FYNBOS FORUM

Programme

THEME: "How well are we doing? Threatened Habit Conservation: Targets and Management"

30th

01-03 August 2007
Club Mykonos
Langebaan

Organised by the Fynbos Forum Committee.
Funded by
The Conservation and Management of Ecosystems and
Biodiversity Focus Area of the National Research Foundation

CAPE ACTION FOR PEOPLE AND THE ENVIRONMENT
C·A·P·E

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DEDICATION

Fynbos Forum 2007 is dedicated to the late Walter Middelmann who represented the flower industry over many years at the Fynbos Forum, initially as a member of the audience, and later as an active participant. His last recorded attendance was at Fynbos Forum 2000 at Yzerfontein (aged 90!)

ACKNOWLEDGMENTS

FYNBOS FORUM

01-03 August 2007

We wish to acknowledge with many thanks the following for their assistance this year!

1. National Foundation for Research Development (NRF) for sponsorship
2. The Botany Department of the University of Cape Town for facilitating the NRF funding
3. The Botanical Society of South Africa for hosting the secretariat, and the special offer of Field Guides.
4. Struik Publishers for donating the book prizes this year.
5. Flowers – Hans Hettach, Arnelia Farms / Nurseries, Hopefield
6. Décor – Deon van Eeden - Vula Environmental Services, Vredenburg
7. DJ - Jonathan Pryor, Working for Water Programme, Grahamstown
8. West Coast National Park for two fieldtrips in the Park
9. All other fieldtrips and leaders for arranging such interesting trips
10. The Table Mountain Fund (TMF) for funding “Extending the Fynbos Forum Research Strategy”.
11. The CAPE Project and TMF for initiating and funding the Fynbos Forum Innovation Scholarship

COMMITTEE MEMBERS 2006 – 2007

Chairman:	Ms Julia Wood
Committee:	Mr Mark Botha
	Ismail Ebrahim
	Prof Karen Esler
	Onno Huyser
	Donovan Kirkwood
	Dr Richard Knight
	Rupert Koopman
	Dr Connie Krug (Vice Chair)
	Mr Xola Mkefe
	Mr Matthew Norval
	Mr Guy Palmer
	Mrs Azisa Parker
Secretariat:	Ms Wendy Paisley

FYNBOS FORUM MISSION

The Fynbos Forum is an affiliation of researchers, planners, managers, landowners and a range of other stake-holders that meets annually to discuss management issues and research results, and to formulate priorities for future research and conservation management actions required to ensure the conservation and sustainability of Fynbos ecosystems.

In order to achieve this goal, we undertake to assess biological resources, ensure institutional capacity and consider socio-economic issues.

PREVIOUS FYNBOS FORA

1988	:	Avalon Hotel, Montagu
1989	:	ClanWilliam
1990	:	Stellenbosch, The University of Stellenbosch, Die Ark
1991	:	Bredasdorp, Potberg
1992	:	UCT, Cape Town
1993	:	16 & 17 March (Drosdy Museum, Swellendam)
1994	:	13-15 July (Bien Donné, Stellenbosch)
1995	:	5-6 December (Mispah Youth Centre, Grabouw)
1996	:	17-18 July (The Nekkies Dist. Worcester)
1997	:	16-18 July (Genadendal)
1998	:	22-24 April (Die Herberg, Waenhuiskrans, Arniston)
1999	:	September (Rein's Nature Reserve, Albertinia)
2000	:	7-9 June (Ganzekraal Holiday Resort & Conference Centre)
2001	:	01-03 August (Calitzdorp Spa)
2002	:	14-16 August (Goudini, Rawsonville)
2003	:	05-08 August (Hartenbos Resort, Hartenbos, Dist. Mossel Bay)
2004	:	10-13 August (Club Mykonos, Langebaan)
2005		01-05 August (Pine Lodge, Port Elizabeth
2006		9-11August (Goudini Spa, Rawsonville, Dist. Worcester)

Fynbos Forum 1-3 August 2007

Programme Overview

Time	Wed 01 Aug	*Thurs 02 Aug*		Fri 03 Aug		
7h15		Breakfast & late registration		Breakfast		
8h00		8h20 Welcome Julia Wood		Parallel Workshop 4: NEMA EIA: Biodiversity & Agriculture Charl de Villiers	Parallel Workshop 5: Information Selwyn Willoughby	Parallel Workshop 6: Business / Biodiversity Mandy Barnett / Augustine Morkel
8h30		Opening Address (Mrs D Elford – 30 mins)				
9h00		Paper Session 1 (9h00)				
		Brian Huntley – 20 mins				
10h00		Richard Cowling – 20 mins				
		Jeff Manuel – 20 mins				
10h15		Trevor Sandwith – 20 mins				
10h30		Poster Session & Tea from 10h20 – 11h15		Poster Session & Tea from 10h30 – 11h00		
11h00	Registration & Tea	Parallel Paper Session 1 Conservation/ Threatened Species	Parallel Paper Session 2 Education	Parallel Paper Session 5 Ecology	Parallel Paper Session 6 Land-use/ Spatial Planning	
12h00	Field Trips – collect packed lunch			Parallel Paper Session 7 Fire Ecology	Parallel Paper Session 8 Resource Economics/ Business & Biodiversity	
13h00	Field Trips	Lunch		Lunch		
14h00		Parallel Paper Session 3 Plant-Animal	Parallel Paper Session 4 Partnerships/ Stewardship	Parallel Paper Session 9 Restoration & Invasives	Parallel Paper Session 10 Aquatics	

		Interactions				
15h10					Closing Remarks, Prizes	
15h30		Tea			Tea	
16h00		Parallel Workshop 1: Wetlands Forum George Davis	Parallel Workshop 2: Fragmentation Connie Krug	Parallel Workshop 3: Education – Eureta Rosenberg		
17h00						
17h30	Brief Welcome: Julia Wood					
17h45	Top 4 Innovation Scholarship Student Presentations					
18h30	Talk by John Yeld	AGM				
19h30	Dinner at Boesmanland Plaaskombuis	Special Dinner at Club Mykonos				

Fynbos Forum 1-3 August 2007
Programme

PLEASE NOTE: Presenters' names are in *italics*.

Time	Wed 1 August
11h00	**Registration & Tea**
13h00	Field trips & Packed Lunches
17h30	Brief Welcome – Julia Wood
17.45-18.30	**Top 4 Innovation Scholarship Student Presentations**
18:30	**Talk by *John Yeld:*** 20 years of reporting on fynbos – a journalist looks back.
19h30	**Dinner**

Time	***Thursday 2 August***	
7h15	**Breakfast & Late Registration**	
8h20	Welcome: Julia Wood	
8h30	**Opening Address – Mrs Dipelelo Elford** **Chair: Xola Mkefe**	
9h00	Plenary Address: *Brian Huntley*: **Biodiversity Conservation - the Art of the Possible**	
9h20	**Plenary Address: *Richard Cowling*:** Research for Implementation: What do we need to think about? What do we need to do?	
9h40	**Plenary Address: *Jeff Manuel*:** Integrating conservation planning with landuse planning: obstacles and opportunities	
10h00	**Plenary Address: *Trevor Sandwith*:** Putting a green foot forward: what has C.A.P.E. achieved?	
10h20	**Poster Session and Tea**	
	Parallel Session 1: Conservation/ Threatened Species **Chair: Rupert Koopman**	**Parallel Session 2: Education** **Chair: Zwai Peter**
11h15	*Fahiema Daniels* Does protecting threatened ecosystems conserve threatened plant taxa? A case study from the Cape Floristic Region.	*Daksha Naran*, H. Lotz-Sisitka, Rob O'Donoghue & Eureta Rosenberg Lessons learned in conservation education strategy development in the CRF region
11h30	*James Pryke* & Michael Samways Conservation of the endemic invertebrate fauna of the Cape Peninsula	*Hestelle Melville* The role of an Environmental Education Centre situated on a nature reserve

11h45	*Ismail Ebrahim* Exploring new frontiers – CREW rising to the challenge	*Andreas Groenewald* The Friends of the Helderberg Nature Reserve: Supporting Fynbos Conservation and Education, Helderberg Nature Reserve
12h00	*Tilla Raimondo* Red List for the Fynbos, threats to plants in the CFR	*Ally Ashwell* Youth, GIS & urban nature: reporting back on the pilot project
12h15	*Andrew Skowno* Planning for conservation in the Baviaanskloof: 2003-2007	*Kirsten Mahood* limbovane: it's about the learners
12h30	*Pat Holmes,* Tony Rebelo & Julia Wood Cape Town: a biodiversity megadisaster	*Caitlin von Witt* Plant Monitoring Day: outdoor education and conservation action in the Cape Floristic Region
12h45	*Julia Wood* Solva: perspectives of a landowner	*David Gwynne-Evans* Creating an digital archive for efficiently documenting our Biodiversity
13h00	**Lunch**	
	Parallel Session 3: Plant-Animal Interactions **Chair: Connie Krug**	Parallel Session 4: Partnerships/ Stewardship **Chair: Ismail Ebrahim**
14h00	*Elvis Makady* Impact of herbivory by large game on plant palatability in West Coast Renosterveld	*Abigail Kamineth* Engaging civil society in NMBMs conservation action
14h15	*Ken Coetzee* Game introduction in the fynbos	*Arnelle van Noie and Terence Coller* Converting the unconverted/ conserving the unconserved: ecosystem conservation in a fragmented landscape – who needs to get involved and how?
14h30	*Odette Curtis* Linking the sustainable use of gamebirds to improved habitat management in renosterveld fragments in the Overberg, Cape Floristic Region	*Kerry Purnell & Chris Martens* Status quo of Stewardship in the Western Cape and South Africa, where to from here?
14H45	*James Chapangara Mugabe* The effects of habitat fragmentation on small mammal communities in the Western Cape lowlands	*Paula Hathorn* & Marilyn Martin Shifting relationships for sustainability
15h00	*Petra Ros* & Bruce Anderson Pollinator-driven floral variation in *Tritoniopsis revolute*	*Zwai Peter* Challenges in scaling up
15h15	*Sjirk Geerts* Assembly and disassembly of nectarivorous bird communities in the Cape, South Africa	*Michael Brett* Unlocking the potential of Protected Areas: The Western Cape's protected areas as tourist destinations
15h30	**Tea**	

16h00 – 18h00	**Parallel Workshop 1: Wetlands** **Chair: *George Davis***	**Parallel Workshop 2: Fragmentation** **Chair*: Connie Krug***	**Parallel Workshop 3 : Education** **Chair*: Eureta Rosenberg***
18H30	**AGM**		
19h30	**Special Dinner**		

Time	**Friday 3 August**		
7h15	**Breakfast & late registration**		
08h00 – 10h30	**Parallel Workshop 4: NEMA EIA: Biodiversity & Agriculture : Chair: *Charl de Villiers***	**Parallel Workshop 5: : Biodiversity Information Management, Chair: *Selwyn Willoughby***	**Parallel Workshop 6: Business / Biodiversity** **Chair*: Mandy Barnett & Augustine Morkel***
10h30	Poster Session & Tea		

	Parallel Paper Session 5: Ecology **Chair: Annelise Schutte Vlok**	Parallel Session 6: Land use/ Spatial Planning **Chair: Matthew Norval**
11h00	*Jeanne Gouws* & Steven Chown Altitudinal body size variation in beetles	*Donovan Kirkwood* A single GIS product to guide land-use in the Western Cape
11h15	*Heidi Hawkins* Dusk 'til Dawn: Protea night-life and its importance for ecosystem functioning	*William James Knaggs* Implementing biodiversity priorities in Drakenstein Municipality
11h30	*Tony Rebelo* Phenology of Proteaceae	*Kerry Te Roller* Using the C.A.P.E. Fine-scale Biodiversity Plans and Guidelines as your biodiversity informant in the land use decision making process
11h45	*William Bond* Drought responses of plants in the Agter-Cedarberg: a peek at the future?	*Gerhard Gerber* Provincial guidelines on biodiversity offsets
	Parallel Paper Session 7: Fire Ecology **Chair: Pat Holmes**	*Derek Berliner, Phillip Desmet & Amanda Younge* Eastern Cape Biodiversity Conservation Plan
12h00	*Jeremy Midgley* & Tony Rebelo Why are there no trees in fynbos?	Parallel Paper Session 8: Resource Economics/ Business and Biodiversity **Chair: Onno Huyser**
12h15	*Steffen Heeleman* Post-fire seedling recruitment of non-sprouting serotinous Proteaceae in the eastern fynbos vegetation	*Augustine Morkel* Economic biodiversity centres
12h30	*Diane Southey* Fire in the Western Cape: do we have answers to the burning questions?	*Ryan Chisholm* Conflicts between carbon sequestration and other ecosystem services: the Fynbos as a model system
12h45	*Annelise Schutte Vlok* Recurrent fires – what's happening to slow-growing subalpine species?	
13h00	**Lunch**	
	Parallel Session 9: Restoration and Invasives **Chair: Donovan Kirkwood**	**Parallel Paper Session 10: Aquatics** **Chair: George Davis**
14h00	*Carly Cowell* Restoration protocols for fynbos species	*Earl Herdien* Draft Implementation Framework: An awareness and rehabilitation strategy for rivers of the Western Cape
14h15	*Mirijam Gaertner* Effects of invasive alien plant species and cultivation on nitrogen cycling and plant species composition	*Mbedzi Mulalo* Ecological Status of the Gourits Water Management Areas fish health
14h30	*Shelly Vosse* Evidence that fynbos riparian seed bank dynamics are altered after invasion - implications for riparian restoration after clearing	*Tovho Ndiitwani Nyamande* Ecological state of the Olifants/ Doorn water management area, Western Cape, South Africa: 5 years of data gathering and management challenges
14h45	*Herve Roland Memiaghe* Influence of soil chemistry on vegetation recovery in West Coast Renosterveld	*Charl Cilliers* Environmental management at the Berg River Dam, Franschoek
15h00	*Allan Wood* Implications of biological control of *Acacia saligna*	
15h15	**Closing Remarks, Prizes**	
15h30	**TEA**	

POSTER PRESENTATIONS

FF 2007

ON 2ND at 10h20-11h15
AND
On 3RD at 10h30-11h00

	Title	Authors	Session
1	The impact of fire regime on plant species diversity in mountain fynbos communities at Kirstenbosch	Dinilesizwe Gudlindlu	**Poster Ecology**
2	Analysis of the Fire History of Bontebok National Park, 1970 – 2006	Tineke Kraaij & N Kruger	**Poster Ecology**
3	Seed banks, germination and the regeneration of Cape lowland Renosterveld	Steffen Heeleman	**Poster Ecology**
4	Tracing the effects of Climate Change in Proteaceae in the Cape Floral Region, South Africa	Lara Husted, Eugene Marinus, Mawethu Nyakatya & Tony Rebelo	**Poster Ecology**
5	Clearing invasive alien plants from riparian areas: What has been achieved thus far?	Ryan Blanchard & Pat Holmes	**Poster Ecology**
6	The Anthropogenic Influences on the Spacial Ecology of the Chacma Baboon *(Papio Ursius*	Carika Van Zyl	**Poster Ecology**
7	Schapenberg Sir Lowry's Conservancy: How well are we doing conserving and managing our environment?	Andreas Groenwald , Heather Epsein, & Di Marais	**Poster Conservation**
8	Building partnerships in the Upper Breede River Valley	Garth Mortimer, Rudolf Roscher, Joan Isham, & Terence Coller	**Poster Conservation**
9	The Milnerton Conservation Area a Little Known Gem	Jeremy Keyser & Mandy Noffke	**Poster Conservation**
10	Van Staden wild Flower Reserve – Nelson Mandela Bay Municipality	Joram Mkosana & Wesley Berrington	**Poster Conservation**
11	Kenilworth Race Course Conservation Area (KRCA) 2007	Otto Beukes & Maya Stauch	**Poster Conservation**
12	Rehabilitation at Boulders Coastal Park	Monique Ruthenberg & Tess White	**Poster Conservation**
13	Millennium Seed Bank project	Olivia Pekeur	**Poster Conservation**
14	The Management of road reserves for continual biological interchange/ seed dispersal using Blaauwberg Conservation Area as a pilot site	Leanne McKrill	**Poster Conservation**

15	The Eerste River Estuary	Thumeka Mdlazi	**Poster Aquatics**
16	The River Health Programme The past, present and future	Taryn Roossenroode	**Poster Aquatics**
17	Determining the Health Status of the Lourens River System	Victoria Day	**Poster Aquatics**
18	The effectiveness of a reedbed for the absorption of excessive nutrients at Rietvlei Wetland Reserve	Elana Kellerman	**Poster Aquatics**
19	Innovative Techniques of the C.A.P.E. Fine-scale Biodiversity Plans	Tracy Timmins, Gen Pence, & Kerry Te Roller	**Poster Conservation Planning**
20	Towards urban biodiversity conservation in Drakenstein Municipality	Justine Wyngaardt	**Poster Conservation Planning**
21	The critical role Eco-Schools plays in raising Community awareness on Fynbos	Cheryl Gibson-Dicks & Khahliso Losaba	**Poster Education**
22	Plant Monitoring Day: outdoor education and conservation action in the Cape Floristic Region	Caitlin von Witt & Yoseph Araya	**Poster Education**
23	Medicinal Plant Garden training facility: Table Mountain National Park	Sizwe Mkhulizi & Deon Davids	**Poster Education**

Subjects:
1-6 – Ecology
7-14 – Conservation
15-18 – Aquatics
19-20 –Conservation Planning
21-23- Education

FIELD TRIPS

FYNBOS FORUM

1st August 2007
Leaving at 13h00 and to be back by 17h30

1. **Vegetation Mapping and Conservation Planning** in the context of Urban and Industrial expansion in a plant diversity hotspot - the Saldanha example.
Leader: Nick Helme

2. **Visit to Malgas Island**. (Maximum of two trips and 10 people per trip: WEATHER DEPENDANT)
Leaders: West Coast National Park: *Please note that this trip is number limited, so first paid first on the boat!*

3**. A spring visit to West Coat National Park:**
Sand dunes and Posberg – and of course flowers!
Leaders: West Coast National Park staff

4. West Coast Fossil Park :
Packaging five million years of earth history and a successful environmental rehabilitation project on the west coast into a sustainable research, education and eco-tourism product.
Leaders*:* Pippa Haarhof & Deon van Eden. *(A small cost involved.) Numbers are restricted* ***to 30.***

5**. A visit to a Protea Farm in the Sandveld near Hopefield**.
Hans cultivates proteaceae for the overseas trade as well as for the local landscape trade. This might be a controversial field trip, but Hans hopes it will stimulate debate
Leader: Hans Hettasch

6. **Jakkalsfontein Private Nature Reserve on West Coast**.
The field trip will consist of a visit to a few pans and vleis on the reserve to discuss the association with the resident black harriers. There are normally 5- 6 breeding pairs on JKF as indicators of ecological health.
Leader: Steyn Marais and some birding experts.

