I would like to thank all those who have assisted me in carrying out this task but most especially the honorary secretary, Tony Palmer. I am pleased to say that in spite of all the effort that he has put into this work for SAAB he has also managed to continue actively with his research programme. He has completed a number of papers for publications and submitted his Ph.D. thesis. This, along with the task of secretary has been some achievement. Thanks also to Prof. Ted Botha who has handled the membership and accounts of the association so well. We hope that the affairs of SAAB are being handed over in good order and I would like to wish Prof. Johnson and the new executive well knowing that they can always look to us for assistance if it is needed.

PROF. ROY A. LUBKE

IN MEMORIAM INEZ CLARE VERDOORN (1896 - 1989)

Inez Verdoorn was born in Pretoria on 15 June 1896. The first schooling she received was from a governess while the family lived on a farm in Garstfontein near Pretoria after the Boer War. After attending the Arcadia School and Pretoria Girls High, where ill health necessitated her absence for two years, she matriculated at the Loreto Convent in 1916.

She became a public servant in the Controller and Auditor General's office. Towards the end of 1917, Dr I.B. Pole-Evans, chief of the Division of Botany and Plant Pathology, requested her to be appointed in the vacant post of herbarium assistant, on the strength of an essay she had written after a visit to the Division whilst still at school. Although apprehensive at first, she soon came to realise the wonder of nature and especially that 'plants also have names'. At the National Herbarium she rapidly progressed from the ranks of the technical staff to become Senior Professional Officer - one of the few public servants to do so without university training. (She was an extra-mural student at the Transvaal University College in 1920, but did not complete the graduate course as a result of indifferent health).

For a period of two years, from 1925-1927 she was Liaison Officer for the

National Herbarium at the Royal Botanic Gardens, Kew. Besides routine work for Pretoria, she did research on several genera, one of which being the genus Crotalaria. After returning to South Africa she was placed in charge of the National Herbarium from 1944-1951. She retired during 1951, but was immediately reappointed as Temporary Senior Professional Officer, working mainly on the 'Flora of Southern Africa' for which she was the inspiration and also for 'Flowering Plants of Africa'. She finally retired in 1968, but once again continued to work in a voluntary capacity due to the serious shortages of plant taxonomists.

Dr Verdoorn's first scientific paper to be published was 'The Genus Fagara', in 1919 and to date she has a list of over 300 publications to her credit, including major revisions and papers in scientific and popular journals. One of her major contributions has been her 172 descriptions for 'The Flowering Plants of Southern Africa' series, Volume 28 of which was dedicated to her 'in recognition of her outstanding contributions to the advancement of Botanical Science in the Republic of South Africa during many years of devoted public service'.

Dr Verdoorn collected some 4000 specimens, plus many more which she collected jointly with other botanists. Some of these proved to be undescribed. One of her most important collections was made in the Salt Pan area north of the Soutpansberg - this was in the company of Amelia Obermeyer and H.G. Schweickerdt. She also collected extensively around Fauresmith, O.F.S. and at Middelburg, Cape Province, and in various other parts of South Africa; also in Rhodesia (annual visits from 1940 to 1949) and on Inhaca Island, Mozambique. The main set is housed at PRE, with many duplicates in K and elsewhere.

In 1952 the South African Biological Society awarded the Senior Captain Scott Memorial Medal to Dr Verdoorn in recognition of her contributions to botanical literature. She was elected President of this society in 1957. She was also elected President of Section B (Botany) of the South African Association for the Advancement of Science for 1964 and 1965. Her Presidential address was entitled 'Plant Taxonomy in South Africa'. In April 1967, the University of Natal honoured her by awarding her the degree, Doctor of Philosophy, *Honoris Causa*. It was stated that 'by her dedication to the ideals of science, by her

modest and unobtrusive dignity and her resolution in defending those ideals, by the outstanding quality of her work, and her kindness and courtesy as botanical guide, philosopher and friend to presidents, prime ministers, professors, students and scholars, she has become South Africa's most widely respected botanist'. In 1981 she received the SAAB Senior (Silver) medal for Botany.

Eve Palmer dedicated her book 'A Field Guide to the Trees of Southern Africa' to Inez Verdoorn.

Dr Verdoorn is commemorated in the following plant names: Aloe verdoorniae Reynolds, Senecio verdoorniae R.A. Dyer, Teclea verdoorniana Exell & Mendonca, Salsola verdoorniae Toelken, Chasmatophyllum verdoorniae (N.E. Br.) L. Bol., Eugenia verdoorniae A.E. van Wyk, and the Asteraceous genus Inezia Phill.

