

## THESIS ABSTRACTS

### VEGETATION DYNAMICS DURING THE PROCESSES OF DEGRADATION AND RECOVERY IN PARTS OF THE GRASSLAND AND KAROO BIOMES OF SOUTH AFRICA

Dr K Kellner, PhD study, June 1995

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Dynamic changes, such as the composition, basal cover and spatial pattern of species take place in a natural rangeland when submitted to disturbances such as an unpredictable or erratic rainfall pattern or different grazing conditions. Depending on the type and degree of disturbance, as well as on the change in the environmental conditions, species changes usually start in small patches, influencing the condition of the vegetation on a macro-scale in the short or long term.

Macro-plots were selected in three study sites on a rainfall gradient ranging from a low annual rainfall in the Karoo Biome at the Grootfontein ARI, to Glen and Reitz in the Orange Free State, which are characterized by higher annual rainfall patterns. To study the effect of grazing, macro-plots that were previously grazed at certain levels were enclosed and withheld from further grazing (so-called recovery sites), while neighbouring macro-plots were still being lightly, moderately or heavily grazed. Micro-plots, representing patches of a certain vegetation composition and conditional changes, were selected in these macro-plots. Successional changes, including aspects such as the increase and decrease in basal cover or changes in the spatial pattern of single or groups of species were studied in the micro-plots for a period of three years (1990 to 1992). By means of a photographic technique, successive changes could be identified only visually, while changes in the percentage basal cover were quantitatively determined using a point quadrat monitoring technique and drawing species distribution maps of each micro-plot.

The construction of transition matrix tables led to the identification of indicator species that either remained either constant in basal cover, or were subjected to a species by species replacement process, due to the different rainfall and/or grazing patterns. The largest changes, however, took place between the decrease or increase of the basal cover of a species and the percentage of bare ground.

By making use of the Markovian Projection Model, the vegetational changes taking place from 1990 to 1991 were used to predict possible future species change and vegetation compositions. Together with the values calculated to indicate change and the indicator identified species, the degree of stability of a micro-

plot represented by a certain vegetation composition could be established. Some species were indicators of a changing rainfall pattern, while others were more influenced by different grazing treatments.

On the whole, micro-plots representing a greater stability were characterized by a more climax type of vegetation with a low species diversity. Micro-plots that had previously been or were still being heavily grazed and which already showed a higher degree of degradation, however, were characterized by a higher species diversity and species turnover, resulting in a greater stability. Except for some of the more widely spread species, such as *Themeda triandra* and some of the *Eragrostis* species, most of the species were area-specific and served as indicators of vegetational changes in either the drier Karoo or wetter Orange Free State areas.

The conditional state of the macro-plots was assessed, using established range condition models for each study site. Changes in the condition from 1990 to 1992 were indicated by trajectories and veld condition scores. Species contributing to the changes in the conditional states of the micro-plots were in most instances the same as the species used as indicators of in the macro-plots. This finding underlines the fact that vegetational changes on a micro-scale can be used to some extent to explain conditional changes on a macro-level.

The ecological role and behaviour of single species that are usually driven by seasonal fluctuations or episodic events, can, however, only be established by long term monitoring of permanent plots on a micro-scale.

From the results of this study it is evident that vegetation dynamic changes, indicating processes of recovery or degradation, are very complex and have to be studied over a much longer period of time. This is especially the case if the effects of rainfall and/or grazing were to be monitored. Certain deficiencies and recommendations have been identified during this study that have to be taken into account in long term vegetation dynamic studies in rangeland.

## DIE KWANTIFISERING VAN VELDTOESTAND IN DIE SENTRAL-VRYSTAAT

HC van der Westhuizen, MSc(Agric) 1994

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Die sukses van veldtoestandbepalingstegnieke hang af van die volgende eienskape: Dit moet eenvoudig en vinnig uitvoerbaar wees: ekologies verantwoordbaar; voorsiening maak vir agronomiese waardes en wetenskaplik korrek wees.

Die veldverwysingstegniek wat tans in die studie gebied gebruik word, voldoen nie aan hierdie vereistes nie. Althowel hierdie tegniek vinnig en eenvoudig is vir gebruik deur opgeleide veldwerkers, berus die ekologiese en agrolgiese eienskape van hierdie tegniek op subjektiewe waarnemings. Probleme ontstaan ook gewoonlik by die identifisering van veldverwysingspunte wat die onakkuraatheid van hierdie tegniek verhoog.