7. **More than just Daisies**!
Managing nature reserves on the west coast has some interesting challenges, never mind the beautiful flowers! A visit to Rondeberg Private Nature Reserve followed by a visit to the Tienie Versfeld Nature Reserve.
Leaders: Carol Duckitt, Helene Preston, CREW and others!

WORKSHOP ABSTRACTS

FYNBOS FORUM

THURSDAY 2ND August 2007
16h00 to 18h00

WORKSHOP 1:

Wetlands in CFR: Hot topics under discussion in the Western Cape Wetlands Forum

Western Cape Wetlands Forum (Davis, G[1]. Noffke, M[2]. & Huntly, P[3].)
[1] Urban Conservation, SANBI (Chair)
[2] Wetland Solutions (Treasurer)
[3] Secretary
* davis@sanbi.org

The Western Cape Wetlands Forum, which was effectively launched the last time the Fynbos Forum convened at Mykonos, is now well established as a vehicle serving the needs of a wide range of wetland stakeholders. This year there will be three main items on the agenda:

1. It will reportback on activities of the preceding year, and outline current themes being explored by the Forum. This first item will also accommodate flagging of any items of stakeholder concern.
2. Time will be allocated for exploring the production of detailed terms of reference for conservation, management and restoration in CFR wetlands. The starting point for this discussion will be the seminal "Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape" (Charl de Villiers (ed), 2005), in particular the chapters on wetlands and rivers by Liz Day.
3. A session is planned to look at opportunities for wetland restoration and stewardship on private lands on the Agulhas Plain. This topic has been mooted by David Waddilove, who will lead the discussion.

WORKSHOP 2:

Fragmentation Workshop

Krug, C.B.[1*] & te Roller, K.[2]
[1] Department of Zoology, University of Cape Town, Private Bag X3, Rondebosch 7701
[2] teroller@sanbi.org
* connie.krug@uct.ac.za

The lowland vegetation types of the Cape Floristic Region are highly transformed and fragmented, mostly due to agricultural conversion and urbanisation. Although ecological research has been conducted on the effects of habitat fragmentation on biological diversity and ecological processes, the results, mostly of case studies in renosterveld, are only available as theses and scientific publications. However, to inform planning and decision making, results of scientific research need to be filtered down and "translated" in order to be usable for conservation planning, and for appropriate management of remnants, corridors and surrounding land use types.

Aim of the workshop is therefore to present information relevant to conservation planning and management available in current literature, highlight "burning" questions from spatial planners and conservationists that need urgent attention by researchers, and to provide room for a panel discussion of experts in order to address (and answer) these burning questions, and guide future research on habitat fragmentation in the Cape lowlands.

Information is specifically required for sand fynbos and strandveld vegetation types, where research needs to inform forward planning and decision making.

We will present a short review of recent and current research on fragmentation, highlighting information contained in scientific publications that are applicable to conservation management and spatial planning. CapeNature and C.A.P.E component 5.1. (Spatial Planning) will provide a list of "burning questions" requiring urgent answers which will be addressed in the workshop.

WORKSHOP 3:

Working With Schools

Key words: education, Eco-Schools, evaluation

Eureta Rosenberg
7 Boulder Road, Lakeside, Cape Town, 7945

Landowners, government officials, developers, communal land users and the general public are priority groups for conservation education in the Cape Floristic Region. Most C.A.P.E. partners also target schools for their conservation education programmes. Much time, funding and effort go into setting up, resourcing and implementing these schools' programmes, and it is important that we strategise to optimise their relevance and benefits, and evaluate them accordingly. This workshop will report back from the C.A.P.E. Conservation Education & Stewardship Summit's strategic workshop on Working With/In Schools, as well as the current evaluation of Eco-Schools in the C.A.P.E. region. Eco-Schools is a national award programme implemented by WESSA with support from WWF, SANBI, City of Cape Town and other C.A.P.E. partners. Through initiatives like the Fynbos Nodes, partners use the Eco-Schools framework to engage schools in various conservation education activities, for which schools then receive a Green Flag. This workshop will report on how well this is working, what aspects might be strengthened, and how this could be done. We would welcome participation from conservation agencies who want to strengthen their existing schools' programmes, or want to start working with schools. Aspects covered will include: ensuring that conservation education providers' initiatives are aligned with and support the biodiversity - and conservation related learning outcomes in the national curriculum, and ensuring that providers optimise the value of their activities by aligning with schools' planning frameworks.

[231]

FRIDAY 3RD August:
08h00 – 10h30

WORKSHOP 4:

The NEMA EIA regulations, biodiversity and agriculture: An update on the 2006 Fynbos Forum proposal to expedite agri-environmental decision-making

Key words: Agriculture, EIA, fine-scale biodiversity planning, LandCare

Charl de Villiers
Conservation Unit, Botanical Society of South Africa, Private Bag X10, Claremont 7735

In 2006, the Fynbos Forum initiated a process to pursue the streamlining of agri-environmental decision-making by aligning LandCare area-wide planning, fine-scale biodiversity planning and environmental management frameworks. A progress report will be presented. The workshop will be used to asses the utility and relevance of the 'Fynbos Forum' proposal against the agri-EIA experiences of environmental assessment practitioners, biodiversity specialists, organised agriculture and officials over the past year.

WORKSHOP 5:

Biodiversity Information Workshop

Keywords: Biodiversity, GIS, information, knowledge

Willoughby, S.W. [1], Roberts, R.D[1]. & van Ross, G[1].
[1] SANBI, Private Bag X7, Claremont, Cape Town, 7735

SANBI's strategic objectives include being the preferred source for biodiversity knowledge and information management in South Africa. SANBI is therefore actively consolidating its information resources and services. The aim is to provide easy access to biodiversity information to support biodiversity science, planning, decision-making and policy advice. SANBI has developed a knowledge and information management (K&IM) strategy which aims to proactively coordinate and manage all of the Institute's biological information resources, provide rapid access to accurate information and to create networks within the Institute, and between its partner organisations, to share scarce knowledge-based resources and skills.

The aim of the workshop is to showcase some of SANBI's available information resources and tools and to discuss further developments and collaborations. We will demonstrate the following;

- Plants of Southern Africa (POSA) (http://posa.sanbi.org)
- Jack Skead's Gazetteer (http://skead.sanbi.org)
- SANBI's Integrated Biodiversity Information System (SIBIS)
- Biodiversity GIS (http://bgis.sanbi.org)
- South African Biodiversity Information Facility (SABIF) (http://www.sabif.ac.za)

WORKSHOP 6:

The Business of Biodiversity: Experiences from Implementation across the CFR

Mandy Barnett [1], Augustine Morkel [2,] Inge Kotze 3
[1] CAPE, C/o SANBI, Private Bag X7, CLAREMONT 7735
[2]. SANBI, Private Bag X7, CLAREMONT 7735
[3]. BWI, Botanical Society, P O Box 7055, STELLENBOSCH 7599.

Recognising that the private sector has an enormous role to play in the conservation of biodiversity, one of the growing components of the C.A.P.E. programme is the Biodiversity Business component. To date, the component has included:

- A range of agricultural sector- based initiatives including flowers, wine, potatoes and rooibos. Beekeeping, Citrus and Ostrich sector engagements are in the pipeline
- The development of policies best-practice guidelines for several sectors including off road vehicles, sustainable flower harvesting and wine
- The development of extension and stewardship capacity to support conservation – private sector partnerships
- Fundraising efforts and associated discussions with potential funders, from banks to retailers
- Engagements with business leaders and proposals to create a business leadership forum to support the C.A.P.E. programme and its partners
- The creation of SMMEs, including ecotourism enterprises such as donkey cart trails, guided trails and hiking routes etc

In many respects, the C.A.P.E. Business and Biodiversity Programme is still defining itself, and has set, as its targets for 2007/ 2008:

1. Engagements to consolidate the lessons learned from implementation to date; and,
2. An exploratory programme of engagement with the private sector, that has begun with a series of meetings with Woolworths, with the objective of developing a deeper understanding of the private sector and a more refined approach for future engagement.

We would like to invite you to join us at the Fynbos Forum for a “Business of Biodiversity” workshop. The purpose of the workshop will be to explore and discuss our experience in “Business and Biodiversity” projects to date, to discuss the successes and challenges, and to begin to develop and share some ‘best practice’ guidelines for engagement with the Private Sector.

Paper Abstracts

1-3 August 2007

20 Years of Reporting on Fynbos - A Journalist Looks Back

Key words: fynbos, journalist

Yeld, J.A.
Environment & Science Writer, Cape Argus, CAPE TOWN. john.yeld@inl.co.za

My earliest awareness of fynbos was forged in the late 1950s in the then unspoiled paradise of Betty's Bay. The texture and smell of damp restios, proteas and palmiet, and the crinkly touch of pressed everlastings are an ingrained part of my childhood memories. Two decades later, as a photographer on the Cape Argus newspaper, those memories returned as I started to learn about fynbos in the company of the newspaper's then environment reporter. In the latter half of the 1980s it was my turn to start writing about this endlessly fascinating subject.

In the past two decades, the public has become increasingly familiar with fynbos - it's now no longer just a funny word for some strange-looking plants that grow in obscure places, and it's become part of the popular lexicon. In particular, there has been a sharply increased understanding on the part of the public of the necessary role of fire in fynbos and of the threats posed by invasive alien vegetation.

However, this increased public awareness is by no means universal, and in particular there is still a lack of appreciation of just how rich fynbos is in biodiversity terms and how many different types of fynbos there are - it's not just "all that stuff that grows on the Western Cape mountains", as many people still appear to believe.

The media can, and is, playing an important role in educating the public about fynbos and about why it is so important to conserve habitats across the full fynbos spectrum. But professionals - botanists, other scientists, conservators, researchers - must accept a greater responsibility and more regularly use the media, both by talking to journalists and by using forums such as the "Letters to the Editor" columns, to explain the complexity of fynbos and the required management tools to the public.

PLENARY ADDRESSES:

Research for Implementation: What do we need to think about? What do we need to do?

RM Cowling
Department of Botany, Nelson Mandela Metropolitan, University, Port Elizabeth

Pragmatic, mission-oriented disciplines such as conservation planning, restoration ecology and ecosystem management should seek to generate knowledge and understanding that leads to the implementation of strategic management objectives. However, disturbingly few studies are embedded in a social process designed to ensure effective on-the-ground management of areas. It is unlikely that the outcomes of technically sophisticated research published in scientific journals will lead to implementation via a “trickle down” effect. Research needs to be geared for implementation and scientists should assist this process by responding to stakeholder needs from the outset, and by becoming involved in the messy process of collaborating with and empowering stakeholders in strategy development and implementation. My presentation addresses some conceptual issues (knowledge generation within interdisciplinary frameworks) and pragmatic issues (an operational model for achieving implementation) for producing research that is user-inspired, user-useful and user-friendly.

When there’s the will, what is the way?

Key words: Systematic Conservation Planning, Land Use Decision-making,

Manuel, J.[1,2]
1. *Department of Environmental Affairs and Development Planning*
2. *South African National Biodiversity Institute*

The landscape of the Western Cape is under intense development pressure – More than 30% of the Cape Floristic Region has been irreversibly transformed by urban and agricultural development. Due to the province’s growth as a tourism destination, economic activity and development mandate, this pressure will increase. The conservation of biodiversity is a contentious environmental issue in the Western Cape, given that more than two-thirds of South

Africa's threatened vegetation types occur in the province, predominantly in lowland areas likely to be subject to development pressure – Everything is important.

The Options-based conservations plans produced over the last decade have paved the way for the integration of biodiversity priorities in the wider land use sector, but has not been integrated in land use planning and decision-support tools as envisaged. Engagement with the land use sector to mainstream biodiversity plans into land use planning however reflect that where the recognition and will exists to integrate biodiversity priorities in the relevant agencies, a number of obstacles still hamper integration, including user skills shortages; organisational capacity; lack of understanding of biodiversity plans and concepts; and the interpretation of the applicability, importance and implications thereof. Critically, current conservation plans are also deemed not specific enough to inform land use planning and decision making – Everything cannot be important.

Protected areas expansion alone will not meet our conservation targets, and engaging on a site-by-site, case-by-case basis with land use development applications will not ensure a functionally connected and sustainable landscape. To achieve these goals, we need to deliver conservation products that enable decision-making that can be site-specific, but is shaped by a regional conservation context of a landscape where representative biodiversity is functionally connected. We should provide the plan to protect what will be important – and support its uptake in the toolkits and comfort zones of land use decision makers.

Putting a green foot forward

Key words: C.A.P.E., impact

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The Cape Action for People and the Environment Programme launched in 2000 set an ambitious 20 year goal of conserving the biodiversity of the Cape Floristic Region, restoring it wherever possible and ensuring that people of the region benefit significantly. Following agreement on the broad strategy, the CAPE programme set about mobilising a co-operative implementation programme involving 24 signatory organisations, over 100 projects and hundreds of individuals in a managed learning network. The year 2007 marks the endpoint of an investment by the Critical Ecosystem Partnership Fund and the mid-term of the GEF-funded CAPE Biodiversity Conservation and Sustainable Development Project. It is an opportune moment to stand back and evaluate progress made in the programme since 2000, to distinguish whether in addition to the programme outputs, the goals of the programme are being achieved, and to chart a course through adaptively managing the programme for the future. It is also an opportunity to assess the extent to which the contextual institutional, social and economic environment has changed and how this might influence the range of activities necessary to pursue the CAPE goal.

In this paper, we highlight the progress to date, including the findings of an independent evaluation of the programme and a review of the CEPF-funded activities, with a specific focus on measuring impact. We describe a new monitoring and evaluation framework developed through a participatory approach with programme implementers, including a new objectives hierarchy, output and impact indicators, that will help to sharpen the focus of activities and ensure that the attribution of impact to specific activities is carefully monitored. We also point towards gaps in the implementation programme and the means to address these. We speculate on the extent to which the programme can be broadened and deepened to take advantage of the growing concern, public perception and institutional response to the threat of climate change.

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3. ABI report
4. CAPE Strategy

PARALLEL PAPER SESSION 1: CONSERVATION/THREATENED SPECIES:

Does protecting threatened ecosystems conserve threatened plant taxa? A case study from the Cape Floristic Region.

Key words: Threatened ecosystems, threatened species, conservation

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South Africa's National Environmental Management: Biodiversity Act (NEMBA) stipulates that taxa may only be regarded as threatened if they are endangered by activities listed by the Act. The main threats to plant biodiversity in the Cape Floristic Region (CFR) including habitat destruction and agriculture are not restricted activities. Consequently, a large proportion of the Red Listed plant taxa in the CFR are not on the national list of protected plants. The rationale for not including taxa threatened by habitat transformation is that they will be protected by legislation focusing on threatened ecosystems. However, there is little scientific justification to show that threatened taxa would be protected by this legislation for threatened ecosystems. This paper uses the CFR as a case study to explore how many threatened taxa (TT) will be conserved if threatened ecosystems are protected and what impact mapping ecosystems at a finer scale will have on the number of taxa protected. We identify which additional ecosystems should be listed to conserve threatened taxa more effectively. Threatened taxa point locality data, based on digitised herbaria records, and Atlas data were used to determine the relationship between threatened taxa and ecosystems. Results show that 41% (765) of the taxa used in this analysis occur within the protected areas network. Of the taxa not protected, 661 are taxa of conservation concern. Some 271 taxa of conservation concern will be protected if we conserve threatened ecosystems and at least 290 taxa of conservation concern will not be protected. Preliminary results show that at least 6 ecosystems (Table 1) in the CFR needs to be added to the list of Critically Endangered and Endangered ecosystems to conserve 80% of taxa of conservation concern and 68% threatened taxa.

Table 1: Ecosystems to be listed as threatened based on the number of threatened taxa recorded in them.

