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Grassroots

Newsletter of the Grassland Society of Southern Africa

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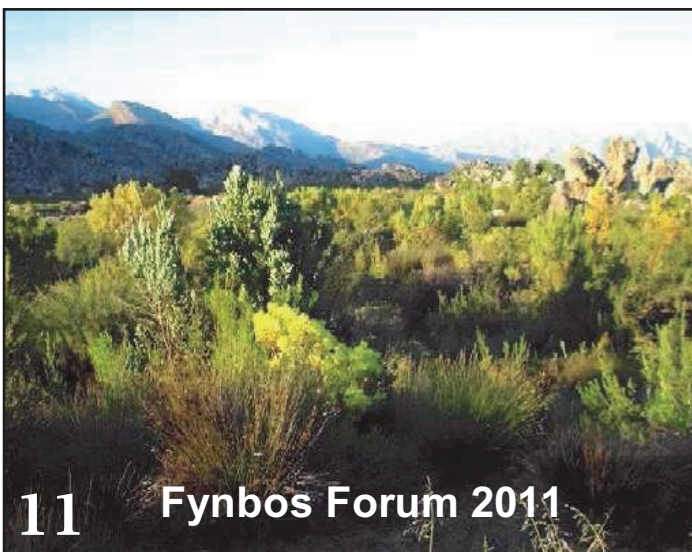
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New Members

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Graham Harding, Invader Plant Specialists
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Grassroots

November 2011



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Editor's Note

Dear Readers

Welcome to the fourth and last edition of Grassroots for 2011. Not so long we were talking about 46th GSSA Annual Congress, it came and passed and another year is gone. The focus for the Society is on the 47th Congress in the Western Cape.

Time is moving very fast, we should all start preparing papers and posters. The talk of the moment is the 17th Conference of the Parties of the United Nation Framework Convention on Climate Change to be held in Durban, South Africa from 28 November to 9 December 2011. The Minister of International Relations and Cooperations Ms. Maite Nkoana-Mashabane will the President of COP17, which aims to produce a legally binding agreement on greenhouse gas emissions as part of the second commitment of Kyoto protocol.

There are many predicted effects of climate change on southern Africa and the world. The question for the Society is, are we doing enough on climate change related research? One of the feature articles in this issue of Grassroots is about the life of the late Wangari Maathai – the first African female to win the Nobel Peace prize and the founder of the Green Belt Movement.

I would like to wish all GSSA family a happy and safe festive season.

Julius Tjelele

Post Graduate Opportunity

It is a pleasure to inform you that Switzerland is offering ten university bursaries to South African students for the academic year 2012/2013.

Preference will be given to doctoral and post-doctoral application but does not exclude masters applications.

These bursaries are granted for studies and research at Swiss Universities and Federal Institutes of Technology (you will find a list of Swiss Universities and Federal Institutes of Technology on www.swissuni.ch). Candidates should not be older than 35 years (born after 1 January 1976).

It is recommended that the applicants carefully read the attached "Application guidelines" as well as the application requirements specified on the website of the State Secretariat for Education and Research:

http://www.eda.admin.ch/eda/en/home/rep/afri/vzaf/ref_visinf/viszaf/takch.html

Proficiency of French, German or Italian could be helpful but not essential as most courses in Switzerland are using English as the main language.

Each application form (attached) and all the annexed documents required should be send in triplicate in the same order as stated in the "Application guidelines".

If the candidate has passed her/his exams, but not yet received the diploma, an original document officially stamped by the University of graduation, stating that the candidate has been successful and informing of the date when the diploma will be received, must be enclosed. The complete application files should be submitted to the Embassy not later than October 31, 2012.

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Upcoming Events

Farm Planning Course

Date: 21-30 November 2011

Venue: Willem Prinsloo Agricultural
Museum, Pretoria Region

Contact: Jolene

Tel: 014 717 3819

Website: www.alut.co.za

17th Conference of the Parties (COP 17)

Date: 28 November -9 December 2011

Venue: Durban, South Africa

Website: www.cop17-cmp7durban.com

NZ Conference of the International for Conservation Biology

Date: 05-09 December 2011

Venue: Auckland

E mail: 2011@combio.org

Website: www.conbio.org

11th International Conference on Goats

Date: 24-27 September 2012

Venue: Gran Canaria, Spain

Contact: Dr. Juan Capote

E mail: jcapote@icia-world.com

47th Annual GSSA Congress: Advancing Rangeland Ecology and Pasture Management in Africa

The Annual Congress will be hosted by the Western Cape Province at Club Mykonos in Langebaan from 16 to 20 July 2012. The preliminary programme, planned mid- and post-Congress tours, registration fees and other information is now available at www.grassland.org.za

The Annual Congress will be hosted by the Western Cape Province at Club Mykonos in Langebaan. The Greek-themed resort is on the shores of the Langebaan Lagoon about 120kms north of Cape Town (airport shuttle available).

The town of Langebaan was originally a whaling station but has been transformed into an idyllic seaside destination for holidaymakers. The Lagoon is part of the Cape West Coast Biosphere Reserve, is a RAMSAR site, temporary home to migratory birds from as far afield as Russia and nursery to a population of Southern Right whales.

The Society is looking forward to a Congress where everyone can stay together for easy networking and experience the magic of the West Coast!

The Effects of Climate Change on South Africa

CMP7 News Centre

If nothing is done about climate change and we continue, among other things, to burn fossil fuels and chop down our forests at current rates, the followings are predicted for South Africa

South Africa's coastal regions will warm by around 1-2°C by about 2050 and around 3-4°C by about 2100

South Africa's interior regions will warm by around 3-4°C by about 2050 and around 6-7°C by about 2100.

There will be significant changes in rainfall patterns and this, coupled with increased evaporation, will result in significant changes in respect of water availability, e.g. the western side of the country is likely to experience significant reductions in the flow of streams in the region.

Our biodiversity will be severely impacted, especially the grasslands, fynbos and succulent Karoo where a high level of extinction is predicted.

Small scale and homestead farmers in dry lands are most vulnerable to climate change and although intensive irrigated agriculture is better off than these farmers, irrigated lands remain vulnerable to reductions in available water.

Some predictions suggest that maize production in summer rainfall areas and fruit and cereal production in winter rainfall areas may be badly affected.

Commercial forestry is vulnerable to an increased frequency of wildfires and changes in available water in south-western regions

“Because of our already poor health profile, South Africans are specifically vulnerable to new or exacerbated health threats resulting from climate change.”

Rangelands are vulnerable to bush encroachment which reduces grazing lands. Alien invasive plant species are likely to spread more and have an ever-increasing negative impact on water resources.

Although strong trends have already been detected in our seas, including rising sea levels and the warming of the Agulhas current and parts of the Benguela, we are not yet sure what impacts these could have on our seas, the creatures living in the seas or on the communities dependant on the sea.

Because of our already poor health profile, South Africans are specifically vulnerable to new or exacerbated health threats resulting from climate change. For example, some effects of climate change may already be occurring due to changes in rainfall (droughts and floods) and temperature extremes and Cholera outbreaks have been associated with extreme weather events, especially in poor, high density settlements.

Agricultural Business Chamber hosts Workshop on Land Reform Green Paper

Dr John Purchase at the ABC.
Email: john@agbiz.co.za

The Agricultural Business Chamber (ABC) hosted a most successful Workshop on Tuesday, 27 September to develop agribusiness' position on the Green Paper on Land Reform. Mr Sunday Ogunronbi, Chief Director of Policy Research and Legislation for the Department of Rural Development and Land Reform, introduced the Green Paper to the Workshop and clarified issues around government's thinking and rationale behind the paper.

Prof Nick Vink, Head of the Department of Agricultural Economics at Stellenbosch University and an expert on land issues and rural development, assisted the Working Group in developing its position and options.

