FYNBOS FORUM

Programme

Theme: Biome Boundaries

3rd to 6th August 2015

NG Church Hall, Montagu

Organised by the Fynbos Forum Committee

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ACKNOWLEDGEMENTS

FYNBOS FORUM

3rd August to 6th August 2015

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

1. The Kishugu Non Profit Company for administering the Fynbos Forum funding

2. The Table Mountain fund for sponsoring the Fynbos Forum Innovation Scholarships and the update to the Fynbos Forum Ecosystem Guidelines
3. The Plant Conservation Unit, UCT, for sponsoring The Theo Manual Award for Conservation Education
4. The Fynbos Forum committee for spending time and energy on making the forum happen
5. All keynote speakers, oral and poster presenters, workshop facilitators, and leaders of field trips for arranging such an interesting programme this year
6. The exhibitors for their displays and posters

7 Pieter Coetzee for donating the prizes

8 Charles Stuart and Liane Truter for organizing this years forum

9 Montagu for hosting the 2015 forum

COMMITTEE MEMBERS 2013 – 2014

Chair:	Ms Tessa Oliver (Chair)
Committee:	Dr Nicky Allsopp
	Ms Carly Cowell
	Prof Karen Esler
	Mr Vernon Gibbs-Halls
	Mr Rupert Koopman (Vice Chair)
	Mr Tony Marshall
	Ms Marilyn Martin-VermaakD
	Mr Donald Matjuda
	Dr Nicola van Wilgen
	Ms Natasha Wilson
	Ms Julia Wood
Secretariat:	Mrs Liane Truter
	Mr Charles Stuart

FYNBOS FORUM MISSION

The Fynbos Forum is an affiliation of researchers, planners, managers, landowners and a range of other stakeholders 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**.**

Contact details

Fynbos Forum Secretariat
Winter House
Rhodes Ave
Newlands
7700
Tel.: 021 797 5787
Email: fynbosforum2014@gmail.com

PREVIOUS FYNBOS FORA

FYNBOS FORUM PROJECT

1977	Various dates at UCT & Stellenbosch University- founding of the Fynbos Biome Project	
1978	Various dates and various venues	
1979	Stellenbosch	29 January
1980	Stellenbosch	20 - 30 July
1981	UCT	29 - 30 June & 1 July
1982	UCT	11 June
1983	UCT	28 June
1984	Stellenbosch	26 June
1985	Stellenbosch	29 - 30 July
1986	UCT	26 - 27 June
1987	Saasveld, George	23 - 25 June
1988	Avalon Hotel, Montagu	27 - 29 July

FYNBOS FORUM *(name change)*

1989	ClanWilliam	18 - 20 July
1990	Stellenbosch - University of Stellenbosch, Die Ark	1 - 2 October
1991	Bredasdorp- Potberg	11 - 13 August
1992	Cape Town	
1993	Drosdy Museum, Swellendam	16 - 17 March
1994	Bien Donné, Stellenbosch	13 - 15 July
1995	Mispah Youth Centre, Grabouw	5 - 6 December
1996	The Nekkies Dist. Worcester	17 - 18 July
1997	Genadendal	16 - 18 July
1998	Die Herberg, Waenhuiskrans, Arniston	22 - 24 April
1999	Rein's Nature Reserve, Albertinia	22 - 23 September
2000	Ganzekraal Holiday Resort & Conference Centre	7 - 9 June
2001	Calitzdorp Spa	1 - 3 August
2002	Goudini, Rawsonville	14 - 16 August
2003	Hartenbos Resort, Hartenbos, Dist. Mossel Bay	5 - 8 August
2004	Club Mykonos, Langebaan	10 - 13 August
2005	Pine Lodge, Port Elizabeth	1 - 5 August
2006	Goudini Spa, Rawsonville, Dist. Worcester	9 - 11August
2007	Club Mykonos, Langebaan	1 - 3 August
2008	Oudtshoorn – known as Interfaces, a joint forum with Arid Zones Ecology Forum, 3-7 August	
2009	The Sports Centre, Bredasdorp	4 – 7 August
2010	NG Church Centre, Citrusdal	3 – 6 August
2011	Community Hall, Still Bay	31 May – 3 June
2012	Cape St Francis	17 – 19 July
2013	Kirstenbosch Botanic Garden, Cape Town	7 – 10 October
2014	Premier Hotel, Knysna	4-8 August