Vegetation Type	Proposed ecosystem status (NEMBA)	Number of TT	Upgraded status based on TT
Overberg Sandstone Fynbos	LT	60	CR
Atlantis Sand Fynbos	VU	50	EN
Kogelberg Sandstone Fynbos	LT	43	EN
Boland Granite Fynbos	VU	37	EN
Hawequas Sandstone Fynbos	LT	31	EN
Agulhas Limestone Fynbos	LT	26	EN

Conservation of the endemic invertebrate fauna of the Cape Peninsula

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The Cape Peninsula, is only 470km^2, yet has 2285 plant species of which 90 are endemic specifically to the peninsula, remarkably, very little is known of the invertebrate assemblages of this area[1]. Recently, a literature survey for the Cape Peninsula and recorded 112 endemic faunal species, of which 111 were invertebrates, most of which were collected on Table Mountain[1]. Of great concern, is that many of these endemics have not been seen for several decades, and many are now considered extinct. Further concern for these invertebrates for the

fact that their habitat is being transformed through the impact of invasive alien trees [3,4], and the unnaturally high occurrence of fires, the effect of which is virtually unknown[5].

The objectives for this study are to ascertain the ground, litter, boreal and aerial invertebrate diversity value of Table Mountain, to assess the status of irreplaceable endemic taxa, to determine significance of changing landscape mosaics on the biodiversity of Table Mountain, with particular emphasis on areas that have either been burned or cleared of pine trees and to provide baseline information that links with Peninsula-wide management.

Ground, aerial and boreal sampling methods for 80 sites across Table Mountain were intensively sampled. These enable comparisons between vegetation, aspect, elevation, disturbance levels and the effect of fires. Also a Peninsula wide survey of conspicuous invertebrates' distributions was conducted and mapped these distributions allow for further analysis and the identification of invertebrate conservation priority areas.

Preliminary results show that young forests and cultivated gardens (Kirstenbosch) show the highest epigaeic and flying invertebrate diversity. Both ground and flying invertebrate diversity was higher at low elevation sites in the fynbos, yet in forested sites they appeared unaffected by elevation. Fynbos sites on the north and west sides of the mountain, had higher diversity than other sides. Furthermore, several rare and threatened species have been found on the mountain, along with a number of species never recorded on the peninsula before.

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Exploring new frontiers – CREW rising to the challenge

Key words: Threatened plants, Monitoring, Conservation, Livelihoods

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The CREW program has been established nationally and we have 4 nodes in the country. The CFR expansion has been very successful and we managed to establish 4 new groups in 2006. Useful data from these new areas are streaming in and we have used the data to update the red list and in land-use decision-making and conservation planning.

CREW has found that it is fairly challenging to engage communities from previously disadvantaged backgrounds in monitoring and conserving threatened plants.
We will be piloting a new project in the Mamré region to find solutions to the many challenging conservation issues as well as trying to address socio-economic problems. The project will focus on developing capacity within the community in Mamré to assist with monitoring and conserving threatened plants, strengthening existing tourism activities and creating opportunities for the community to continue contributing to the conservation of this area.

This presentation will showcase the CREW Mamré Project and highlight some of the new areas and new challenges facing the CREW program.

Lessons from red listing the Fynbos plants

Keywords – Red List for the Fynbos, threats to plants in CFR

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SANBI'S threatened species programme has been responsible for updating the red list for South Africa's plant species. This list will be published at the end of 2007. The final list is complete and indicate that over 60% of South Africa's threatened plants occur in the Fynbos Biome. This presentation will present the final statistics of how many plants are threatened in the CFR and what are the main threats. It will also explore the patterns of rarity within the CFR and show the distribution of threatened plants. It will then look at what are the implications for conservation and suggest what approaches need to be taken to effectively conserve and monitor our threatened plant species. The presentation will outline some of the major lessons learnt during the red listing process.

Planning for conservation in the Baviaanskloof: 2003 – 2007

Keywords: Conservation, Planning, Mainstreaming, Baviaanskloof

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The Baviaanskloof region is one of three priority areas in the Cape Floristic Region (CFR) that have been identified by the Cape Action for People and the Environment (C.A.P.E) as suitable for the establishment of so-called mega-reserves, a consolidated conservation landscape of > 400 000 ha in extent. The region is arguably one of the most bio diverse areas within Southern Africa with representation of all seven of South Africa's biomes. It is at the convergence of 3 of the world's top 36 biodiversity hotspots (Cape Floristic Region, Succulent Karoo and Maputo-Pondoland-Albany centre of endemism). The Baviaanskloof mega-reserve project is a world bank funded CAPE project implemented by the Eastern Cape Government and the Wilderness Foundation. The conservation planning component of the BMR can be described in four phases. 1) The initial planning focussed on using existing information and project out puts (such as STEP) to inform internal decision making and project implementation. Implementation pilot areas were identified based on systematic planning principals, and project development and support were focussed in these areas. Detailed vegetation and landuse mapping, essential for more detailed planning, was commissioned and completed during this phase. 2) The formal conservation estate in the Baviaanskloof region is currently about 231,386 hectares, and is managed by the Eastern Cape Parks Board. The second phase of planning focussed on these formal protected areas and used the detailed vegetation and landuse mapping to develop a fire management plan, conservation development framework, strategic management plan, and land consolidation strategy. 3) The third phase of planning was the development of a detailed Systematic Biodiversity Plan for the mega-reserve, to aid in Landscape level planning at Local Government and level, and in informing regulatory decision making by DEAET, the provincial agency responsible for implementing NEMA. 4) A critical phase in currently being implemented in which the planning products are mainstreamed and integrated into agriculture, local government , provincial government and EA industries.
The lessons learnt from this process include; Planning expertise within the project management team allows for defensible decision making in a dynamic implementation environment; Having a planning framework in which the various types of plans are described and linked is very useful; Following best practise and guidelines described by other projects can save a great deal of time – innovation is not always a justified cost.

Cape Town: a Biodiversity Megadisaster

Key words: threatened ecosystems, conservation, development pressures

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The City of Cape Town sits at the heart of the Cape Floral Kingdom. Although covering an area of only 2200km^2, it contains 9 of the 24 Critically Endangered ecosystems (as defined by the National Environmental Management,

Biodiversity Act of 2004) in South Africa. In this area some 13 plant species are globally extinct (at least in the wild), out of a total of 47 in South Africa: Thus 3.4% of the world's 380 extinct plant species occur within Cape Town; only a few countries exceed Cape Town's figure. A further 152 threatened species (Red Data List: Critically Endangered, Endangered and Vulnerable) occur in the area. Although there are many initiatives to conserve and manage the biodiversity, critical areas are being lost at a faster rate than conservation measures can counter. Land transformation and invasive alien plant species pose the biggest threats. Severe pressure to provide land for upmarket suburban and coastal developments and low-cost housing for Cape Town's rapidly growing low-income sector, to obtain building materials (primarily sand), and to provided shaded landscapes for walking dogs are in direct conflict with national objectives to conserve representative ecosystems. Even within the Table Mountain National Park - established in 1997 as the largest conservation area in the city - it is evident that alien control is slipping behind and ecosystem conservation is being compromised by social pressures, for recreation. Without further international pressure and funding, efforts by local conservation officials will fail to slow the rate of degradation.

Solva: Perspectives of a landowner

Key Words: Land Acquisition, Future Management

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In terms of its biological features, Solva (588 ha in extent) has the highest status of conservation priority possible for three reasons:
(i) It includes a substantial portion (200 ha) of a vegetation type (Elgin Shale Fynbos) that is classified as "critically endangered".
(ii) It harbours populations of 7 Red Data Book species (2 of which are endemic to Solva).
(iii) It encompasses a major soil boundary and associated transition from shale to sandstone fynbos."
This serves to remind me how important Solva is and what we have achieved - this is a big contribution to the conservation of critically endangered habitats in the Cape Floristic Kingdom.

The transferring of Solva into my name is an interesting story in it self, but the future road to the securing of the site for conservation brought up some issues which we as conservationists should addressing. These specifically resolve around what the appropriate mechanisms are that can ensure conservation and management of a site in perpetuity.

PARALLEL PAPER SESSION 2: EDUCATION:

Lessons learned in conservation education strategy development in the CRF region

Key words: Conservation Education Strategy , Knowledge resources, Community of practice, Career Parthing

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Within the C.A.P.E. (Cape Action for People and Environment) programme, the conservation education component was tasked with establishing a Conservation Education Strategy for the Cape Floristic Region (CFR) as part of Phase 1 of the C.A.P.E initiative. Mid-way through the first 5 years of the C.A.P.E. programme, the C.A.P.E. Conservation Education Programme (CCEP), based at Rhodes University, has identified a number of insights worth deliberating in terms of the processes associated with Conservation Education Strategy development in CFR.

Synthesising these insights, we propose to put forward an analysis of the Conservation Education Strategy development work, with a view to mapping a way forward for strengthening the way in which Conservation

Education Strategy can contribute to achieving long term biodiversity conservation goals. Key issues to be discussed are:

- Institutional strengthening of conservation education through strategy development (at individual institution level, and at C.A.P.E. CFR wide networking level)
- Maintenance and development of institutionally located conservation education systems through adequate professional development, career pathing, resource allocation, synergies across different conservation components in organisations (e.g. conservation education; stewardship; training etc.)
- Improving strategies for working with knowledge resources to strengthen action competence in diverse social contexts in response to biodiversity conservation priorities within the CFR
- Strengthening a community of practice to deliberate emergent and reflexive approaches to conservation education strategy and activities

The role of an Environmental Education Centre situated on a nature reserve.

Keywords: Environmental Education centre, Education officer, operations

Hestelle Melville:
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The Kristo Pienaar Environmental Education Centre (KPEEC) is situated in the Tygerberg Nature Reserve (TNR) and is one of the Environmental Education (EE) initiatives that form part of the broader Biodiversity Management Department in the City of Cape Town (CCT). It is owned and administered by the CCT and is one of the twelve EE centres within the Local Government structure. CCT owns land comprising twenty-two nature reserves situated in different areas of the Cape Metropole, all with different natural ecosystems. The reserves also differ in the communities they serve; staffing, time they have been in operation and available resources. All the existing education programmes in the different reserves of the city focus on the particular environmental issues and ecological systems that are unique to them. The education officers responsible for these programmes differ in experience, responsibilities, priorities and backgrounds. This paper focus on the role, activities and services offered at the KPEEC in order to understand the role of the centre and review the professional work of an education officer responsible for the centre and its operations.

The Friends of the Helderberg Nature Reserve: Supporting Fynbos Conservation and Education Helderberg Nature Reserve

Key words: 20 Years of Fynbos Support

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The Friends of the Helderberg Nature Reserve was founded in 1987 as a support group to assist the local authority with conservation projects and fundraising initiatives for the Helderberg Nature Reserve.
During the past 20 years the Helderberg Friends has grown to a formidable and well known support group and is active in numerous conservation and support projects.

These projects include:

1. Provision of valuable manpower, at no cost to the City of Cape Town, to;
   - provide environmental education to all sectors of the public;
   - staff the Information Centre where the public is able to access information,
   - staff the Indigenous Nursery,
   - and to assist with alien clearing through organized hack groups.
2. Valuable promotion and advertising of the Helderberg Nature Reserve, through;

- The design and printing of the Reserve's Brochure,
- The development and maintenance of the Reserve's website,
- Regular articles in the local press

3. Important fundraising events that support conservation and maintenance projects, such as;

- The Summer Sunset Concerts
- The Guinea Gift Shop
- The Indigenous Plant nursery
- Membership

Their most ambitious project is the Mike Woods Environmental Education Centre, where learners of all ages are exposed to our Fynbos Environment and are empowered to take informed decisions regarding its conservation. The Centre recently celebrated its 10th anniversary, showcasing and reflecting on all the successes of the past ten years. This event also commemorated the tremendous work done by volunteers.

Youth, GIS & Urban Nature: Reporting back on the pilot project

High school fieldwork, nature reserves, Cape Town, GIS

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Geographic Information Systems (GIS) was introduced as a topic in the senior Geography curriculum for the first time in 2007, but very few schools are equipped to teach about GIS in a practical way. At the Fynbos Forum in 2006, the author proposed that nature reserves could be ideal settings in which high school learners could use GIS technology practically. It was suggested that GIS-based fieldwork opportunities might attract more high schools to visit nature reserves and study biodiversity.
In 2007, a pilot project was initiated in two of the City of Cape Town's nature reserves. With the support of partners including the City of Cape Town, Biodiversity GIS at SANBI, and the Table Mountain Fund, the environmental education centres at Rondevlei and Tygerberg Nature Reserves are being equipped and the education officers trained to use GIS. We are developing educational programmes and materials, and have started trialling the project with schools.
This presentation will provide an update on the project and share what we have learned so far.

limbovane: It's about the learners

Key words: outreach, impact, learners

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limbovane: Exploring South African Biodiversity and Change is a multi-faceted outreach project aimed at Grade 10 Life Science educators and learners within the Cape Floristic Region. The limbovane project is seated within the National Curriculum Statement. The project aims to assist educators to implement the knowledge areas of "Biodiversity, continuity and change" and "Environmental studies" of the Grade 10 curriculum. limbovane has been in operation for three years. The project team is often asked how we measure project success, and if we feel we are having a real impact on the educators and learners we target. This presentation will look at the different ways in which learners are involved in the limbovane project and discuss some of the impacts the project is having.

Plant Monitoring Day: outdoor education and conservation action in the Cape Floristic Region

Keywords: Plant Monitoring Day, education, public involvement

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The Cape Floristic Region (CFR) is a designated UNESCO World Heritage Site renowned for its high species richness and endemism. Presently, 20% of CFR plant taxa are rare or threatened with extinction[1]. The key to successful conservation lies not only on policy and management but also active public involvement. In this context, the Custodians of Rare and Endangered Wildflowers has initiated 'Plant Monitoring Day', an annual educational event in mid-spring (September), where students and their teachers and eco-club volunteers monitor core species in their locality. Data collected is also used to show regional trends and supplement classroom science lessons.
Experience and lessons learnt will be discussed.

[1] Victor et al in prep., 2007

Creating an digital archive for efficiently documenting our Biodiversity: CASABIO's OLIVA – The Ongoing Life Archive

Key words: Biodiversity tool, content management, image archive, Cape Peninsula

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Due to the overwhelming biodiversity that is threatened by ongoing development, a database is being created for the efficient gathering of species and locality information to intelligently conserve our remaining species. Through the use of modern electronic tools, we showcase a revolutionary model and database to compliment existing herbarium and zoological collections. As applicable to the amateur naturalist, as it is to the professional taxonomist, CASABIO aims to provide a tool that allows for rapid species identification, that can be used by the entire biological community, and that will inspire users of the land to promote conservation.

PARALLEL SESSION 3: PLANT ANIMAL INTERACTIONS:

Impact of Herbivory by Large Game on Plant Palatability in West Coast Renosterveld

Keywords: Palatability, nutrient content, fibre, grazing

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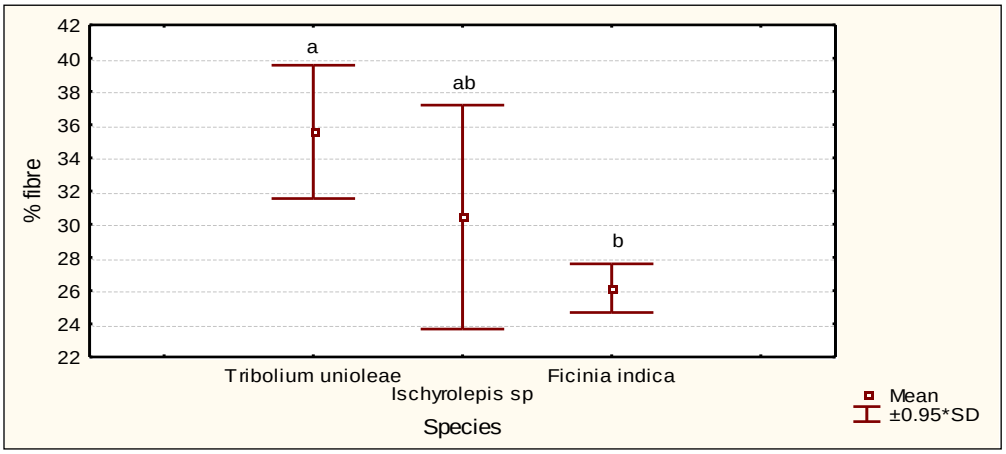
Nearly 95 % of west coast of renosterveld has been fragmented[1]. Historical records suggested that in the past, this vegetation used to sustain large game species[2]. To find out the appropriate management technique of the remaining fragments, we investigated the influence of palatability on selection by herbivores and impacts of herbivores on plants chemical content. A survey of grazing intensity on plant species was carried out on three contiguous sites with different stocking rates: none (LSU: 0/ha); medium (LSU: 0.03/ha) and high (LSU: 0.05/ha) in spring and summer. Plant chemical content has been assessed. A comparison of three species (Restionaceae: *Ischyrolepis sp;* Poaceae*: Tribulium uniolae and* Cyperaceae: *Ficinia indica)* showed that grazing selection is correlated with palatability, i.e. the species most grazed has the highest protein and lowest fibre content (Figure 1) in spring at the highest stocked site. Nutrient content of *Ischyrolepis sp* and *Tribulium uniolae* showed different patterns: protein content of *Tribulium uniolae* was higher at the medium grazing site whereas it was lower for *Ischyrolepis* at the medium grazing site. We suggest that palatability of plant species directs selection by herbivores. Grazing intensity impacts on nutrient content, but others factors such as soil variables might also play a role.