Participants identified and discussed the major deficiencies in the Green Paper from an agribusiness perspective, such as: that land ownership should be the end result - not the point of departure; it should emphasise that it will be impossible for everybody to have access to land; the challenge of the global agro-food system should be taken into account;

and that the capital base and land market must not be compromised in order to ensure optimal economic activity and food production.

The international experience indicated in the Green Paper is recognised, however the agribusiness sector is of the opinion that Land Reform should be managed within South African context.

ABC will actively participate in the six National Reference Group (NAREG) Work Streams established by the Department of Rural Development and Land Reform, and will involve members for certain expertise.

The ABC will finalise a position paper to articulate ABC's position, which will be circulated to ABC members for comment. The final paper will be mandated at the next ABC Council Meeting on 15 November 2011, which falls within the 60-day comment period provided for in the gazetting of the Green Paper.



Minister Meets Labour for Climate Talks

Bua News

South Africa's International Relations and Cooperation Minister Maite Nkoana-Mashabane says the role of labour movements in helping government to mitigate the effects of climate change will be crucial as South Africa prepares to host the COP 17 climate summit later this year.

Nkoana-Mashabane met with various labour representatives on Monday, headed by the country's two major unions - the Congress of South African Trade Unions (Cosatu) and Federation of Unions of South Africa (Fedusa). According to the department, the meeting was called to brief labour on government's position ahead of the Durban climate conference.

South Africa is this year's host to the Conference of the Parties to the United Nations Framework Convention on Climate Change, and the country hopes to follow on the relative progress made at last year's negotiations in Cancun, Mexico. It is expected that approximately 20 000 people will attend the COP 17 event.

Experts have argued that previous climate talks have been weakened by the lack of a formal role for businesses and labour.

Authorities say there is a growing appreciation of the emerging role that labour and business can play in mitigating and adapting to climate change. We want to work with you because together, we believe we can address common concerns and without labour, we cannot achieve adaptation and mitigation goals, Nkoana-Mashabane said. The meeting with labour follows similar gatherings between government, the business sector and civil society in the past few of weeks.

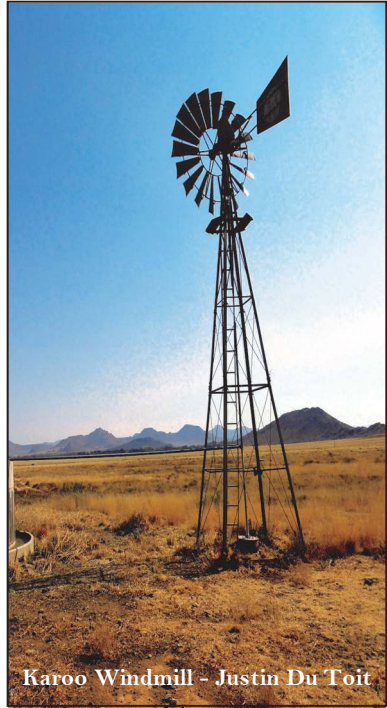
We are of the view that the majority of people who will have to adapt to climate change is the workers themselves and it is important that we have many robust engagement in ensuring that we bring out the strongest Team South Africa to take us to Durban, said Nkoana-Mashabane. She highlighted the need for trade unions to mobilise their members towards a common climate deal that will benefit all of us.

People are looking at us as country and it is therefore imperative that when we leave Durban, we have a fully fledged adaptation committee that labour can be part of, COP 17 presented South Africa's labour movements with an opportunity to address the concerns of workers on issues of climate change that have led to massive job cuts in the agricultural sector.

We are all aware that the changes in environment are directly affecting the agricultural sector, particularly subsistence farming. It is therefore crucial for government and labour and indeed business that we work together to find solutions to the current challenges that we are facing as a country and as the world, Nkoana-Mashabane said. Cosatu's David Macati accepted that the involvement of labour organisations in climate negotiations was crucial to address both mitigation and adaptation.

Climate change talks start and end with the unions. Any decision that is taken after the talks directly affects the workers and we say you don't do anything for us without us, he said. The conference in Durban takes place at a time when the 1997 Kyoto Protocol, which bound nearly 40 countries to specific emission reductions targets, is set to expire in 2012.

Both labour and the department agreed that the Durban summit should, among others, result in countries signing up for a second commitment period to cut emissions beyond 2012.



“We are all aware that the changes in environment are directly affecting the agricultural sector, particularly subsistence farming.”

SAEON, CIRAD and SANParks Team up to Resist the Alien Invasion of the Kruger National Park

Rob Taylor and Dr Dave Thompson, SAEON Ndlovu Node

Invasion biology has become a hugely important scientific field worldwide as invasive species increasingly threaten to decrease biodiversity and modify ecosystems. The same is true in South Africa, where plants establishing outside of their natural distribution ranges represent one of the major threats to ecosystems and their functioning. For these reasons, SAEON considers alien organisms - both plant and animal - to be among the most important agents of anthropogenic change.

Areas dedicated to the protection and conservation of natural ecosystems and biodiversity, such as the Kruger National Park (KNP), are particularly threatened by alien plants which establish along watercourses, 'escape' into the protected area from adjacent gardens and are inadvertently introduced through road hardening. It is therefore imperative that more be done to recognise and prevent the spread of alien plants in this, and other parks. SAEON's Ndlovu Node is collaborating with members of Scientific Services (South African National Parks) and the French Centre for International Cooperation in Agronomic Research for Development (CIRAD)

in compiling a database of the 400+ alien plant species - from notorious Category 1 invaders to ornamentals currently restricted to gardens - which are known to occur within KNP. The outcomes of this collaboration will be detailed descriptions (including their invasiveness, habitat, origin, vernacular names and documented control methods) of as many of these alien plants as possible, supported by clear photographs and illustrations of various diagnostic plant features.

Interactive Identification Tool

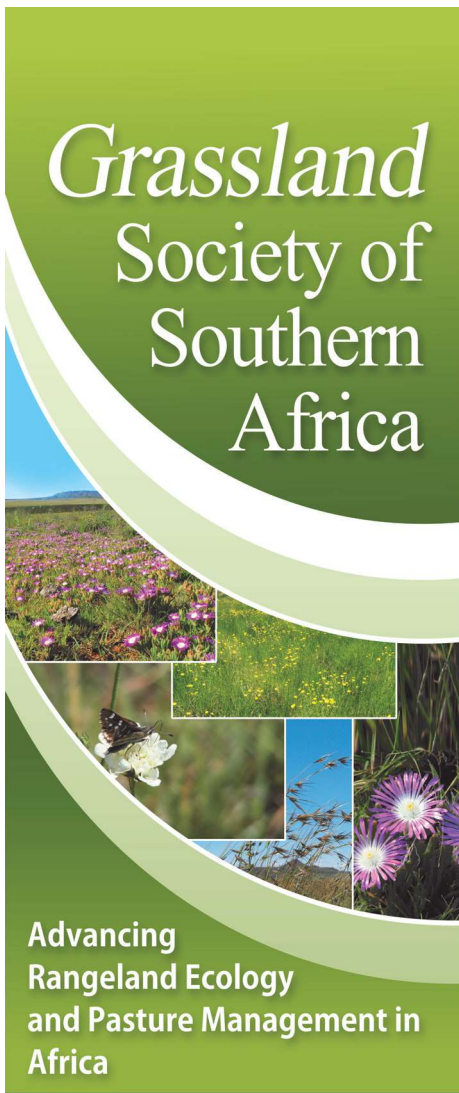
Unique to this project will be the Phase 2 development of an interactive identification tool (IDAO) from the 400-odd species accounts. The IDAO technology (a multimedia approach to computer-aided identification) was developed by members of the CIRAD team and uses an identikit to reconstitute species identity. This process has already been used to produce similar resources for the weeds of the Indian Ocean Islands (Principales mauvaises herbes des îles de l'Océan Indien; Advent-OI) and for other places such as Central Africa, Laos, Cambodia and New Caledonia.

