grass roots

Newsletter of the Grassland Society of Southern Africa

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Message from the New Administrator

As the new GSSA Administrator, one of my first priorities is to improve communications between the Society and its members. Ensuring that our database contains the correct information about you, the member, is crucial to this task. Thank you to those members who responded to my e-mail request for updated details.

To all members who did not receive an e-mail from me, or who did not respond by the cut-off date, I have included a letter containing your details, as recorded in the GSSA database that was handed over to me. I have incorporated updated details where possible, but I would appreciate it if you could alter any incorrect data and return the updated version to me via e-mail, fax or post, by the end of May 2003. I will assume that data are correct if I do not receive an updated version from you by that date.

A small request from me to all members: Please pass on the new GSSA contact details to any members who have not received this communication so that we can re-establish lost contacts.

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Please contact me if you have any suggestions or queries regarding your membership details, subscription fees, the journal, the newsletter, etc..

Looking forward to working with all of you in the future,
Freyni

APRIL 2003 *in this issue:*

New Biodiversity Bill

by
Richard Hurt

The National Environmental Management: Biodiversity Bill, provides for the establishment of a National Biodiversity Institute (NBI), through provision of criteria for the selection and appointment of the governing board, defines functions, powers and operating procedures of the board and of the NBI, and provides provisions on general administration and financial matters. The Bill provides for biodiversity planning, monitoring and research, and for the co-ordination and alignment of biodiversity planning with other environmental and sectoral planning, and allows for the Minister to set norms and standards for the management of biodiversity. Requirements and procedures for consultation are set out and the need for concurrence of relevant Cabinet Members is established.

A regulatory framework, fully integrated with other regulatory frameworks, is created for the regulation of biolog.

The draft Bill was made public for comment, and the closing date for this was 26 February. The Dept of Environmental Affairs & Tourism (DEAT) intends to finalise the Bill by 3 March, submit it to cabinet by 20 March and then, if approved by Cabinet, submit it to Parliament in the 2nd week of April. If this time frame is followed, public hearings will be held towards the end of April or the beginning of May. DEAT is planning to start drafting regulations in September 2003.

The Professional Affairs Committee (PAC) of the GSSA has been monitoring the progress of the Bill since its inception stages. An NGO that monitors environment-related issues in Parliament, the Contact Trust, has held a series of workshops for interested and affected parties to discuss the content of the Bill. The first workshop was held in Johannesburg in late 2001, and the PAC was represented here. This workshop inititiated the formation of a Network for Biodiversity in South Africa (BioNet), a network of environment interest groups that were concerned about the drafting of the Bill. This group has made significant input on the content and development of the draft Bill.

More details can be found at www.contacttrust.org.za

Regional News

Free State

Grass Day held in Free State

by

Ibe Oosthuizen *oosthib@sci.uovs.ac.za*

On Thursday 27 February 2003 a "Grass Day" was held on the farm Rondavel in the Brandford district, Free State. The day, which is held annually, was organized by the John's gift farmers' union.

The speakers on the day included Pierre Spies, a well-known rugby player and motivational speaker, Johan Hoffman, on sheep farming, and Prof. Peet Pienaar on weather patterns. The main presentation of the day, related to veld management, was presented by Prof. Nico Smit of the Dept. of Animal, Wildlife and Grassland Sciences of the University of the Free State.

The Grass Day was very well attended by more than 60 farmers and supported by a substantial number of sponsors.

KwaZulu-Natal

Prestige Grazing Day

by

Graham Peddie *- peddieg@dunrs.kzntl.gov.za*

A very successful Prestige Grazing Day was held on 5 February 2003 on Statherne Farm, in the Dundee district. The owner of the farm, Clive Buntting, was not only the very accomplished host on the day, but also the main speaker. Grazing management of sourveld was the theme of the day. Klaus Kellner, President of the GSSA, started proceedings with a welcome and short speech in which he called for closer contact between farmers and scientists. This was followed by Kevin Kirkman (Univ of Natal), who gave an insightful talk on "Simplifying grassland management". An animal scientist's perspective was presented by Alistair Patterson of Stock Owners Co-op. Tony Grace (Mpati Vet Clinic – Dundee), discussed the animal health problems associated with the semi-intensive system of beef farming as practiced by Clive.