Figure 1: Content of *Ischyrolepis sp, Tribulium uniolae* and *Ficinia indica* in summer under high grazing intensity



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GAME INTRODUCTION IN THE FYNBOS

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The interest in game on private land continues, which has forced us to take a much closer look at the potential for game in the fynbos biome. The original idea that fynbos generally isn't really suitable for game couldn't be further from the reality. Mountain fynbos provides limited opportunities, mostly for small territorial antelopes that are able to survive on nutritionally poor vegetation, while larger herding animals require extensive ranges to satisfy their nutritional needs.

Lowland fynbos habitats and renosterveld however, often provide excellent opportunities for large game introduction. Mosaics of fynbos/renosterveld and thicket, riverine thicket, grassy fynbos, vlei lands and even strandveld are examples of productive habitats for herbivores. The occurrence of transformed habitat, particularly grassy pastures or old lands in many lowland fynbos areas provides additional potential for game.

Estimations of the ecological capacity of the vegetation, animal stocking rates and the species mix of introduced game are confounded by a number of typically "fynbos" issues. These relate to fire, size of a typical ranch, habitat diversity, nutritional deficiencies, threatened plant conservation, alien plant infestations, strongly defined seasonality and water availability.

With this wide range of ecological considerations, by far the best policy is to introduce historically indigenous, and thus presumably suitably adapted, wildlife and to resist the temptation to introduce the typical game ranch animals of the Savanna and Grassland biomes.

While this makes good ecological sense, it is very difficult to convince private landowners to keep to the historical incidence path. Game ranch landowners most often have clearly defined game introduction objectives which have nothing to do with game history, or the best fit to the habitat, but more to do with a maximum return on investment through the introduction of charismatic game animals, hunting and ecotourism.

Cape Nature Conservation have prepared a game translocation policy which, although very accommodating, does prohibit the free movement and introduction of certain species.

Landscape corridor conservation initiatives also favour historically indigenous game which, to some degree, alienates properties that already have long established extralimital game species.

The game industry is extremely difficult to regulate and control, but in the interests of fynbos conservation, the swing should be towards approvals and incentives that are based on ecological evaluation in each case and not only on the policies of the regulating authority. In this way, landowner/authority tension may be reduced and the objectives of fynbos conservation advanced, even on game ranches.

Linking the sustainable use of gamebirds to improved habitat management in renosterveld fragments in the Overberg, Cape Floristic Region

Keywords: renosterveld, gamebirds

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Conservation targets on private land can be met only when incentives are provided that will convince private landowners to alter their farming practices. One effective incentive in other parts of South Africa (but which has not been tested in the CFR) is the potential for economic gain derived from the sustainable harvesting of gamebirds (for example, in the early 1990s, the then embryonic wing-shooting businesses in the Eastern Cape were injecting approximately R2 million annually into financially depressed rural communities. At the same time, a single Greywing Francolin was worth about the same to a farmer as a sheep on the hoof). It is highly possible that gamebirds in the Overberg may prove to be equally valuable to local farmers and communities. This *pilot* project (funded by the CEPF) aims to investigate how gamebirds (Cape Spurfowl and Greywing Francolin) can be used to benefit farming communities, while at the same time providing conservation incentives on private land within the CFR. I therefore focus on 1) examining the relationship between gamebirds and habitat management (by comparing bird counts with vegetation surveys) and 2) gauging farmers' perceptions of gamebirds and their potential value (through one-on-one interviews with farmers). If the link between gamebirds and fragments subject to 'better management' is strong, one could argue that managing for gamebirds has overall benefits to biodiversity in renosterveld. This then presents an opportunity for gamebirds to be used for recreational and commercial hunting, on a sustainable basis (determined by this and other work), and therefore, an incentive for improving habitat management in renosterveld fragments.
**The project is only due to finish in October 2007, thus *preliminary* results will be presented.

The effects of habitat fragmentation on small mammal communities in the Western Cape lowlands

Key words: Fragmentation, renosterveld, fynbos, small mammals

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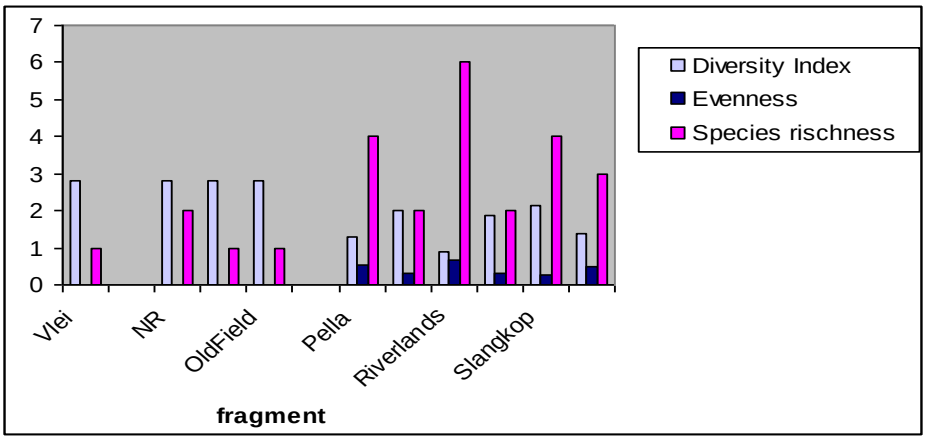
Fragmentation is invariably associated with land systems where conservation competes poorly with other forms of land use such as agriculture and urbanization. This is certainly true of the West Coast renosterveld and the lowland fynbos[1]. At Elandsberg Farms and Nature reserve the renosterveld vegetation has been fragmented in favour of cereal crops whilst at Riverlands and Pela Nature reserves the natural fynbos is increasingly fragmented by the encroachment of the invasive alien Acacia saligna. Small mammals, compared to other wildlife are particularly sensitive to habitat alterations thus making them potential reliable indicators for environmental monitoring programs[2]. As part of a bigger habitat fragmentation project, a study was carried out to investigate the effect of habitat fragmentation on small mammal communities in the Western Cape lowlands. Small mammal populations and vegetation characteristics (habitat) were evaluated in the fragments and in the adjacent transformed veld at these sites. Small mammal species richness, diversity and abundance were less in the adjacent sites compared to the fragments of natural vegetation in all sites. These results are presented and discussed.



Graph 1. Species diversity, richness and evenness in the fynbos and renosterveld fragments.

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Pollinator-driven floral variation in *Tritoniopsis revoluta*

Keywords: *Tritoniopsis*, pollination, long-proboscid fly, tube lengths

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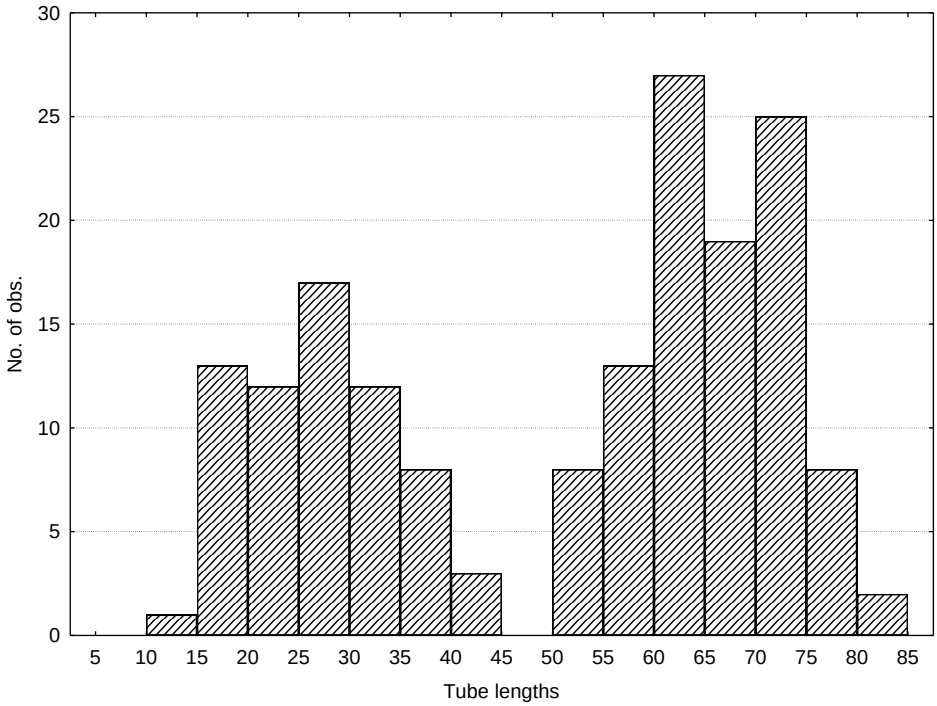
The genus *Tritoniopsis* (Iridaceae) consists of 24 species and is endemic to South Africa. The genus exhibits a high degree of floral variation, and pollination occurs through a wide variety of pollinators (bees, flies, moths, birds). In *Tritoniopsis revoluta*, considerable variation is seen in perianth tube lengths (14-85mm), which led me to hypothesize that the variation in the tube lengths of *Tritoniopsis revoluta* may be due to different pollinator morphology at different populations. Seven different *Tritoniopsis revoluta* populations with tube lengths spanning the entire length-range were found using herbarium data. From these populations pollinator and tube-length data were collected, and compared. I found that tube length can be divided into 2 discrete categories, namely short (10-45mm) and long (50-85mm) (figure 1). In addition to this there is one population with a bimodal distribution in corolla tube length, which suggests that plants with different tube lengths could be incipient species. Flies with proboscis lengths matching the short category have been caught, but no flies have been caught in populations with long tubes. Future research will concentrate on how different morphs are maintained in different populations, and in sympatry. In particular I will undertake a population genetics study to establish whether there is gene flow between different morphs in bimodal populations, and whether there is gene flow between the different populations themselves.



▲ Figure 1: Tube length categories and number of observation per class found in 7 *Tritoniopsis revoluta* populations

Assembly and disassembly of nectarivorous bird communities in the Cape, South Africa

Key words: pollination, nested, nectar, *Protea*.

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Approximately 4% of plant species in the Cape are pollinated by birds. These plants are effectively pollinated by only five sunbird and one sugarbird species. The topic of nectarivorous bird community structure has hardly been touched on in South Africa, and surprisingly little is known about the factors that determine bird community composition in the Cape in general. In this study, the structure of the nectarivorous bird community is assessed. Firstly, I test the hypothesis that these simple communities are assembled in a nested way, such that the species present in species-poor communities are real subsets of the species present in more diverse communities. Secondly, I test the ability of the following variables to predict bird community diversity: veld age, nectar density, and protea diversity. It is important to understand the factors, both natural and anthropogenic, that determine the composition of nectarivorous bird communities because these nectarivores are not functionally analogous pollinators. Certain plant species might, for example, depend only on the large-bodied sugarbirds for pollination. Therefore, the health of the entire nectarivorous bird community is essential.

PARALLEL SESSION 4: PARTNERSHIPS / STEWARDSHIPS:

Engaging civil society in NMBMs conservation action

Key words: Nelson Mandela Metropolitan Open Space System (NM MOSS); Stewardship Agreements; Urban Nature Reserves; Civil Society

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Conservation projects can be best served through partnerships, that commit public an private sectors to working together to conserve biodiversity for future generations.

To realise the implementation vision of the Nelson Mandela Metropolitan Open Space System (NM MOSS) Conservation Programme, the Nelson Mandela Bay Municipality (NMBM) has set out to engage civil society (Wildlife and Environment Society of South Africa (WESSA) and the Baakens Valley Preservation Trust (BVPT)), in conservation action at two of the NMBMs most important NM MOSS implementation sites. These include the Baakens Valley area and the greater Van Stadens River Gorge corridor.

Two partnership projects have been developed in collaboration with WESSA and the BVPT as part of the implementation phase of the NM MOSS Conservation Programme. Seed funding has been granted to these two projects from the CEPF, through the C.A.P.E. Programme. They are known as the *Baakens Valley Recovery Plan* and the *Van Stadens River Stewardship Programme*, which will focus strongly on;

- securing stewardship agreements and incentives for the Van Stadens River Corridor (VSRC);
- establishing public-private partnerships and enhancing community involvement in these two areas;
- identifying conservation initiatives that will restore the Baakens Valley as a community conservation and recreation site.
- and strengthening institutional capacity of the partner organisations

Baakens Valley Recovery Plan

The NMBM and BVPT plans to regenerate the Baakens Valley as a safe community resource and functional habitat by mobilising community participation and support in the valley. These will be mobilised by strengthening the BVPT through knowledge sharing, skills training, capacity-building, strengthening and enlarging the volunteer corps of the BVPT; and employing rangers and tourism ambassadors to guide and protect visitors to the Baakens Valley.

Van Stadens River Stewardship Programme

WESSA and the NMBM aim to develop short and/or long-term stewardship agreements, with selected, priority properties. Landowner participation may be incentivised through offering land management support measures, such as co-managing natural veld, fire control, alien plant clearing or rates/tax rebates on 'stewardship' properties. The development of a cluster of stewardship properties will also pave the way for the development of a VSRC conservancy.

CONVERTING THE UNCOVERTED/CONSERVING THE UNCONSERVED: ECOSYSTEM CONSERVATION IN A FRAGMENTED LANDSCAPE – WHO NEEDS TO GET INVOLVED AND HOW?

Key words: priority conservation areas, landownership, sustainability

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Conservation has shifted focus in both concept and approach from traditional fenced in protected areas to "off-reserve" prioritisation of biodiverse hotspots across landscapes. The Western Cape in South Africa is well known for its high levels of biodiversity and endemism. But with 80% of priority conservation areas existing on private land, fresh, novel initiatives are needed to implement conservation strategies, where private and communal landowners will play a fundamental role.

The Western Cape Nature Conservation Board's Stewardship programme has been actively implemented over the last 5 years, in an attempt to expand the protected areas network across the landscape, giving landowners an opportunity to contribute towards the conservation of globally important biodiversity remnants. Most of the successes thus far however, have included those landowners who were already "converted". So how do we attract the "unconverted" in partaking in such custodianship? South Africa being a developing country and placing great emphasis on transformation, also means that present owners of land do not necessarily reflect the future owners and their relationship with the land.

Therefore, the short- and long term sustainability strategies need to be viable and incorporate present as well as future landowners, their attitudes and willingness to participate. To do this the packaging will need to be well defined and worth-while for landowners. Strong partnerships and cross-organisational collaboration will be crucial in fortify this "new" way of conservation, incorporating social, ecological and economic structures within the landscape.

Status quo of Stewardship in the Western Cape and South Africa, where to from here?

KEY WORDS: Stewardship Programme, Strategy, Lessons Learnt

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The Western Cape Nature Conservation Board (CapeNature) and the Botanical Society of South Africa - funded by the Critical Ecosystem Partnership Fund - piloted the Stewardship Programme in the critically threatened lowland habitats of the Western Cape. This pilot programme was so successful that it was adopted as a permanent programme by CapeNature and fragments right across the Cape Floral Kingdom have been identified as Contractual Nature Reserves.

The Stewardship Programme was instrumental in developing the legislation which allows the creation of Provincial Nature Reserves on private land. The Programme continues to develop tools to aid the management of these Contractual Reserves and develop the extension staff that negotiate and engage in collaborative management with the landowners and managers. One of the programmes objectives is to lobby for conservation incentives provincially and nationally to encourage the formation of Contractual Reserves.

The Stewardship Programme, its strategy, legal framework and methodology are currently being adopted by other South African Provinces, as a means for conserving fragments in the landscape. The National Department of Environmental Affairs and Tourism in South Africa has also acknowledged the possibilities of this mechanism to protect biodiversity and has just recently launched a National Stewardship Programme; Biodiversity Stewardship – South Africa.

Being part of the project from the piloting phase until the present we would like to share the development and lessons learnt from Stewardship and present the strategy for its sustained progress into the future.

Shifting relationships for sustainability

Key words: sustainability, community, partnership

Paula Hathorn & Marilyn Martin
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Handover, letting go, learning to trust, shifting responsibility, a light touch……these are words that we can use to describe our strategy as we shift our relationships with the four conservation pilot sites that where Cape Flats Nature has been intensively involved for the past four years. Together with the City of Cape Town conservators who manage the sites, we have been building a conservation practice that involves and benefits local communities.

Even in the pilot demonstration stage we were conscious of the need to institutionalise our approach and build capacity on the ground, and we shifted our practice in a number of ways that have left the City and community partners working together more independently of the project team.

As Cape Flats Nature moves into its replication & roll out phase, we need to have an even lighter touch. We are rethinking and shifting our administration systems to accommodate new relationships to community partnership activities. Our case study workshops are now with the whole of the City's nature conservation branch, not just the

conservators at the pilot sites. Our relationships with community partners are shifting and changing in response to our changed role. We also need to develop ways of keeping track of how the on-the-ground partnerships are going, and long-term impacts.

There have been different phases to this process of shifting relationships and in this talk we will explore what those phases are and where we are going. We are learning from this process, this is not the last word!

Challenges in scaling up

Key words: replication; partnership; action learning

Zwai Peter
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In 2002, the Cape Flats Nature partnership project was launched to build good practice in sustainable management of nature sites in the City of Cape Town's Biodiversity Network in a way that benefits the surrounding communities, particularly the townships where incomes are low and living conditions are poor.

In Cape Flats Nature's demonstration phase, the project worked at four pilot sites to catalyse community partnerships for conservation action through working in a developmental way with community stakeholders on the one hand, and by building the capacity of City nature conservators to work with community partners on the other.