Die studie is uitgevoer in die Sentrale Grasveld van die Vrystaat en sluit in die vlaktevariasies van sewe verskillende landtipes in die landdrostdistrikte Bloemfontein, Brandfort, Excelsior, Theunissen en Winburg. Die studie-area is in 'n somerreëvalgebied geleë met 'n langtermyn gemiddelde jaarlikse reënval wat varieer vanaf 519 mm tot 565 mm. Die somers is magtig tot warm en die winters is baie koud met ryp vanaf middel April tot middel Oktober. Verder is die gebied in die *Themeda-Cymbopogon*-subgrasveld van die *Themeda-Cymbopogon*-veldtipe geleë wat as 'n soetgrasveld geklassifiseer kan word en waarin *Themeda triandra* oorheers waar veld in 'n goeie bewaringstoestand werker.

'n Degradasiegradiënt is met behulp van die ISPD-pakket beskryf. Hierdie gradiënt het gewissel vanaf swak uitgetrapte veld, rondom waterkrippe, tot goed bestuurde veld op die eerste-as terwyl die variasie op die residuele-as veral as gevolg van seisoenale reënval gevarieer het.

Die ekologiesewaarde van die spesies is bepaal met hulp van die Gausiese verspreidingskromme. Om die ekologiesewaarde van spesies is 'n indeks opgestel wat varieer het van nul tot tien.

Indikatorspesies is vir die studiegebied geïdentifiseer deur verwantskappe tussen individuele spesies en veldtoestand te bestudeer. Dominante indikatorspesies is ook geïdentifiseer wat op een of ander stadium op die gradiënt die belangrikste bydrae tot die samestelling van die veld lewer.

Die verandering van die floristiese samestelling is beskryf soos wat veldtoestand verswak. Kortliks word die degradeseproses gekarakteriseer deur 'n verlaging in die relatiewe samestelling van terwyl dit eerstens deur *Eragrostis chloromelas*, dan deur *Aristida* spesies en laastens deur *Cynodon hirsutus* vervang word.

Omdat rekenaar toerusting die gebruik van die degradesiegradiëntmetode kan beperk, is makliker alternatiewe metodes ondersoek. Die gekombineerde Gausiese verspreidingskromme van *T. triandra* en dominante spesieskromme het die beste resultate gelewer en kan met sukses in die studiegebied toegepas word. Die groot voordeel van hierdie tegniek is die feit dat die opnemer slegs die dominante spesies moet ken wat die tegniek se gebruikerswaarde drasties kan verhoog.

'n Produksie-indeks is aan spesies gekoppel deur die gemiddelde polmassas van spesies te gebruik. Alhoewel standaardafwykings groot was, is betekenisvolle verskille tussen spesies gekry.

Deur middel van 'n voorgestelde formule is die persentasie benutbaarheid van spesies bereken. Data wat voortvloei uit 'n studie van die botaniese samestelling van weidingmonsters, versamel met gefistuleerde diere, met behulp van die mikrohistologiese tegniek, (Potgieter, 1991) is gebruik vir die berekening van die benutbaarheid van plantspesies.

Deur die gemiddelde produksie per pol van spesies te kombineer met die benutbaarheid daarvan is weidingswaardes aan spesies gekoppel. Indekswaardes is gebruik om weidingswaardes uit te druk. Waar weidingswaardes in die verlede subjektief aan spesies toegeken is, is daarin geslaag om 'n meer objektiewe indeling te maak.

Weidingskapasiteitsberekenings is vir die Merino's sowel as bees op elke lokaliteit gedoen. Betekenisvolle verskille het voorgekom wat verklaar kan word as gevolg van veldtoestand verskille. Die berekende weidingskapasiteit vir skaap was laer as vir bees wat beklemtoon dat Merino's nie so goed soos bees in die gebied aangepas is nie.

Goeie korrelasies is tussen veldtoestand en weidingskapasiteit gekry. By die langtermyn verwantskap was die  $r^2$ -waardes by bees en 0.80 by die skaap. Seisoenale verwantskappe het baie gevarieer en laer verwantskappe tussen veldtoestand en weidingskapasiteit kon verklaar word.

Om die ekonomiese implikasies van verswakte veld te illustreer is winsgewindheid as 'n persentasie van optimale toestand uitgedruk. Volgens hierdie berekenings sal, die verlies 20% by 'n toestandsklas van 70% wees in vergelyking met optimale toestande terwyl die winsgewindheid by 'n toestandsklas van 50% omtrent kan verdubbel.