An online alien plant database is being developed in an effort to curb the spread of invasive species. The 'Pl@nt-Inv Kruger' collaboration is a further refinement and validation of this technology. Ultimately the simple platform produced will guide users towards identifying an unknown alien plant through a series of step-wise choices and simple schematics concerning morphological, habit and habitat characteristics. Final identification is based on the similarity (expressed as a ranked percentage probability) of the unknown specimen to so-called 'type' specimen information databased during Phase 1 of the project. Pictures and text can then be accessed to confirm the identity of the alien plant.

Open Source and User Friendly

In keeping with the mandates of SAEON, KNP and CIRAD, the IDAO-associated software and 'raw' database will be open-source and freely available online to all interested parties and potential users. It is also planned for the application to be compatible with a range of mobile electronic storage devices such as smart phones, PDAs and tablets, thus allowing for easy and convenient use under field conditions. Further, it will be linked to a web-based collaborative platform where people can share information, knowledge and questions on invasive plants. This 'one-stop' product will assist managers, conservationists and technical crews within Kruger Park and beyond, to identify alien plants and will suggest appropriate methods for eradication in situ.

SAEON News



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and Pasture Management in
Africa

The graphic features a collage of nature photographs including a field of purple flowers, a butterfly on a white flower, a field of yellow flowers, and a close-up of purple flowers. The text is overlaid on a green background with a white curved line.



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Fynbos Forum 2011 Fynbos and Human Heritage

George Sekonya, Intern, SAEON Fynbos Node

Picturesque Still Bay provided the venue for this year's Fynbos Forum, which attracted some 250 local and international delegates. Among the international delegates were SAEON-sponsored guest Dr Nathalie Philippon (France), Professor David Ackerly (United States), Professor Curtis Marean (US) and Martina Ernszt (Germany).

The Forum was held at the Still Bay community hall on the banks of the Goukou River along the Southern Cape coast. The theme for this year's event, "Fynbos and human heritage", was reflected in the Forum's poster sessions, workshops, keynote address and symposium.

The Forum plays a critical role in the evaluation of scientific knowledge and research, which involves taking into account various aspects of conservation such as socio-economic issues, resources and institutional capacity. This is important especially when dealing with issues which require a holistic approach such as alien invasive species management and control.

This year attention was focused on climate change, alien invasive species, sustainable resource use, restoration ecology and public participation in conservation.

A good take-home message for delegates was the large-scale conservation initiatives undertaken by the community



The staff of SAEON's Fynbos Node participated in the Forum under the leadership of Node Manager Dr Nicky Allsopp. Nicky and Victoria Goodall, the node's Data Manager, presented short papers titled "Can we use remote sensing to monitor invasive aliens in Sand Fynbos?" and "Analysis of long-term trends in a fynbos catchment" respectively.

Microclimates, climate change and conservation

Professor David Ackerly from the Department of Integrative Biology at the University of California, gave an interesting talk titled "Microclimates, climate change and conservation", in which he emphasised the importance of small-scale environmental monitoring. He highlighted the relationship between topographical heterogeneity, microclimate variation, plant dispersal potential and climate change, and the niches that can be provided by small-scale climate variability over short distances. This small-scale variability may provide habitat that enables plants to survive in patches across broad landscapes with the changing climate.

The Forum exhibition was well supported by local schools and the general public. Among the exhibitors were the Hessequa Heritage Initiative, WESSA's Eco school exhibition, the Hessequa Melkfontein Initiative, Hessequa Henque waste recycling project and the Still Bay Marine Protected Reserve. An afternoon devoted to field trips normally represents the highlight of the Forum.

This year was no exception, with nine field trips scheduled for the day. This saw delegates venturing out to see what Still Bay and the surrounding areas have to offer in terms of conservation, tourism and scientific research.

Local Conservation Initiatives

A good take-home message for delegates was the large-scale conservation initiatives undertaken by the community. Local Conservationist Janet Naudé gave an overview of Still Bay's conservation history, challenges and highlights. Most of the conservation initiatives are community-based and local people are actively involved through volunteering in the conservation of their rich natural and cultural heritage sites, which include the Still Bay Conservation Trust and the late Dr Tol Pienaar's Herbarium.

SAEON News

izimmermann@polytechnic.edu.na



The Auas Oanob Conservancy Brainstorms Rangeland Rehydration at Farm Krumhuk EMU style!

Hugh Pringle¹, Ibo Zimmerman² and the Auas Oanob Conservancy, Namibia

¹Ecosystem Management Understanding™, Alice Springs, Northern Territory, Australia; ²Polytechnic of Namibia, Windhoek

Introduction

On the 21st of January the Auas Oanob Conservancy (AOC hereafter) held a field day based on the previous four days work planning landscape rehydration at Farm Krumhuk and reviewing work commenced in 2007 at Farm Lichtenstein Sud and reported on previously in *Grassroots* (Pringle et al. 2009).

This AOC initiative stems from an Ecosystem Management Understanding (EMU)[™] mapping workshop in 2003 held at Farm Claratal. There, six farms were represented in mapping key land management information on a succession of clear overlays that brought each farm to life as an ecosystem with patterns and processes interacting as the natural resource. This baseline mapping and field visits and discussions clearly showed bush encroachment and gully erosion are increasing at the expense of wildlife, livestock and businesses.

The Proceedings of the Day

The introductory presentation of the participatory model for the Golden Aue

The host farmers welcomed everybody and then introduced Dr Hugh Pringle (HP hereafter) from the Ecosystem Management Understanding (EMU) Project[™] in Australia. Hugh described how together with the farmers a model of the “Golden Plain” catchment had been developed, with key process patterns and intervention sites mapped on clear overlays over Google Earth images at the catchment and then local level.

Figure 1 shows the Golden Plain and our field day stops and Figure 2 is an example of a more local image, in this case stop 2, the gully head cutting back to Vlagte Dam in Figure 1. The Golden Plain is a wide valley with a vlei in its widest lowest point before it becomes a narrow, still seasonally waterlogged valley floor carrying excess surface water to the next wide open plain. It has very gently sloping (<1%) lower valley sides and slightly more sloping pediments (1-5%) adjacent to steep, high mountains of the Auas Ranges system.