We have now begun implementing a replication and roll-out strategy, based on lessons from the demonstration phase. In this presentation we want to share our strategy for scaling up and some of the challenges we face.

Unlocking the Potential of Protected Areas: The Western Cape's protected areas as tourist destinations.

Keywords: tourism revenue, tourism development, protected area expansion

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The Western Cape is South Africa's foremost tourist destination but protected areas do not currently generate substantial revenues from tourism and only 10% of CapeNature's budget is generated from this sector.[1] Although CapeNature controls 6.3% of the province, total tourism revenue is equal to the amount earned from two camps in the Tsitsikamma National Park[2]. Amongst the reasons cited for a lack of revenue are historic factors as most reserves were inherited from DWAF and were never designed as viable protected areas. Boundaries are often irregular and national roads cross many reserves, which conveys the perception to the public that the product on offer is abundant and free. A lack of tourist infrastructure and a narrow range of activities on offer are additional factors which weaken the product.
But the demand for nature-based tourism is increasing. Table Mountain National Park currently receives 4 million visitors per annum and is the most visited protected area in Africa. The majority of the Western Cape's protected areas are located within a 2-hour drive of Cape Town, and are therefore easily accessible to a market comprised of several million domestic and foreign tourists.
By comparing the Western Cape to the Natal Drakensberg Park, where the conservation agency provides 536 beds within the protected area, and many thousands of beds are located in hotels in development nodes on the park boundary, could many of the Western Cape's provincial reserves be enlarged and developed to become tourist destinations in their own right? Many current reserves straddle important vegetation boundaries and could be expanded to include portions of the Nama and Succulent Karoo biomes, as well as relics of Lowland Fynbos and in so doing could fulfil both conservation and social obligations.[3] Potential income streams such as game-viewing, game capture and controlled hunting also require further investigation.

This paper examines these issues and proposes enlarging existing protected areas through land purchases, lease agreements and stewardship contracts. Once the land had been secured, tourism development sites at the base of protected areas would be designated, where Public Private Partnerships and lodge concessions can generate income that will help subsidise biodiversity conservation and lessen the dependence on state subsidies.

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PARALLEL PAPER SESSION 5: ECOLOGY:

Altitutinal body size variation in beetles

Key Words: intraspecific patterns, size gradients, resource allocation

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This study specifically investigates how body size within populations varies over space and time. The motivation for this study is the relative paucity of information in the literature pertaining to how body size varies at the intraspecific level for insects, and what mechanisms might underlie this variation. Furthermore, if a better understanding of size variation patterns is sought, especially with regard to the mechanisms underlying how body size of a population is distributed, factors affecting the life history, physiological and ecological responses of individuals in a population need to be considered. This is also the case for geographical variation in body size of insects. Altitudinal variation in insect body size therefore, is of particular interest, and here it was used as the basis for an investigation of the possible mechanisms underlying clinal patterns in body size. These mechanisms have been formulated into five hypotheses (Table 1). Variation was found in the patterns observed for the beetle species considered in this study. Although one species (*Sternocara dentata*) did not vary significantly in mean size along the altitudinal gradient, *Thermophilum decemguttatum* and *Zophosis gracilicornis* both showed a decrease in size with altitude, contrary to what is expected from the temperature-size rule for ectotherms. The responses in the body sizes of the latter two species to several environmental variables along the altitudinal gradient, including mean annual temperature and some vegetation variables indicated that the size variation is subject to the combined effects of temperature, resource availability and resource acquisition. This finding provides support for the resource allocation switching curve mechanism (one of several alternative mechanisms) thought to underlie clinal size variation[3].

Table 1. Predictions of the hypotheses proposed to date to explain spatial size variation in insects

Hypothesis Description	I Proximate biophysical model[1]	II Temperature threshold hypothesis[2]	III Resource allocation switching curves[3]	IV Minimum metabolic rate[4]	V Starvation resistance[5]
Size change with temperature	-	-/+	-/+	-/+	-
Interspecific differences	No	Yes	Yes	Yes	Yes
Larval mortality factors	No	No	Yes	No	No
Size ratio prediction	No	No	No	Yes	No
Extent of seasonal differences	No	No	No	No	Yes
Significance of season length	No	Yes	Yes	No	Yes
Cell size and number	No	No	No	Yes	No

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Dusk 'til Dawn: Protea night-life and its importance for ecosystem functioning

Key words: hydraulic redistribution, nurse plants, summer drought

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Hydraulic redistribution is a process whereby plant roots redistribute water from moist soil layers or ground water to dry, usually upper, soil layers in the absence of transpiration, i.e. at night. This redistribution facilitates increased water and nutrient uptake by shallow lateral roots. Hydraulic redistribution has been documented in more than 50 taxa including trees, shrubs and grasses from deserts to tropical forests. Since proteas have a dimorphic rooting system, i.e. both tap roots >2m deep and fine lateral and cluster roots <0.5 m deep, it was hypothesized that (1) proteas can redistribute water from moist, lower to drier, upper soil layers, (2) proteas act as nurse plants providing water to understorey plants and (3) hydraulic redistribution is driven by increased soil water deficit such as occurs during the summer drought of the CFR. In a glasshouse experiment where tritiated water (^3H_2O) was injected at dusk into lower soil layers of pots with *Protea* 'Sylvia' (Proteaceae), it was found that (1) by dawn, protea roots had redistributed water from lower to upper soil layers, (2) this water was incorporated into a *Cyanodon dactylon* (Poaceae) understorey and that (3) water deficit was a driver of hydraulic redistribution (Fig. 1). None of these processes occurred in unplanted control pots.

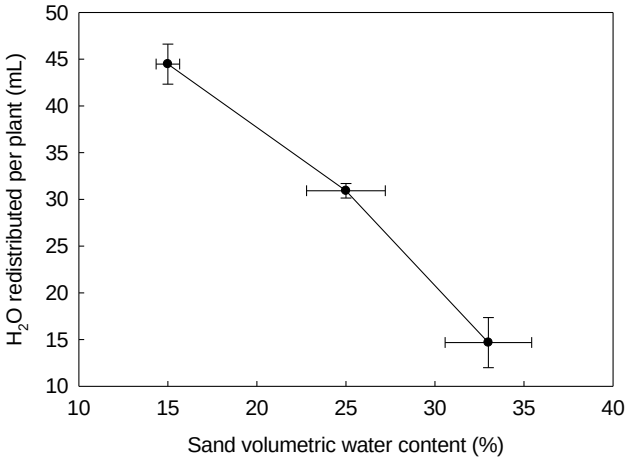

Fig. 1. Amount of ^3H_2O redistributed from lower to middle and upper sand layers when ^3H_2O was supplied overnight to sinker roots of *Protea* 'Sylvia' occurring in lower sand layers. Values are means of four values ± standard errors.

The data clearly showed that proteas redistribute water from lower, moist soil layers to drier upper soil layers, this water was available to other plants and that redistribution was enhanced under dry soil conditions. We conclude that hydraulic redistribution by proteas may play an important role in ecosystem functioning during the summer drought period. Anthropological activities that influence ground water levels and soil water availability, such as ground water abstraction and global warming, are likely to interfere with the hydraulics of ecosystem functioning.

Phenology of the Proteaceae

Key words: Phenology, flowering, growth, Proteaceae

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The Proteaceae are a keystone species in many Fynbos ecosystems. However, they are unique in Fynbos ecosystems in that they grow during the summer drought when most other plant species are dormant. This is attributed to their deep taproots which are thought to reach deep water resources.
Protea Atlas data have provided comprehensive data on seasonal flowering and growth for the first time. Atlassers recorded flowering according to bud production, flowering, peak flowering, over and in fruit, and growth as absent, present in less than half of plants, or in more than half of plants. The data will be collated and summarized. Essentially, young plants grow during the wet season, but, following first flowering, growth is usually confined to the period following flowering, usually summer. In the genus *Protea*, many species flower in winter, but in *Leucospermum*, *Leucadendron* and most of the minor genera, flowering is during spring, with stem and leaf growth commencing around seed set. Only the genus *Aulax* flowers primarily during its growth period.
However, there is a large range in intensity and duration of flowering and growth. These are investigated with regard to major life history strategies, pollination and seed dispersal.

Drought responses of plants in the Agter-Cedarberg: a peek at the future?

Key words: climate change, fynbos, drought

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Longer summer droughts are one of the expected climate changes in the western Cape in the future. We report a study of plant responses to a protracted drought in 2003 and 2004 in the Agter Cedarberg. We wished to determine which species were vulnerable to drought and whether drought impacts varied in the landscape. We surveyed plant mortality along an elevational gradient, on deep versus rocky soils and at a riparian site. We used a 100 year rainfall record, the longest private rainfall record in South Africa, to help define what constitutes a 'drought'. Analysis of this record showed that, though the drought was one of the worst in the 100 year record, there were far worse droughts in the 1920s. The vegetation surveys showed that some species were much more vulnerable than others and that mortality was much greater on deep, than on rocky soils. Our results suggest that mountain fynbos on rocky soils may be less vulnerable to future climate change than anticipated but that lowland fynbos, on deeper soils, is at great risk.

PARALLEL PAPER SESSION 6: LAND USE/[SPATIAL PLANNING:

A Single GIS Product to Guide Landuse in the W Cape

Key words: Systematic Conservation Planning, Land Use, Bioregional Plans, Putting Biodiversity Plans to Work

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In a province with two biodiversity hotspots, daunting spatial heterogeneity and tremendous development pressure, conservation planning is essential to direct and focus conservation. The Cape has been at the forefront of this rapidly evolving field and plans produced vary in domain, scale and usefulness depending on methodology, information available, and implementation focus. This plethora of different, sometimes overlapping spatial plans, with inconsistent terminology, are generally not intended as landuse decision-making tools, usually do not provide required information, and can be highly confusing.
The move away from the options-based conservation planning to design better landuse decision tools is reflected in the latest C.A.P.E. Fine Scale Biodiversity Plans. Developed at an appropriate scale, these plans are linked to land use guidelines to allow site-specific land use decision-making. Extension of this approach to the entire province is needed to improve decision-making and reduce time and costs to applicants and authorities, but may be years away.
In the interim, CapeNature, with SANBI, C.A.P.E. & DEA&DP, have built on the Botanical Society's Putting Biodiversity Plans to Work Project to integrate information relevant to landuse from the various conservation plans and other spatial resources into a single GIS layer for the Western Cape. Although including elements from systematic conservation plans, this resource will not itself be a systematic conservation plan. It will, however be underpinned by GIS analyses and ecological principles to identify those areas likely to be identified as important by any conservation plan. This product should facilitate the standardisation of spatial biodiversity information used by environmental assessment practitioners and decision-makers.
Each unit on this layer/map will have:

1. A context specific description of information required to make a decision regarding landuse impacts
2. If known - the likely conservation significance of impacts on natural habitat;
3. If known – the desired state of that area.

Implementing Biodivesity Priorities in Drakenstein Municipality

Key Words: Land-use, decision making, ecosystems

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Drakenstein municipality is one of the pilot municipalities in the bio-diversity priorities project run by SANBI from 2004 to 2006.
The aim was to provide municipalities with a user friendly land-use decision making tool to enhance biodiversity and ecosystem conservation.
From the inception of the project the principals of the conservation of ecosystems have been implemented in land-use decision-making, be it rezoning, subdivisions, building plan approvals, departure or consent use.
The principles have been incorporated into the SDF, SOER, IDP, urban open space study and densification policy.
The strength of the management tool is that it is easy to apply, being available in hardcopy as a map and a guideline book as well as electronically on the GIS system of the municipality. It is available to all role players and has been widely distributed to officials in all spheres of government as well as developers and consultants.

The main drawback is one of scale (at times not fine enough on municipal (property) level) and at times accuracy. A further drawback is the lack of certain information i.e. wetlands, but this information can be supplemented at any time.
Without this biodiversity conservation management "hand book" environmental decision making would be a nightmare.

Using the C.A.P.E. Fine-scale Biodiversity Plans and Guidelines as your biodiversity informant in the land use decision making process

Key Words: C.A.P.E; land use decision making process; systematic conservation planning.

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The Fine-Scale Biodiversity Planning Project (FSP) is funded by the Global Environment Facility and forms a vital component of the Cape Action for People and the Environment (C.A.P.E.) Programme. Systematic fine-scale biodiversity planning will occur for 9 of the local municipalities falling within 5 identified biodiversity priority areas within the CFR. The project aims to integrate both terrestrial and aquatic surrogate data such as vegetation, fauna, wetlands, estuaries, groundwater and rivers to produce the best possible representation of biodiversity for the areas. Amongst other intended uses, the maps and associated guidelines produced by the project are to form the ultimate fine-scale biodiversity informant in the three legged land use decision making process, thereby superseding all other spatial biodiversity products currently used in the land use planning and decision making realms.

The presentation highlights the plethora of informants government officials are expected to consult when making land use decisions and aims to emphasize how yet another set of tools (FSP) hopes to effectively reduce the complexity of the decision making process.

Western Cape Provincial Guideline on Biodiversity Offsets

Key words: EIA, residual impact, compensation

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The concept of 'biodiversity offsets' is relatively new, and there is no standard method to determine 'the right' biodiversity offset. The most often cited definition of biodiversity offsets is "*conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to ensure no net loss of biodiversity. Before developers contemplate offsets, they should have first sought to avoid and minimise harm to biodiversity*"[1].
The rationale for biodiversity offsets in the Western Cape is two-fold: firstly, the province contains exceptional biodiversity that is unique globally; secondly, its ecosystems underpin socio-economic development and delivery of important services such as the reliable supply of clean water, ecotourism and coastal protection. Land-intensive development poses a significant threat to the Province's remaining biodiversity. Provincial policies have, over the past few years, increasingly prioritised the conservation of biodiversity and important ecosystem services. The need for biodiversity offsets must be identified, and potential offsets must be investigated and evaluated, during the Environmental Impact Assessment (EIA) and decision-making process for proposed development.
The objective of biodiversity offsets, through the development authorization and associated EIA process, is to ensure that residual unavoidable impacts on biodiversity and ecosystem services that are of moderate to high significance (i.e. do not represent a 'fatal flaw' from a biodiversity perspective) are compensated by developers in such a way that ecological integrity is maintained and development is sustainable.
The Western Cape Provincial Guideline on Biodiversity Offsets[2] is written as a stepping stone towards the development of a robust, workable biodiversity offset system supported by an appropriate policy framework in the Western Cape. It remains *work in progress*, largely because the institutional arrangements associated with the financial mechanisms presented in this guideline are still in the process of being investigated and have yet to be

finalized. However, since biodiversity offsets are increasingly being used in the development planning and authorization process, the Department intends to use the principles and approaches contained in the guideline to introduce consistency into the way offsets are being considered, determined and evaluated.

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EASTERN CAPE BIODIVERISTY CONSERVATION PLAN

Derek Berliner, Phillip Desmet and Amanda Younge

This project was initiated by the Department of Water affairs and forestry as response to recommendations arising from a Strategic Environmental Assessment for the northern portion of the Eastern Cape (water management area 12, an area earmarked for future aforestation expansion).

Despite the numerous conservation planning projects within the province, large gaps still exist. In addition much of this information is not in a readily available format for government land use planers. This project addresses this urgent need for integrative conservation planning and land use decision support at the scale of the province.

The Eastern Cape, globally recognised for its high biodiversity, is facing unprecedented pressure from unplanned development, urbanization and agricultural expansion, as well as some of the highest levels of rural poverty in the country. There is thus a joint obligation by government to promote both development (that will alleviate poverty), and biodiversity conservation, that will ensure the persistence of the rich natural capital of the province.

The key aim of this study was therefore to use systematic target driven conservation planning to map critical biodiversity areas necessary for biodiversity persistence, and to use this to inform rural land use planning.

The approach can be summarised as follows : a) the integration of all aquatic and terrestrial data available for the province; b) 'hard wiring' of priority areas identified by other sub provincial conservation planning projects (in particularly, STEP); c) extensive use of experts to map biodiversity hotspot areas, known locations of rare and endangered species and ecological corridors d) use of marxan systematic conservation planning software to identify irreplacebility of planning units and lowest cost ecological corridors .

Applications include identification of provincial scale strategic planning priorities for conservation and reserve expansion as well as to guide land use planning and decision making. The later has been facilitated by linking biodiversity sensitivity categories to biodiversity land management objectives. Mapped information can be used both reactively and strategically to guide future development away from sensitive and priority biodiversity areas.

Information presentation platforms include a technical report, poster maps, electronic CD Rom map viewer, and a user friendly web enabled decision support system.

PARALLEL PAPER SESSION 7: FIRE ECOLOGY:

Why are there no trees in fynbos ?

Keywords: Proteaceae, age to maturity, longevity

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An old chest-nut in fynbos ecology is the relative absence of trees (say plants > 10 m tall). It is an important question because there is ample evidence that trees can survive unaided in the fynbos environment. Presently, treeless fynbos is considered to be due to fire preventing the recruitment, or release, of indigenous forest species,

within fynbos. This does not explain why the tree growth form did not evolve within fynbos families, especially the dominant canopy family, the Proteaceae. We present a life-history argument based on the consequences of early age to maturity. Analysis of data from the Protea Atlas survey and monographs on *Protea* and *Banksia* suggests that many fynbos reseeders are mature within 5 years. Also that there is a correlation between age to maturity and maximum size (Fig. 1). There are no trees because fynbos is essentially a weedy post-fire flora. Along the way to explaining tree-less fynbos, many other complex debates need to be considered. These include reseeders versus resprouters, what was the "natural" fire regime (mean and variance), invasion by exotic trees mainly pines, growth-rate versus growth type and causes of senescence.