## DIE INVLOED VAN STIKSTOFBEMESTING EN ONTBLARING OP DIE KWANTITEIT EN KWALITIEIT VAN *Lolium multiflorum* cv. Midmar

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Die doel van die studie was om die kwantiteit- en kwaliteitsfunksie van *Lolium multiflorum* cv. Midmar by verskillende stikstofpeile en sny-intervalle te ondersoek. Die doelwitte van die studie: was om die invloed van verskillende stikstofbemestingspeile en sny-intervalle op die volgende eienskappe te ondersoek:

- DM-produksie en -inhoud;
- waterverbruiksdoeltreffendheid (WVD);
- totale stikstof, ware proteïene en nie-proteïene (NPN);
- veselkomponente nl. NDF en ADF;
- verteerbaarheid;
- elementinhoud en verbruik t.o.v. P, K, Mg en Ca.

Die studie is in die Vrystaat te Glen Landbou-ontwikkelingsinstituut uitgevoer. Die proefperseel was op die Glen-Sharrocks gewasekotoop. Die gewas was by 20 verskillende behandelingkombinasies wat 4 stikstofpeile (0, 150, 300 en 450 kg N.ha<sup>-1</sup>.jr<sup>-1</sup>.) en 5 sny-intervalle (twee-, vier-, ses-, agtweeklikse en tweemaal per seisoen) insluit, verbou. Drie replikasies was gebruik. Die behandelingkombinasies het voldoende water ontvang. Besproeiingskedulering is met hulp van 'n neutronwatermeter gedoen. Die DM-produksie, DM-inhoud, WVD, totale stikstofinhoud, NPN- en ware proteïeninhoud, stikstofverbruiksdoeltreffendheid, NDF- en ADF-inhoud, verteerbaarheid, elementinhoud en elementverbruik van P, K, Mg en Ca is op 'n snyselbasis bepaal. Die organiese eienskappe is d.m.v. die NIRS bepaal. Die elementinhoud is deur middel van atoomabsorpsiespektroskopie bepaal.

DM-produksie het van 0 tot 300 kg N.ha<sup>-1</sup> toegeneem, waarna die toename afgeplat het met 'n vedere verhoging van die stikstofpeil. Die hoogste betekenisvolle ( $p \leq 0.05$ ) DM-produksie is met 'n kombinasie van 300kg N.ha<sup>-1</sup> en agtweeklikse sny-intervalle verkry. Sny-interval het, net soos stikstof, 'n drastiese invloed op DM-produksie. DM-produksie neem toe soos die sny-interval verleng tot die punt waar die plante volwassenheid binne 'n sny-interval bereik. sny-intervalle het 'n verlaging van Dmproduksie tot gevolg. Met hierdie studie was die draaipunt met agtweeklikse sny-intervalle bereik.

In hierdie studie was daar geen betekenisvolle ( $p \leq 0.05$ ) verskille t.o.v. die gemiddelde waterverbruik, tussen die behandelings wat stikstof ontvang het nie. Die hoogste betekenisvolle ( $p \leq 0.05$ ) WVD is met 300 kg N.ha<sup>-1</sup> en agtweeklikse sny-intervalle verkry.

Die totale stikstofinhoud van raaigras neem reglynig toe met 'n verhoging van die stikstofpeil en daal met 'n verlenging van die sny interval. Behandelingkombinasies waarby die stikstofinhoud van die plante moontlik beperkend (te laag) vir diereproduksie sal wees, is uitgewys. Behandelingkombinasies waarvan die stikstofinhoud baie hoog is en moontlik 'n gevaar vir dieregesondheid kan inhou, is ook uitgewys. Die invloed van die behandelingkombinasies op die ware proteïene en NPN samestelling asook die opbrengs en herwinning van stikstof is bspreek.

Baie stikstof en sny-interval het 'n betekenisvolle ( $p \leq 0.01$ ) invloed op die verteerbaarheid van raaigras. Die invloed van sny-interval oorskadu die invloed van stikstof.

Beide stikstof en sny-interval het 'n betekenisvolle ( $p \leq 0.01$ ) invloed op die NDF- en ADF- inhoud waarvan sny-interval die grootste en belangrikste faktor is. 'n Goeie negatiewe verwantskap is tussen die ADF-inhoud en verteerbaarheid van raaigras verkry waar 'n styging van die ADF-inhoud 'n daling van die verteerbaarheid tot gevolg het.