Fynbos Forum 2015
Programme Overview

Time	Monday 3rd August 2015		
12h00	Registration		
13h00 – 17h00	Workshop 1	Workshop 2	Workshop 3
18h30	Opening of Fynbos Forum &Keynote address		
19h00	DINNER		
	Tuesday 4th August		
07h30	Late registration and Tea		
08h15	Welcome & Keynote address		
09h15	Session 1: Biome Boundaries		
10h30	TEA		
11h00	Session 1: Biome Boundaries		
13h00	LUNCH		
14h00	Poster Viewing Session		
15h00	TEA		
15h30	Session 2: Resource Use and Stewardship		
17h00	Fynbos Forum AGM		
19h00	DINNER		
	Wednesday 5th August		
07h30	Late registration and Tea		
08h00	Session 3: Conservation		
10h30	TEA		
11h00	Session 3: Conservation (Continued)		
12h25	Fieldtrip Briefing and lunch pickup		
13h00	Fieldtrips: Coordinator – Marilyn Martin		
19h00	DINNER & Disco at Cabrieres		

	Thursday 6th August
07h30	**Late registration and Tea**
08h00	**Session 4: Ecology**
09h30	**Session 5: Citizen Science and Environmental Education**
10h30	**TEA**
11h00	**Session 6: Invasions and Restoration**
13h00	**LUNCH**
15h10	**PRIZE GIVING/TEA**
19h00	**DINNER**

Fynbos Forum 2015
Programme

Monday 3rd August 2014			
12h00	**REGISTRATION**		
	Workshop 1	Workshop 2	Workshop 3
13h00 – 17h00	**Management Effectiveness Tracking Tool (METT): Application in the CFR** presented by Julia Wood	**iSpot** presented by Tony Rebelo	**Applying for Funding – Writing Submissions** presented by Augustine Morkel
18h30	**Keynote address: Dalton Gibbs-** Fynbos and Fire – the Marshmallow connection		

19h00	**DINNER**

Tuesday 4th August	
07h30	Late registration and Tea
08h15	**Welcome:** Tessa Oliver (Chairperson of the Fynbos Forum Committee)
	Session 1: Biome Boundaries **Chair: Tessa Oliver**
08h30	**Keynote: Alistair Potts- An operational framework for biome boundary research outlined using examples from the Greater Cape Floristic Region**
09h00	Bob Scholes– South African Research Infrastructure Roadmap-Terrestrial and Freshwater Environmental Observation Infrastructure
09h15	SerbanProches – Fire-free environments across southern Africa's biomes: distribution and refugial value
09h30	NyashaMagadzire - Assessing the importance of the fire regime and vegetation growth rates for the distribution of species with different life-histories in the Cape Floristic Region
09h45	NasiphiNtshanga - Transitions of southern African plant lineages between biomes
10h00	AnishaDayaram- Vegetation map updates 2006-2012: Focussing on Fynbos
10h15	GaleoSaintz- Mountain Interface Zones in the Fynbos Biome: Trails, Conservation & Connectivity **Short paper**
10h22	Cliff Dlamini – Table Mountain Fund: Climate change corridors within the Cape Floristic Region – intervention report **Short paper**
10h30	**TEA**
11h00	**Keynote: Glenn Moncrieff - Improving projections of the future distribution of the Fynbos and Succulent Karoo Biomes using Dynamic Vegetation Models**
11h30	Barry Low - Blurring of biomes boundaries in the Cape, with special reference of the West Coast
11h45	Curtis Bailey - Scaling patterns of landscape heterogeneity
12h00	Phoebe Barnard - High and dry – future of the fynbos bird endemics under climate change
12h15	**Discussion: Climate change, biome boundaries and assisted species migration for conservation** **Chair: Nicola van Wilgen**
13h00	**LUNCH**
14h00 – 15h00	**Poster viewing session**
	List of posters
	Megan Simons - The long-term effects of unplanned veld fires on plant diversity in Namaqualand Granite Renosterveld.
	Monique Ruthenberg - Fires in an urban park: Management challenges, lessons learnt and opportunities arising
	Yolanda Chirango - Generalised pollination in Gomphocarpuscancellatus *(Apocynaceae: Asclepiadoideae)*
	Sandy-Lyn Steenhuisen - Trends in floral trait evolution associated with pollinator shifts in *Protea* (Proteaceae)
	MlindeliNgcana - Nectar robbing in Erica verticillata *:Implications for restoration at False Bay Nature reserve (Rondevlei Section)*
	Megan Welsford - Effects of harvester ants on indigenous and alien plant species in renosterveld vegetation within a variegated agricultural landscape
	Aileen Thompson – Soundscaping of the Kogelbergbioshpere reserve to access complementarity of the core, buffer and transition zones
	Samantha Schroder – Verlorenvlei protected areas project
	Dean Ferreira - The seed to REAL Growth for People, Planet and Business
	RhonwenKayster - The Cape Winelands Shale Fynbos recovery behaviour after the harvesting of Pinuspinaster *(Cluster Pine) and an ecological burn, at Helderberg Nature Reserve*
	NosiphoTyagana - What is the potential for the restoration of fynbos from soil stored seed- bank following pine clearing in Table Mountain National Park?
	SibisisiweBalakisi - The most effective method to control and manage Phragmitesaustralis*at Matjiesrivier Nature Reserve*
	SithembileShezi - Assessing the effectiveness of bio-control in the buffer areas of the Agulhas National Park