Dr Verdoorn's research contributions have enriched and broadened the knowledge of taxonomic botany in southern Africa. Inez Clare Verdoorn died in Pretoria on Sunday 2nd April 1989.

G. GERMISHUIZEN

THE BOLUS HERBARIUM OF THE UNIVERSITY OF CAPE TOWN

The Bolus Herbarium is one of the oldest herbaria in southern Africa. The collections were started by Harry Bolus in the third quarter of the 19th Century, and have been added to steadily since then. At present, with over 250 000 collections, it is one of the biggest herbaria in southern Africa. After the death of Harry Bolus, the Herbarium was bequeathed to the University of Cape Town, where it was initially housed as a separate institute. It had a complicated history, having survived ten moves since its beginnings in Graaff Reinet in the home of Harry Bolus. While in the care of the University, it was first housed on the Hiddingh Hall campus, and was then housed at the National Botanic Gardens at Kirstenbosch, before being moved to the Groote Schuur campus of the University in the 1930's. As the years passed, the link between the Herbarium and the Department of Botany became closer, and a few years ago the Herbarium was finally integrated into the Botany Department.

The collections represent an excellent coverage of the Cape Flora. Especially valuable are the collections of Elsie Esterhuysen, numbering over 35 000, which have made important contributions to our knowledge of the higher montane flora of the Cape, and document the distributional and morphological ranges of these poorly known taxa. However, the coverage of the rest of southern Africa, and indeed tropical Africa, is surprisingly good. The Dummer collection from East Africa, and numerous duplicate sets exchanged from the large herbarium at Harare and elsewhere, have extended the tropical holdings. Important collectors include Harry Bolus, Elsie Esterhuysen, Rudolf Schlechter, Neville Pillans, Helmut Tolken, Prof. Schelpe, Guthrie, Wolley Dod, Garside, Leipoldt, Fourcade, Levyns, Adamson, MacOwan, Salter, Flanagan and Tyson. For some families, such as the Mesembryanthemaceae, Ericaceae, Proteaceae, Orchidaceae and Restionaceae the Bolus collections would be critical for any student of the group to study. The Bolus herbarium collections are remarkably rich in types. In addition to the general syntypes and isotypes (e.g. Esterhuysen, Schlechter, Tyson, etc. collections), the holotype collections of Harry Bolus, Louisa Bolus, Margaret Levyns, Neville Pillans, Helmut Tolken, and others are housed here.

In addition to the dried collections, there is a large pickle collection - especially of the families of the orchids and the mesembs. The collection of orchid flowers exceeds 1400 records, and is remarkably comprehensive for the southern African flora.

The Bolus Library is one of the best taxonomic libraries in southern Africa. Its collection of rare, and often very beautiful, botanical books from the 18th Century is unrivalled in South Africa. This collection is a sheer delight for a bibliophile. Moreover, due to a generous grant from the Fourcade Bequest, the library has been able to keep up to date, and the modern holdings give an excellent coverage, not only of the taxonomy of African plants, but also of modern systematic methods.

At the beginning of the year, the Herbarium and Library moved from their temporary quarters at the Hiddingh Hall campus near the city centre to modern quarters in the Botany Department on the Groote Schuur campus. The collections are housed in new steel cabinets, arranged on two levels in an air-conditioned collection room. The collections have been reorganized from the Bentham & Hooker system to the De Dalla Torre & Harms system, in order to be compatible

with the sequence used at the Botanical Research Institute in Pretoria. It is planned to provide computerized access to the alcohol preserved collections, and to the rich collections of illustrations of the Mesembryanthemaceae. An identification center is being developed, to assist non-taxonomists to name their own collections - a very necessary development in the rich Cape Flora, especially now with the major herbaria not wishing to provide an identification service to the general and scientific public.

The staffing complement consists of Prof. A.V. Hall (Keeper), Dr H.P. Linder (Assistant Keeper), Mrs Pat Lorber (Curatrix), Mrs Anne Bean (Senior Scientific Officer), Mr B. Broll (Assistant Curator), Messrs R. Gordon and J. Syster (Technical Staff), and a secretary.

The new accommodation provides ample working space for visiting scientists, both in the collection room, and in a general research room. The Library also has much more spacious accommodation, which facilitates research. Being situated on campus, there is easy access to Cafeteria and post and banking facilities. One of the most important services on a busy campus is also provided: reserved parking bays for visitors to the Herbarium or Library!

