

# grass roots

*Newsletter of the Grassland Society of Southern Africa*

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*Mr Richard Semelane (left) of the National Department of Agriculture and Prof Klaus Kellner during the CST meeting. (Pg. 18)*

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# Editorial

Happy 2004 to all GSSA members and their families!! Our editor has temporarily abandoned us, but, considering that his wife just gave birth to a baby boy, I suppose we can't blame him congratulations to the Peddie family. So, I'm filling in until their lives settle down.

This is the first issue of Grassroots for 2004, and it is filled to the brim with interesting articles. In fact, there was such a great response to our desperate plea for articles, we had to add an extra four pages to fit everything in. However, don't let this sudden wave of enthusiasm discourage you from submitting your own contributions May 2004 is still empty.

The Council has included a small report of their last meeting. I think that this is very important, if only to let the members know that they don't just drink tea. The next Strategic Planning Workshop is in the pipeline, to produce an updated five-year plan. This plan is integral to the success of the

Society, and if any members have anything to contribute, I suggest that you contact the Council members and ensure that you are included in the process.

Klaus Kellner's Presidential Address (which was presented at the last AGM) has some powerful and poignant points to make about the Society, and its members. I think that much of what he says is rather important, and his suggestions would not take a lot of effort to implement read it and maybe send in your own thoughts about what he has to say.

On the suggestion of the Council, I've included a list of the new members from 2003 and 2004 to date. It is encouraging to have such a great growth in our numbers, and I hope that we can continue to increase at this rate into the future. Sadly, though, we have also lost a member very recently, and Prof Tainton has been kind enough to contribute a little something about this great Grassland Scientist, so that we can all remember him and what he helped to give us the Grassland Society of Southern Africa.

Yours, Freyni

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## News from the GSSA Council

The Council had an Exco meeting on 20 January 2004 at the University of KwaZulu-Natal.

Various issues were discussed. We will highlight a few of the things Council concerned itself with.

Annelene Swanepoel of the **Congress 39** Joint Organising Committee gave a report on the progress made with the upcoming Congress at Goudini Spa in the Western Cape. The congress is organised jointly by the GSSA and SASAS. Details are available on our website ([www.gssa.co.za](http://www.gssa.co.za)). Members are encouraged to attend (it is still possible to register) and make use of this opportunity to present their latest research findings, or simply exchange ideas and network with fellow grassland scientists and of course the animal scientists as well.

At the last AGM in July at the IRC in Durban, Council was mandated to look at possible venues for the **40<sup>th</sup> Congress in 2005**. There was an indication that Namibia may be an option but no firm invitation had been received. In the mean time two invitations have come forth, one from KwaZulu-Natal and one from Limpopo province. Council decided that the Namibian option would be difficult for many members of the GSSA to attend as it involves international travel for the majority of members of the GSSA. The KZN option was chosen for 2005. The KZN congress will be linked to the very topical issue of moist grasslands, which are being transformed and lost at an alarming rate. As these grasslands are mainly in KZN, southern Mpumalanga Highveld and the Wild Coast, KZN is a suitable location. During the Congress a Grassland Summit will take place to deal specifically with the issues of the threatened moist grasslands. All other subjects normally associated with the Congress will be accommodated as usual. So, bear this in mind for your plans of 2005!

Council also discussed **Grass Roots** and felt that the new A5 format is definitely beneficial. We appeal to all members to write contributions for Grass Roots (send to `admin@gssa.co.za` or `peddieg@dunrs.kzntl.gov.za`). Let's use it as a means to communicate grassland, range and pasture issues or any related topics. If you have come across anything interesting then let Grass Roots know. In future Grass Roots will also be placed on the website.

There are various **symposia and farmers days** in the pipeline for this year. Details will be placed on the website. The first one coming up will be organised by Justin du Toit and his team at University of KwaZulu-Natal. Topics for the day include emerging alien weeds and bush encroachment, grazing systems and management and some economic aspects.

A grazing rally is due to be held in northern KZN during March or April. This will be

organised by Clive Buntting and Graham Peddie. Watch the website for more details.

The **financial situation** of the GSSA is an issue that concerns Council a lot and takes up much of the discussion. We encourage members to pay their subs and support the society. We believe that we have a good journal and newsletter to offer and good congresses.

The Council also decided to organise a **Strategic Planning Workshop** during the first half of 2004. We want to revisit various aspects of the society and consider them in terms of present challenges in grassland science and develop a vision and plan for the future.

We will keep you informed of the developments in Council through this column.

**GSSA Council.**

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## GSSA Council 2003/04

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# OBITUARY

## *Professor Peter (Pete) de Villiers Booyesen*

Pete was one of the Eastern Cape contingent of Grassland Scientists who graduated in the old Pasture Management and Soil Conservation (PMSC) under Professor J D Scott. He commenced his degree programme in 1949, having matriculated at Kingswood College in Grahamstown. Having completed his BSc Agric in 1953, he proceeded immediately to the MSc Agric, which he was awarded *cum laude* in 1955. At this point he was appointed to the staff of the Department in place of Professor Pine Pienaar, who had taken up an appointment in Pretoria.

In 1960 he took up a Departmental bursary which allowed him to attend the Berkley campus of the University of California, where he was awarded the PhD. He later spent a years' sabbatical in Missouri. Each time he returned from these trips he was promoted - first to a Senior Lectureship, and after the Missouri excursion, to the Associate Professorship. He was appointed Head of the Department at the time of Professor Scott's retirement in 1973.

Of particular interest to the Grassland Science community is his pioneering role,

together with Professor Scott and others, in the establishment of the Grassland Society of Southern Africa, which held its first congress in Pietermaritzburg in 1966. He was elected President of the Society in 1970 and was subsequently elected an Honorary Member of the Society.

In 1977 he moved out of Grassland Science and into University administration, first as the Vice-Principal of the Durban branch of the University of Natal, and in 1983 as Principal of the University. Here he remained until his retirement in 1991.

Pete was involved in numerous activities in addition to his role in academic and administrative matters at the University, and in particular in matters related to rugby and sports administration. He played on the wing for Natal. He was at various times President of the Maritzburg University Rugby Club, the Maritzburg University Sports Union, the Maritzburg Rugby Sub-Union and the Natal Rugby Union and served on the SA Rugby Board. He served as a member of the Natal selection committee.

*Grassroots and the GSSA Council would like to thank Prof Neil Tainton for writing this dedication at such short notice. Our thoughts are with Prof Booyesen's family and friends during this difficult time.*

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## Has the Grassland Society still a role to play in Southern Africa?