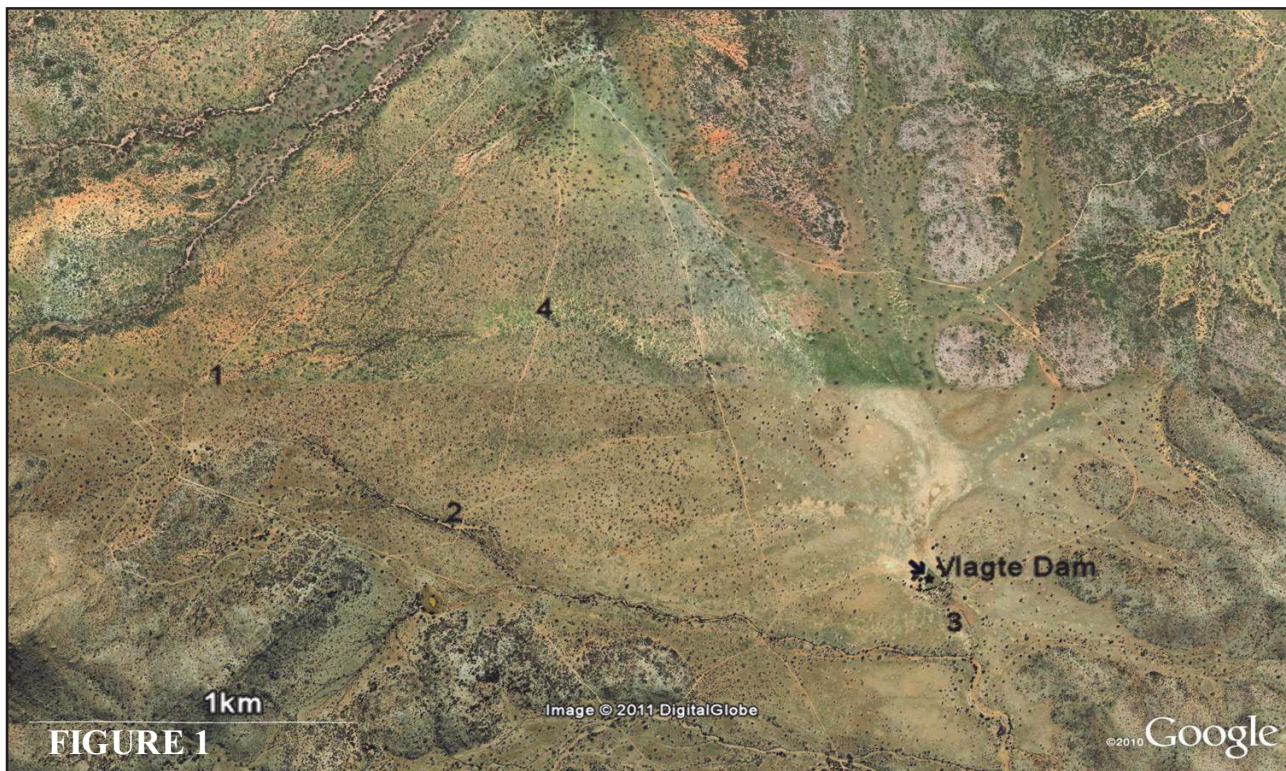


FIGURE 1
 Google Earth satellite images of the Golden Plain on Farm Krumhuk, south of Windhoek, indicating the numbered sites visited during the field day.

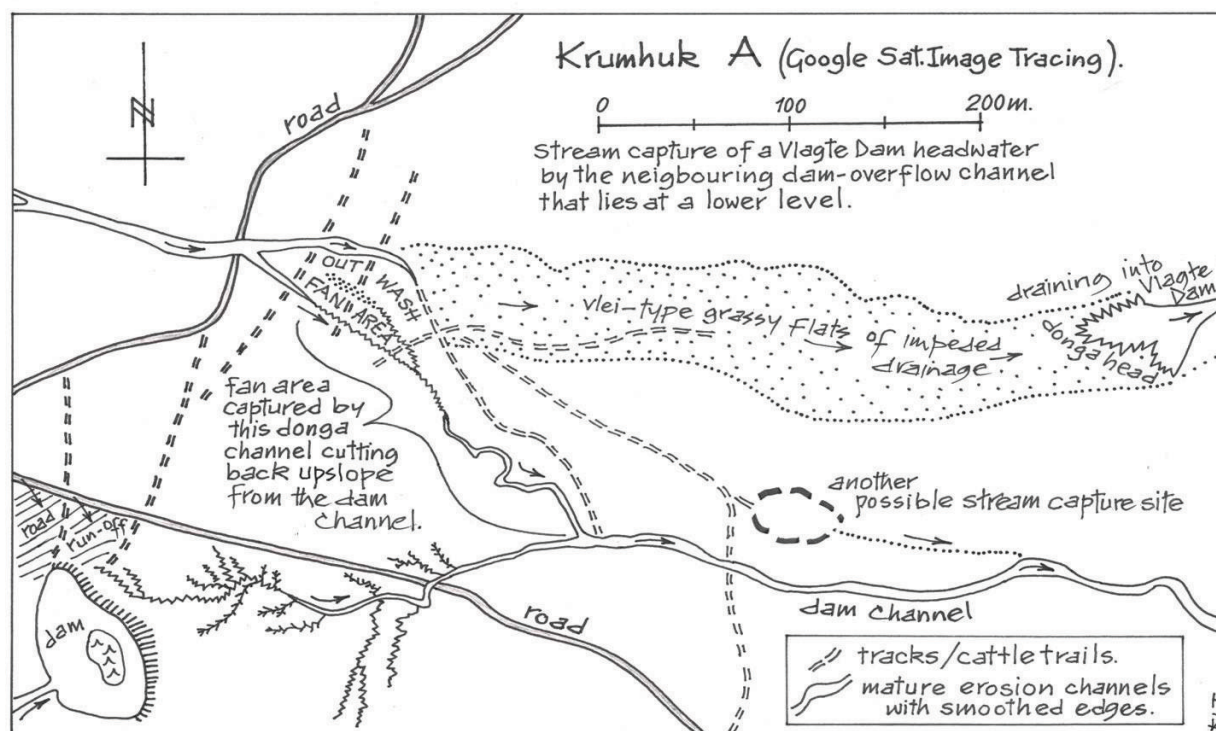


FIGURE 2
 Tracing of Google Earth satellite image, kindly drawn by Ken Tinley, zoomed into Site 2 (see Figure 1).

A donga (gully) had cut through a narrow valley floor between mountains that connects the Golden Plain to the next large open, seasonally inundated plain. This is the primary incision of base levels (the lowest point of all areas up slope) and is in places over three metres below the old valley floor level. Valley side flows now “waterfalling” over the side faces of the primary donga have caused lateral (secondary) dongas to cut back wherever flows are strongest because the water tumbling over the “waterfall” donga edge undercut it and the top eventually becomes too heavy and collapses into the primary donga floor and is washed away to the next plain or farm. When this happens the new donga head attracts more valley side water and the head accelerates its way up the valley side as it increasingly draws water to it as the easiest route down slope.

Where animal paths cross the lateral gully head from an upslope angle, they can cause yet another gully head to develop from the same process (a tertiary donga). This can be repeated further, eventually creating a “canal” system that effectively drains what was once a persistently waterlogged broad valley system. One way of looking at this is that a healthy system supporting water-loving grasses becomes a tiled roof (the uplands and areas between dongas) with effective downpipes supporting bush species that like frequent, but short periods of high soil moisture (Pringle and Tinley 2003, Tinley 1982, 2001).

In several instances one donga had cut into another donga that was slightly higher than it (often an old track that hadn't cut back from the primary donga but been incised by machinery and vehicle use in wet weather) and had thus “stolen” that donga's normal flows because the “thief's” base level was lower than the old track's base level where they met. This is catchment “piracy” at a local scale.

Stop 1: a gully head fed by a track creek

Proceedings started with a welcome from the hosts of Farm Krumhuk, followed by a brief description of the previous days work planning restoration on the farm by Hugh Pringle and the farmers. One of the Krumhuk farmers, Ralph Ahlenstorf, observed that he knew each problem before this exercise, but he wasn't aware how all of the issues were connected and that through the EMU Project™ he now had a clear idea of how to prioritise and sequence restoration works. The planning used the principles developed by Ken Tinley and Hugh Pringle in southern Africa and Australia (Tinley and Pringle 2006). This approach emphasises the drainage basin or catchment as the key organising unit in terms of patterns and process context. Any area of interest is assessed first in its wider catchment(s) context. The key patterns and processes are mapped and then the “problems” so that problems are appreciated in their broader process context. The process context also guides repair planning.

We had some really good discussions about what to do with the gully head. It was accepted that it was sucking the landscape dry and favouring broomdoering and acacias over grasses. One idea was to put a few lines of anchored bush above the head to slow water. This might not suffice, but it would help slow water before it reached whatever more direct work was done. As the head was up to 2m deep in parts, it was thought that bush packing the lip and base would not suffice and that the head had to go.

The two main options were to either use enclosed cattle (preferably bulls, but whatever is most practical) or a grader or bulldozer to reshape the head into a smooth, gently sloping surface. If machinery was to be used, it would probably be useful to then bring in cattle for a short duration to bring in nutrients and stabilise the area. Otherwise the reshaped area would need to be protected by a check bank, as long as viable release points could be planned for checked surface flows. It was also suggested that placing cut bush on the reshaped surface might help protect against water and wind erosion and perhaps act as nursery seed traps.