Die resultate toon dat met 'n verhoging in toegediende stikstof, die persentasie P, K, Mg en Ca in raaigras toeneem, terwyl 'n verlenging van die sny-interval tot 'n verlaging in die persentasie elemente tot gevolg het. "Verdunning" van die hoeveelheid element vind in die materiaal plaas.

Die elementverbruik of -opbrengs volg die DM-produksiepatroon. Die elementverbruik a.g.v. 'n behandelingkombinasie kan gebruik word om die onderhoudsbemesting (P en K) te beraam wat vir die groeiseisoen benodig gaan word.

Om die koste-implikasies by raaigras te demonstreer is die verbouingskoste per hektaar en per ton DM bereken. 'n Goeie aanduiding van die ekonomiese waarde van die geproduseerde materiaal word nie verkry deur die verbouingskoste per hektaar uit te druk nie. Die koste per ton DM-materiaal is 'n beter maatstaf. Die koste per ton DM-materiaal daal drasties vanaf 0 tot 150 kg N.ha<sup>-1</sup> waarna die koste weer styg met 'n verdere verhoging van die stikstofpeil. Die behandelingkombinasies wat 300 en 400 kg N.ha<sup>-1</sup> ontvang het, verskil nie betekenisvol ( $p \leq 0.05$ ) van mekaar nie. Diereproduksie moet egter as ekonomiese maatstaf gebruik word aangesien alle fasette van produksie so saamgevat word.

## SOCIETY NEWS

### REPORT ON LOWVELD CO-ORDINATED RESEARCH FORUM HELD AT THORNYBUSH GAME RESERVE

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On Wednesday the 5th July 1995, a Lowveld Co-ordinated Research Forum (LOCORES) field day was held at Thornybush Game Reserve. The day was organised jointly by Ecological Consultancy Services, the Range & Forage Institute and Thornybush Game Reserve. The field day was held to give feedback on the Community Employment/ Selective Bush Clearing Programme currently being run by Thornybush and to share their experience with others. It followed on from the LOCORES field day held in May 1994 (Thomson, Peel & Venter, 1995) where the programme was presented to interested and affected parties for their input during the planning phase.

Forty two people representing 24 organisations attended the field day (comprising six community members, nine managers, 22 researchers, three students and two visitors).

Mr Anthony Grote of Thornybush Game Reserve (TGR) gave an overview of the project explaining how ecotourism could benefit local communities both from an income generation and training point of view. He explained how they had structured the bush clearers into five groups of twenty people each, with each team headed by a Community Contractor (CC). Training was given regarding which woody species should be cut and which areas should be cleared. He explained that a considerable amount of wood had been cut and difficulty was now being experienced in transporting this wood from the field to the fuelwood depot and marketing it. TGR was considering value-added options such as charcoal manufacture and braai wood packs. They had also asked for tenders to transport the wood to Acornhoek for resale to local community members.

A Steering Committee member of the Bushbuck North Development Forum (BNDF), Mr Mandla Soko, said that the role of the BNDF was to ensure that local communities were both involved in projects and benefited from them. The BNDF felt that it was important to encourage the private sector to engage the local communities in employment programmes and to ensure that relevant skills were transferred. If this was done, nature conservation would be accepted as a viable land use system in the Central Lowveld.

A reportback on the costs associated with the programme was given by Mr Frazer Gear of Thornybush (TGR). He explained that as this was a pilot project, the costs were obviously higher than those of future projects. In the eight months that the project had been running, the net expenses incurred were R741 778. This was broken down into R507 601 invested by TGR mainly for tractors, trailers and wages, and R234 177 which had been invested by the Independent Development Trust (IDT) for training, capacity building and consultants. Wood was selling at R30 a bakkie load and was only meant to cover costs, not to make

a profit. The cost of the project would be reduced as the wood in the field was sold ( $\pm$  2 500 stacks of four bakkie loads per stack were ready for selling). The direct costs involved were R824/ha which excluded herbicides. It was also realised that this was not a once-off cost, as follow up treatment of cleared areas (using herbicides or re-clearing) would be necessary in the future.

Charcoal manufacture was being investigated as an option and 800 bags had been produced in a pilot project using a kiln at the fuelwood depot. If the wood was cut, bundled and sold for braai wood, a 900% increase on the wholesale price could theoretically be obtained, but this would depend on a ready, local market for braai wood. TGR was also investigating selling the wood in Gauteng as a replacement for household coal during winter, but transport of this high bulk, low value product was a problem.