### MESSAGE FROM THE PAST PRESIDENT

*Summary of the Presidential address by Prof Klaus Kellner  
28 July 2003 GSSA AGM at IRC/GSSA Congress in Durban*

A **society** can be defined as a number of persons united for the promotion of a common purpose by means of meetings, publications and other activities. A **scientific society**, however, can be defined as a body of persons that are eminently learned or skillful of agreeing with the rules, principles or methods of science. For nearly 30 years, since 1966, the Grassland Society of Southern Africa (GSSA) has been trying to live up to these obligations by making meaningful contributions to policies, land use practices and environmental issues to advance the science and practice of

sustainable use of rangelands and pastures for the social and economic well-being of all people in Southern Africa. The GSSA is a professional society with an interdisciplinary group of scientists and practitioners working in a collaborative way amongst themselves and with other institutions, organizations, agencies and individuals with a common goal in varied resources of rangeland and pasture conservation and management. Members of the GSSA include a wide variety of stakeholders of different service provider and resource consumer organizations in planning, development, education, training

and management. These include academics, scientists, agricultural and environmental officers, farmers, students and any other persons interested in range and forage studies.

Over the years, members of the GSSA have played a major role in the promotion of science and technology of rangeland production and especially the creation of opportunities for different stakeholders with regard to the collection and dissemination of knowledge and information, both nationally and internationally. This has been accomplished through the congresses and publications offered by the GSSA over many years. Through its dedicated members, highly respected scientists and professional objectivity, the GSSA has played a major role in not only promoting the grass and forage science discipline, but also to get a better understanding of the sustainable production and management of these resources. The question however arises, has the GSSA really kept up with the changes that have taken place, including the new challenges that face this discipline over the last three to five years? Research in range and forage science has become more broadly based and inter-disciplinary in which not only the biophysical factors, but also links to the social and economic concerns have to be created. Is the GSSA really demonstrating progress in achieving multi-disciplinary teams working together towards a well defined problem, needs or opportunity, identified and prioritized by the communities working with researchers, extension, and other resource and consumer representatives? If one want takes the objective and mission of the society into consideration, namely to advance the science and practice *“for the social and economic well-being of all people in Southern Africa”*, I am not so sure if we are really keeping up to these challenges that are facing us on a continued basis. This leads to the second important objective of the GSSA, namely to make valuable contributions towards **policy issues** in South- and Southern Africa. Does the GSSA as a scientific society contribute to policy matters in South Africa?

Although these are very long standing

objectives of the GSSA, have we really fulfilled or lived up to these challenges over the last few years? These are the issues that are becoming more and more important for a society such as the GSSA. **Yes**, members of the GSSA are engaged in farmer's days and special interest group discussions and members are represented on committees and panels for National and Provincial Government and other institutions, and **yes**, we are taking note of policy documentation, **but** are we really listening to the new challenges and are we adjusting our actions accordingly? When last have you announced at one of your committee meetings that you are a GSSA member and that you are proud of it? When last have farmer associations or community groups approached the GSSA to research or investigate important aspects regarding the objectives our Society stands for? When last has the GSSA made an impact and had their voices heard regarding new policy, e.g. the new Biodiversity Bill or the revised Conservation of Agricultural Resources CARA, Act No. 43 of 1983? Have we all become too busy in our own struggle of survival?

Everyone is aware that range and pasture scientists, who were previously involved in the formal governmental sector, as well as many academic and training institutions, who are often regarded as the main feeding ground of the GSSA, has decreased considerably. Many of these dedicated members and long standing supporters of the GSSA have either left the discipline to seek more profitable income sources, are retired, or are showing less and less interest in the GSSA as a discipline. **The dwindling membership, as well as often passive and less dedicated actions or contributions by many GSSA members, has put a tremendous pressure, not only on the existence, but also the management of the GSSA as a whole.** It is not very encouraging if one looks at the last issue of July 2003 of the *“Grassroots”* newsletter, where 7 of the 10 so called sub-regions have not presented any news or activities of the GSSA in their region. I am sure that many activities have been taking place in these regions regarding range and forage science, but have we considered for one moment to mention that

we are part of the Grassland Society of Southern Africa and that we are proud of being part of this "team" of professionals? The GSSA should not only become important when it comes to the annual congress, or when the next issue of the Journal or Grassroots newsletter has been received, or the CV has to be updated.

I think that members of the GSSA have a multitude of skills and knowledge and have made marked contributions, nationally and internationally, through their inputs at congresses, workshops, in books and other publications and by the participation at many forums. The answer to the question made in the title of this presentation is, therefore, not so bleak and negative as it seems. I believe that through all the activities and inputs made by so many of our present and past scientists and land managers, who have become specialists in their field and have made a great impact in the research and development fraternity in Southern Africa, (take for example the use of fire in rangeland management, the control of invasive species or the sustainable management of both the dry and moist grasslands and savannas for livestock and game production in southern Africa, or the development of new cultivars for improved cultivated pastures), that we as members of the GSSA can still make a valuable contribution in the diverse and fast changing country of South Africa. As

specialists or even generalists in the particular fields, we can form an important link in the collaborative and multi-disciplinary interactions between the range and forage disciplines and the social, economic and policy arena in Southern Africa. This includes the liaison and closer collaboration with other societies and associations in South Africa.

It is however important that we put on the "cap" of the GSSA more often, be proud of our Society and promote the objectives of the Society in all our actions and activities.

I want to challenge current and future GSSA members to prove to me, where in the world they would get better value for their money when paying a minimal subscription fee of R225 for all the activities and items that are offered by the GSSA, such as a scientific journal with a high standard of scientific publications, an interesting and very informative newsletter, a well organized annual scientific congress, as well as all the communication and collaboration between different stakeholders that is being created by the GSSA activities. I want to thank all those members who have contributed so greatly to the GSSA and without any remuneration have kept the GSSA still "ticking". I am still proud to be a member of one of the oldest societies in Southern Africa.

## **HAVE YOU REGISTERED YET?**

**The Joint Congress 39 of the  
Grassland Society of Southern Africa  
and the South African Society for Animal Science  
will be held at Goudini Spa, near Stellenbosch,  
from 28 June to 1 July 2004.**

**For more information please visit our website, [www.gssa.co.za](http://www.gssa.co.za),  
or contact Annelene Swanepoel**

**tel: (021) 808-5321, fax (021) 808-5331  
or e-mail [aneldavh@elsenburg.com](mailto:aneldavh@elsenburg.com).**



# *Prestige Grazing Symposium.*

*Grasslands in South Africa: Yesterday, Today, Tomorrow.*

On the 10 March 2004, the University of KwaZulu-Natal and the Grassland Society of Southern Africa, in association with the KwaZulu-Natal Department of Agriculture, will be presenting a Prestige Grazing Symposium entitled "Grasslands in South Africa: Yesterday, Today, Tomorrow. The day aims to review past and current knowledge, to provide land-users with information to assist in planning and management of natural and cultivated grasslands in the future.