	KanyisaJama - Emerging invaders of the eastern cape poster
	Axola Qongqo - Ecological interactions of plant pathogenic fungi, alien and indigenous vegetation: The case of Banksia,*Proteaceae*
	AdriaanGrobler - Preservation of the natural vegetation of the Cape Floristic Region: challenges as seen by the new generation of Fynbos ecologists.
	Jerome September - Ethology teaches our youth at risk life lessons
	Benjamin Goloff - Toward Liberatory Conservation?
	KhuselwaMabuyane – Interaction between communities and nature reserves within the Dassenberg Coastal Catchment Partnership
	Rolivhuwa Murovhi – The importance of snake awareness in the neighbouring communities within the Klein Dassenberg Conservation Area
	Jannie Groenewald - Floristic composition and ecology of quartz fields in the Greater Cape Floristic Region
	GaleoSaintz – Cape Mountain Interfaces Zones: Trails, conservation & connectivity on the Rim of Africa
	Sonya Erasmus - The effect of soil on the habitat preference and distribution of the Landdroskop moss frog and the De Villiers moss frog in the Hottentots Hollands conservation area
15h00	**TEA**
	Session 2: Resource Use and Stewardship **Chair: Carly Cowell**
15h30	ElzanneSingels - Geophytes and hunter-gatherers in the Cape
15h45	Roger Bailey - Sustainable Harvesting of Wild Fynbos – Developing an Assurance Programme
16h00	Rhoda Malgas - When biomes know no boundaries: implications for honeybush production (*Cyclopia spp*.) across social-ecological boundaries
16h15	EleonoreSlabbert - Potential ecosystem services and disservices of arthropods associated with *Cyclopia spp*. (Honeybush).
16h30	Anri Marais - Mamre: A walk-in kitchen in the Fynbos
16h45	Shelly Fuller – Reviewing the business case of the Biodiversity and Wine Initiative (BWI)
17h00	**Fynbos Forum AGM**
19h00	**DINNER**
Wednesday 5th August	
07h30	**Late registration and Tea**
	Session 3: Conservation **Chair: Bongani Mnisi**
08h00	**Keynote: Carly Cowell Outcomes of the IUCN World Parks Congress**
08h30	Julia Wood - Assessing Management Effectiveness of City's protected areas as a key tool in climate change resilience
08h45	Rupert Koopman - HELP WANTED: In meeting our Protected Area targets
09h00	ThandoMendela - The WWF-SA's Land Programme – where we are and where we are going
09h15	ThembelaBushula - The River Health Programme (SASS5) assessments in Keisie and Kingna Rivers in the Montagu area
09h30	Liezel Knight - The Knersvlakte Nature Reserve – A botanical review of plant species representation, endemism and status **Short paper**
09h38	Trevor Adams - SANParks Species of Special Concern Monitoring Programme: Agulhas National Park **Short paper**
09h45	Alliston Appel – Conservation Management in Agulhas National Park
10h00	LeighanMossop - The utilization of habitats neighbouring the Table Mountain National Park by small to medium fauna: preliminary findings from Westlake Conservation Centre
10h15	Vernon Gibbs-Halls - "A con in Conservation"
10h30	**TEA**
11h00	**Keynote: Tilla Raimondo - A strategy to conserve South Africa's plant species**
11h30	Maria Fernanda Gonzalez - Uniting different interests for the conservation of biodiversity in Colombia (Mainstreaming)