The option of putting in a check structure to release flows through the central, lowest part of the head was also considered and regarded as the most expensive and most time consuming approach.

The host farmers are considering all of these options and will make a decision about which combination to implement. However, rediverting flows away from the head is a given and will require machinery, so it is likely that the head will be reshaped at the same time.

Stop 2: A lateral from another gully steals flow from a floodout system's channel

The second stop was at a point where a gully had cut back from another deeper gully receiving dam overflow. The secondary (lateral) gully had cut back into a natural drainage line that previously flooded out into the Golden Plain. Now almost all water went in a straight line (it may have been an animal path before the water was turned onto it) to the dam's donga. Everybody agreed that the natural flooding out flow needed to be restored, but exactly how resulted in quite vigorous debate. On the one hand, one of the host farmers wanted to block the lateral gully with anchored tyres. On the other, several people favoured a less obstructive approach using suspended bush filters that would still allow some water through, but make the original path a more favourable path for incoming flow. There was general agreement that the incoming flow should be slowed with bush filters above the key intervention site. There is a gully head below the original floodout channel that will need to be stabilised before more water

is returned to the natural floodout system by the interventions discussed by participants. For HP, it was interesting to see how all participants saw bush filtering as a key tool in repair work. This is not generally the case in Australian rangelands where pastoralists often regard the process as too time consuming and requiring ongoing maintenance. They tend to prefer the use of graders and bulldozers and the use of a range of bank structures to check gully heads and slow and spread water (Purvis 1988). The cost of labour is far higher in Australia.

Stop 3: The Vlagte Dam donga

The Vlagte Dam was put into a swampy part of the Golden Plain. Its narrow spillway leads to, and has driven the progress of, a gully head that probably started at a watering point in a pinch point where the Golden Plain overflows through a narrow break in the surrounding mountains. The gully probably formed as a result of animal paths and wagon or vehicle tracks. It is this gully, with its head about 100m below the dam spillway, that has driven the network of lateral secondary dongas now taking over what was seasonally inundated, channel-free terrain upslope. The heavens erupted as we alighted the vehicles, but some of us went out and saw how the gully head was draining the surface water.

A parallel, slightly higher lateral gully head quickly dried up, but the main gully head continued to have waterfalls as we left...all of that water would normally have stayed in the landscape.

The biggest waterfall was fed by an animal path, a really effective drainage feature! There was freshly detached soil with green grass amongst it below the head's waterfalls indicating a head retreat of between 3 and 5 metres from the 85mm rain in 36 hours previously.

The fact that the lateral head drained the slightly higher part of this seasonally inundated landscape so quickly and that the main head continued to operate as a series of waterfalls clearly indicates both the dehydrating process and its spatial context. The gully head system is slowly reducing the area of seasonally inundated soil and opening it up to scrub encroachment as seedlings will no longer be drowned (Tinley 1982).

All participants believed the head needed to be broken down and there was some agreement that herd impact should follow. Machinery will probably be needed to do the preliminary reshaping. There was again discussion about herd impact and our host, Ralph Ahlenstorf indicated that he wanted herd impact to be viewed as an ecological tool and not just a physical treatment of the soil. In particular, he wanted to see herd impact build the soil ecosystem through input of nutrients and desirable seeds.

It was felt that the reshaping of the landscape needed to stop short of the first major tributary (lateral) donga until it has been calmed above at identified critical places. However, the plan is to progressively stabilise all parts of the Golden Plain...to put the plug back in the bath (Pringle and Tinley 2003).

Stop 4: An actively sheeting floodout system

This site receives distributary (floodout) flow from the gully system at stop 1. It is characterised by a series of interconnected erosion cells (Pickup, 1985) that effectively drain this previously highly productive plain. It is a “leaking landscape” now. Quite clearly, the tracks through it are driving the dehydration as evidenced by the strong flows in the track where we stopped and the lateral microterraces (wide low erosion faces) eating back upslope from it.

The repair of the road creek was seen as a critical component of the local repair strategy in its wider Golden Plain context. “Let it go, let it flow” naturally. However there was some vigorous debate as to what needs to be done to address the landscape leaking and restore desirable perennial grasses. One idea was to do contour-aligned light brush packing. Another was to use herd impact and then rest from grazing and yet another was to fence all large grazing animals out.

The latter suggestion was not so strongly supported, but the former two, perhaps in combination, but at least starting with herd impact and protection, were supported.

The key issue of timing of herd impact was then discussed. It was agreed generally that August to October was a period of potentially destructive storms to avoid. However, some participants suggested that herd impact be implemented after first rains and others that it be implemented before first strongly predicted rains. The latter is riskier; there is a chance of no rain and exposed disturbed soil. It would be interesting to see which strategy works best in terms of ecological succession and the capacity to “flip” the system.

Concluding Comments

This community-based EMUTM initiative focused on the gradual dehydration of key bottomlands (vleis, floodouts, etc) and the depositional landscapes upslope of them (e.g. dambos and other upland valley floor habitats). It was widely acknowledged that gullies (“dongas”) are spreading and thus more effectively draining key productive areas that should be seasonally inundated and thus support highly productive grasslands.

A view that gullies do not represent a major problem in Namibia because there are so many dams has been expressed to us by scientists working in Namibia. Indeed, HP's contribution from BIOTA to the Namibian National Rangeland Management Strategy had to be withdrawn and submitted independently on that basis. The reality is quite different; dam overflows represent a key accelerator of landscape incisions below. Dam's can cause major dongas wherever there is a "nick point" below upon which to work. These "nick points" are often farm tracks or cattle paths (particularly near poorly located watering points).

It would appear more attention is paid to harvesting surface flows than to the redistribution of excess (the overflow) when dams are planned and built. Fortunately, the scientists who rejected HP's input agreed to explore the issue further and there may be an opportunity to investigate these key patterns and processes through the Regional Science Service Centre for southern Africa.

This pattern of catchment and landscape dehydration occurs in rangelands globally wherever there are substantial flows of surface water and "nick points", which are usually tracks or livestock paths, but can be caused by wildlife.

One vivid example of the latter is where a hippo "unplugged" Lake Urema's supporting base level (a tributary sand fan "plug") in accessing pools in the Pungwe River in the Gorongosa of Mocambique (Tinley 1977).

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Report for the Study Tour to Hungary: 12 - 24 May 2011

E van Zyl¹, CD Dannhauser² and R Coetzee²

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Following a visit to South Africa in October 2010, Prof. Orosz and Dr. Penksza from the Szent Istvan University in Hungary invited Chris Dannhauser, Erika van Zyl and Rhudolf Coetzee on an official study tour to Hungary during May 2011. The main drive behind this collaboration was to find new common research areas in the fields of animal husbandry and grassland and pasture management. The first days of our tour in Hungary were spent at the Szent Istvan University where we met with the Dean of Faculty Agric and Environmental Sciences and with the Head of the Department of Animal Nutrition. We had the opportunity to do presentations on veld management in South Africa to staff and students and had interesting discussions.

We also had discussions with the staff of the Institute of Environmental and Landscape Management where they developed a program similar to the Bio-Resource program in KwaZulu Natal. The Institute also focuses on the development of systems to revitalize sustainable small scale farming systems as part of their rural development strategy.



Fig. 1 The beautiful architecture of the Szent Istvan University

A valuable visit was paid to the “Model silo system for silage making” which is a low cost “mini tower” system, used for silage research (Fig. 2). It was developed by Prof. Orosz, who is an expert in the field of silage. The “mini tower” design can be obtained from Prof. Orosz (Orosz.Szilvia@mkk.szie.hu).

A Symposium of the Grassland Society Hungarian Academy coincident with our tour and we attended it, despite the language problem!

Prof. Dannhauser presented a talk (in English) on grass species selection in bushveld areas of South Africa and his pictures, supporting the presentation, breached the language problem substantially.