The day will comprise four sessions namely, Alien Weeds, Resting of Grasslands, Grazing Management and Economics of Drought. An expert on each topic will introduce the session, and then delegates will have the opportunity to discuss and debate around current issues. In addition to the speakers, a panel of experts will be present to provide greater depth and a broader perspective to each issue.

The target audience for the day is anyone involved in the management or conservation of grasslands, particularly natural rangelands. Farmers, conservationists, officials, extension workers, academics, and members of the public with an interest in grasslands, are all invited to attend. Each delegate will receive a printed copy of the proceedings.

The day will be held at the Neil Tainton Arboretum, at the University of KwaZulu-Natal, with entrance from Golf Road, Pietermaritzburg. Registration will commence at 8:30 am. Lunch will be served after the sessions are completed, with field trips to Ukulinga Research Farm, for those interested, in the afternoon. For registration details, as well as information on sponsor, exhibitor and advertising packages, please contact Freyni on 083 256 7202, email

mandf@telkomsa.net, or fax 033 390 3113. "Early bird" fees will apply if you register before 2 March 2004.

## **Panel of Speakers**

Terry Olckers. Alien weeds is the worst yet to come? Dr Terry Olckers has been employed by the Agricultural Research Council for many years, is the Team Leader of the Emerging Weeds Programme, and has recently been appointed a lecturer in entomology at the University of KwaZulu-Natal. Dr Olckers will review current management options for controlling alien weeds, including bramble, and will provide information on some of the emerging alien weeds that look set to invade rangelands, planted pastures, and croplands.

Kevin Kirkman. Resting veld: Necessary? Useless? Or a wolf in sheep's clothing? Professor Kevin Kirkman is the head of the Discipline of Grassland Science at the University of KwaZulu-Natal. Prof. Kirkman has been involved in the theory and management of planted pastures and rangelands for several years. He will discuss some of the issues regarding resting of grasslands, and will highlight how, under various circumstances, resting may be unnecessary, or even counter-productive.

Justin du Toit. Grazing management: Sweetveld to Sourveld. Justin du Toit is a lecturer in the Discipline of Grassland Science at the University of KwaZulu-Natal. Mr du Toit has been researching the consequences of a range of grazing systems on animal performance and veld condition for several years, in sweetveld and sourveld areas of South Africa. He will discuss management options open to farmers, review the pros and cons of continuous and rotational systems, and present results from

grazing trials and farms across the country.

Alistair Patterson. Drought: its effects and its consequences. Dr Alistair Patterson, a well-known agricultural economist, is the Manager of Advisory Services of the Stockowners Co-operative. Dr Patterson regards the current drought in KwaZulu-Natal as the worst in living memory. He will be discussing some of the economic aspects of drought, reviewing the impacts to land-users, and offering ideas as how to proceed into the future.

### **Panel of Experts**

Mr. Clive Bunting is a commercial farmer in the Dundee area and Chairman of Directory of Stockowner Co-Operative. He has recently conducted research into the effects of grazing systems and drought on animal production and veld condition.

Mr. John Clayton is employed by the Agricultural Research Council as the project coordinator of the Livestock Production Programme in KwaZulu-Natal. He has a particular interest in developing integrated strategies for the control of problem plants.

Dr Stuart Ferrer is a lecturer in Agricultural Economics at the University of KwaZulu-Natal. He is a Resource and Environmental Economist, with a particular focus on land reform and development.

Mr. Richard Fynn is a theoretical ecologist at the University of KwaZulu-Natal. He conducts research into competition between

plants, and the effects of rest, burning, and defoliation on species dynamics in rangelands.

Mr. Richard Hurt is a private consultant in Natural Resource Management. He has a particular interest in problem plant management, focussing on both indigenous bush encroachment and alien invasive species.

Mr. Craig Morris is a senior researcher in the Agricultural Research Council, and an honorary senior lecturer at the University of KwaZulu-Natal. He has conducted research into species dynamics in sourveld grasslands of KwaZulu-Natal, with a particular interest in ecological statistics.

Mr. Kelson Camp is a retired technician in the KZN Department of Agriculture with 40 years of experience. He was instrumental in developing the Bioresource Programme for the Department, which describes, in detail, the various veld types of KZN, their climate, productive potential and management.

Dr Pete Bartholomew is the Deputy Manager: Animal Production in the Department of Agriculture. He has been involved in research and extension of rangeland and planted pastures for many years.

Mr. Neil Whitehead is an Agricultural Economist at the Department of Agriculture with many years experience in animal production systems.

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## **\$70 billion worth of freshwater resources at risk annually, says WWF**

**Gland, Switzerland** - According to a new WWF report, US\$70 billion worth of goods and services from freshwater resources could be at risk annually if governments fail to manage their wetlands sustainably.

The report, *The Economic Values of the World's Wetlands*, is the first comprehensive overview of the economic values of the world's wetlands. It analyses the 89 existing valuation studies and uses a database covering a wetland area of 630 000 km<sup>2</sup>, putting the annual value of wetlands at a very conservative US\$3.4 billion. But extending this figure using the Ramsar Convention's global wetland area estimate of 12.8 million km<sup>2</sup>, the WWF report concludes that the annual global value of wetlands is US\$70 billion. It shows that amenity and recreation, flood control, recreational fishing, and water filtration are the most valued functions of wetlands. Asian wetlands have an economic value three times greater than those of North America despite the fact that the total area of Asia's wetlands analysed in this report is less than half of North America's. This is due to a higher population density, which means high demand for wetland goods and services.

However, according to the report billions of dollars are spent each year on the draining of wetlands for irrigation, agriculture, and other land uses for immediate economic benefits. This has led to increased flooding, water contamination, and water shortages worldwide, and costs governments large amounts of time and money to later repair such damage.

"Decision-makers often have insufficient understanding of the values of wetlands and fail to consider their protection as a serious issue," said Dr. Kirsten Schuyt, WWF International's Resource Economist and co-author of the report. "Wetlands are often perceived to have little or no economic value compared to land-use activities which may

yield more visible and immediate economic benefits."

The report highlights that more than half of the world's wetlands have disappeared since 1900 as a result of human population increase and development. For example in the Everglades (Florida, US), rapid population increase, development, and urban sprawl have destroyed half of the original wetlands. Attempts to repair the resulting damages such as species decline, the spread of invasive alien species, and severe water shortages, will take decades and cost almost US\$8 billion dollars.