11h45	Augustine Morkel – Collective impact for impact at scale
12h00	Elton le Roux - Kirstenbosch: The long walk to emi'dom**Short paper**
12h07	Leon Steyn - Baboon Monitoring at Local Authority level - making use of National Funding and Partnerships. The Pro and Cons.
	Fieldtrip Briefing and lunch pickup **Chair: Tessa Oliver**
12h25	**FIELDTRIP BRIEFING AND LUNCH PICKUP**
19h00	**Dinner & Disco atCabrieres, just outside of town – REFER TO MAP FOR DIRECTIONS**
Thursday 6th August	
	Session 4: Ecology **Chair: Donald Matjuda**
08h00	**Keynote: AnnelizeSchutte-Vlok – Fire patterns of the Gamka-Rooiberg and Kammanassieinselbergs**
08h30	Pieter Botha - Rodents and baboons reduce seed cone production of*Proteaneriifolia*
08h45	Kobus Kellermann - Exploring the antagonistic effects of climate change and increased atmospheric CO2 concentrations on drought stress in a widespread Fynbos species
09h00	Sandy-Lyn Steenhuisen - Observing the "small and hairy": the use of remote cameras in pollination studies **Short paper**
09h07	Zoe Poulsen - Conserving Living Landscapes: Investigating impacts of livestock grazing and assessing rangeland restoration potential in Overberg Renosterveld**Short paper**
09h15	Justin van Blerk - Gender-specific culm-felling of *C .congesta*(Restionaceae) by *R.pumilio* (Muridae)
	Session 5: Citizen Science and Environmental Education **Chair: Vernon Gibbs-Halls**
09h30	Rehana Dada - Supporting climate change adaptation at community level
09h45	Ismail Ebrahim - Citizen scientist's contribution to taxonomy **Short paper**
09h52	Dewidine van der Colff - The South African Plant Red List: An update and the contributions of Citizen Science
10h07	Rudaya Adams - Establishing and maintaining a formal spotter network for SANBI's Invasive Species Programme **Short paper**
10h15	Ismail Ebrahim –The ins and outs of iSpot identification keys **Short paper**
10h22	Johann & Georgina van Biljon - Environmental Education Program designed for grade 6 learners in the Cape Winelands District, Western Cape **Short paper**
10h30	**TEA**
	Session 6: Invasions and Restoration **Chair: Julia Wood**
11h00	Pat Holmes - Alien invasions and fynbos restoration: progress over twenty years
11h15	Stuart Hall - Dynamic modelling to determine restoration recovery potential after invasion control in an endangered fynbos vegetation type
11h30	MirijamGaertner – Post-burn removal methods for *Acacia saligna* in Cape Flats Sand Fynbos
11h45	ElanaMostert – *Acacia* versus pine: comparing impacts of different invasive trees on highly threatened lowland Fynbos
12h00	Ernita Van Wyk - SANBI's Invasive Species Programme: What do we do in the Western Cape?
12h15	SiyabongaMyeza - Soil vulnerability to erosion and restoration in degraded lands on the proposed Avontuur Nature Reserve **Short paper**
12h22	Johann & Georgina Van Biljon - Riparian rehabilitation of private land in the Cape Winelands District, Western Cape focusing on the Berg and Breede River **Short paper**
12h30	AlizwaMbada- Assessing the invasive status of *Malvaarborea* (Tree Mallow) in South Africa
12h45	Joy Mangachena - Return of the birds: Fynbos birds as an indicator of ecosystem recovery after alien invasive plant clearing in a riparian habitat of South Africa
13h00	**LUNCH**

14h00	NolwethuJubase - Options for the chemical and mechanical control of *Banksia speciosa* in Agulhas National Park, South Africa
14h15	SisandaNuse - The City of Cape Town biological control insect mass rearing facility
14h30	Victoria Wilman - Seed banking as an Integrated Conservation Tool – Nature's Safety Net
15h00	**PRIZE GIVING / TEA**
19h00	**DINNER**