Field trials (Fig 3) on fertilization of different fescue cultivars, production and adaptation trials on various other grass cultivars and meadow (veld) reclamation plots were visited.

The dairy industry in Hungary is important. Pasturing (grazing) is not done, simply due to restricted land. Cows are therefore on TMR (total mixed rations) with maize silage as the backbone. Farm produced feed include maize and ryegrass, ryegrass, Alfalfa and meadow (veld) hay. Lolium cultivars in use are selected for high yields, high sugar, carotene and protein content.



Fig.2: Mini Towers for Silage Making

New legislation in Hungary obliges dairy farms to improve on waste management. The dairy farm that we visited uses biodigesters in their waste management system (Fig.4). The electricity generated is fed into the National Electricity's Grid. Private use of this electricity is prohibited, but the private supplier is paid less for electricity generate than for buying back electricity.



Fig.3: Field trials visited during the Symposium

Dairy products from goat and sheep milk are very popular in Hungary and we visited both a goat and sheep dairy Farm. Animals are housed indoor during winter and rations consist of maize silage, Alfalfa hay, Alfalfa haylage, Clover/grass hay and concentrates.



Fig. 4: Lolium pasture with the biodigesters in the background

The Hortobágy National Park, a declared World Heritage site, is Hungary's largest protected area, and the largest natural grassland in Europe. It has unique species diversity with an abundant number of legumes (Fig.5). However, the area is still used for traditional livestock farming.

Farmers entered an agreement with government for grazing and many large flocks of wool sheep are utilizing the area. Unfortunately, definite signs of overgrazing and area selection were noticed during the excursion, especially when considering the prevalence of species like *Dactylis glomerata*.

The study tour was a valuable experience and all the goals set for the study tour were accomplished. The most valued knowledge exchanges of the study tour were: The Hungarians specialized in preserved feeds, like silage and it is done very efficiently. Their Model Silo System needs special reference.

The veld management knowledge of South Africa is much more advanced and can support Hungarian researchers and farmers. Fertilization of veld is practiced in Hungary, and the value of the legume component underestimated. The Planted pasture scene in South Africa is much more diverse than in Hungary.



Fig.5: Clovers species are abundant in natural grasslands



In Memoriam

France 24 International News

**Wangari Maathai,
the gutsy,
traditionally-robed
Kenyan activist
whose environment
conservation work
earned her the 2004
Nobel Peace Prize,
died of cancer at the
age of 71.**



Wangari Maathai, the first African female to win the Nobel Peace Prize and a woman who was deemed, "too educated, too strong, too successful, too stubborn and too hard to control" by her former husband.

The founder of The Green Belt Movement, a grassroots environmental None Governmental Organization of primarily rural women, Maathai had been undergoing treatment for cancer at the Nairobi Hospital, where she had spent an increasing amount of time over the past year. "It is with great sadness that the family of Professor Wangari Maathai announces her

passing away on 25th September, 2011, at the Nairobi Hospital, after a prolonged and bravely borne struggle with cancer. Her loved ones were with her at the time," said a statement on The Green Belt Movement's website.

An outspoken woman with an infectious hearty laugh, Maathai was a familiar figure on the world stage in her brightly printed traditional African dress and her ability to enthrall audiences with her powerful, yet simple speeches.

Her decades-long campaign to organise women to plant trees to combat the effects of deforestation and soil erosion won her the 2004 Nobel Peace Prize, but it also earned her powerful foes in her native Kenya. When she started her tree-planting campaign in the late 1970s, Maathai initially steered clear of political debates on democracy and governance.

But as she later noted, her experience in environmental activism made it apparent that responsible governance of the environment was not possible without democracy. It was a revelation that frequently landed her in prison and earned her numerous violent encounters with law enforcement officials, especially the riot police. In the 1990s, Maathai took on a powerful opponent when she opposed the building of a skyscraper planned in the middle of Nairobi's landmark Uhuru Park.

She was vilified by the then long-standing Kenyan president, Daniel Arap Moi, who dismissed her as "that mad woman". In 1997, she ran against Moi in a presidential election marred by violence and garnered few votes. But she did win her high-profile campaign to stop the building of the skyscraper in Uhuru Park.

She also swept the polls in the 2002 parliamentary elections, when she was elected as Member of Parliament with 98% of the votes as part of an opposition coalition that stormed to power after Moi was barred from contesting the presidential election that year.

A trained biologist, Maathai was never afraid to challenge the patriarchal structures in her deeply conservative East African homeland. When her former husband divorced her in 1979, he famously issued his "too educated, too strong" verdict, one that the presiding judge seemed to endorse when he slapped her with a six-month contempt of court sentence for calling the judge "incompetent".

Born in a village in colonial Kenya, Maathai was educated in Christian missionary schools, where she excelled in her studies. In 1960, she was one of around 300 Kenyans – along with US President Barack Obama's father – chosen to study at US universities. In the US, Maathai specialized in biology before returning to Kenya, where she married Mwangi Mathai. When the marriage ended, Mathai sent her a letter demanding that she drop his surname. She responded by adding an extra 'a' to the family name.

Back in Kenya, Maathai earned her PhD – the first woman from East and Central Africa to do so – and became a professor at the University of Nairobi, from where she began her work in women's rights and environmental activism. In 1977, she started The Green Belt Movement, an NGO that works with women to improve their livelihoods by increasing their access to resources like firewood for cooking and clean water.

She became a high-profile advocate for better management of natural resources, with her movement successfully planting about 30 million trees, an achievement that has helped make Kenya one of the best environmentally managed countries in Africa.

Recognising Maathai's work in 2004, the Norwegian Nobel Committee noted that, "You are the first woman from Africa to be honoured with the Nobel Peace Prize. You will also be the first African from the vast region between South Africa and Egypt to receive the prize. You stand as an example and a source of inspiration to everyone in Africa who is fighting for sustainable development, democracy and peace."

"In a few decades, the relationship between the environment, resources and conflict may seem almost as obvious as the connection we see today between human rights, democracy and peace."

- Wangari Maathai

Then Nobel Committee chief Ole Danbolt Mjos ended his speech in Maathai's native Swahili with the words, "Twakupongeza, tunasema asante sana," – we thank you, and thank you so much. For the millions of women – as well as their menfolk and their families – whose lives were touched and transformed by Maathai, it remains a fitting tribute to a remarkably gutsy woman. Maathai is survived by three children and a granddaughter.

**Speech Delivered by Ouma Makofane during the
Mpumalanga Climate Change Summit,
Grade 9 Learner from Makuke Secondary School,
Mpumalanga Province, 6-7 October 2011.**

Supervisor: Mr. Nkhwele Rathogwa

Greetings to you all. Let me take this opportunity to thank the organizers of this meeting and my school for their generous support through-out.

I will be talking to you about climate change, which is a serious global issue that indeed will lead our future generation to face difficulties because of low resource availability and ultimately animal and plants extinction if no actions are taken.

Climate is defined as the average weather and variability pattern over a certain time span and a specific area. Weather refers to the short term atmospheric conditions such as temperature, cloudiness, wind patterns and so forth. Hence weather can change in just a few hours while climate can take years, decades or centuries to change.

Climate change is attributed directly or indirectly to human activities that alter the composition of the global atmospheric gases. Most of us are not really sure what causes climate change.

Well, according to Avis et al. (2008) and Dube et al. (2004), climate change is a result of global warming which is defined as the average increase in temperature near the Earth's surface. Global warming is caused by deforestation, burning of fossil fuel for energy purposes, industrial activities and veld fires.

All these contribute to an increase in greenhouse gases such as methane, nitrous oxide and carbon dioxide. These gases contribute significantly to enhanced greenhouse effect which is the main cause of global warming (Opie 2009, Winter et al. 2009) and hence climate change. These gases are again responsible for destruction of the ozone layer which is vital for temperature regulation. High accumulation of gases in the atmosphere interferes with radiation of energy that affects prevailing ecosystems.