WWF believes that governments must recognize the economic, social, and environmental value of wetlands and include the sustainable management of these ecosystems in their national agenda. They should also list their most valuable wetland sites under the Ramsar Convention, the only international treaty on wetland protection. For example, the recent designation by the government of Mali of the Inner Niger Delta (the third largest wetland in the world) as a Ramsar site represents a major commitment to prevent overexploitation of freshwater resources in the area and promote sustainable management of these wetlands.

"Managing wetlands sustainably will aid significantly in meeting the target set at the World Summit on Sustainable Development of halving the number of people without adequate water and sanitation services by 2015," said Jamie Pittock, Director of WWF's Living Waters Programme.

If you would like to read more about this issue, please visit the following websites:  
[www.ramsar.org](http://www.ramsar.org) - the Ramsar Convention, which promotes the conservation and wise use of wetlands:-  
[www.panda.org/news\\_facts/publications/frshwater](http://www.panda.org/news_facts/publications/frshwater) - the full report can be read here.

# Directional Virtual Fencing (DVF™)

*Dean M. Anderson; U.S. Department of Agriculture-Agriculture Research Service*

If determining how many animals to place on a given area of land (stocking rate) is the first management decision to be made in free-ranging animal husbandry then the second management challenge surely must be getting the animals to distribute themselves to utilize the vegetation more uniformly (stocking density). The question then becomes do you have immediate control over where your livestock forage? If your answer is "yes", you are probably using herding. If you answer "no" you are probably using one or more tools, techniques or natural phenomenon other than herding to manage your animals (Figure 1). If you would like to have near real-time control of your animals, and not pay a herder, than you might find Directional Virtual Fencing (DVF™) to one day very soon bring a new twist to your fencing tool box. This newest method of controlling free-ranging animals is currently under research and development by the US Department of Agriculture-Agricultural Research Service.

## What is (DVF™)?

DVF™ is a methodology that uses animal behaviour and electro-mechanically produced cues to locate animals and subsequently move them across the landscape. It uses a solar powered animal-mounted device that combines Global Positioning System (GPS) technology with electro-mechanically produced cues activated by proprietary algorithms in the device's Central Processing Unit (CPU) to control animals without conventional fencing systems. The GPS component in the DVF™ device gives an animal's position on the landscape while a Geographic Information System (GIS) allows pre-programmed longitude-latitude pairs to define a Virtual Centre Line (VCL™), inside a Virtual Boundary (VB™) used to create a

Virtual Paddock (VP™) that can be held stationary or moved across the landscape, see Figure 2. To find out more about GPS and GIS the reader is referred to <http://www.trimble.com/gps> and <http://www.gis.com/whatisgis/index.html>, respectively.

If an animal inside a VP™ penetrates a VB™ while wearing an activated DVF™ device the angle of the animal's head with respect to the nearest VCL™ determines to which side of the animal the unique independently programmable left or right side cues will be delivered. Following cuing, the animal should move in a manner that will put the greatest distance between it and the VCL™ in the shortest amount of travel and with the least amount of stress (cuing). Cue intensity is ramped from least severe at the VB™ perimeter to most severe immediately on either side of the VCL™ (Figure 2). Should the animal fail to respond appropriately to cuing, the cues stop, either after a programmable period of time has elapsed or after the animal has travelled a predetermined programmed distance away from the VCL™. This latter approach is how the DVF™ has been evaluated to date (Figure 2). Details on the operation of the DVF™ device can be found beginning on page 85 at the following web address: [http://www.macaulay.ac.uk/gps/gps\\_abstract\\_2001.pdf](http://www.macaulay.ac.uk/gps/gps_abstract_2001.pdf).

## What allows the system to operate?

The heart of DVF™ relies on a constellation of approximately 24 operational Global Positioning System (GPS) satellites that orbit the earth about every 12 hours. GPS technology was developed during the late 1960's and early 1970's by the United States Navy and Air Force for precise timing and space-based navigation. Today GPS Radio Frequency (RF) signals coming from these satellites can be captured by commercially available equipment without connection charges to the user. The service is extensively used for tracking movement of people and goods, on land, air and water. Beginning in the mid-1990's GPS was deployed for the first time in tracking wildlife and today GPS is even used to track domestic livestock in animal ecology research. Though the animal

tracking equipment used in research is frequently expensive, the actual hardware necessary to gather GPS signals for the DVF™ device is relatively inexpensive. For additional information on number of available GPS satellites see [http://www.navcen.uscg.gov/gps/status\\_and\\_outage\\_info.htm](http://www.navcen.uscg.gov/gps/status_and_outage_info.htm).

### **What do we already know about DVF™?**

Since DVF™ relies entirely on altering animal behaviour to control animals it must never be used if absolute animal control is required. Fencing of boundaries or right-of-ways along routes of transportation such as roadways, railways and airport runways will still require conventional wire, wood or stone fences to prevent injury or death to either humans or animals.

Research has shown that animals can be controlled with DVF™ that employs audio sound and electric shock to change an animal's location and direction of movement. It appears that because the DVF™ device employs ramped cues, once animals learn the irritation produced by the cues increases in severity as the VCL™ is approached animals frequently change their direction of movement after exposure to only sound, immediately inside the VB™ perimeter (Figure 2).

The sound and/or electric shock cues do not appear to produce lasting stress based on monitoring heart rate and observing the animal's response immediately preceding and following the administering of cues. When cuing occurs while an animal is moving, animals have been observed to graze into a VB™, receive cuing and move out of the VB™ and resume grazing all within a few minutes.

Every animal in a group may not need to be instrumented if the goal is to alter the location of an animal group on the landscape. To date only a small group containing six cattle have been successfully controlled in which half the animals wore DVF™ devices yet the remaining non-instrumented animals stayed relatively close to those animals wearing the activated DVF™ devices. Evaluating the

management of larger groups with DVF™ must await the manufacture of additional devices scheduled for completion later in 2004.

Furthermore, simultaneously controlling single groups of animals containing more than one animal species using DVF™ appears quite realistic if bonding is used to create the mixed-species groups. Bonding involves changing the behaviour of small ruminants (sheep and or goats) so they consistently stay near cattle under free-ranging conditions. This cohesiveness of small ruminants to consistently stay with cattle is only characteristic of small ruminants that have had their behaviours modified, normally at a young age. The resulting single group of animals has been termed a flerd (flock + herd). By controlling flerd cattle using DVF™ devices the small ruminants will remain close to the cattle without the need for sheep or goat proof conventional fencing. For more information on flerds and how bonded groups can be created watch for a forthcoming issue of *Grass Roots*.