The main talk was presented by Clive Buntting, on the 5-cell management strategy which he has implemented and modified for his situation. Clive is currently writing up a Masters based on research which he has conducted over the past few years on his farm.

The day was very well supported; about 120 people attended.

Thanks must go to Stock Owners Co-op for their sponsorship of the day.

Above:
LtR Graham Peddie (Chairman), Prof Klaus Kellner (President GSSA), Prof Kevin Kirkman (Univ of Natal), Dr Tony Grace (Mpati Vet Clinic), Dr Alistair Patterson (Stock Owners Co-op) & Clive Buntting (Main Speaker and Host)

Above:
Part of the 120 who attended

Left:
Cattle on burnt veld on Stratherne Farm

Right:
Tea under the trees before the start of proceedings

Below:
Kevin Kirkman in fine voice.

Potchefstroom University for Christian Higher Education signs Major International Research Contract

by
Franci Jordaan *Francij@Potch1.Agric.Za*

The PU for CHE recently signed a major research contract with ICRISAR (International Crops Research Institute for the Semi-Arid Tropics) regarding the conservation as well as the restoration of biodiversity and degraded rangelands in the semi arid regions of South Africa. This contract is financed mainly by GEF (Global Environmental Facility). It forms part of the environmental conservation plan/program of the United Nations (UN) and falls under the Desert Margins Program (DMP). A grant of R500 million over a period of six years, is allocated to nine African countries. The purpose of the project is to determine the most important factors/parameters responsible for rangeland degradation as well as to identify parameters that will ensure sustained soil fertility. South Africa *per sé* received R10 million to do the mentioned research. Prof Klaus Keller, a

lecturer at the School for Environmental Sciences and Development at the PU for CHE, will coordinate this project in South Africa. It is being done in two provinces, namely North West Province and the North Cape Province. Both these provinces consist of large degraded semi-arid and arid regions. Both provinces also border neighbouring countries, like Botswana, Namibia and Zimbabwe. The latter two countries also form part of the bigger GEF project.

A successful workshop between the two provinces has already been held. The stakeholders participating in the different projects are amongst others, the PU for CHE, University of the North West, Provincial and National Departments of Agriculture, North West Parks Board, ARC, Environmental Monitoring Group (EMG), private consultants, etc. Various projects were discussed at the workshop and successful collaboration between different stakeholders was established. The National Coordinating Committee (NCC) has already approved of the first projects. The first phase of the six year contract will, therefore, start later this month (March 2003).

With this project it will be possible to share expert knowledge, not only between land users, managers and researchers at different levels, but also between the people of South Africa and other African countries.

For further information on the program Prof Kellner can be contacted. His details are as follows:

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Left:
Back: Profs Huib van Hamburg (Director School of Environmental Sciences and Development), Klaus Kellner (project coordinator)
Front: Profs Gerhard du Toit (Director Research), Frikkie van Niekerk (Vice Principal Acadamic)

Below:
Attendees at the Northwest Workshop

LIMPOPO PROVINCE

Cornelis van der Waal *corwaal@mweb.co.za*

GAME FARMERS' DAY

Recently game ranching expanded tremendously in the Limpopo Province. This shift away from cattle ranching is also evident in the Mopane veld north of the Soutpansberg and a farmers' day on game related issues was proposed. A farmers' day was subsequently held in the Musina area on the 22nd of January 2003.

Formal presentations that were offered during the day included practical game genetic management presented by Dr Paul Grobler (University of the North) and cheetah status and management options for game ranchers in southern Africa presented jointly by Mr Deon Cilliers and Miss Kelly Wilson (De Wildt Cheetah Breeding Centre). The most relevant topic to the discipline of the grassland sciences was presented by Prof Dirk Wessels (University of the North). During his session the utilisation of mopane (*Colophospermum mopane*) by game species, with special reference to the effect of tannins on utilisation, was discussed. Preliminary results of a research project conducted in the Musina area was discussed. From these findings management practises to increase browse availability during the critical dry season were proposed.