POSTER VIEWING SESSION

Tuesday 4th August 2015 14h00 – 15h00

No	Title	Authors
1	The long-term effects of unplanned veld fires on plant diversity in Namaqualand Granite Renosterveld.	*Megan Simons*
2	Fires in an urban park: Management challenges, lessons learnt and opportunities arising	*Monique Ruthenberg*
3	Generalised pollination in Gomphocarpuscancellatus (Apocynaceae: Asclepiadoideae)	*Yolanda Chirango*
4	Trends in floral trait evolution associated with pollinator shifts in Protea (Proteaceae)	*Sandy-Lyn Steenhuisen*
5	Nectar robbing in Erica verticillata :Implications for restoration at False Bay Nature reserve (Rondevlei Section)	*MlindeliNgcana*
6	Effects of harvester ants on indigenous and alien plant species in renosterveld vegetation within a variegated agricultural landscape	*Megan Welsford*
7	Soundscaping of the Kogelbergbioshpere reserve to access complementarity of the core, buffer and transition zones	*Aileen Thompson*
8	Verlorenvlei protected areas project	*Samantha Schroder*
9	The seed to REAL Growth for People, Planet and Business	*Dean Ferreira*
10	The Cape Winelands Shale Fynbos recovery behaviour after the harvesting of Pinuspinaster (Cluster Pine) and an ecological burn, at Helderberg Nature Reserve	*RhonwenKayster*
11	What is the potential for the restoration of fynbos from soil stored seed- bank following pine clearing in Table Mountain National Park?	*NosiphoTyagana*
12	The most effective method to control and manage Phragmitesaustralis at Matjiesrivier Nature Reserve	*SibisisiweBalakisi*
13	Assessing the effectiveness of bio-control in the buffer areas of the Agulhas National Park	*SithembileShezi*
14	Emerging invaders of the eastern cape poster	*KanyisaJama*
15	Ecological interactions of plant pathogenic fungi, alien and indigenous vegetation: The case of Banksia, Proteaceae	*Axola Qongqo*

16	Preservation of the natural vegetation of the Cape Floristic Region: challenges as seen by the new generation of Fynbos ecologists.	*AdriaanGrobler*
17	Ethology teaches our youth at risk life lessons	*Jerome September*
18	Toward Liberatory Conservation?	*Benjamin Goloff*
19	Interaction between communities and nature reserves within the Dassenberg Coastal Catchment Partnership	*KhuselwaMabuyane*
20	The importance of snake awareness in the neighbouring communities within the Klein Dassenberg Conservation Area	*Rolivhuwa Murovhi*
21	Floristic composition and ecology of quartz fields in the Greater Cape Floristic Region	*Jannie Groenewald*
22	Cape Mountain Interfaces Zones: Trails, conservation & connectivity on the Rim of Africa	*GaleoSaintz*
23	The effect of soil on the habitat preference and distribution of the Landdroskop moss frog and the De Villiers moss frog in the Hottentots Hollands conservation area	*Sonja Erasmus*
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Workshop Abstracts 2015

Workshop 1:

MANAGEMENT EFFECTIVENESS TRACKING TOOLS ON PROTECTED AREAS

Workshop 1 – Fynbos Forum 3rd August 2015, Montagu Church Hall

13h00 – 17h00

The workshop will focus on the various management effectiveness tracking tools in Protected Areas, the one of which is the METTS. This workshop will look at what management effectiveness tracking tools and other state of biodiversity or ecological integrity tools, the various organisations in the CFR are using; how valuable they find the various tools; and highlighting successes and challenges. The workshop is aimed at information sharing between the different organisations.