### **Ongoing research using DVF™**

Tests are currently underway to evaluate the ability of DVF™ to move animals across the landscape. The VP™ is a programmable polygon that can take any shape to optimize utilization of the standing crop while promoting proper animal distribution within the polygon. Likewise the direction and rate of movement of the VP™ across the landscape are both fully programmable thus promoting what can be described as Prescription Stocking (R<sub>x</sub>S™). The goal of R<sub>x</sub>S™ using DVF™ is to optimize all the economic and ecological benefits offered by rotational stocking without the management challenges of conventional fencing. The VP™ is fully programmable, thus, allowing number of animals per unit area (stocking density) to be managed in a time dependent set of incrementally finite steps. With DVF™ animal movement across the landscape can be matched to forage disappearance and plant re-growth thus optimizing both the plant's and the animal's nutritional requirements. In addition to optimizing the management of stocking density DVF™ could be used to

gather animals thus reducing the amount of time managers spend using conventional techniques in this labour-intensive aspect of animal husbandry.

Moving animals within a VP™ should minimize handling stresses if movement of the VB's™ coincide with periods when the animals are already in motion such as during periods of foraging or walking. Using this protocol, cuing stress will be kept to a minimum when altering an animal's location and direction of movement, compared to initiating movement in a stationary (lying or standing) animal. Personal observation and published research suggests free-ranging cattle, sheep and goats move more between sunrise and sunset than during periods of darkness; therefore, it seems reasonable that VP's™ should be moved mainly during the daylight and not during the night when managing these livestock. Determining exactly when to program VB's™ to move can be determined by watching the behaviour of animal groups prior to using the DVF™ device. Ultimately the success of DVF™ in promoting R<sub>s</sub>S™ will require a paradigm shift in our thinking of when to move animals to minimize stress and optimize husbandry.

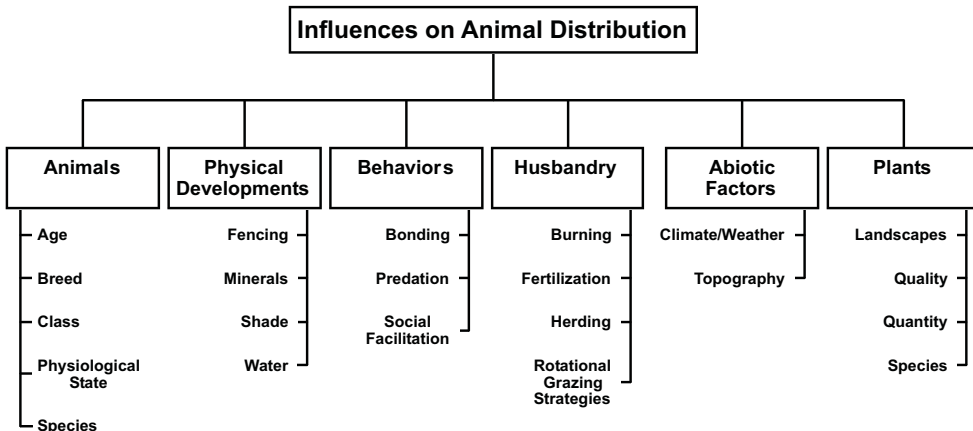
In conjunction with testing the ability to move VB's™ in time and space a solar powered “node computer” having cellular communication capabilities is being developed to autonomously and electronically download data stored in the DVF™ device's memory. The “node computer” will be placed at a location instrumented animals frequent, such as at the drinking water or a mineral supplement. As instrumented animals pass the “node computer” data from the DVF™ device will be wirelessly transferred into the “node computer.” Just as data can be transferred to the “node computer” the “node computer” will have the capacity to upload a “new” VP™ into the DVF™ device's CPU. Thus when the animal returns to the paddock from drinking water or taking a mineral supplement it could be moved to an entirely different part of the landscape from where it was foraging prior to receiving the “new” VP™.

Eventually knowing where on the landscape a “new” VP™ should be established will come from real-time satellite imagery of standing-crop quantity and/or quality relayed back to the DVF™ device through the “node computer. The VCL™ of the “new” polygon, based on standing-crop parameters, from satellite imagery will be uploaded to the DVF™ device's CPU using a wireless link. However, until satellite images are available in real-time for uploading, VCLs™ can be entered into the DVF™ device in one of two ways.

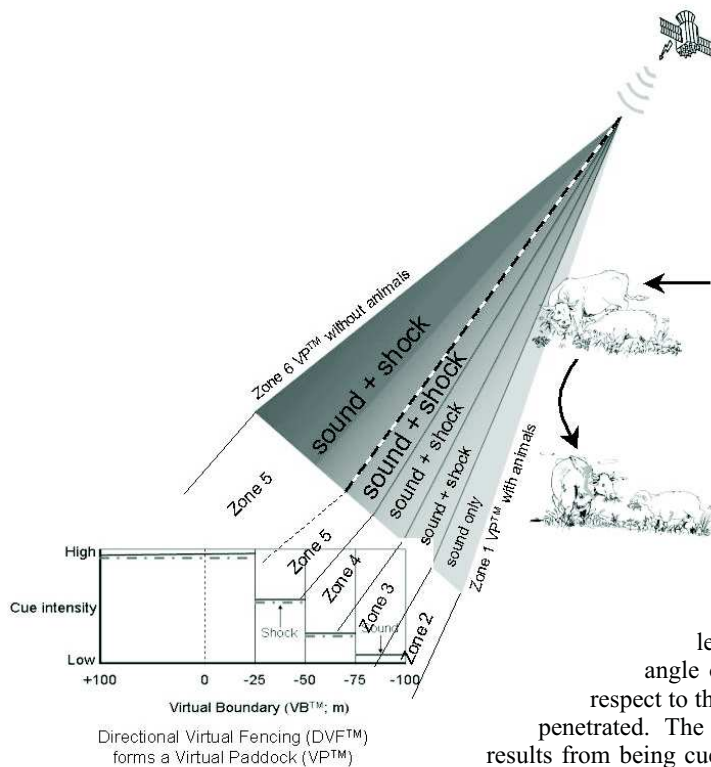
A VCL™ may be established by traversing the perimeter of the area to be stocked while carrying a hand-held GPS unit. Waypoints (latitude and longitude values) are recorded at locations along the path of travel where there is a change in direction of the line. These data pairs are then uploaded into the DVF™ device's CPU where the points are sequentially connected using algorithms that define the polygon termed a VP™. Alternatively if the perimeter can not be traversed longitude and latitude values can be taken directly from topographic maps. Even without a “node computer” to upload the waypoints, each DVF™ device can be individually programmed with a VP™ by hardwiring the device to a lap-top computer and downloading the waypoints that define the polygon.