The Thornybush programme had supplied jobs to 104 previously unemployed people who had taken back  $\pm$  R32 000 per month to a community that, on average, subsists on  $\pm$  R500 per month for a family of eight. Problems had occurred regarding the payment of wages. Payment was changed from a daily rate (R12 per bushclearer) to a task-based system (R80 per stack of wood produced) after a go-slow strike by the bushclearers. It was felt that the workers should have had individual contracts with the CC's from the beginning of the project. The whole system of remuneration and individual contracts between the CC's and the bush clearers is currently being reviewed.

Because of the excessive wood build up in the veld, it had been decided to halt clearing operations for a period of three months to concentrate on marketing the stockpiled wood. During this period, the CC's would receive intensive training on all aspects of the project, especially financial administration, entrepreneurship and marketing. Wood sales to local community members had increased with the onset of winter and it was felt that this was an ideal time to market the wood.

Dr Nico Smit, of the Department of Agriculture, gave a talk on the use of herbicides in bush clearing projects. Studies had shown that the roots of a tree could account for as much as 9 760 - 29 790 kg/ha which was usually considerably higher than the above-ground biomass. Coppice regrowth competed with the grass layer and, if coppicing was not controlled, one could end up with a worse problem after the bush clearing operation than before. Further studies had revealed that there was no difference between various seasonal applications of Tordon Super, the method of application (spraying versus painting) or the cutting height of the stump regarding the efficiency of this arboricide. Stumps cut to  $\pm$  5cm reduced the amount of Tordon Super/Diesel mixture required and saved on herbicide costs. He emphasised that it was vital to cover the whole stump with the herbicide/diesel

mixture. It is important that the herbicide sprayers/painters are in balance with the bush cutters to ensure the systematic and comprehensive treatment of cut stumps.

The strengths and weaknesses of the project were summarised by Mr Richard Graves of VM Rural Development Services who are responsible for managing the Thornybush project. He identified the strengths as the creation of jobs, income generation and capacity building. Not only were friendships developed between the Community Contractors, the Bush clearers and Thornybush staff, but the way had been paved for similar projects in other conservation areas. The weaknesses of the project were that a good business plan did not exist and estimates regarding the transport of wood, breakdowns, punctures etc. had not been accurate. Communication had not been as efficient as it could have been and wood marketing skills were not in place. The impact of the three month delay had also not yet been fully investigated. It was, however, felt that these problems were common to any pilot project and Thornybush's efforts were commendable.

The people attending were then taken on a field excursion to the wood clearing sites where Mr Harry Maluleke, one of the

Community Contractors, explained how the bush clearing teams had been structured and how the bushclearers had benefitted. He pointed out that the CC's had gained invaluable training and experience and would shortly be able to offer their bush clearing services to other conservation areas and cattle ranches in the Central Lowveld.

Mr Mike Peel, from the Range and Forage Institute (RFI), gave a brief outline of the ecological monitoring programme that they had conducted and highlighted some of the results obtained during the base-line assessment.

Anyone requiring further information on the Thornybush Community Employment/Selective Bushclearing Programme can contact Anthony Grote or Frazer Gear at (01528) 31976 or Richard Graves at (01311) 45011 or 42035.

#### Reference

Thomson C, Peel M & Venter J 1995. Report on Lowveld Co-ordinated Research Forum held at Thornybush Game Reserve. Bulletin of the Grassland Society of Southern Africa 6(1): 5-6.

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### A REPORT ON AN AD HOC MEETING OF SOUTHERN AFRICAN RANGELAND SCIENTISTS AND OTHERS INTERESTED IN SOUTHERN AFRICAN RANGELANDS AT THE V INTERNATIONAL RANGELANDS CONGRESS, SALT LAKE CITY, USA

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An unstructured meeting was convened during the Fifth International Rangelands Congress so that scientists from the southern African region could meet each other, find out who was doing what, the kinds of problems they encountered and to generally share ideas. The meeting took place from 5.00 pm to 6.00 pm on Thursday 27 July 1995 at the Red Lion Inn, Salt Lake City. The following people were present: Harry Biggs (SA), Rina Biggs (SA), Ben Cousins (Chair) (SA), Christo Fabricius (SA), Dave Grossman (SA), Mark Hardy (SA), Urs Kreuter (USA), Angus MacLaurin (Zim), Charles Moyo (Zim), Prisca Mugabe (Zim), Tim O'Connor (SA), Jan Raats (SA), Norman Rethman (SA), Peter Scogings (SA), Ian Scoones (Convenor) (UK), Japie Williams (SA) and Maureen Wolfson (SA).