13h00 - 13h10

1. Welcome and introduction – Julia Wood (5mins)

13h10 – 14h25

2. SANParks – Carly Cowell (15 mins)
3. Eastern Cape Parks Board – Wayne Erlank (15 mins)
4. CapeNature – Natalie Hayward / Lauren Waller (15 mins)
5. City of Cape Town – Julia Wood / LeighanMossop (15 mins)
6. METTSA version3 National Perspective – Paul Britton (15 mins)

14h30 – 15h00

7. Group Discussion

15h00 – TEA

15h15 – 15h45

8. Group Discussion cont.

15h45 – 16h30

9. Report back

16h30 – 17h00

10. General Discussion and Way Forward
11. Closure

Workshop 2:

iSpot course

- Background (30 mins - talk)
  - Introduction to iSpot www.ispotnature.org
  - What is iSpot
  - Highlights of iSpot
- Signing up (for those who have not done so) (15 mins - online)
- Adding an observation (practical) (45 mins – talk and do)
  - Tips for localities
  - Tips for layout
  - Adding interactions
- Photos for iSpot (if time: 10 minutes - talk)

- How to take photos
- What to take
- GIS and photos: save heaps of time
- Optimizing photos

· Searching on iSpot (10 mins -talk)

· Checking your profile and updates (15 mins -talk)

- Exercise (30 mins)

· Making Identifications (30 mins – talk and do)

- Using the dictionary
- Links
- Surfing
- Keys
- Projects

· using tags and forums for your projects (10 minutes -talk)

· Thanks and summing up

Workshop 3:

Applying for funding – Writing Submissions

Each participant should attend with a project in mind they would like to have funded.

1) Introduction

a. WWF Nedbank Green Trust

b. Table Mountain Fund

2) Group Work:

a. Introduce projects

b. Apply question framework

c. Discussion: Which questions did you have a problem with and how to address?

3) Plenary feedback from groups.

4) Workshop themes:

a. Funding Overview

b. Engaging with funders

c. Matching Funders

d. Environmental Outcomes solutions

e. Contribution to strategy

f. Impact at scale

g. Catalyse

h. Success and measurement

i. Theory of Change

j. Dependency on others

k. Impact achievement

5) Final questions?

6) Closing

Field Trips 12h30 on 5th August 2015

NO	TITLE & DETAILS	LEADER/S	DURATION	# people	SITE	REQUIREMENTS
1.	**Driekuilen: A collaborative research and teaching site** (UCT is using it for undergrad fieldtrips and is setting up some experiments there). Apparently	Dean Ferreira dean@driekuilen.co.za Need to get: Annelies or Jan Vlok, Rupert, Tony Rebelo or Pat Holmes **www.driekuilen.co.za**	5hrs	Open	DrieKuilen Nature Reserve, 70kms from Montagu	**Cost:** None **Need:** Sturdy boots and warm clothing (sun hats/rain jackets, depending on weather **Own transport** required – vehicles with clearance, 4x4 is not a prerequisite

4.	**Rehabilitation of riparian zones**	Johann van Biljon Cell:072 734 7287 Intaba Environmental Services (Pty) Ltd	3hrs	Open	Jackbird farm +/- 25km form Montagu and possibly 2 other rehab sites	**Cost:** None **Need:** Shoes for walking outside at rehab site **Transport:** Own transport
5.	**Renosterveld/Arid Fynbos Transition:** walk around the Piet se Pad development area and the Montagu Mountain Reserve. It is magnificent veld, with a development plonked into it, with a mix of Renosterveld and Arid Fynbos.	Marion Maclean: marion.botanica@gmail.com 072 118 1725	2hrs	20pl	Montagu Mountain Reserve & Piet se Pad development (edge of town)	**Cost:** None **Need:** cameras, water, hats, walking shoes **Transport:** own transport **(**donations to the Klein Karoo Crew for buying of potting bags/pots etc.)
6.	**Walk the line between 2 Biospheres** excursion on Simonskloof farm.	Jürgen Wohlfarter, GaleoSaintz, Ivan Groenhof	2 hours + 2 hours travel time to & fro Montagu	20	Simonskloof, +- 2km, 1 hour	**Cost:** Free **Need:** Hiking Boots, hat, water bottle**Transport:** Own Transport
PAYING EXCURSIONS / ACTIVITIES						
2.	**Indigenous Medicinal Herbs of the Montagu Museum** ***Joubert House*** oldest house in town. The ***herbal garden project*** – uses of herbs, cutting, drying, weighing and packaging of herb by local person. This garden is part of the National Heritage complex. ***Montague Museum***	Annette Cilliers (Curator) mmuseum@telkomsa.net jouberthuis@cybersmart.co.za Tel: 023 614 1950 (Museum) 023 614 1774 (Jouberthuis) Fax: 023 614 1950	2hours	15 per group (can do more than one tour)	Joubert House & Montagu Museum	**Cost:** R5pp **Need:** Comfortable shoes for walking **Transport:** No transport, walking distance Bring $ for buying herbs, books and herbal products