The immediate task in bringing this methodology to market will be to miniaturize the size of the current neck belt DVF™ device to that of a right and left ear tag (see <http://patft.uspto.gov/netahtml/srchnum.htm> for details). Also, power requirements will continue to be a challenge to this and any other electronic technology for use on free-ranging animals. However, advances in battery design and flexible solar cells together with miniaturization of electronic components suggest new platforms for delivering cues will certainly evolve and replace the current state-or-art components being used.

For additional information on DVF™ please contact **Dean M. Anderson**; U.S. Department of Agriculture-Agriculture Research Service, Jornada Experimental Range; Las Cruces, New Mexico 88003-8003; e-mail [deanders@nmsu.edu](mailto:deanders@nmsu.edu).



**Figure 1.** Tools and techniques used to influence free-ranging animal distribution.



**Figure 2.** A schematic representation of how Directional Virtual Fencing (DVF™) operates with a programmable Virtual Boundary (VB™) that activates a series of cues ramped from least severe (audio sound only) at the VB™ perimeter to most severe (audio sound + electric shock) on either side of the Virtual Center Line (VCL™). Cues are applied to either the animal's right or left side depending on the angle of the animal's head with respect to the VCL™ once the VB™ is penetrated. The animal's movement that results from being cued should put the greatest distance between the animal and the VCL™ in the shortest amount of travel and with the least amount of stress to keep it within the Virtual Paddock (VP™).

# “Members write to the GSSA”

*This is a new spot that we are going to make permanent in Grassroots.  
A spot for anything that you would like to say (within reason, of course).  
Start a debate, share an anecdote, or just a suggestion.  
Use the GSSA address details on the front page.*

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Hi  
I have just received my copy of Grass Roots and take note that you are selling Mugs with the Big Five Logo. Please could I request that the committees look into mugs with some of our indigenous African grasses on them as an alternative in future. I would definitely buy a set of *Themeda* or *Cenchrus* glasses in future. The **Big 5 Grasses** would in my opinion go down well. Just a suggestion.  
Keep up the good work.  
Regards.  
Ralf Kalwa

## GSSA SOUVENIRS

To raise some funds for the GSSA, the Council organised some limited edition GSSA branded souvenirs to sell at the International Rangelands Congress held in Durban last year. For those of you who couldn't make it, now is your opportunity to get some for yourselves (and they make excellent gifts!!). All of the items are engraved with either the GSSA logo or one of Africa's "Big Five".

The sets of Schnapps Glasses or Glass Coasters are available with either all GSSA logos or with one GSSA logo and one each of the "Big Five". If you would like to order any of the items listed below, email [admin@gssa.co.za](mailto:admin@gssa.co.za), fax 033 390 3113 or phone Freyni on 083 256 7202. Postage is not included, but will be determined by how much is purchased.

DESCRIPTION	PRICE
6 Schnapps glasses in wooden gift box	R180.00
2 Whiskey glasses in wooden gift box	R130.00
6 Glass coasters in wooden gift box	R110.00
Stainless steel mugs (with GSSA logo and one of the "Big Five", or just GSSA logo, or just one of the "Big Five")	R25.00
Stainless steel glasses (with GSSA logo and one of the "Big Five", or just GSSA logo, or just one of the "Big Five")	R25.00

## Journal News

### Should we change the name of our journal?

The publisher of the GSSA's official scientific journal, NISC, has proposed that the name of the journal be changed this year from *African Journal of Range & Forage Science* to *Range & Forage Science*. The motivation is that this simple change could have a major impact on the sustainability and international exposure of the journal to the benefit of African scientists. Many Australian journals have dropped "Australia" from their title in order to be more sustainable and more international. It may be argued that having "Africa" in the title limits our submissions and readership. With increasing competition among journals, changing the title to a more international one is a strategic move towards becoming the international journal of choice for grassland, rangeland and forage research. The journal is already well positioned for this as it has been substantially improved and currently looks attractive in the international market. What do members think? Please direct comments to the Scientific Editor ([pscoging@pan.uzulu.ac.za](mailto:pscoging@pan.uzulu.ac.za)).





# REGIONAL NEWS

## KwaZulu-Natal - Region

### **Using cattle to achieve conservation objectives: some tentative steps in KZN**

*Alan Short, KZN Department of Agriculture and Environmental Affairs and  
Ian Rushworth, Ezemvelo KZN Wildlife*

Domestic livestock have traditionally been seen as being incompatible with protected area objectives. While in most cases there is good reason for this (including impacts on tourism, disease transfer from wild ungulates to domestic stock and *vice versa*, erosion, impacts on biodiversity and the difficulty of maintaining any grazing system in an area without internal fences), there is a growing realisation that cattle can, under specific conditions, play a role in achieving conservation objectives in certain conservation areas.

In some protected areas it is not possible to re-introduce the historical suite of bulk grazers, and cattle can be used to simulate the ecological effects of absent species such as buffalo and white rhino. With proper planning and management, cattle in sourveld areas can be used to create more of a patchy grass sward, which benefits certain species such as oribi that need both long (for protection) and short (for feeding) grass. Likewise, wattled cranes benefit from a certain amount of cattle grazing as cattle open up the wetland edges thus improving access to food plants and facilitating movement of young crane chicks.

Under the guidance of Ezemvelo KZN Wildlife's Ecological Advice Co-coordinator for the uKhahlamba (Drakensberg) Region (Ian Rushworth) a team consisting of Ezemvelo KZN Wildlife ecologists and managers, KZN Crane Foundation, KZN

Department of Agriculture and Environmental Affairs, and local farmers are overseeing the introduction of cattle into two areas managed by the conservation agency.

One area, Middledrai, is a small property long used for grazing domestic stock and only this year acquired by KZN Wildlife. The other property is Umgeni Vlei, a major wetland in the Drakensberg and the source of the Umgeni River. This property has been under the control of the conservation body since 1987, before which it was utilised for commercial livestock production. Both of these sites are prime habitat for the endangered wattled crane and oribi.

Most wattled cranes can be found on privately owned land, and it for this reason that the KZN Crane Foundation has been working closely with landowners to monitor the status of the crane population and to encourage awareness of the status of the wattled crane amongst farmers. The cranes seem to thrive in areas that are grazed, often heavily, by cattle, and it is this fact that inspired KZN Wildlife to explore the possibility of managing their crane populations by allowing graziers to utilise protected areas. The cattle keep the grass on the margins of vleis short and open up pathways for the crane chicks, which would otherwise have difficulty in moving through the rank and moribund grass. The oribi also benefit from the mixture of short and tall veld left by grazing cattle.