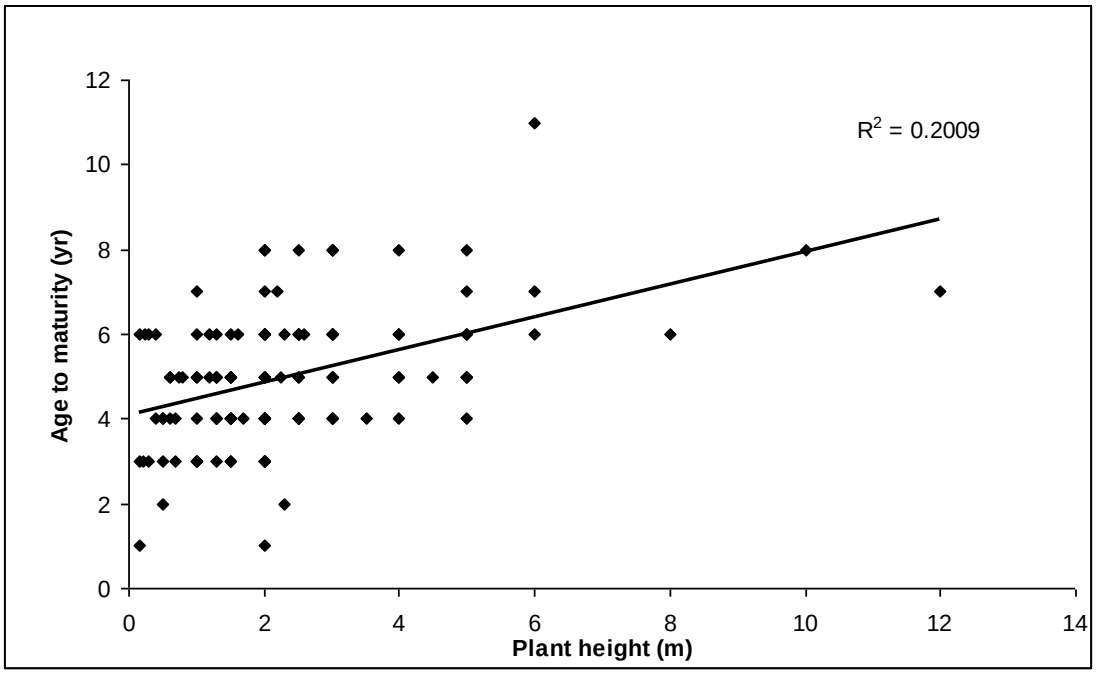

Figure 1. Correlation between maximum plant height and age to maturity (n=111). Age to maturity was the post-fire age for a species, when more than 50% of populations had more than 50% of individuals that had flowered.

Post-fire seedling recruitment of non-sprouting serotinous Proteaceae in the eastern fynbos vegetation

Keywords: fire season, fynbos, Proteaceae, seedling recruitment

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The fynbos biome is a fire-prone vegetation type, and is the main component of the Cape Floristic Region (CFR) of South Africa. It shows a clear gradient in decreasing proportion of winter rainfall along a west-east gradient. For a given amount, winter rainfall is more reliable in the west while summer rainfall is more reliable in the east. A striking feature of extreme eastern landscapes is the relatively small extent of communities dominated by non-sprouting, overstorey proteoid shrubs. Most of the fynbos ecology studies have been conducted in the west. For the first time this study aimed to test recent fynbos ecology hypotheses in the eastern part of the CFR, by assessing population indices and analyzing phenology data. It shows that the smaller extent of proteoid communities in the east respond differently to fire season than western fynbos communities. Specifically, winter

and spring fires promote rather than diminish the recruitment of some non-sprouting Proteaceae dominant in many proteoid fynbos communities in the east. This is most probably a consequence of the non-seasonal climate, which results in variable recruitment conditions throughout the year, and summer-autumn flowering phenology: seed availability for recruitment is maximal in winter and spring, when the most recent seed crops are mature. Our observations further suggest that pre-dispersal, together with post-dispersal seed predation may be an important determinant of post-fire population sizes among proteoid shrubs in the eastern CFR.

Fire in the Western Cape: do we have answers to the burning questions?

Key Words: large fires, fire frequency, Western Cape

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The fynbos biome is subject to regular burning, which includes infrequent and unpredictable large fires. Large fires pose the greatest threat to personal safety and property and are very difficult to manage and predict. This project explores the effect of large fires on the patterns of fire frequency in the Western Cape over several study sites, using fire records from the last 40 years. Most important is an understanding of the driving factors behind large fires so that their interaction with the fynbos ecosystem can be better understood. Currently there is a global debate as to whether fuel loads or climatic events cause large fires to develop. An answer to this question would help inform fire management now and in a globally warming future.

Recurrent fires – what's happening to slow-growing subalpine species?

Key words: youth phase, Proteaceae, fire frequency, Swartberg Mountains

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Research has shown that the interval between successive fires in a given area should not be less than the minimum period required to allow for the slowest maturing non-sprouting species to set seed. Non-sprouting, serotinous species of Proteaceae, such as *Protea lorifolia*, *Protea eximia*, *Protea repens* and *Protea neriifolia*, have been suggested as good indicators for determining minimum fire interval. For the Swartberg Mountains, *Protea lorifolia* has been used to set the threshold of potential concern for fire frequency, because it is the slowest maturing species and occurs over a wide range on both the northern and southern slopes of the mountain. Concerns have, however, been raised as to whether the suggested threshold of 13 years is adequate to accommodate the youth phase of non-sprouting subalpine species of Proteaceae (e.g. *Protea venusta* and *Leucadendron dregei*). A study of the youth phase of these species is currently underway, the results of which will be presented and discussed.

PARALLEL PAPER SESSION 8: RESOURCE ECONOMICS /BUSINESS AND BIODIVERSITY:

Economic Biodiversity Centers: The Kirstenbosch Model – A strategy for sustainable Biodiversity Conservation Management

Keywords: Strategy

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The success of biodiversity conservation activities in South Africa is greatly influenced by proximity of the conservation operations to the priority areas. The problem experienced is that the operation centers are often "cost centers" and not self-sufficient surplus generating centers, often forcing conservation agencies to withdraw the centers from the priority areas in an attempt to consolidate costs of operations in the face of scare finance. The concept of an "Economic Biodiversity Centre" lies in a model for a biodiversity conservation operation to become self-sufficient by becoming a valuable element in the local economy to the extent that the conservation operations become self-sufficient while being economic value adding assets. The Kirstenbosch National Botanical Garden recently became a self-sufficient surplus generating centre which has a significant influence and role to play in its region of operation. Despite its long and "spoilt" development, the model is ideal and representative of the situation most conservation operations find themselves in. The presentation is on the Biodiversity and Business model used by the Kirstenbosch National Botanical Garden as an "Economic Biodiversity Center" and not a Conservation "cost center".

Conflicts between carbon sequestration and other ecosystem services: the Fynbos as a model system

Key words: Fynbos, alien invasive species, carbon sequestration, ecosystem services

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Land-use patterns globally are governed by a complex interaction of societal objectives, including the production of crops, the protection of water supplies and the conservation of biodiversity. As the importance of mitigating global climate change becomes recognised, a new land-use objective, carbon sequestration through afforestation, is entering this equation. The Fynbos is a model system for studying this phenomenon because: it is in a global biodiversity hotspot; the potential for afforestation is real, as evidenced by alien tree invasions; and it has strong precedents of ecosystem service valuation[1-3]. Carbon mitigation may provide seemingly perverse incentives for land managers in the Fynbos to allow or even facilitate alien invasions. My preliminary analysis demonstrates that when only carbon sequestration, water values and management costs are considered, alien plant clearing programmes remain economically justified for most parameter values (Fig. 1). However, there are substantial uncertainties, such as the role of fire, ecosystem carbon fluxes, and the future economic value of carbon. The possibility remains that, at least on local scales, incentives for carbon sequestration will encourage afforestation and/or discourage alien-clearing programmes in the Fynbos. My research aims to reduce uncertainty and construct more sophisticated ecological/economic models of the Fynbos to investigate this problem and generalise to other systems.

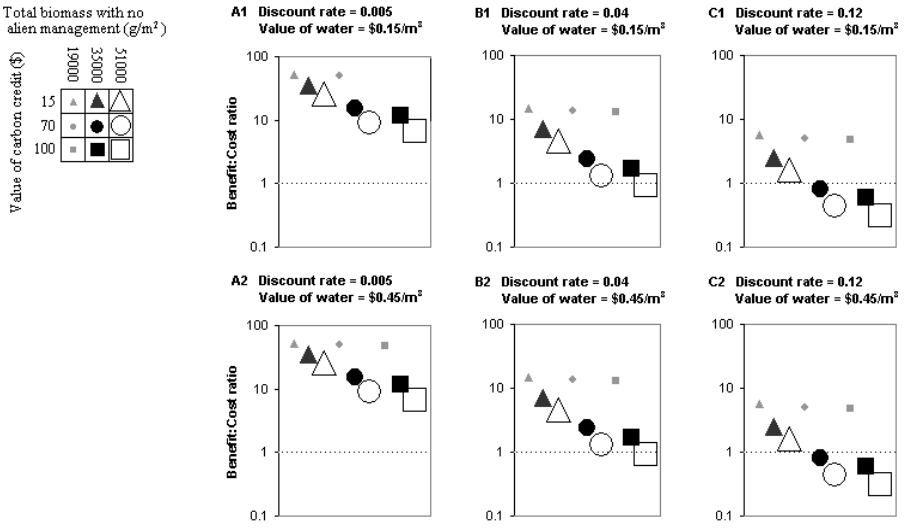

Figure 1: Cost-benefit analysis of clearing alien plants in a hypothetical Fynbos catchment. Graphs show distribution of possible benefit:cost ratios given uncertainty in underlying parameters. A benefit:cost ratio above the dotted line indicates that management of alien plants is economically justified.

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PARALLEL PAPER SESSION 9: RESTORATION & INVASIVES:

Restoration Protocols for Fynbos Species

Keywords: Restoration, Fynbos, Millennium Seed Bank, Kirstenbosch

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The Millennium Seed Bank Project South Africa (MSBP) works in partnership with South African Botanical Gardens collecting and conserving threatened plant species. Restoration of key conservation areas is a high priority for both partners, however restoring and rehabilitating plants back to the wild poses many challenges. The MSBP working with horticulturalists from Kirstenbosch Botanical Gardens have developed protocols for restoring Fynbos species of the Cape Floristic Region, in threatened habitats thus aiding the South African National Biodiversity Institute (SANBI) achieve targets 3, 7, 8, and 13 of the GSPC. Seed is collected and stored by the MSBP, this ensures that the genetic integrity of the species is preserved. Living collections of plants are kept by Kirstenbosch Gardens and grown in stock beds where seed can be bulked up for seed banking. Once a specie has been identified for restoration, seed is collected from the target species and sown in nursery trays. The seedlings are grown for 18 months before being returned to the original site. Vegetative material is also collected from target species, with a wide selection made from a particular population to contain as many alleles as possible. Rooted cuttings are kept in the nursery environment for 12 months to prevent contamination and loss of the variety of genes. Protocols for placement of plants and timing of restoration have also been developed.

Effects of invasive alien plant species and cultivation on nitrogen cycling and plant species composition

Key words: restoration, nutrient enrichment, alien invasion, old fields

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Fynbos is under threat from alien plant invasions and transformation to alternative land uses. Thousands of hectares of natural vegetation are gradually being altered by invasive alien tree and shrub species, resulting in reduced biodiversity and water run-off[1]. A major impact of these invasions is the mineral enrichment of the soils through nitrogen fixation[2, 3]. Furthermore, the alteration of the nutrient cycling can lead to changes in community structure. Remaining areas of fynbos vegetation have also been degraded by habitat fragmentation resulting from agricultural development[4]. Where restoration of fynbos is undertaken, one of the biggest challenges that manager face following the clearing of alien stands (particularly in the lowlands) is the altered soil nutrient level. These effects remain for an unknown period even after the alien species have been removed. Our knowledge of the effects of invasive alien species on soil processes is limited and this reduces our ability to predict the feasibility and potential outcomes of restoration efforts in different areas[5]. Only rudimentary recommendations exist for effect strategies to reduce high nutrient levels[3, 6].
To develop predictions as to which invaders are likely to influence nutrient dynamics after their removal and to devise effective techniques to minimize the influence of invasive aliens on restored ecosystems we are testing a variety of management strategies through field trials and experimental manipulation. We are also investigating changes in species composition due to mineral enrichment. Our research is being conducted at Flower Valley Farm, Gansbaai situated below Swartkransberg on the western side of the Agulhas Plain and at Berg Plaas Farm situated in the Agulhas National Park.
Our key questions are:

1. Does the invasion of alien plant species alter the soil mineral status?
2. Is there an alteration of the soil nutrient status through common agricultural practises?
3. Which restoration method is best to reduce the soil nutrient level to its pre-invasion status?
4. Which indigenous fynbos species are competitive enough to enable alien invasive species to re-establish after the clearance of the sites?

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Evidence that fynbos riparian seed bank dynamics are altered after invasion - implications for riparian restoration after clearing

Key words: soil-stored seed, species assemblage, restoration

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Riparian areas are complex systems with varying levels of disturbance that are highly susceptible to invasion by alien plants. Once invaded, riparian areas play a major role in the dispersal and spread of invasive alien plants (IAPs) through the river system and, in some cases, to neighbouring landscapes. These areas have therefore been prioritized by many alien clearing initiatives in South Africa. The current practice for the restoration of cleared areas is minimal and relies mainly on the un-aided recovery of native species from residual individuals and soil stored seed banks. Little research, however, has been done on the effectiveness of this approach, to what extent riparian seed banks are affected by invasion, and what potential post-cleared riparian areas have to assist in plant community restoration. Study sites were selected within four river systems in the south-western Cape: the Berg, Eerste, Molenaars and Wit Rivers. Plots were selected in both invaded (>75% IAP canopy cover; considered "closed" alien stands) and un-invaded (also termed reference, with <25% IAP canopy cover) sections of the river. Replicate plots were established along varying gradients of elevation (mountain stream and foothill) and moisture regimes (dry, wet and transitional bank zones). Soil samples were taken together with above-ground vegetation surveys and comparisons were made. The impact of invasion on the riparian seed bank was most clearly shown through the correspondence analyses for the 20 most frequently occurring species. Results indicated the seed bank assembly patterns were clearly defined by the state of the river (reference or invaded). Interestingly, this pattern was evident at all three spatial scales; landscape (rivers), reach (mountain stream and foothill sections) and habitat (dry, wet and transitional zones). The results and their significance in terms of restoration of riparian areas will be discussed.

Influence of soil chemistry on vegetation recovery in West Coast Renosterveld

Key words: soil properties, burning, combination burning-herbicide, herbicide application

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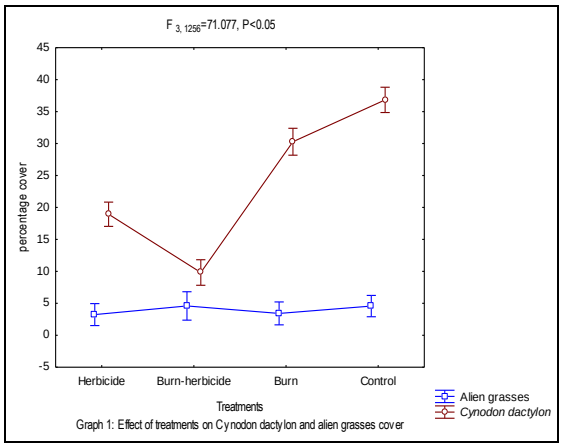
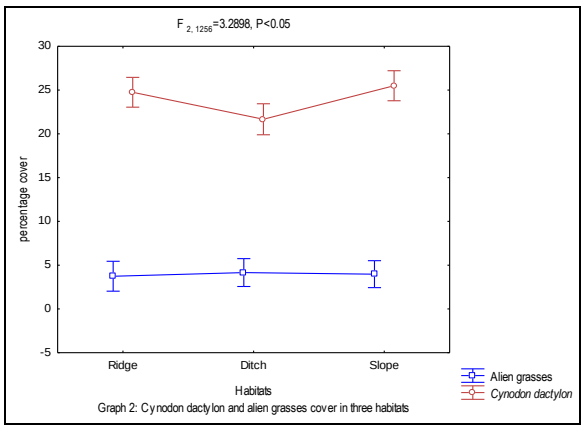
Coastal renosterveld is one of the vegetation types of the Cape Floristic Region, associated with fertile shale derived soils in low-lying areas along the western and south-western coast of the Western Cape. West Coastal renosterveld has been mostly transformed due to agriculture, leaving only about 5% of in a natural condition. To reach the IUCN goal of preserving 10 % of any ecosystem in the world, restoration of renosterveld vegetation on old agricultural fields has to be carried out. However, recovery of natural vegetation is slow possibly due soil chemistry. The aims of this project were to investigate soil proprieties of an old field, and relate these to the vegetation present. In addition, above-ground treatments (herbicide application, burning, and a combination of both) and re-seeding were carried out to facilitate the return of the natural vegetation. Monitoring of the plots took into account the topography of the old field, which differs to the natural renosterveld area.
On the old field, the soil is alkaline with high level of salinity whereas natural renosterveld vegetation grows on acidic soil. Furthermore *Cynodon dactylon* has higher cover than alien grasses. However the control has the highest cover of *C. dactylon* and combination of both treatments the lowest cover (Graph 1). Moreover looking at the difference among habitat C. dactylon has the higher cover than all alien grasses, but in the ditch there is small decrease of cynodon dactylon cover (Graph 2).