9.	**Viljoensdrift Wines and River Cruises** River, Wine, Peace, Tranquility, Country Life Style and Hospitality	Viljoensdrift Wines and Cruises +27 23 6151017 Boat Bookings - rivercruises@viljoensdrift.co.za Website: www.viljoensdrift.co.za	approximately 1 hour			Cost: R40 for Adults and R15.00 (3 - 16 years) for children.
3.	**Rock climbing:** rock climbing lessons for beginners, guiding for more experienced.	Justin Lawson Email: justin@climbing.co.za Website: www.climb.co.za Tel: +27 (0) 23 614 3193 Mobile +27 (0) 82 696 4067	2hrs per session			Cost: 1 pax @ R1200; 2 pax @ R600pp; 3 pax R500.00 pp; 4 pax R450.00 pp; 6 pax R400pp

PAPER ABSTRACTS 2015

Monday 3rd August 2015

Keynote Address:

Fynbos and Fire – The Marshmallow connection

Gibbs, D

Regional Manager South,Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town

The role of fynbos and fire has been readily understood by ecologists and arsonists for several generations now. Less understood is the role of marshmallow's and fire in the fynbos biome. Until recently (actually 25 minutes ago) it was felt by the majority of fynbos ecologists that fire and myremecochory could explain the intricate plant diversity on the alpha and beta level in the fynbos. The concept of marshmallows as a major driving force in the fynbos fire ecology is only beginning to be appreciated and its evolutionary and conservation implications have not yet been determined.

This paper attempts to deal with tricky issues in marshmallow research that have long perplexed ecologists for the past two or three days; questions such as do pink marshmallows actually taste different to white ones? How do I stop the one side of the marshmallow getting too toasty? Does flame length, flame intensity and smoke constitution affect taste? How should conservators deal with the rising trend of novelty marshmallows? And most important of all; how do I eat a really gooey marshmallow without getting it all over my field clipboard and notes?

A series of innovative experiments were carried out in the fynbos biome dealing not only with the culinary but also sociological impacts of marshmallows in fynbos and their findings presented.

Tuesday 4th August 2015

Session 1: Biome Bounderies

Keynote Address:

An operational framework for biome boundary research illustrated with examples from the Cape Floristic Region

Potts, A.J

Botany Department, Nelson Mandela Metropolitan University, Port Elizabeth

Understanding how biome boundaries function is crucial if we are to predict how biomes may shift under altered environmental conditions (in the past or into the future). Research on biome boundaries has been conducted using a wide range of methods. In this talk, I will outline an operational framework for biome boundary research by categorising these methods into five approaches and discuss the benefits and weaknesses of each approach. The approaches are: 1) field observations, 2) correlative modelling (i.e. quantitative measurements of vegetation and environment), 3) experimentation, 4) mechanistic modelling, and 5) the phylogenetic approach. Each of these approaches, and the temporal and spatial scales of biome boundaries they address, will be illustrated using examples from the Cape Floristic Region.

South African Research Infrastructure Roadmap

Terrestrial and Freshwater Environmental Observation Infrastructure

Scholes, B

University of the Witwatersrand

The Department of Science and Technology (DST) initiated a process in 2013 to identify domains and activities in which to make major new investments in nationally-shared scientific infrastructure, totalling billions of Rands , starting in 2016 and extending for at least a decade. From the initial long list of possibilities, seventeen were invited to develop concept documents, each led by a 'champion'. Thirteen passed that hurdle - which means that they are in principle accepted - and were invited to develop, by the end of October 2015, detailed implementation plans.

The concept proposal for a Terrestrial and Freshwater observation infrastructure was to create a network of equipped and serviced sites across south Africa, along with the necessary support staff and data infrastructure. SAEON would form the institutional home, but the sites could be on property owned by other institutions. A three-level hierarchy of sites is proposed,

covering both terrestrial ecosystems (including highly transformed ones such as urban or agricultural landscapes) and freshwater ecosystems. The top tier is about six highly instrumented landscape-scale sites, rather like the NEON in the US or ICOS in Europe. The next tier is about 120 sites with less sophisticated instrumentation, distributed among land and freshwater systems, and may include existing study facilities and experiments. The third tier consists of thousands of locations where samples are taken repeatedly. The system is linked to routine acquisition of remotely-sensed data as well as national systems of weather and hydrological monitoring. The primary purpose is the creation of detailed, long-term research datasets at large scale, with environmental monitoring as a secondary objective.