We look forward to a productive stay within the stimulating environment of the Botany Department of U.C.T., and hope to receive many visitors.

NUUS VAN DIE DEPARTEMENT PLANTWETENSKAPPE, POTCHEFSTROOMSE UNIVERSITEIT
VIR CHRISTELIKE HOÛR ONDERWYS

Personeel

Die Departement Plantkunde van die PU vir CHO het tans 8 doserende en navorsingspersoneellede, naamlik, Proff. O.J.H. Bosch (departementshoof), G.H.J. Krüger en W.J. Jooste, Drs H. Kruger, P.D. de Villiers en J. Booysen, en mnr L.A. Steenkamp en G.F. Smith. Prof. H.P. van der Schijff is tans n ere-professor in die departement.

Behalwe vir bogenoemde het die departement twee laboratoriumassistente, mnr H.P. Greyling en mev. H.J. van Vreden en 'n sekretaresse, mev. S.H. van Rooyen. Mnr B. Ubbink is kurator van, en mnr J.P.A. Bezuidenhout senior tuinier in die Botaniese Tuin van die PU vir CHO. Twee dosente van die departement Lewenswetenskappe van UNISA, mnr K. Kellner (Plantkunde) en S.S. Cilliers (Biologie) is ook lede van die departement.

Gedurende 1989 is Prof. O.J.H. Bosch met sabbatsverlof by die Arid Zone Research Institute, Longreach, Queensland in Australië en vir hierdie jaar tree prof. W.J. Jooste as hoof van die departement Plantwetenskappe op.

Studentegetalle: 1988

Doktorsgraadstudente	4
Meestersgraadstudente	20
B.Sc. (Hon.)-studente	10
Derdejaarstudente	31
Tweedejaarstudente	32
Eerstejaarstudente	84
Plantkunde Sekondêre Diploma	26

Navorsingsaktiwiteite

Prof. Bosch en sy nagraadse studente is tans betrokke by navorsing oor fundamentele ekologiese beginsels wat 'n rol speel in beplanning, ontwikkeling, benutting en bewaring van natuurlike plantegroei. Hierdie projek behels onder andere die ontwikkeling van hulpmiddels (rekenaarprogramme en publikasies) vir die effektiewe toepassing van die fundamentele beginsels in beplanning en bestuurstrategieë in die plantkunde, landbou, en natuurbewaring. Nagraadse studente is onder sy leiding betrokke by die volgende projekte:

- . Gradiëntstudies van die plantegroei van die Wildplaas Tussen-Die-Riviere in die suidelike OVS (Mej. H.E. Vorster).
- . Potensiaal van digitale Landsat TM- en SPOT-data vir identifisering van natuurlike plantegroei en om verandering daarvan te bepaal (Mej. L. Dreyer).
- . Verfyning van populasieveranderingsmodelle met behulp van outekologiese studies van belangrike grasspesies van die westelike grasveldbiom (Mnr B.J. Strohbach).
- . Invloed van plantegroei-veranderinge op produksiepotensiaal in die grasveldbiom (Mnr C.J. Naude).
- . Gebruik van Landsat-beelde vir die kartering van grasveld (Mej. T. Oberholzer).
- . Weidingsgradiënte in waterbaanplantegroei (Mnr A.C. Beckerling).

- . Plantekologiese verwysingsperseelnetwerk vir die Hoëveldlandbou-streek (Mnr M. Scholtz)
- . Die geskiktheid van 'n aantal Cynodon dactylon-variante vir die hervestiging en herwinning van versteurde gebiede (Mnr E.R. Fuls).
- . Invloed van Acacia karroo-verdigting op veldtoestande van Swartland- en Rensburggrondtipes (Mnre J.F. Nel & I.A. du Toit).
- . Evaluering van verskillende beeldverwerkingsisteme op die mikrorekenaar met betrekking tot verwerking van Landsat MSS-data (Mnr P.P.S. du Toit).
- . Prosesse van gemeenskapveranderinge in die grasveldbloom (Mnr W.A. Cloete).
- . Droogtebestandheid by rankgrasspesies: ekofisiologiese ondersoek (Mnr I.F. Prinsloo).
- . Die akkerboomlaning van Potchefstroom (Mnr B. Ubbink).

Dr J. Booysen, wat onlangs 'n betrekking in die departement aanvaar het, is betrokke by die modellering van die grasvelddinamika.