Graph 1: Effect of treatments on Cynodon dactylon and alien grasses cover



Graph 2: Cynodon dactylon and alien grasses cover in three habitats

Implications of biological control of *Acacia saligna*.

Key words: *Uromycladium tepperianum*, *Melanterius compactus*, rehabilitation, integrated control.

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Acacia saligna (Port Jackson) was considered as the worst weed of the fynbos biome in the early 1980's[2], and was undergoing explosive increase in both extent of the area invaded as well as size and density of stands. The impact of the gall rust fungus *Uromycladium tepperianum* has been monitored over a period of 15 years at selected sites in the Western Cape, see [5] for full details. There has been a dramatic decrease in plant density when there have been at least 10 year periods since fires, between 85 and 98%. Canopy mass and seed production have both been substantially reduced compared to pre-release data. A canopy mass of 8.6 t ha^{-1} was published in 1981[3], whereas at four sites in 2004 canopy mass was estimated as 0.663, 0.847, 1 and 4.518 t ha^{-1} (stand density was between 3375 and 50200 trees ha^{-1}). Data on pre-release annual seed production includes 5443 seed m^{-1}, 10562 seed m^{-1} [4], 2102 seed m^{-1} [1], 2645, 6922, 7314 and 13472 seed m^{-1}. In 2004 estimated annual seed production at four sites was 446, 1116, 1118 and 3035 seed m^{-1}. Although seed production is reduced, the soil seed banks still remain unacceptably high, with the result that there is regeneration of dense stands following fires. The recently introduced seed-feeding weevil *Melanterius compactus* has been established and is ready to be redistributed. Preliminary monitoring at original release sites has shown that 99% of the remaining seed produced is destroyed. Control efforts should therefore concentrate on establishing the weevil throughout the range of the weed, ensuring other weeds do not replace thinning stands, and the rehabilitation of the invaded areas.

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PARALLEL PAPER SESSION 10: AQUATICS:

Draft Implementation Framework: An awareness and rehabilitation strategy for rivers of the Western Cape.

Keywords: stewardship program, River Health Program, Adopt-a-River

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Freshwater is a finite natural resource. South Africa, regarded as a semi-arid country, display below world average annual rainfall figures, has water scarcity problems and continual pollution, because of ongoing unwise water usage practices that endangers the lives of many of its people. It is therefore crucial that goods and services are derived from these water resources and that its survival and wellbeing is determined in a sustainable manner. This requires not only protection of the precious water resources, but includes active attempts to understand the nature of the health of the whole ecosystem, by applying appropriate integrated water resource management practices on a reserve level and various stewardship programs on a community level. The River Health Program has engaged in several of these types of initiatives on both a local and national level. One such initiative is termed the Adopt-a-River program and has been mandated by the minister of the Department of Water Affairs and Forestry for countrywide implementation. As a result, the drafting of a framework for adopting a river catchment is underway for national implementation purposes as well as a draft implementation framework for river rehabilitation and stewardship projects to be implemented in the Western Cape. This provincial draft framework and implementation strategy will be discussed.

Ecological Status of the Gourits Water Management Areas fish health

Keywords: River Health Program, State of Rivers, River Conservation Unit, fish index.

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The River Health Program (RHP) was initiated in 1994 by the Department of Water Affairs (DWAF) with the primary goal of providing the ecological status of all major rivers in South Africa. In 2003 a partnership was established between CapeNature and DWAF with the formal establishment of the River Conservation Unit with the key objective to provide a benchmark framework for river health biomonitoring and ecological status reporting for the four Water Management Areas of the Western Province. Since 2003, the State of River Reports for the Overberg, Olifants/Doorn, Greater Cape Town and Berg Catchments were produced. The fish index, one of the four Biomonitoring indices of the RHP were undertaken on all the above-mentioned studies including the Gourits Catchment study currently being completed. This report discusses the status of the fish health for Western Capes rivers with reference to the Gourits Water Management Area study. Results are conclusive.

ECOLOGICAL STATE OF THE OLIFANTS/DOORN WATER MANAGEMENT AREA (WMA), WESTERN CAPE, SOUTH AFRICA: - 5 YEARS OF DATA GATHERING AND MANAGEMENT CHALLENGES

Key words: Land-use, Ecological state, ecological Reserve and Water Resource Management

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The Olifants/Doorn WMA comprises of the Olifants, Doring, Kouebokkeveld, Knersvlakte, and Sandveld areas, with the Olifants River being the main river system within the WMA. This river system is situated on the Cape West Coast, draining the Agter Witzenberg Mountains north of Ceres. Land-use activities in this catchment consist of vines, vegetables, citrus and deciduous fruits farming, grain farming, livestock farming, forestry, industries (wineries, canneries and other food processing factories), fishing, mining in small scale, small urban areas and rural settlements.

An assessment of the ecological state of the Olifants/Doring River was undertaken based on findings of surveys conducted as part of the River Health Programme (RHP) and the Reserve Determination studies. The surveys took place during 2000-2005 for the RHP and 2003-2006 for the Reserve Determination. The RHP looked at habitat integrity (instream and riparian habitat), riparian vegetation, geomorphology, fish and macro-invertebrates as ecological indicators or groups or indices for all the rivers in the WMA; whereas the Reserve determinations focused on the amount of water needed for the Ecology and Basic Human needs for both surface and groundwater within the whole WMA. The results generally indicated that only the upper reaches of the main rivers and its tributaries are still in a natural or good ecological state. The middle and lower reaches of many rivers are in poor ecological condition as a result of water abstraction, alien plant and fish infestation as well as intensive agricultural development.

This paper addresses the management actions being taken to ensure effective protection of the important water resources in this WMA.

Environmental management at the Berg River Dam, Franschoek

Keywords: Berg River Dam

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Modern day construction site environmental management entails keeping the contracting engineers within project specifications (as determined by the EIA, ROD and EMP) and relevant environmental legislation. This sounds simple, doesn't it? Not so. Conflicts of interest and management challenges arise on an almost daily basis, especially on a large construction site (such as the Berg Water Project) where engineers adhere to stringent production deadlines. These must then be managed and, if applicable, the effects mitigated in line with financial and ecological considerations.

Environmental Officers at the Berg River Dam do not however spend all their time in conflict resolution! Environmental management includes working alongside alien clearing and rehabilitation sub-contractors; formalising agreements with neighbouring landowners and the protection of threatened plants and animals.

The project also is unique in that from the outset the client placed a high premium on environmental issues, both in terms of the dam's physical design and in protecting the valuable natural resources. The contracting engineers (BRPJV) are thus, for the most part, happy to support the environmental staff in our work, provided financially sound, practical solutions are sought.

POSTER

ABSTRACTS

FYNBOS FORUM

1-3 AUGUST 2007

POSTER ABSTRACTS
FYNBOS FORUM 2007

ECOLOGY:

The impact of fire regime on plant species diversity in mountain fynbos communities at Kirstenbosch

Keywords: Fynbos, Fire, Biodiversity

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The last study to be conducted on fynbos plant communities on the Kirstenbosch Natural Estate vegetation was a phyto-sociological study done by Jeffrey and Wilson (1987), 20 years ago. The fire in February 2006 was the first fire in +/ - 30 years in the southern end of the Estate. This has presented an opportunity to contribute to the work of Jeffrey and Wilson (1987) by conducting a comparative study between the newly burnt area and the un-burnt areas.

Two mountain fynbos sites (one burnt and one un-burnt) on the Kirstenbosch Natural Estate were sampled using the Braun-Blanquet technique[1]. This study was undertaken to investigate the effects of the current fire regime on plant species diversity and vegetation structure. Various studies on the subject indicate that species diversity is higher in young fynbos and many species have disappeared or are far less common in mature fynbos. The study outputs will be a plant diversity assessment and a vegetation structure assessment, presented to inform the environmental management decisions on the Estate, the results of which will be presented in this poster.

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Analysis of the Fire History of Bontebok National Park, 1970 - 2006

Key words: fire regime, fire origin, fynbos, renosterveld

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The Bontebok National Park (BNP) was initially established at its current location in 1960 to save the bontebok (*Damaliscas pygargus pygargus*) from extinction. The fire management regime applied in the park since the early 1970s was aimed at increasing forage (grasses) available to bontebok. The vegetation of the park largely comprises two vegetation types or broad habitat units, i.e. Overberg Coast Renosterveld[1] (also called South Coast Renosterveld[2]) and Suurbraak Grassy Fynbos[1]. The renosterveld vegetation, approximately 50 % of the park's surface area, has been burnt at a 3-4 year rotation, and the fynbos at a rotation of approximately 12 years in a block-burning system. The fire interval has often further been reduced by the occurrence of accidental fires and spread of scheduled fires. Fire was excluded from the riparian vegetation along the Breede River.

The park has received much criticism in the past for being managed as a 'single-species park' to the detriment of the vegetation - the fire return period considered insufficient to allow for reproduction of slow-maturing reseeding plant species. Scheduled burning has furthermore often been done in winter, which is not regarded the ecological fire season for fynbos vegetation[3]. While regionally, bontebok as a subspecies is not in danger of extinction anymore[4], renosterveld and lowland fynbos are of critical conservation importance[5]. In line with this shift in park management objectives/priorities, the fire management plan was altered in 2004. The fire return interval was prolonged to a minimum of 8 years in renosterveld and approximately 16 years in fynbos, but aiming to achieving a degree of variability in the different components (season, intensity, frequency, size) of the fire regime[6].

An analysis was done of the actual history of fires since 1970 in terms of fire origin (scheduled *vs.* accidental), fire season, and average fire return frequency for the different vegetation types. These results should facilitate comparative floristic assessments of areas with different fire histories, and evaluations of the impact of the fire management history on plant community composition.

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Seed banks, germination and the regeneration of Cape lowland Renosterveld

Keywords: restoration, renosterveld

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Renosterveld is a characteristic and once dominant vegetation type of the CFR and strongly threatened by conversion to agricultural areas. Both destruction and conversion lead to an increased fragmentation of the habitats, which is an additional threat for the vegetation and species still growing in the remnants. Therefore, first attempts were made to restore the respective communities on former arable land or on pastures. However, the information is still lacking on which species of the respective communities are able to re-establish, and on which factors such as soil conditions (e.g. moisture) or disturbance regimes the re-establishment is dependent upon. In addition, very few studies on the germination ecology of renosterveld exist. This study intends to test factors contributing to successful re-establishment of indigenous species in a restoration experiment at the Tygerberg Nature Reserve by applying alternative restoration practices, such as soil disturbance and irrigation.

Tracing the effects of Climate Change in Proteaceae in the Cape Floral Region, South Africa

Keywords: Proteaceae, Cape Floral Region, Climate change

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Predictions of climate change across the Cape Floral Region (CFR), a world hotspot for plant biodiversity, suggest that many species will lose much of their current distribution range. This study investigates variations in the morphology and reproduction of species across climate gradients in the Proteaceae of the CFR, and determines if such variations are consistent with climate change models. Variation growth rates is used to trace recent past performances across climate gradients in the CFR.

This study was based on the distributional data from the Protea Atlas Project (PAP) in the CFR. We will conduct field surveys of some sites sampled by PAP, spanning from Nieuwoudtville to Grahamstown. In order to facilitate modeling of abundance we will refine the population abundance estimates obtained during PAP: specifically the Common category (100-10000 plants), needs to be refined to 100-1000 and 1000-10000 plants to yield a logarithmic scale of abundance. To determine climatic influences on growth and reproduction we will measure the internode length, number of branchings and stem diametre at each node, for the length of the plant from the current year to the base of the plant. Flower and seed production, and the total number of terminal branches will also be counted where possible. These will be compared between species and across climatic gradients, both within key sites and between sites to determine species responses to climate, primarily rainfall. These will then be used to refine the current climatic models at the mesoscale (1 minute cells) and allow an interpolation to finer resolution.

Clearing invasive alien plants from riparian areas: What has been achieved thus far?

Key words: Working for Water; riparian zones; fire; restoration.

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The Working for Water programme has been clearing invasive alien species for more than ten years with a major focus on clearing riparian zones. Following clearing indigenous vegetation is left to recover on its own. However, little is known of the effect various clearing methods have on the recovery of indigenous vegetation. Three initial alien clearing methods were identified namely, Fell Only, Fell & Remove and Fell & Burn as preferred clearing techniques. This study focuses on the removal of dense alien stands cleared more than two years prior to sampling to highlight which method best promotes natural vegetation recovery. Reference uninvaded areas, taken from Prins *et al.* (2004)[1], were used as baseline information for comparisons. Changes to riparian vegetation structure can be partially explained by the treatment of slash and the clearing treatment used (Figure 1). Important growth forms, such as small (3-10 m) trees were suppressed by felled slash and burning. The removal of slash from the riparian zone was the best method to promote indigenous vegetation cover and species composition similar to the Reference condition. This poster highlights what can be achieved from cleared areas and what management improvements can aid the recovery of riparian areas.

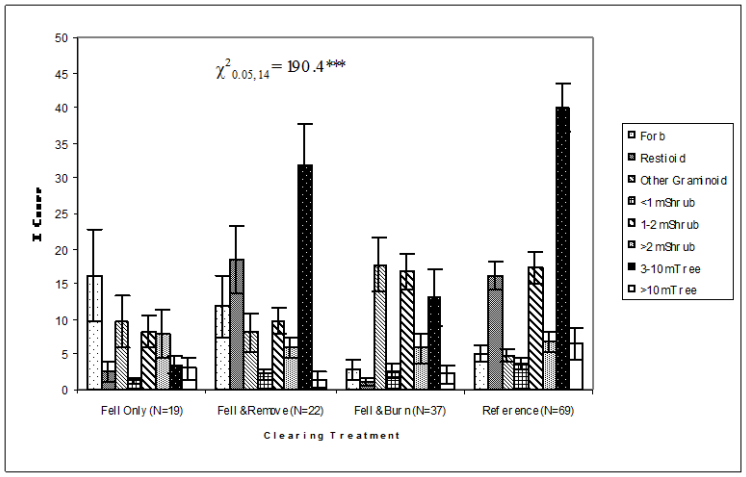

Figure 1. Projected % canopy cover for eight growth forms (mean ± standard error) in cleared and Reference plots. The χ^2 analysis was calculated using contingency tables with Reference as the expected values.

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The Anthropogenic Influences on the Spacial Ecology of the Chacma Baboon *(Papio Ursius*

Carika van Zyl
City of Cape Town

Abstract not to hand at time of going to press

CONSERVATION:

Schapenberg Sir Lowry's Conservancy: How well are we doing conserving and managing our environment?

Key words: Conservancy successes and failures

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The Schapenberg Sir Lowry's Conservancy (SSLC) was founded in 2000 and lies in the south east corner of the Helderberg Basin and encompasses the rural areas around the Sir Lowry's Pass Village, and the Schapenberg Hills which form the focal part of the conservancy. The main aim of the conservancy is to advance conservation of the environment of the area that includes remnants of Swartland Shale, Granite and Silcrete Renosterveld on the Schapenberg hills and Boland Granite and Cape Wineland Shale Fynbos toward the Helderberg mountains (FF presentation 2003). The SSLC has presented over the last 4 years at FF. How well are our projects progressing?
1. Wedderwill Country Estate, > 400 hectares of mountain fynbos, farmland and forest, lies on the eastern portion of the Schapenberg hills above Sir Lowry's Pass Village. Wedderwill a founder member of the Schapenberg/Sir Lowry's Conservancy spent millions on alien clearing subsequent to a fire in 1997. This project was presented as an example of unaided, successful "delivery of the goods" by private initiative to the FF in 2004. Phase 2 alien clearing is continuing up the high slopes of the mountain!

2. Biodiversity and Wine Initiative (BWI) member, Waterkloof of the >10 vine/wine farms within the Schapenberg-Sir Lowry's Conservancy spearheaded the BWI in the area (FF presentation 2005). Onderkloof is a prospective member and Wedderwill has attained prestigious BWI champion status.
3. Farm 830, Knorhoek, was subdivided into 19 portions (Agriculture 1). Construction commenced on two houses on one of the high portions (>650m above sea level, near Sir Lowry's Pass) causing huge visual and environmental impact. Knorhoek mountain development is continuing within the city's biodiversity network without an EIA (FF presentation 2006). A loophole in the law was found.
4. An important funding initiative by the global body, the Critical Ecosystem Partnership Fund (CEPF, www.cepf.net) has resulted in funding becoming available to the Western Cape Conservation Stewardship Association (WCCSA) for the preservation of endangered ecosystems in the Western Cape. The Schapenberg because of its fragments of highly threatened renosterveld (96% lost) and fynbos which are within Cape Town's biodiversity network for urgent preservation has been chosen as one of the sites to be evaluated under the scheme. This Biodiversity and Effective Management Assessment will provide landowners with baseline information and a crude indication of their potential status in terms of the CapeNature Stewardship Program.

BUILDING PARTNERSHIPS IN THE UPPER BREEDE VALLEY

Key words: collaboration, partnerships, resources, planning

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The Upper Breede Collaborative Extension Group (UBCEG) was formed to build capacity amongst its members, and support each other where landscape initiatives and responsibilities overlap in the region between Rawsonville and Tulbagh in the Western Cape, South Africa.