The Messina Game Association concluded the formal activities with the annual determination of game hunting prizes for the 2003 hunting season. These prizes act as a guideline for game ranchers in the area.

The day was sponsored by the Soutpansberg Petroleum group and was organised by the Limpopo Department of Agriculture, the Messina game study group and Messina Game Association. More than a 100 people attended the day.

Below:
Part of the more than 100 people who attended the Game Farmer's Day

Nambia

6th NAMIBIAN RANGELAND FORUM

Held at Ogongo Agricultural College,
18 and 19 June 2002

Compiled by:
Axel Rothauge Neudamm Agricultural College
November 2002

1. FOREWORD

The Namibian Rangeland Forum is a civil initiative of people interested in rangeland matters, that meets occasionally (usually once a year) to discuss matters relating to rangeland issues, to inform each other of new information and to exchange ideas between practitioners, scientists and others. The Forum met for the sixth time this year (in 2002) since its inception (in 1997), on 18 and 19 June.

The Forum is usually held under the umbrella of one or other organization that avails its people, time and facilities. This year, as often in the past, the Directorate of Agricultural Research & Training (DART) in the Ministry of Agriculture, Water & Rural Development (MAWRD) offered to host the Forum. As requests at the previous Forum had indicated a need to meet in a communal area, the 6th Forum was hosted by the Ogongo College of Agriculture, close to Oshakati in the northern communal area, Omusati region. We express our sincere gratitude to DART (MAWRD) for making available their meeting and accommodation facilities at Ogongo, as well as to Mr. Renier Burger, lecturer at Ogongo, for taking care of the local organization.

The Desert Research Foundation of Namibia (DRFN) was the main financial supporter of this year's Forum. Without their generous backing, we would not have been able to enjoy the meals and refreshments served by the caterers at Ogongo as well as those arranged by ourselves, nor would these proceedings have been in colour and bound, and their support is gratefully acknowledged.

Eventually, the 6th Namibian Rangeland Forum was attended by close to 50 people. Participants are thanked for tackling the long distance to Ogongo to meet, listen to stimulating presentations and participate in lively discussions. Anuschka Barac is thanked for keeping meticulous record of these discussions. Presenters went to great lengths to prepare interesting papers on the topics of this Forum, viz. Rangeland Utilization in the Northern Communal Areas and Bush Encroachment, which are contained in these proceedings.

May these proceedings act as a lasting record of what transpired at the 6th Namibian Rangeland Forum!

2. SUMMARY

1. The 6th Namibian Rangeland Forum was held on 18 and 19 June 2002 at Ogongo College of Agriculture under the umbrella of the Directorate of Agricultural Research &

Training (DART) in the Ministry of Agriculture, Water & Rural Development (MAWRD) and the financial support of the Desert Research Foundation of Namibia (DRFN).

2. The first presentation, by Bertus Kruger, Tuffy Nakale, Komeine Nantanga (standing in for Dr. Mary Seely who unfortunately was not able to attend, all from the Desert Research Foundation of Namibia) introduced the day's topic, viz. "Rangeland utilization in the northern communal areas". This had been identified as an urgent need at the previous NRF (2001, in Okahandja). The presentation dealt with the "Ecology of the northern communal regions".

The presenters concluded that the mixed farming system practiced mainly for subsistence in the northern communal areas was characterised by crop production on soils of low fertility and often high salinity, integrated with livestock production. Crops consist mainly of grain staples such as pearl millet (omahangu) intercropped with legumes such as beans and Bambara groundnuts, while indigenous fruit trees occurring in the cultivated fields are preserved to yield fruit and enhance soil fertility. Livestock provides draught power and manure for fertilization in addition to food.

Biophysical constraints on communal farmers are the unreliable and often poorly distributed rainfall, poor soils (exacerbating the effect of poor rainfall), insufficient ground water or ground water of low quality and the inadequacy of natural pastures in the event of low or poorly distributed rainfall.