Four concerns and suggestions seemed to be most apparrant (person who raised the issue is in brackets):

- Communication among researchers in southern Africa (Mugabe)
- Communal rangelands research in southern Africa (Scogings)
- Regional land management forums in South Africa (Grossman)

- Expansion of the Grassland Society of Southern Africa to sub-Saharan Africa (Fabricius)

The issue that tended to dominate the discussion was the difficulty of finding out who's doing what in other parts of southern Africa. It seemed that people working outside of South Africa feel "left out" and non-membership of the Grassland Society of Southern Africa (GSSA) makes it difficult to find out about rangelands research in the southern African region. The availability of an address list of researchers in southern African rangelands in the form of a register of GSSA members was mentioned (Wolfson) and this could help to alleviate the problem somewhat. In this regard, the option of expanding the geographical limits of the GSSA to Sub-Saharan Africa, or even the whole of Africa, was mentioned and the GSSA is investigating this matter (Fabricius). With regard to communal rangelands, the idea of a Southern African Communal Rangelands Network (SACRAN) was suggested (Scogings) and this was well supported by some attendants. Unfortunately, time did not allow the issue of land management forums to be discussed further.

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## SOUTHERN AFRICAN COMMUNAL RANGELANDS NETWORK (SACRAN)

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### Communal rangelands

The interest in communal rangelands in southern Africa, where traditional African agro-pastoralism is practised, has increased dramatically over the last five years. The extent of communal rangelands in southern Africa covers a wide diversity of climate, geology, geomorphology, soils and vegetation and are often found adjacent to commercial ranching enterprises and nature conservation areas, making functional comparisons possible.

### Active groups

There are various groups of researchers and developers active in communal rangelands to a greater or lesser extent in southern Africa. Each group has experience at different temporal and spatial scales and each has different emphases. The groups include ecologists, sociologists, economists, agricultural scientists, botanists, zoologists, hydrologists, medical/health scientists, geographical scientists, etc. The Southern African Communal Rangelands Network (SACRAN) is a sub-continental network being formed to integrate research and development activities conducted by various people and organisations in the communal rangelands of southern Africa. The focus of the network is driven by the need that exists for a predictive understanding of communal range-land systems, relative to commercial or non-communal systems, so that flexible management and development strategies can be developed and adapted to fit the dynamic ecological and sociological patterns of rangelands.

### Goals

Among the first goals of SACRAN is a mailing list and a

state-of-knowledge synthesis of communal areas in South Africa. Particular points of interest for SACRAN are:

- Perceptions of people living on communal rangelands towards the natural resources, ie, indigenous knowledge
- Patterns of communal resource utilisation and key processes in communal rangeland systems relative to commercial or non-communal systems
- Impacts and sustainability of natural resource utilisation in communal rangelands, compared to other forms of rangeland utilisation
- Development, in collaboration with rangeland users, of management practices that promote the sustainable utilisation of African rangelands

### International links

The network, SACRAN, can link to the Global Change and Terrestrial Ecosystems (GCTE) core project of the International Geosphere - Biosphere Programme (IGBP) through the GCTE's Global Change Impacts on Agriculture and Forestry Focus 3, which aims to improve the ability to predict global land-use and climate change impacts on key agronomic species and on managed forests, pastures and rangelands, including communal rangelands.

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## REPORT ON ATTENDANCE OF THE GRASSLAND SOCIETY OF SOUTHERN AFRICA, CONGRESS 30 IN KROONSTAD, FREE STATE (16-19 JANUARY 1995)

MC Mbuti & M Mapuma

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The Congress opened with an overview of developing agriculture and agricultural research for the future. Topics within developing agriculture included: land acquisition, ownership and utilization; the communal farmer and land reform; and, the problems facing the emerging farmers. The land issue is high on the government political agenda and due to cultural complexities, people with different value systems have different ideas on the land issue. Land acquisition and ownership is the most important issue facing South African agriculture, with particular reference to historically disadvantaged communities. Discussion on communal farming and land reform highlighted the problems facing communal farmers. These include: inadequate infrastructure, agricultural policy paradigms favouring food sufficiency rather than food security, unsecured tenure etc. It was noted that land reform will enhance the entitlement of food security by expanding food production for home consumption. Land reform should not only deal with inequities between black and white, but also with

the inequalities of land use as currently practised.