Clitheroe et al. 2006, Avis et al. 2008, and Isaac et al. 2009 noted that the effects of increased global temperatures and climate change includes:

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Clitheroe et al. 2006, Avis et al. 2008, and Isaac et al. 2009 noted that the effects of increased global temperatures and climate change includes:

Droughts, wild fires, desertification, tropical storms, increased diseases, malnutrition, floods, loss of income, tsunamis, anthropogenic events, extinction of plants and animals and pollution.

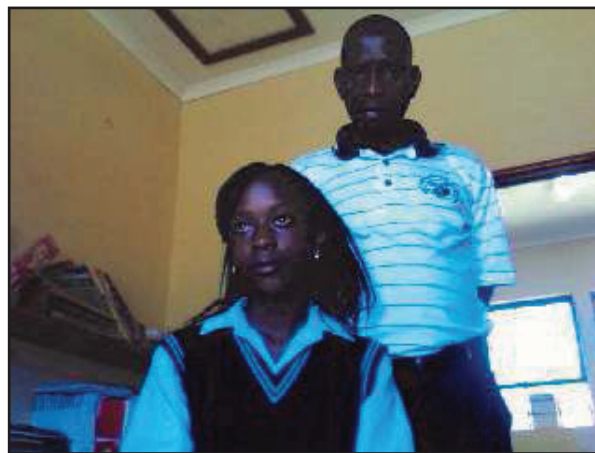
People's attitude towards climate change is evident as seen in the Kyoto Protocol and the Montreal Protocol (Clitheroe et al. 2006). However success depends on the rich countries' willingness to implement these strategies as they compromise development or economic generation. Amongst other resolutions, people are encouraged to be creative including recycling of products, changing light bulbs in their homes to compact florescent bulbs, use alternative transportation, using solar energy, plant more trees.

Developing countries find it hard to solve this as they are trying to create jobs for their nations. It makes it hard for these strategies to work. Countries like Mozambique and South Africa are trying to create jobs. But how can you create jobs while nature is in danger, bearing in mind that nature is the only reliable source of sustainable jobs and economy.

In conclusion, climate change pose a serious challenge to the environment. The environment we destroy because of carelessness is our life. So change for the environment. Stop and think before you act because life comes once.

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Ouma Makofwane and Principle Nkhwele Rathogwa



Making 10 years of Progress in South Africa's Succulent Karoo

By Tessa Mildenhall

This year marks the 10th anniversary of the Succulent Karoo Ecosystem Program (SKEP), an initiative seeking to protect threatened species and raise public awareness about this unique ecosystem that provides fresh water and other critical resources for local people. Conservation South Africa's Tessa Mildenhall reflects on what SKEP has accomplished so far.

In 2001, I walked into a cottage in South Africa to interview for a position that, I was told by my recruitment agent, was temporary and would be to help a young woman who was drowning in administrative work. Her name was Sarah Frazee, a bubbly blonde who chewed lots of gum and had wacky ideas about doing almost everything differently from the norm.

Sarah was developing a national conservation program for the Succulent Karoo Biodiversity Hotspot, a semi-arid area with over 6,356 plant species, 250 birds, 78 mammals and 132 reptiles and amphibians, with over 40 percent of these species found nowhere else on Earth. To create this program, Conservation International (CI) consulted with 60 scientific experts and over

400 local people, including a network of representatives from government, academia, NGOs, the private sector and local communities.

Ten years later, I'm in Vanrhynsdorp in the Western Cape, attending a 10-year review of the program and reflecting on just how much has changed in the past decade. When CI began working in the Succulent Karoo, less than 3.4 percent of the area was protected. Therefore, our first task was to educate local people about the value of ecosystems and train many of them to play a part in protecting them.

Over time, we began to see the adoption of SKEP conservation priorities within various structures and plans all over the region; suddenly people knew what and where we were talking about.

Building trust in the Namaqualand region is difficult, and to the Namakwalanders, actions speak louder than words. Some of SKEP's biggest accomplishments so far include:

- Declaration of Sperrgebiet National Park in Namibia, a 2.6 million-hectare (more than 4.9 million-acre) national park which includes the protection of 15 vegetation types, nine invertebrates and three reptiles.

- Doubling the size of Namaqua National Park to 150,000 hectares (370,658 acres). This expansion connects the highest mountains of Namaqualand to the west coast of South Africa.
- This crucial connection includes a variety of ecosystems and gradients that will act as a corridor for species migration in response to climate change
- Creation of a small grants fund, called SKEPPIES, which promotes conservation through socioeconomic development. The fund has contributed to the creation of more than 452 new jobs and ensured better environmental management of 42,228 hectares
- Transitioning the management of the SKEP program to the South African National Biodiversity Institute — a government entity — to ensure the program's long-term sustainability.
- Creation of the 70,000 hectare Knersvlakte Conservation Area, renowned for its tiny succulents that emerge from the region's quartz fields, which provide life to 133 IUCN Red List plant species.
Development of management plans and grazing guidelines for communally owned lands — a first for the region.
- Establishment of a stewardship program that has led more than 50 private and communal farmers to reduce their stock and follow grazing guidelines and alternative predator management strategies to restore and maintain these degraded high priority areas and threatened species.
- Expansion of the Oorlogskloof Nature Reserve, which has helped to secure local water supplies.

In the past decade, the Succulent Karoo's protected areas have increased by 90 percent, and 63 percent of vegetation types are now under some form of protection, 20 percent more than when the program began. There are still many difficulties to overcome in the Succulent Karoo; government cooperation and support needs to be strengthened, and responsible mining and restoration of degraded ecosystems continues to be a challenge across the region.

But all in all, what started as just an idea is now a mature program that has positively altered the lives of hundreds of people — demonstrating conservation as a land use rather than instead of land use in the rather than instead of land use in the most trying of arid conditions. I'm privileged and proud to be a part of this movement, and look forward to seeing what the next 10 years will bring.

Tessa Mildenhall is the communications and operations manager for Conservation South Africa, a member of the CI affiliate

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Meet Dr Wayne F Truter - GSSA President

Wayne is currently employed by the University of Pretoria as a senior lecturer and researcher in the Department of Plant Production and Soil Science. His field of specialization is Planted Pastures, Forage Crops and the application thereof in Land reclamation.

He currently manages various research projects for the Pasture Seed Industry, Water Research Commission as well as Mine-land Reclamation projects for Coaltech, the Coal Mining Research Association of the Chamber of Mines. He also heads the Land Rehabilitation Services Unit at the Business Division of the University of Pretoria.

He is responsible for the undergraduate teaching of Planted Pastures to 1st year Veterinary Students at Onderstepoort, as well as 3rd year Agricultural students at University of Pretoria, main campus. He also presents undergraduate courses in Environmental Resource Assessment and Monitoring as well as Turfgrass Management. Postgraduate training is also one of his responsibilities at the University, where he has trained approximately 20 post graduates. He currently supervises 3 Hons students, 10 MSc students and 2 PhD students in the fields of Planted Pastures, Irrigation of pastures, Land Reclamation and Rangeland Management.

Wayne has completed a BSc (Agric) in Animal/Pasture Science, an MSc (Agric) in Rangeland and Forage Science and a PhD in Integrated Environmental and Agricultural Sciences at the University of Pretoria.

During his postgraduate research, one of the components of his studies was the agricultural use of agricultural and industrial by-products (Waste), especially in land reclamation. This led him to become involved in the South African Coal Ash Association, of which he is the Vice-President.

Wayne has spent many years establishing environmentally acceptable methods of reclaiming and using these by-products in land reclamation, to ultimately re-vegetate these areas with selective planted pastures to improve the agricultural potential of these degraded areas. The science of Planted Pastures and their role in agriculture and land reclamation lies very close to Wayne's heart, and he has taken up the challenge together with other colleagues to revitalize this discipline in South Africa.