KZN Wildlife is cooperating with neighbouring commercial farmers on the two properties. The Department of Agriculture is drawing up veld management plans, based on the objectives of the graziers and the conservation objectives of KZN Wildlife. Veld monitoring sites are being set up on both properties by the Department.

For management reasons, Umgeni Vlei has been divided in two by a cattle fence. One of the many hazards that a young wattled crane chick faces in its life is the standard barbed wire cattle fence. The chicks are tall enough for their necks and legs to get tangled up in the bottom two or three strands of a fence, where they slowly starve to death. For this reason, a crane-friendly fence designed by the crane foundation was used: four strands of wire, only the top one of which is barbed, with the bottom strand knee-high above the ground. This design should, hopefully, allow the crane chicks to pass through the fence unscathed. The possibility of converting some portions of the boundary fence into a more crane-friendly fence will also be examined.

The two properties are very different in character, although they both occur in Highland Sourveld. Middledrai is internally fenced and has been grazed fairly heavily for decades. Some areas are showing signs of overgrazing, with dongas (gullies) forming and the undesirable wiregrass, *Aristida junciformis* (Ngongoni grass), encroaching. The cattle will be managed under the grazing, resting and burning recommendations of the Department of Agriculture (one third of the property will have a full season's rest every third year followed by a burn).

Umgeni Vlei, however, is very different. There have been no large herbivores, or even large numbers of small herbivores, for 15 years. The veld is relatively tall compared to the adjacent grazed properties and dominated by large, vigorous tufts of the palatable *Themeda triandra* (redgrass). The composition of the flora may well be somewhat different from the neighbouring (grazed) properties, although this needs to be examined.

It is important to recognise that there are only limited opportunities in protected areas to use cattle as a management tool, and that where this is done it needs to be subject to very strict guidelines (stocking rates, grazing system,

season) and closely linked to the objectives of the area. Detailed monitoring programmes for vegetation and important animal species have to be set up to ensure that cattle grazing is having the desired effect. Money generated through leasing of the grazing is being ploughed straight back into the management of the areas e.g. alien plant control, erosion reclamation and fence maintenance, thus further benefiting conservation.

This project is in its early stages, but the cooperation between farmers, the KZN Department of Agriculture and Environmental Affairs, the KZN Crane Foundation and Ezemvelo KZN Wildlife promises exciting developments for the future. It is hoped that other institutions can also contribute to this exciting project by surveying and monitoring other aspects of the ecology of the vleis.

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## **NOTTINGHAM ROAD FARMER'S DAY**

*Alan Short, KZN Department of Agriculture and Environmental Affairs, Cedara*

What started out as a bunch of mates who all happened to be farmers getting together transformed itself into an official farmer's day when the KZN Department of Agriculture was informed about the event. Chris Melouney and Adam and Nancy Rouillard, local farmers, and Alan Short from the Department of Agriculture, put together what was hoped would be an informative morning of talks. Unfortunately, the best laid plans of mice and men didn't predict that the Nottingham Road Sale Yards would change the date of their final ever sale, after a century of operation, to the same day. After two days of dithering and uncertainty on the part of the organisers, they decide to go ahead with the event anyway.

The Rouillards hosted the small gathering at a, rather surprisingly, fully equipped conference venue on the farm that they manage. Only five farmers arrived at the venue, but they generated heated debate around the issues of grazing and resting of veld, along with the other participants, who included representatives of the University of Natal, the Crane Foundation, and the KZN Department of Agriculture. The morning started with Brent Forbes from the Natural Resources section at Cedara discussing KwaZulu-Natal's bioresources, and the computer-based Bioresource programme that planners use to advise farmers and other land managers on the best options for their land.

Kelson Camp, a retired technician from the Department who had much to do with building the Bioresource programme, then gave an entertaining and informative talk on the basics of veld ecology. He reminded farmers that they were primarily grass farmers, who transform grass into cash via the medium of a grazing animal.

Cobus Botha, from extension services, then gave a long talk, which generated much

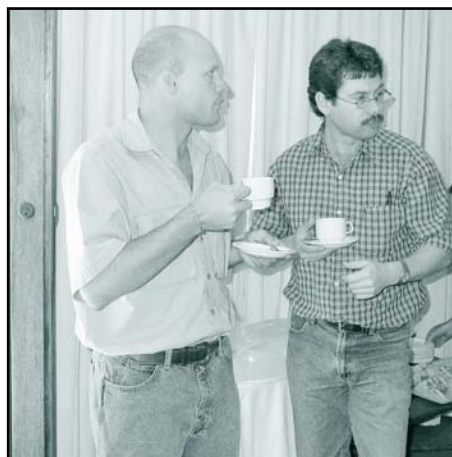


**Left to right: Iona Stewart and Thomas Shearing from the Department of Agriculture share a thought with Kelson Camp.**

discussion, on what the department considers the basics of veld management: grazing, resting and burning. It emerged that some farmers are sceptical about the economics of resting veld for an entire growing season, arguing that they cannot afford to reduce their stocking rate to accommodate a full season's rest on a large area of their farms. Although it was argued that resting veld does not require reduced stocking rate on the remainder of the farm, this was hotly debated.

The day ended up with Garrett Müller, an economist from extension services, discussing the rands and cents generated by improved veld management and the resultant improved livestock production.

Although the clash with the Nottingham Road sale was a disappointment for the organisers of the day, the day was successful in re-establishing the connection between the Department of Agriculture and the veld farmers in that area. This connection will be kept intact in the future through regular visits by Departmental staff, and participation in the farmers' study groups.



**Above: Cobus Botha (left) and Garrett Müller from extension services.**



**Above: Brent Coverdale from the Crane Foundation and B. Mennie, farmer and University of Natal student, deep in conversation.**

## **News from UniZul Department of Agriculture**

In August 2003, Land Bank granted R200 000 to the University of Zululand's Department of Agriculture for a Chair in Agriculture. Land Bank's sponsorship of research and training at universities is driven by an effort to reduce the gap between commercial and developing farmers, thus addressing the challenges the bank faces in its mission to finance agriculture. The activities of the recently endowed Chair in Agriculture are directed at the development of competent agricultural researchers and the dissemination of agricultural knowledge and skills among developing farmers. All the projects comprise both research and outreach components, and are implemented by final-year undergraduate students, postgraduate students and staff members of various departments in the university. Among the projects being conducted are:

- Improving the production of indigenous sheep at KwaMthethwa
- Sustainable livestock production at Emoyeni in the Pongola district
- Improving crop production and minimising impact in Mabibi
- Planning and implementation of community farms in KwaMkhwanazi

**Right: Cobus Botha from extension services discussing veld management systems**



**Below: Some of the small but interested audience.**



# North West Region

## *PUK forms part of National Government team to Cuba for the Convention to Combat Desertification.*

Prof Klaus Kellner of the School of Environmental Sciences, Potchefstroom University, was nominated by the Minister of Environmental Affairs and Tourism, Mr Valli Moosa, to form part of the technical team which attended the 6<sup>th</sup> meeting of signatory countries to the United Nations Convention to Combat Desertification (UNCCD). Other members of the technical team included representatives of the National Departments of Agriculture, Environmental Affairs and Tourism, and Foreign Affairs. South Africa was also represented by Deputy President Jacob Zuma, the Deputy Minister of Environmental Affairs and Tourism, and the Director General, Dr C Olver.