Mnr K. Kellner se navorsing is gerig op retrogressiestudies in die grasveldbloom, met klem op koldinamika. Beide hierdie navorsingsaktiwiteite vorm deel van die WNNR se studie van ekologiese plantgemeenskapsprosesse tydens degradasie en herstel in die grasveldbloom.

Hierbenewens het mev. C.M. Smit ook 'n fitososiologiese studie van die New Castle-omgewing, Natal, onder die aanvanklike leiding van prof. G.J. Bredenkamp, tans U.P., uitgevoer.

Prof. W.J. Jooste is die enigste dosent in mikologie en hy is as leier by etlike projekte betrokke. Die verhouding tussen fungi en plante, patoëen en simbioties, en die ultrastrukturele aspekte daarvan vorm 'n belangrike deel van die navorsingsprogram. Die volgende geniet tans aandag:

- . Die rol van Aspergillus niger v. Tiegh. by die na-oesbederf van uie (Allium cepa L.) (Mnr S.P. Naude).

- . Endofitiese fungusse teenwoordig in 'n aantal aangeplante grasspesies. (Mej. J.C. de Villiers).
- . Taksonomie van 'n aantal Pythium spp. in Wes-Transvaalse landbougronde (Mej. C. Rademeyer).
- . Ultrastrukturele histopatologie van Bipolaris pedicellata (Henry) Schoem. tydens die infeksie van mieliewortels (Mnr E.M. Cilliers).
- . Die invloed van blaarvleksiectes op die opbrengspotensiaal van Arachis hypogea (Mnr Z. de Beer).
- . Die ultrasruktuur van konidiogenese by Curvularia spp.

Mnr G.F. Smith, die taksonoom in die departement, is tans besig met 'n multidissiplinêre studie van die kleiner genusse in die subfamilie Alooideae van die Asphodelaceae. Hierdie projek is veral gerig op die bepaling van die generiese affiniteite van, onder andere, Chortolirion en Poellnitzia. Mnr Smith het gedurende Julie en September 1988, by geleentheid van twee buitelandse kongresse, navorsingsresultate van hierdie projek voorgedra. Benewens mnr Smith se betrokkenheid by die Alooideaeprojek, is mnr J.D. Theunissen, 'n M.Sc.-student in die departement, tans besig met 'n ekosistematiiese ondersoek van 'n aantal belangrike weidingsgrasse van die Suid-Afrikaanse grasveldbloom. Mnr S.S. Cilliers hersien huidig die genus Brachylaena en dit maak deel uit van die Flora van Suidelike Afrika-projek.

Prof. G.H.J. Krüger is betrokke by navorsing oor die biologie van Microcystis en sianied-ongevoelige respirasie by 'n verskeidenheid blougroenalge en die ekofisiologie van fotosintese van belangrike inheemse weidingsgewasse.

Mnr L.A. Steenkamp bestudeer die invloed van etileen op sommige bestanddele en metabolismiese prosesse in die blare van Nicotiana tabacum en het in Januarie 1989 'n bydrae hieroor gelewer by die 33rd Tobacco Workers Conference, Nashville Tennessee, VSA.

Dr H. Kruger ondersoek die anatomiese bou van plante wat as karoo-indringers in die grasveld geïdentifiseer is. Hierdie plante word langs 'n voggradiënt versamel om te bepaal of hul anatomie enigsins gekorreleer is met die mate van veldagteruitgang. Nagraadse studente is onder haar leiding ook betrokke by die volgende projekte:

Die morfologie en ultrastruktuur van die blaartrigome van Nicotiana tabacum L. (Mej. M.J. van der Merwe).

'n Ondersoek van die bou van die stingels en blare van enkele Suid-Afrikaanse xerofitiese plante (Mej. A. Jordaan).

Dr P.D. de Villiers is intensief betrokke by die opleiding van Biologie- en Biologievakdidaktiekstudente, laasgenoemde met die oog op sekondêre onderwys. Dr de Villiers is ook voorsitter van die Wes-Transvaalse tak van die Suid-Afrikaanse Vereniging van Onderwysers van Biologie. Die departement Plantwetenskappe verskaf die infrastruktuur vir kursusse in Biologie vir praktiserende Biologie-onderwysers.

G.F. SMITH

MANAGEMENT OF FYNBOS FOR THE WILDFLOWER INDUSTRY

The Working Group for Wildflower Resources recently assisted in the organisation of a Farmers' Day on the farm of André Brink, Blomkloof, together with the Botanical Society of Bredasdorp/Napier and the Haasvlakte Farmers' Association.