Making matters worse is the growing population pressure on natural resources, resulting in rapid deforestation and rangeland degradation, fences erected by communal farmers with the necessary means that restrict the movement of cattle of those farmers with lesser means, the migration of young and economically active people to urban areas in search of schooling and employment, and the impact of HIV/AIDS on the remaining population. During the discussion, the remoteness of the northern communal areas from traditional agricultural support services such as capital, loan and knowledge providers, input suppliers and output buyers were added to the list of socio-economic constraints that, together, have the net effect of increasing the vulnerability of northern communal farmers to drought, and other natural and man-made disasters.

3. Prof. Klaus Kellner from the University of Potchefstroom then proceeded to inform the gathering of ways and means to restore degraded areas, be they in communal or commercial ranching areas. Land degradation compromises the sustainability of ecological systems, and their restoration requires precise definition of the objectives of restoration and of the parameters used to measure "success". Restoration technologies include passive and active means, the former following and applying natural ecological pathways whereas the latter require interventions such as soil amelioration and cultivation, oversowing to re-introduce seeds of desired plants into degraded systems and a combination of these and other methods.

Degradation is not a technical, but a socio-economic problem: the techniques to restore degraded rangelands are known, but may not be readily available, are certainly expensive, do not address the immediate needs of the land user (which is to survive or maximise profit, not to spend money "unproductively" on conservation and restoration) and are only successful in the long term and with appropriate aftercare measures that have to address the root causes of degradation rather than merely its symptoms. However, the many advantages of restoration, both in terms of short- to medium-term socio-economic benefits as well as in repairing the long-term ecological integrity of the rangeland, outweigh its disadvantages. The creation of an automated decision-support system such as "Bush Expert" (to be introduced by Anuschka Barac), consisting of case studies identifying best practices of restoration, is a tremendous advantage when restoring degraded rangelands.

It was concluded that the restoration of degraded communal rangelands in Namibia requires a long-term investment in people, who need to be involved to create awareness, trained to build capacity and convinced by small-scale demonstration projects so that they themselves decide to apply restoration techniques on a wider scale. Small-scale projects also serve to identify the best combination of local indigenous knowledge and scientific technologies to best address the problem. In many areas, carefully managed benchmarks will be required as it is virtually impossible to estimate the "pristine" condition of the degraded rangeland and to measure and demonstrate progress. In the discussion following the presentation, this approach was applauded, as mere application of expensive and often inappropriate technologies often confounds rather than ameliorates the problem and antagonizes people.

4. Then it was over to the DRFN's Bertus Kruger again to examine "The role of non-governmental organizations in sustainable rangeland management" in the communal areas of Namibia. In a short but lucid presentation, sustainable rangeland management was defined as a situation in which the condition and productivity of the range is maintained or improved, but that the means have to be culturally and socially acceptable to the land user, amongst other because they increase his resilience and offer him more options in times of feed shortages.

This can only be achieved by offering the land user secure tenure over rangeland resources, integrating his indigenous skills with modern knowledge, improving the community's organisational skills and structure, amongst others by regular technical information updates, and by offering the land user alternative sources of income as well as investment opportunities. NGOs have a much better chance than technical individuals of achieving these multiple aims because they offer many skills through their multi-disciplinary and experienced staff component and can often lobby government more successfully than individuals to achieve the desired policy changes. Since independence, Namibia has had the great fortune to having had a multitude of NGOs researching and developing remote rural areas, and their contribution to improving the livelihoods of rural Namibians, although difficult to measure, must have been considerable.

5. The next presentation, by Wolfgang Werner of the Namibian Economic Policy Research Unit (NEPRU), on "Land tenure security and sustainable range utilisation in

the non-freehold areas of Namibia", discussed the implications of different forms of ownership or usership of communal land on its sustainable utilization. There is widespread agreement in the world that property rights over land and natural resources is a precondition for more sustainable resource and rangeland management. Enhanced tenure security offers freedom of action and economic incentives to conserve natural resources. In and of itself, however, it will not necessarily bring about more sustainable land utilization. Without access to appropriate technology and management practices, tenure security will achieve little. 'If the freedom conferred by ownership is coupled with ignorance of proper land use practices and ecological stress, it provides only the opportunity to degrade the resource'.