This biennial meeting (so-called Conference of Parties COP6) was held from 25 August to

6 September 2003 in Havana, Cuba; and was attended by 165 countries. Important decisions around the implementation of the aims of the convention, as well as liaison with International Funding Agencies, continued through out the meeting.

Prof Kellner was appointed as leader of the Committee for Science and Technology (CST). He is also on the list of International Specialists, which was drawn up by the secretariat of the UNCCD in Bonn.

The Desert Margins Program (DMP) currently being run in South Africa forms an important part of the UNCCD. Negotiations are currently underway with various National Government Departments to promote both the UNCCD, and the DPM, and to implement the aims of the program.

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# East Africa Region

The Animal Production Society of Kenya is to hold a Regional Conference on Animal Production in March 2004. Please contact Dr D M Mwangi ([david.kari@africaonline.co.ke](mailto:david.kari@africaonline.co.ke)) for further information.

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## **Send news items for the various regions, to the addresses below:**

### *Eastern Cape*

Wiseman Goqwana, [wgoqwana@ufh.ac.za](mailto:wgoqwana@ufh.ac.za)

### *KwaZulu-Natal*

Richard Hurt, [info@mvelo.co.za](mailto:info@mvelo.co.za)

### *North West*

Franci Jordaan, [francij@potch1.agric.za](mailto:francij@potch1.agric.za)

### *Gauteng*

Marike Trytsman, [marike@veld.agric.za](mailto:marike@veld.agric.za)

### *Western Cape*

Annelene Swanepoel  
[annelenes@elsneburg.com](mailto:annelenes@elsneburg.com)

### *Mpumalanga Highveld*

Anneke Engelbrecht  
[anneke@laeveld1.agric.za](mailto:anneke@laeveld1.agric.za)

### *Mpumalanga Lowveld & Eastern Limpopo*

Mike Peel, [mike@frieden.agric.za](mailto:mike@frieden.agric.za)

### *Limpopo*

Cornelius van der Waal,  
[corwaal@mweb.co.a](mailto:corwaal@mweb.co.a)

### *Free State*

Ibe Oosthuizen, [oosthib@sci.uovs.ac.za](mailto:oosthib@sci.uovs.ac.za)

### *Namibia*

Axel Rothauge, [arothauge@unam.na](mailto:arothauge@unam.na)

### *East Africa*

Prof Elly Sabiiti, [esabiiti@agric.mak.ac.ug](mailto:esabiiti@agric.mak.ac.ug)

Regional representatives have not been identified for: **Northern Cape**, **Mozambique**, and **Zimbabwe**. If anybody from these areas would be prepared to co-ordinate news from their region, please contact the editor Graham Peddie, [peddieg@dunrs.kzntl.gov.za](mailto:peddieg@dunrs.kzntl.gov.za)

## **COMPLETE YOUR JOURNAL AND BULLETIN COLLECTION!!**

We've discovered that the demand for back issues is definitely out there. Thank you for the orders. The Discipline of Grassland Science at the University of KwaZulu-Natal has kindly let us have a storeroom for all of our back issues, which will be in use from the beginning of February. The administrator will publish a full list of the holdings in the next Grassroots, but carry on sending in orders and we'll see what we can do.

There was a bit of confusion about what the Society actually publishes. The Bulletin was mainly published as A5 booklets, and covered farmers' days and other smaller gatherings, as well as research notes. It is now incorporated into Grassroots, and so this is where you could send the odd thought or two today. The Journal of the Grassland Society of Southern Africa was the previous name of the African Journal of Range and Forage Science, and is sometimes referred to as the Proceedings of the Grassland Society of Southern Africa. See "Journal News" in this issue of Grassroots for more information about the journal in its modern form. And then there were also some Special Publications, generally dedicated to specific workshops or conferences, such as the Proceedings of the First Valley Bushveld/Subtropical Thicket Symposium and Prestige Farmers' Days Proceedings 1991-1992.

Postage of the orders is not included but will be worked out based on how much you buy, and is pretty reasonable. Some issues are very rare, and only one or two are left, so orders will be treated as first come, first served. Email [admin@gssa.co.za](mailto:admin@gssa.co.za), fax 033 390 3113 or phone Freyni on 083 256 7202. Invoices will be supplied with all orders.

## **NEW MEMBERS**

**Welcome to the following 41 new members who joined the Society during 2003, and early 2004:**

Mr Christoffel Visagie, Ms Anneke Engelbrecht, Prof Cornelis Roos, Ms Linda Kleyn, Mr Cornelius Du Toit, Mr Gerhardus Trytsman, Mr Phillippus Breytenbach, Dr Robert Westfall, Mr Seema, Mr Gideon Brits, Dr Fall Safietou, Ms Miriam Lang, Dr Albrecht Glatzle, Ms Caryn Rauff, Mr Mark Jevon, Mr Wayne Twine, Mr William Mnene, Mr Peter Macharia, Dr Godfrey Olukoye, Dr Brien Norton, Mr Osmond Mugweni, Mr Daniel Taljaard, Ms Loraine Van Den Berg, Dr Uyapo Omphile, Dr Susanne Vetter, Ms Anuschka Barac, Ms Navashni Govender, Mr Mahlodi Tau, Mr Mark Galpin, Mrs Christelle Botha, Mr Brent Forbes, Ms Christine Lambrechts, Ms Marisa Coetzee, Mr Ngwekhulu, Ms Bernadine Gray, Ms Erika Van Zyl, Ms Nicola Findlay, Mr Brian Dalton, Ms Lizette Moolman, Ms Jane Holliday and Mr Alan Short



### ***CONFERENCE ANNOUNCEMENT***

The South African Holistic Management Annual Conference will be held in Vryburg from 30 March to 1 April 2004. The theme is Handling Change, and it will be addresses in a number of sessions including "how microorganisms in animals and soils handle change caused by management" and "how plants handle change caused by management". For more information, please contact Ilse van der Linde (053 927 4551) or Judy Richardson (053 927 4367)