A strong partnership has been forged between three main role player organisations in the region, namely CapeNature (C.A.P.E. Stewardship Programme implementer), the Department of Agriculture's LandCare component and the Biodiversity and Wine Initiative (BWI) a pioneering partnership between the South African wine industry and the conservation sector.

The UBCEG is exploring ways to develop an improved strategic collaborative plan in order to build effective and sustainable partnerships in the landscape; and to catalyse landowner investment in biodiversity conservation. The UBCEG is developing criteria that would influence the prioritisation of areas for collaboration in order to focus awareness on threats, best practice and accessing respective budgets in a way that adds value to the projects (synergy).

We aim to develop a set of criteria that can be used on a sliding scale to identify priorities across the landscape that will ensure our combined initiatives will benefit from a proactive and not reactive approach in planning landscape conservation. These criteria would be based on both biodiversity value and economic value (Agriculture, forestry, tourism etc). Community buy-in and the potential to have a high social impact through job creation and skills development are essential elements to ensure long term commitment to biodiversity conservation.

The Milnerton Conservation Area a Little Known Gem

Keywords: Management, Conservation, Red Data species

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An overview of the Milnerton Conservation Area, its conservation importance and the management system approach being employed in the management of the area.
The Milnerton Conservation Area is relatively small in size (17.6ha) and forms the centre of the Milnerton Racecourse. The area around the racecourse is now completely developed resulting in the complete isolation of the conservation area from other open areas as well as the nearby Rietvlei Wetland Reserve. Ironically it is the very developments resulting in the Conservation Areas isolation that has led to and provides a large proportion of the funding for the ongoing management of the Milnerton Conservation Area.
A systematic and forward thinking management system has been recently put into place that aims to ensure the long term management and protection of this area and the many gems it contains.

KENILWORTH RACECOURSE CONSERVATION AREA (KRCA) 2007

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Kenilworth Racecourse Conservation Area (KRCA) has been identified as the most valuable piece of Sand Plain Fynbos. It is home to at least 275 indigenous species of flora, 19 of which are endangered. This poster aims to give an over view of the value of this conservation area in measure of some of its unique flora, as well as fauna at its present state. And a brief description of all the parties involved and the roles they play in the conservation of this precious ecological treasure.

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REHABILITATION AT BOULDERS COASTAL PARK

Key words: Rehabilitation, Boulders, Penguins

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The TMNP management team have identified three main causes for vegetation degradation & erosion at the Boulders Coastal Park (BCP). (1) Invasive exotic vegetation, which currently supports nesting African penguins and stabilises the BCP dunes, but reduces the lowland fynbos and coastal thicket biodiversity. (2) As BCP is a low lying area situated between the coast and a residential area, it is on the receiving end of storm water from the high lying areas, roads and residential properties. This storm water has been channelled into two main areas above BCP and has caused soil loss. (3) Penguins affect the vegetation through direct trampling, by removing soft foliage for nesting material and through their concentrated guano, which has resulted in soil nutrient enrichment.

Strategies for soil conservation at BCP are based on agronomic measures (vegetative covering of the soil). The measures are aimed at increasing the soil infiltration capacity, the aggregate stability, the soil surface roughness and promoting natural ecosystem functioning.

The preliminary results from the rehabilitation project have been positive and include the following:

- The first exclusion area has been opened and is currently used by penguins as nesting habitat
- Sand dunes previously covered by invasive exotic species are now covered by lowland fynbos.
- Areas previously covered by dilapidated structures are now covered in coastal thicket

- The rehabilitated sections are utilised by other bird species, snakes, tortoises, mice, dassies, chameleons etc.

This rehabilitation project will continue with new areas being prepared as the older ones are made available to penguins. Planting occurs annually between May and September.

Millennium Seed Bank project

Olivia Pekeur
Millennium Seed Bank Project, SANBI, Kirstenbosch

The Millenium Seed Bank is a 10 year international seed conservation project started by Royal Botanical Gardens Kew in 2000. The aims for the bank are to provide a genetic insurance policy for the plants of the world, to bank 24 000 of the dry land plant species seed by 2010 and to provide training & capacity building to promote conservation. Seeds are bank to provide insurance against threats to plants in their natural environment, options for the future conservation and utilisation of plants, facilitate species reintroductions and habitat restoration. Habitats are disappearing faster than we can preserve them and many Cape lowlands species will be lost in the next 50 years. Seed Banking is the only viable insurance against mass extinction.

The Management of road reserves for continual biological interchange/ seed dispersal using Blaauwberg Conservation Area as a pilot site

Leanne Mckrill
City of Cape Town, Blaauwberg Conservation Area

The fact is, that there is a drastic shortage of land, this causes both anthropogenic and environmental struggles.

In this instance, it is road reserves and the vital links they form (Between urban reserves), that are focussed on.
The pilot site being a portion of road- along the N7 namely, the Plattekloof interchange to the M19 and the R27- West coast road

Within this area there are three different veld types:
All of which are Endangered or Critically Endangered.

In most instances, incorrect management of road reserves leads to:

- Proliferation of Alien Invasive Species:
- Loss of naturally present pollinators.
- Nutrient enrichment of the soil
- Excessive amounts of water utilized.

Invasive Alien Grasses
Important, but overlooked elements, generally the focus is mainly on Woody invasive aliens. Problems that these grasses lead to and their survival strategies…

Indigenous Road Verges, Positives vs. Negatives

Positives	Negatives
Continual biodiversity in an urban area.	Concealment of criminals and vagrants.
Promotion of historically occurring flora.	Periodic fires- impaired vision

References:

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AQUATICS:

The River Health Programme

The past, present and future.

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This poster is an overview of the planning, implementation and operation as well as the future plans for the River Health Programme (RHP), Western Cape, from the first days of existence to 2008.
It also highlights some of the achievements of the Western Cape RHP since implementation in 2001. The province now has over 200 monitoring sites on rivers throughout the province[1].
The Department of Water Affairs and Forestry initiated the formal design of RHP in 1994. Monitoring aquatic ecosystem health is a requirement in terms of the National Water Act (Act 36 of 1998)[1]. The key purpose of RHP is to serve as a source of information regarding the overall ecological status of river ecosystems in South Africa. Accordingly, the RHP makes use of biological communities to characterize the response of the aquatic environment to numerous disturbances. The rationale is that the health of the biota provides a direct and integrated measure of the health of the river as a whole[2].
Following the years after the National RHP framework design phase initialization, a provincial framework was implemented and the pilot phase was executed. In 2000 the programme was tailored to suit local capacity and resource availability so that it may be applied nationally. During the year 2001 the RHP was actively implemented in the Western Cape through a partnership between CapeNature, the Department of Water Affairs and the CSIR[1].
The year 2003 saw the establishment of the River Conservation Unit (RCU) and the launch of the first State-of-River report (S.o.R), The Hartenbos & Klein Brak River Systems, for the Western Cape RHP. From 2003 until 2006 another four S.o.R reports were published, namely the Diep, Hout Bay, Lourens & Palmiet; Berg River System; Greater Cape Town and Oliphants/Doorn[3]. The Gouritz S.o.R report is currently in press (refer to **Table 1**).
This year the RCU's primary objectives for the team are the collection of data in the Breede River Basin, initializing the pilot phase of the Adopt-a-River Project and the completion of several technical reports. The future of RHP in the Western Cape holds promise of rehabilitation perspectives for implementation across the Western Cape Province , implementation of the suggested management actions and the publication of technical reports that cover all four Water Management Areas (Berg, Breede, Gouritz and Oliphants/Doorn)[1].

Table 1: Western Cape River Health Programme project status

	Complete	In press	Nearing Completion	In Progress	Pilot Phase
1994	- Framework design				
2000	- Provincial framework and Pilot phase				
2001	- RHP, Western Cape, implementation				
2003	- Berg River system S.o.R report - Hartenbos & Klein Brak River System S.o.R report - Diep, Hout Bay, Lourens & Palmiet S.o.R report				
2004	- Berg River system S.o.R report				
2005	- Greater Cape Town's Rivers S.o.R report				
2006	- Oliphants/Doorn & Sandveld Rivers S.o.R report		- Goukou & Duiwenhoks Technical report		
2007	- Adopt-a-River workshop	- Gouritz S.o.R report	- Oliphants/Doorn technical report - Overberg Rivers technical report	- Berg WMA technical report	- Adopt-a-River pilot project
2008-onwards				- Adopt-a-River National Project - Breede River technical report - Garden Route Rivers technical report - Gouritz technical report	

.

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The Eerste River Estuary: Activities affecting the water quality

Key words: Activities affecting Eerste River Estuary

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The poster focuses on various human activities which affect the water quality and life in the Eerste River Estuary. The Eerste River estuary forms part of and runs along the eastern borders of the Macassar Dunes Nature Reserve. The mouth opens to the False Bay coastline, south of the Macassar Waste Treatment Works. It is approximately 36 km south-east of Cape Town. The Eerste /Kuils river catchment does not contribute to drinking water due to a range anthropogenic influences such as river transfer, waste water discharge, alien invasion, agricultural run-off, urban development and industrial effluents.

Determining the Health Status of the Lourens River System

Victoria Day
City of Cape Town, Helderberg Nature Reserve.

The Lourens River is South Africa's first whole river to be proclaimed as a Protected Natural Environment. The problem is that there is not much monitoring being done on the river. There are three South African Scoring (SASS) sites and five water quality monitoring sites on the main river. There is no monitoring being done on any of the tributaries.

The idea of this project is through using SASS and water quality testing kit is to bring attention to the fact that the human processes along these tributaries do in fact have a negative impact on the ecological processes of the river.

The effectiveness of a reedbed for the absorption of excessive nutrients at Rietvlei Wetland Reserve

Key words: Pollution absorption, reedbed, water analysis

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Rietvlei had a massive fish die-off in December 2006. More than 80 tonnes of fish died. In February 2007 Rietvlei had a sudden toxic blue-green algal bloom. Rietvlei's main watersource is stormwater from the Bayside canal. This water is very nutrient rich. It is said that the massive fish die-off, the toxic blue-green algae and the eutrophic water are linked to each other. Going to use visual observations, collect water samples for analysis and compare the results to each other. Through this investigation, it will be clearer whether the reedbed at the Bayside storm water canal is effective in terms of nutrient absorption, thereby producing water of a better quality.

CONSERVATION PLANNING:

Innovative Techniques of the C.A.P.E. Fine-scale Biodiversity Plans

Key Words: C.A.P.E; land use decision making process; systematic conservation planning.

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The Fine-Scale Biodiversity Planning Project (FSP) is funded by the Global Environment Facility and forms a major component of the Cape Action for People and the Environment (C.A.P.E.) Programme. Systematic fine-scale biodiversity planning will be carried out for 9 of the local municipalities falling within 5 identified biodiversity priority areas within the CFR. The project aims to produce maps and associated guidelines which, amongst other uses, will act as the primary fine-scale biodiversity informant in land use decision making.

The project integrates both terrestrial and aquatic surrogate data such as vegetation, fauna, wetlands, estuaries, groundwater and rivers to produce the best possible representation of biodiversity for these areas. Ecological processes will also be included in the analyses to create the biodiversity plans. To ensure the plans are suitable for site level recommendations the assessments and analyses must be conducted at a sufficiently fine scale.

FSP shares some of the innovative techniques employed to produce a product which 1) is detailed enough to inform case-specific land use decisions, 2) takes the specific characteristics of the diverse vegetation types into

consideration when assessing the condition of remaining habitat and 3) aims to integrate dry and wet ecosystems when setting priorities within the landscape.

Towards urban biodiversity conservation in Drakenstein Municipality

Key words: partnerships, local government, biodiversity conservation

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The Drakenstein Municipality is one of many municipalities in the Western Cape that falls within the Cape Floristic Region (CFR), an international biodiversity hotspot that was recently declared a World Heritage Site in recognition of its rich biodiversity1. Being one of five Western Cape municipalities with the highest number of critically endangered ecosystems, the Drakenstein municipality supports some of the last remaining lowland renosterveld and fynbos habitats. Although 15 747 ha of the 26 022ha area of biodiversity priority in the area has formal protection status, a significant proportion exists beyond the boundaries of protected areas on privately owned land, in servitudes, road reserves, along river corridors and public land2.. The establishment of innovative partnerships with various government departments, NGO's and interest groups has enabled the municipality to safeguard several sites of biodiversity importance, including wetlands and biodiversity corridors, from being lost to "land hungry" economic driven activities, development and infestation by invasive alien species. The biodiversity priority areas identified throughout the municipality, like New Orleans Caravan Park in the Dal Josaphat residential community of Paarl and the Wellington Industrial Park Wetland sites, provide benefits and opportunities to communities (e.g. employment, tourist related activities, eco-schools, recreation). Biodiversity priority and land use guidelines have been developed to support the application of conservation interventions at these sites. The guidelines promote an innovative and coordinated approach to conservation; therefore partnerships and collaboration with various stakeholders are essential3. This paper will address some of the challenges in applying biodiversity conservation interventions in the urban landscape and the potential of partnerships to strengthen the conservation capacity of local government.

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EDUCATION:

The critical role Eco-Schools plays in raising Community awareness on Fynbos

Key words: Eco-Schools, Community, Fynbos

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Broadening the knowledge of Fynbos in the greater Bethelsdorp community, beyond the boundaries of the educators and learners exposed to the Eco-Schools programme, is emerging as a critical element to ensure an holistic and integrated approach to the successful preservation and restoration of Fynbos in the area. In addition, it is noted that the Eco-Schools programme is an important tool to engage with a diverse range of key stakeholders such as community leaders, municipal authorities and local media, and has the potential to unlock a number of initiatives conceptualized by the community itself.

Plant Monitoring Day: outdoor education and conservation action in the Cape Floristic Region

Keywords: Plant Monitoring Day, education, public involvement

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The Cape Floristic Region (CFR) is a designated UNESCO World Heritage Site renowned for its high species richness and endemism. Presently, 20% of CFR plant taxa are rare or threatened with extinction[1]. The key to successful conservation lies not only on policy and management but also active public involvement. In this context, the Custodians of Rare and Endangered Wildflowers has initiated 'Plant Monitoring Day', an annual educational event in mid-spring (September), where students and their teachers and eco-club volunteers monitor core species in their locality. Data collected is also used to show regional trends and supplement classroom science lessons.

[1] Victor et al in prep., 2007

Medicinal Plant Garden training facility: Table Mountain National Park

Key words: Medicinal plants, propagating, training, park-community patnerships, sustainable use

Sizwe Mkhulise, Deon Davids,
Table Mountain National ParK, CONSTANTIA

Bark, roots, bulbs and herbs from natural forest and fynbos on the Cape Peninsula are used for traditional medicine. Some of these resources are severely affected by unsustainable use rates and practices. If harvesting continues at the current rate, there will be no harvestable resources of the preferred species left.
Traditional healing cannot be stopped. It provides an essential health and social service to African communities, and also serves as an important source of income to both urban and rural health providers. There is approximately one traditional healer for every 500 people compared to one physician for every 40 000 people.

The TMNP initiated a project that would assist and train traditional healers and commercial plant gatherers in the Cape Metropolitan area in medicinal plant propagation and cultivation techniques. This would enable them to grow the plants themselves in culturally acceptable practices and sites through practical and affordable methods. This would also help to alleviate pressure on the natural plant resources and hence ensure the survival of indigenous biodiversity.

POSTERS

FYNBOS FORUM

1-3 AUGUST 2007

POSTERS

Please Note: We did not receive jpegs of all posters, but those received are listed per title and number appearing in the programme on page 9 &10. See Pictures of below posters on following pages.

	Title	Authors	Session
2	Analysis of the Fire History of Bontebok National Park, 1970 – 2006	Tineke Kraaij & N Kruger	**Poster Ecology**
5	Clearing invasive alien plants from riparian areas: What has been achieved thus far?	Ryan Blanchard & Pat Holmes	**Poster Ecology**
8	Building partnerships in the Upper Breede River Valley	Garth Mortimer, Rudolf Roscher, Joan Isham, & Terence Coller	**Poster Conservation**
9	The Milnerton Conservation Area a Little Known Gem	Jeremy Keyser & Mandy Noffke	**Poster Conservation**
10	Van Staden wild Flower Reserve – Nelson Mandela Bay Municipality	Joram Mkosana & Wesley Berrington	**Poster Conservation**
12	Rehabilitation at Boulders Coastal Park	Monique Ruthenberg & Tess White	**Poster Conservation**
13	Millennium Seed Bank project	Olivia Pekeur	**Poster Conservation**
15	The Eerste River Estuary	Thumeka Mdlazi	**Poster Aquatics**
16	The River Health Programme The past, present and future	Taryn Roossenroode	**Poster Aquatics**
17	Determining the Health Status of the Lourens River System	Victoria Day	**Poster Aquatics**
19	Innovative Techniques of the C.A.P.E. Fine-scale Biodiversity Plans	Tracy Timmins, Gen Pence, & Kerry Te Roller	**Poster Conservation Planning**
21	The critical role Eco-Schools plays in raising Community awareness on Fynbos	Cheryl Gibson-Dicks & Khahliso Losaba	**Poster Education**
22	Plant Monitoring Day: outdoor education and conservation action in the Cape Floristic Region	Caitlin von Witt & Yoseph Araya	**Poster Education**
23	Medicinal Plant Garden training facility: Table Mountain National Park	Sizwe Mkhulizi & Deon Davids	**Poster Education**