Other themes of the Congress involved cultivated pasture production, cultivar evaluation, animal performance on veld and cultivated pastures, vegetation dynamics, effects of woody plant thinning on growth and reproduction, and effects of fire intensities on bush. A field excursion was made to the Semick Bonsmara Stud Farm.

A poster entitled "The effect of stocking rate on the browsing behaviour and species selection by goats" was presented by Mr M. Mapuma. Numerous researchers showed interest in the work presented. As the first two final year students majoring in animal and pasture science at the University of Fort Hare to obtain such funding, we are grateful to the FRD/UDP for funding our attendance at this congress.

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## A Report on the Eastern Cape Range Monitoring Workshop, 18-20 July 1995, Morgan's Bay Hotel, Eastern Cape

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### Introduction

Range monitoring has rather a poor history in South Africa. If one argues that adaptive management is the only intelligent and sensible way of managing our rangelands, then monitoring is essential. The Eastern Cape has an extremely diverse vegetation and a rich pastoral history which is ingrained in the people that occupy the land. If ecologists and range scientists are to impact on the future trends and use of the vegetation then we must have some scientific basis to argue for or against certain land use practices being applied by the land users. This workshop was a result of these circumstances and is directly linked to the end of the Iqunde Project which was initiated 6 years ago to establish user orientated range condition assessment techniques and a range monitoring program for the Ciskei Region. The workshop was funded by the University Development Program.

The objectives of the workshop were:

- To advertise and promote Fort Hare as an active participant in the field of range monitoring.
- To establish links with other local, national and international institutions that have range monitoring as an activity.
- To evaluate and further develop the present range monitoring program in the Eastern Cape Region

### Sessions, Presentations and Discussions.

Three sessions were held where a number of people gave key presentations. These proceedings will be available at a later date. After the presentations, discussions were held, and this process was facilitated by Mrs Jane Coleman.

#### Session 1: Eastern Cape, History and Present Area.

The Transkei region is an area where more work needs to be done and it would seem that there is great interest in developing monitoring programs for this region. Present political and structural changes in the Eastern Cape will influence the patterns of land use, so there is a need for range ecologists to become involved in the new plans. These changes are also affecting the Dept. of Agric. and although there could be a negative impact in the short term, there could also be new opportunities created. Mike Coleman made it very clear that range monitoring must be seen in relation to other land uses.

#### Session 2. Technical Aspects of Range Monitoring

No single technique will be adequate for all land users. All land users should be encouraged to become involved in range monitoring. Although researchers and technical staff of the Dept. of Agric, Cape Nature Conservation and the Universities

in the Eastern Cape will do most of the data collection, individual farmers, and other interest groups should also be encouraged to contribute to the monitoring data base. Remote sensing seems feasible for monitoring changes in biomass, bush density and erosion but not for changes in grass species composition. The remote sensing work done in Western Australia (WA) by Jeremy Wallace and Alec Holm was clearly applicable to some parts of the Eastern Cape. The possibility of using the remote sensing group that is based in Perth, WA, will be actively pursued in the future.

#### Session 3. Data Analysis and Interpretation.

End products must be developed for the land users and other authorities. This was seen as the major objective of any range monitoring program. This conclusion came after hours of debate. Noelene Duckett and Chris McCartney both presented very interesting techniques for data analysis and presentation. This was seen as an area for co-operation with other National and International monitoring groups.

#### Conclusions

- There is a need for an indigenous range monitoring network in the Eastern Cape, which has now been called Jongidlelo, a Xhosa word for "Veld Watch". The executive for this network are, Niel Tainton, Felix Hobson, Andrew Beckerling and Alec Holm.
- The network should aim at being supportive and inclusive, not prescriptive and exclusive.
- The network should try and link into other national and international range monitoring programs, such as the WA Range Monitoring System, and the Global change groups.
- Biennial workshops should be held to synthesise and report on range condition in the Eastern Cape. Future workshop's should avoid getting bogged down in monitoring techniques. The next workshop will be held in 1996.
- There should be active inclusion of other disciplines, especially social scientists.
- There should be easy access to data generated from the various range monitoring programs. This data base was seen as an immediate priority.

#### Thanks

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