The replacement of customary tenure regimes by freehold title may not be the most appropriate mechanism to ensure tenure security or transfer of property rights. Instead, the strengthening of customary tenure rules and institutions to implement those rules may be a more appropriate way to bring about enhanced tenure security for individuals and groups. Interventions for more sustainable natural resource management thus need to identify problem areas very clearly in order to come up with appropriate solutions. What may be perceived as a tenure problem, can sometimes be solved by strengthening local institutions.

In the discussion that followed, is was noted how, so far, speaker after speaker had emphasised the empowerment of local people and/or institutions, but how this had to be accompanied by appropriate knowledge and technology input to improve chances of success. It was also pointed out that this is one of the aims of the NRF, which could be better achieved if more of its members would attend the annual gatherings, especially extension officials working in Namibia's communal areas. Transfer of knowledge was also achieved by the publication of technical journals and information brochures by the MAWRD and other institutions. In this respect, the NRF noted with sincere regret the recent decision by the MAWRD not to publish the Agricola, Namibia's only scientific-technical journal on agriculture, this year. In fact, a strong plea was made to the MAWRD to review this decision, which was perceived as disadvantaging the farming community at large.

6. The day's session was concluded with a field excursion to the game camp at Ogongo, perceived as being in a reasonable condition although signs of degradation, caused either by previous beef cattle management or current game farming practices, are clearly visible. Later, the flickering light of an omusati log fire created a gemütliche atmosphere conducive to lively discussions.

7. Bessie Bester introduced the second day's proceedings on "Bush encroachment" with an overview of past and present research on bush encroachment and related topics in Namibia. Awareness of the problem dates back to the 1950's and almost all the early trials evaluated some kind of control mechanism, be it manual, biological (using goats) or chemical control. Some findings were published in Namibia's "grey literature". During the 1980's, emphasis switched from control to utilization and several studies were done on the charcoal potential of bush-encroached areas. Most results were only recently published. Current research focuses on the ecology of problematic bush species (mainly *Acacia mellifera*), especially pathogen-induced mortality. The main agents, fungi of the *Phoma spp.*, have been investigated extensively and results have been published in international literature and in the form of several dissertations.
The current status of bush encroachment in Namibia was illustrated in a series of maps, included in these proceedings, indicating that it has reached critical proportions in the northern and central parts of the country. The effect of rainfall, soil fertility, fire and natural mortality was discussed at length, the latter also with respect to other species than *A. mellifera* and regeneration of bush in stands killed by *Phoma spp*. Since regeneration appears to be an episodic event, it has not been observed on a widespread scale, which may also be a result of the pathogen infecting the seeds of the host. It was concluded that surveys on a wide spatial scale are necessary to elucidate the ecology of problematic bush species and that early trials and observations should be concluded, summarised and utilised to prevent research into the same topics that have already been investigated. During the discussion, it was pointed out that researchers have an obligation to inform the public of their results by publishing these in widely available media, and that this would, amongst others, prevent duplication of research efforts.

8. Anuschka Barac, a Master's student at the Potchefstroom University, then introduced the "'Bush Expert': A data base to capture bush encroachment information" to the NRF. The Bush Expert is one component, together with the "Grass Expert", of a larger data base called "EcoRestore". Together, these two expert data bases form a decision support system (DSS) that will enable anyone interested in restoring degraded rangeland to draw relevant information and advice from it. Information was gleaned from several large surveys on commercial and communal farms on the extent of the bush encroachment problem, how it was controlled in the past and present, and what control methods work best under what conditions, together with relevant scientific research results and product information. The information was quantified and tested statistically to withstand rigorous scientific scrutiny, and then packaged in a user-friendly computer program that allows for inter-activity, i.e. new cases and information can be fed into the DSS continually, thereby keeping it up-to-date and relevant.