Prof. J.N. Eloff opened the day by stressing the rich resource of the plants of the southwestern Cape - not only a valuable resource for the country, but also a renewable one. A resource which is eternal - if managed optimally.

Many organisations were represented at Blomkloof - amongst the 140 participants, the Chief Directorate: Nature and Environmental Conservation, the Jonkershoek Forestry Research Centre, the Universities of Stellenbosch and Cape Town, the Botanical Research Institute and the Kirstenbosch National Botanic Gardens were represented. The day presented farmers of the area with a unique opportunity to speak 'on their own turf' with researchers in the field, and visa versa.

Eight short papers were presented, covering the following topics:

- * Managing fynbos with fire (Mr S.A. Botha, Jonkershoek Forestry Research Centre)

- * Seed biology of fynbos plants (Dr R.M. Cowling, Botany Department, University of Cape Town).
- * The impact of ploughing on the fynbos veld (Mr G.W. Davis, Botanical Research Institute)
- * Pruning techniques for increased production of Proteaceae (Mr D.G. Malan, Vegetable and Ornamental Research Institute)
- * The impact of wildflower picking on seed reserves of Proteaceae (Mrs P.J. Mustart, Botany Department, University - presented by Ms D. Law, University of Cape Town).
- * Reclaim your veld from invasive plants (Mr G.S. Ruddock, Nuweberg State Forest).
- * The impact of wildflower harvesting on nutrients in the veld (Dr W.D. Stock, Botany Department, University of Cape Town).
- * Fire control areas (Mr P.J. van der Merwe, Chief Directorate: Nature and Environmental Conservation).

THE WILDFLOWER RESOURCE : COMMERCE, CONSERVATION AND RESEARCH

T. Greyling and G.W. Davis (Editors)

Occasional Report No 40

Occasional Report Number 40 of the Terrestrial Ecosystems Section has recently been published. What follows is an excerpt from the Executive Summary of the report. Copies of the report can be obtained from the Terrestrial Ecosystems office in Pretoria (Marié Breitenbach (012- 841 3633)).

1. This publication sets out not only to record the proceedings of a symposium on The Wildflower Resource: Commerce, Conservation and Research, held at the Houw Hoek Inn on 4 October 1988, but also to record the underlying concepts of the wildflower resource and its various users. The document is the result of a joint effort of the commercial producers, biological researchers and conservationists/managers, who are strongly in favour of current cooperation being carried forward.
2. It is hoped that this document, a statement on the wildflower resource and its future requirements, will provide the necessary motivation for granting of research funding, for better understanding amongst

user groups, for improved legislative and administrative procedures, and for an improved future for us all.

3. A mission statement for the development of indigenous flora for the wildflower industry can be defined as follows:

To earn the maximum foreign currency by developing the indigenous flora and to ensure production and marketing in the most effective and efficient way so that the natural resource can make a contribution to job creation and prosperity in South Africa, without depleting the resource.

4. The wildflower industry's current total trade turnover (both foreign and local sales) is approximately R29 million per annum, with estimated foreign sales of R17 - R18 million per annum. About 10 000 - 15 000 people derive their income from the wildflower industry, which is generated in sub-viable agricultural regions of the Cape coastal region. Should the natural veld resource be lost to the wildflower industry, massive de-ruralisation of the Strandveld would occur. (See chapter 2).
5. The wildflower industry has created important international contacts and has increased worldwide interest in the South African flora. Through the distribution of seed, commercial Protea growing has arisen in Australia, California, Hawaii, Israel, Madeira, Canary Islands, and New Zealand. (See chapter 2).
6. Problems facing the commercial wildflower industry are outlined in chapter 2. The most critical problem is the woeful lack of ecological knowledge especially where the veld-picking industry is concerned. An appeal is made for user-orientated research. Specific requests are addressed in chapter 2.
7. A further appeal, made by the commercial wildflower industry, concerns the almost total lack of statistics with regard to income and other aspects of the trade. It is imperative for the long-term understanding of the wildflower industry that export figures not be regarded as 'classified' by the Commissioner for Customs and Excise, and that these figures be made available to the producers, researchers and managers of fynbos systems, in order for them to concentrate their efforts in the

right direction. (See chapter 2).