One of his most recent contributions is the role of pasture ley crops in conservation agriculture (no and/or minimum tillage systems). Wayne is involved in a few international research projects on Land Reclamation as well as Pasture development programs for the Dairy industry in North and South America and in Africa.

Wayne has published numerous times both internationally and locally, and also serves as an Associate Editor for the African Journal of Range and Forage Science. Wayne has been a member of the Grassland Society since 1999, and on Council since 2008, and is also a trustee of GSSA Trust. This surely shows his commitment to the Grassland Society of Southern Africa to maintain it as a renowned Society of our country.



GSSA Trust

Our focus is to promote:

- Development
- Student Participation
- Mentorship Programmes
- Growth for Young Scientists

The Council of the GSSA, as well as paid up GSSA members can apply for funding from the Trust for attending national and international congresses, or for other GSSA matters.

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GRASSLAND SOCIETY OF SOUTHERN AFRICA

ESKOM EXPO FOR YOUNG SCIENTISTS 2011

The Society was represented by 19 judges at 16 Regional Expos and the National Final. At the regional level, 9 projects presented by 12 learners received the award. All of these scholars will receive a certificate from the Society. At the National level, 5 projects by 6 learners received the award or a commendation. The winner at National level will receive a framed certificate and medal.

The GSSA Award for the Best Grassland Science Project

Judged according to the following criteria:

- The project must deal with an grass land science issue (rangelands/pastures, rehabilitation, alien and invasive species, game surveys, animal production, etc.)
- The students must exhibit a clear understanding of the problem
- The project must have a sound scientific approach
- Presentation must be good

At a regional level, the prize consists of a GSSA certificate for each member of the winning team. At national level, the prize consists of a GSSA certificate and medal for each member of the winning team. If possible, the prize may also include "tickets" to the next GSSA Congress. It is advisable that if this part of the prize is to be awarded, the GSSA specifies (under the special requirements section requested by the organisers) that only Matric and Grade 11 students may be awarded the Grassland Society Award.

Regional Finals - 2011

Grahamstown: 22 July

No award given

Judged by Tony Palmer, Agricultural Research Council

Northern KZN: Ladysmith: 12 August

Bush Encroachment: Liability or Asset, Nadia van Zyl and Carla Pretorius, Grade 11, Dundee High School

Judged by Erika van Zyl, KwaZulu-Natal Department of Agriculture and Rural Development

Johannesburg: 29 & 30th July

No award given

Judged by Linda Kleyn, South African National Space Agency, and Moagi Keretsetse, Gauteng Department Agriculture and Rural Development

East London: 6 August

No award given

Judged by Bethwell Moyo, University of Fort Hare

Port Elizabeth: 11 and 12 August

Investigating whether plants can grow in the absence of water, sunlight, oxygen and soil, Nicole Muller, Grade 4, Kabega Primary School

Judged by Steve Henley, Nelson Mandela Metropolitan University

Nelspruit: 13 August

No award given

Judged by Shaun MacGregor, Ecoleges Environmental Consultants

Cape Town: 23-25th August

Hardklop van die Karoo, Daniel Louw, Grade 11, Hoerskool Jan van Riebeeck

Judged by Igshaan Samuels, Agricultural Research Council

NW Cape Upington: 18 August

Hoekom Pienk Blomme? Benita Claasens, Grade 9, Postmasburg High School

Judged by Lisa Hebbelmann, Northern Cape Department of Agriculture, Land Reform and Rural Development

Potchefstroom: 25 August

Volhoubare Hulpbron Benutting – Herwinning, Reinhardt Hitge and Stefan Bogenhofer, Grade 6, Laerskool Saamtrek
Judged by Yvette Brits, North West Department of Agriculture, Conservation and Environment

Bloemfontein: 19 August

No award given

Judged by Hennie Snyman, University of the Free State

Kimberley: 12 August

Die verbetering van plantegroei met gebruik van motorbande, Ina-Mare Kriek, Grade 9, Hoerskool de Aar

Judged by Yolandi Els, SAEON

Northern Gauteng Pretoria: 2-3 Sep

Secrets of seed germination, Michael Botha and Clifford Engels, Grade 10, Pretoria Boys High School

Judged by Leana Nel and Riaan Jonker, University of Pretoria

Nkangala(Kwamhlanga): 20 Aug

No award given

Judged by Gilbert Pule, Agricultural Research Council

Lebowakgomo (Limpopo): 27 Aug

Soil Erosion - cost effective prevention on Small Scale, Dione Cilliers, Grade 6, Pietersburg Primary School

Judged by Lerato Letsoalo, Limpopo Department of Agriculture

Stellenbosch: 25 -26 Aug

Planter vs Saaimasjien, Simone van Eeden, Grade 12, Bloemhof Hoer

Meisieskool: Judged by Clement Cupido, Agricultural Research Council

Capricon/Venda: 2 Sept

No award given

Judged by Farai Dondofema, University of Venda

National Finals: 7 and 8 October 2011

Winner: Heartbeat of the Karoo, Daniel Louw, Grade 11, Hoerskool Jan van Riebeeck

Runners up: Enviro-Travel, Charl Deacon, Grade 12, Hoerskool Kathu and Bush Encroachment: Liability or Asset, Nadia van Zyl and Carla Pretorius, Grade 11, Dundee High School

Commendation: Volhoubare Hulpbron Benutting – Herwinning, Reinhardt Hitge and Stefan Bogenhofer, Grade 6, Laerskool Saamtrek

Judged by Leana Nel and Dirk Coetzee, University of Pretoria

Winning Entry

Heartbeat of the Karoo

Daniel Louw of Hoërskool Jan van Riebeeck

Purpose of Project

Massive herds of springbok once migrated across the Karoo. The impact of these herds on the arid landscape had been overlooked, even though their demise followed the same time-line as the degradation of the Karoo ecology. The aim of the study was to investigate the historical role of the springbok in the ecology of the Karoo. This was done by investigating the physical impact that the springbok had on the Karoo soil.

Procedure

An anatomical study of the springbok was done. Through video analysis the physics and mechanics of the jump was analysed. From this, the forces that a springbok jump can generate were calculated. A study was performed to investigate how the soil crust breaking capabilities of the hoof would influence the germination of indigenous seeds.

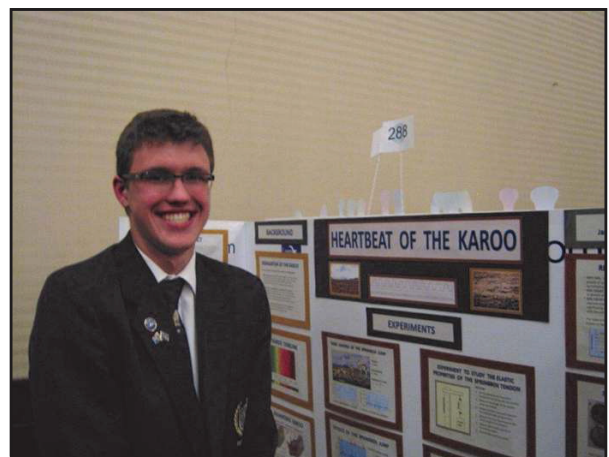
Results

The springbok is superiorly adapted to jumping. The anatomical adaption of the hind leg and flexor tendons enables a jump that is consistent, repetitive and energy efficient in nature.

The study proved that the jump generates sufficient force for the hoof to break the soil crust and effectively till the soil. This creates a near ideal environment for the germination of seed and growth of vegetation.

Conclusion

The ecology of grassland is dependent on its natural grazers, therefore the restoration of Karoo veld will benefit from the re-introduction of indigenous wildlife. The grazing patterns of the springbok herd is of great importance to the Karoo ecology. Alternatively, farming practices can be adapted to mimic the effect of the springbok hoof on the Karoo soil.



Daniel Louw - 2011 Winner