Preliminary results from the farmer surveys indicate that, according to the farmers, 70% of their initial control methods proved more than 80% successful, but only if the appropriate aftercare was applied as well. Namibian farmers much preferred chemical control measures to mechanical or biological control, but have moved away in recent years from total eradication to selective thinning of problematic bush species.

The demonstrated DSS forms part of a wider, national effort to get a grip on bush encroachment and the regeneration of degraded areas.

9. Nico de Klerk, recently of the Ministry of Environment & Tourism, updated participants on "The Bush Enroachment Research, Monitoring and Management Project

(BERMMP)",the national program to handle bush encroachment and its control of which the above DSS is an integral part. It attempts to capture all available information on the ecological reasons for and processes that lead to bush encroachment, the extent of the problem, the effect of bush encroachment on the natural and farming environment, the ways and means of its control and the long- and short-term success of control measures, as well as ways to utilize bush, the socio-economic incentives that might be required to encourage utilization or control of bush and the best way to manage all this information and make it available to the (farming) public.

About 22 million hectares of Namibia are encroached by a variety of woody species, at a calculated annual loss of N$400 million. They not only lower herbaceous yield in a country already saddled with low primary productivity due to its arid climate, but also affect soil water content negatively. Recommended control measures should prevent eradication of woody species, but rather attempt judicious thinning of the most problematic species. Effective control requires a long-term commitment and management plan, including continued control after the initial control has been applied (aftercare measures). Utilization of encroacher species for charcoal production should adhere to the guidelines of the Forestry Stewardship Council. Various chemical and biological control measures were discussed in detail, including root- and foliar-applied herbicides, game animals and goats, fire, fungal pathogens and sound range management. Information management will proceed through an integrated system of monitoring, farmers' input, feedback and decision support. Socio-economic aspects include establishing a viable (encroacher bush) wood product industry and job creation schemes linked to the national drought amelioration strategy.

Discussion following the presentation was lively and emphasised the fact that technicians, scientists and academics will have to proceed beyond technical measures and start informing and engaging decision-makers regarding appropriate strategies that look beyond the comfortable field of the technical solution. Again, NRF members were reminded of their special role and advantages in this regard.

Abstract of MSc thesis

Title:
Phytochemical changes in leaves of sub-tropical grasses and fynbos shrubs at elevated atmospheric CO_2 concentrations

By
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The effects of elevated atmospheric CO2 concentrations on plant polyphenolic concentration, tannin concentration and chemical composition were investigated in leaves of sub-tropical grass species and fynbos shrubs of South Africa. The hypothesis was based on predictions that carbon based secondary compounds would increase when carbon in excess of growth requirements accumulate in plant leaves under carbon enrichment.

This hypothesis was tested in two systems involving plants with differential photosynthetic mechanisms and growth strategies:

1. Grasses from a C4 dominated, sub-tropical grassland. Three plots were subjected to different free-air CO2 enrichment treatments, i.e. elevated (550-800 ppm), intermediate (no more than 400 ppm) and ambient CO2. One of the seven grass species, Alloteropsis semialata, had C3 photosynthetic mechanism.
2. Three fynbos species grown in open-top chambers. The plants were grown at ambient and ambient + 350 ppm CO2 in typical low nutrient acid sands of the fynbos biome.

This study showed that despite some of the grasses having the capacity to produce tannin-like substances, polyphenolics and tannins did not increase in the grasses. Polyphenolic and tannin concentrations were increased only in Leucadendron laureolum amongst the fynbos species.

Chemical composition in grasses were largely unaffected by elevated CO2, however, some species-specific responses were observed. Only L. laureolum showed a response in chemical composition at elevated CO2, whereas its sister species Leucadendron xanthoconus did not show any response except a decrease in N concentration.

In conclusion, fast growing grasses invest extra carbon into growth rather than polyphenolics and tannins and show small species-specific chemical changes at elevated atmospheric CO2 concentrations. Responses in fynbos species were species-specific even within plants from the same genus. Thus generalizations about plant responses to elevated CO2 based on theoretical principles cannot be directly applied, especially in complex natural environments where ecophysiological processes may dictate phytochemical responses.