8. Great concern is expressed throughout this document for the sustainable utilization of the fynbos resource and for clear directives, guidelines and advice to be provided through research specifically geared to provide these.
9. The Cape Floral Kingdom (Fynbos), one of the six floral kingdoms of the world, covers less than 4% of southern Africa but constitutes about 46% of the entire southern African flora. 19% of the genera and 68% of the species are endemic. Of the extinct, endangered and vulnerable species in the south western Cape fynbos, 8,5% are extinct or threatened as a result of legal or illegal wildflower harvesting. (See chapter 4).
10. The historical pattern of land tenure in South Africa leaves much of the natural veld in private hands, and, combined with a complex set of laws and regulations, places an awkward onus on landowners with regard to their responsibilities as custodians of this natural resource. Uncontrolled land use under the anticipated massive population increase would be expected to cause severe degradation of all but the most inaccessible natural areas. (See chapter 1).
11. Three systems for the production of fynbos have been developed in South Africa. They are a) Production from the natural veld; b) Production from species plantations; and c) Production from cultivar plantations. A comparison of these systems is presented in Chapter 5. It is expected that the wildflower industry will grow steadily, with an increasing emphasis on quality and novelty value. The demand for novelty will provide increasing momentum to cultivation at the species and cultivar level.
12. Impacts of the wildflower industry on the fynbos resource include direct abuse of target populations (also rare and endangered species), unintentional abuse by ignorant farmers, the impact of fungicides and pesticides on essential pollinators, and soil erosion. Indirect effects include low quantities and qualities of seeds, diminished post-fire regeneration and soil compaction as a result of trampling. (See chapter 4).
13. Fundamental understanding of the biology of species used in the

wildflower industry, and of the ecosystems in which they occur, is essential to draw up meaningful guidelines for the industry. The existing guidelines need to be critically reviewed, and there is an obvious need to make the guidelines more species-specific to accommodate the range of species and life cycle strategies involved. Not only should the research be carried out, but there should be efforts to make the findings available to the users. (See chapter 4).

14. Despite considerable advances in the horticultural production of flowers, 75 - 80% of this valuable export is still harvested from the veld. It is realistic to accept that a high proportion of the crop will be collected from the veld indefinitely. There will always be a reliance on indigenous vegetation for raw material for the development of cultivars and for those species which do not lend themselves to cultivation. The harvesting of flowers from the veld raises a host of problems and challenges for researchers. The mission of such research should be the provision of practical guidelines for the sustainable production of the resource while minimizing the impact on community structure and processes. (See chapters 3 and 4).
15. While research programmes on veld resources should be designed to solve practical problems faced by producers, they also offer tremendous scope for addressing fundamental questions regarding the structure and functioning of fynbos communities and ecosystems. Research on the veld harvesting of wildflowers can, if appropriately executed, provide insights into the evolution and maintenance of species richness in fynbos communities, and issues of global concern and interest. Such research provides an ideal training for post-graduate students in that both fundamental and applied issues are addressed. (See chapter 3).
16. Much of the research which has proved useful for the utilization of fynbos veld resources was undertaken to address other problems, particularly the management of mountain catchments. Research initiated explicitly to address problems in the wildflower industry has played a crucial role in the development of fire regimes to maximize recruitment of Proteaceae. But whilst considerable advances have been made in research related to the Proteaceae, very little is known regarding the population biology, and impact of harvesting on 'greens' which include species of Agathosma, Berzelia, Brunia, Diosma, Erica, Eriocephalus,

Helichrysum, Helipterum, Leucadendron, Leucospermum, Metalsia, Nebelia, Phaenocoma, Pteronia, Retzia and Staavia. Virtually nothing is known about those species with soil-stored seed banks. The impact of flower harvesting on community processes has received no attention. (See chapters 2 and 3).

17. Increasingly successful cultivation under the guidance of research can reduce the exploitation pressure on the habitat. About 33 cultivars of Proteaceae are currently grown in South Africa, but an estimated pool of at least 100 working Proteaceous cultivars will be required by industry in the long term. However, cultivar development is a long and costly process. The cultivation of propagation material of bulbs in particular is an aspect which would best be further investigated by the private sector. (See chapters 3 and 5).
18. The genetic development of the South African fynbos species (Proteaceae for cultivar production) and bulbs (for earning of royalties) is strongly supported as a development programme. The result of such development does not only imply financial benefit, but could also be an important stage in the development of high level technology (gene transfer, tissue culture, embryo culture etc), which may in turn have applicability to other sectors of agriculture. Horticultural research can be regarded as the common denominator linking wildflower exploitation and conservation. In the case of some endangered species, cultivar development may be the only answer to both conservation and utilization. (See chapters 3 and 5). (To be concluded).

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