Innovative aspects are the inclusion of long-term experiments (such as the various fire trials and catchment experiments) in the design, and the inclusion of social data collection along with ecological and environmental variables. There are parallel conceptsunder development for coastal systems and for marine systems. The Terrestrial and Freshwater team will collaborate closely with them to ensure a seamless system.

A team of researchers from many institutions and disciplines will assist in refining the design, institutional arrangements and costings between now and October 2015. This process will involve workshops and outreach meetings. The Implementation Plans will be used by the DST to schedule the projects, beginning in a staggered way in April 2016. The design team will need help in identifying the infrastructural elements and data needed to support your discipline, and eventually in site selection. You can help by volunteering to be part of the design team, reviewing parts of the design, and communication the initiative among the community to raise levels of support and use.

Fire-free environments across Southern Africa's biomes: distribution and refugial value

Serban Proches

Discipline of Geography, University of KwaZulu-Natal, P.B. X54001, Durban 4000

It is widely known that southern African forests harbour a variety of organisms absent in several other southern African biomes due to their inability to survive fire. Likewise, biomes where succulent plants are dominant can also provide shelter for some fire-sensitive lineages. There is however little information as to how some other groups that are not adapted to survive veld fires survive in fire-prone biomes, although rocky outcrops and other types of fire-free refugia have been invoked. There is a need for a systematic approach towards understanding the distribution of fire-free refugia in fynbos, grassland, and savanna, and the spatial scales relevant to fire-survival in various groups of organisms, depending on their dispersal abilities and strategies, as well as on seasonal patterns in their life cycle/phenology.

Assessing the importance of fire regime and vegetation growth rates for the distribution of species with different life-histories in the Cape Floristic Region

Keywords: fire regime,species distribution model, Cape Floristic Region

Magadzire, N.[1]*, De Klerk H.M.[1], Esler K.J.[2] and Slingsby J.A.[3,4]

[1]Department of Geography and Environmental Studies, Stellenbosch University, Private Bag x1, Matieland, 7602, South Africa
[2]Department of Conservation Ecology and Entomology and Centre for Invasion Biology, Stellenbosch University, Private Bag x1, Matieland, 7602, South Africa
[3]Fynbos Node, South African Environmental Observation Network (SAEON), Centre for Biodiversity Conservation, Kirstenbosch Gardens, Private Bag X7, Rhodes Drive, Claremont 7735, Cape Town, South Africa
[4]Statistics in Ecology, Environment and Conservation, Department of Biological Sciences, University of Cape Town, Private Bag X3, Rondebosch 7701, South Africa
*nyshmagadzire@yahoo.com

Climate change impacts on diversity are of great concern in the hyperdiverse Cape Floristic Region (CFR).Our understanding of the effects of climate on species distributions is largely based on species distribution models (SDMs), which are popularly used for predicting potential shifts in vegetation distribution in response to climate change.However, most SDMs are limited to the use of abiotic variables such as climate and soils and largely ignore critical components of the ecology of the CFR such asfire regime, post-fire vegetation growth rates and differences in species' life histories. A major concern is that the impacts of climate change on biodiversity may be amplified by climate - induced changes in fire regimes and vegetation growth rates, greatly altering species distributions and vegetation structure. While fine scale studies have given us much insight into the fire ecology of many Fynbos species and the structure of the vegetation in which they commonly occur, we do not know to what extent the various properties of the fire regime and post-fire vegetation recovery rates constrain their distribution across the CFR, how they will respond to changes in these factors, nor if their sensitivity depends on their life-history traits. Here we fit SDMs that include fire and vegetation growth information and examine the contribution of these variables in determining species distributions relative to climate and soils. Furthermore, we examine whether the importance of fire and vegetation growth information varies between species of differing growth form or fire response strategy.

Transitions of Southern African plant lineages between biomes

Ntshanga N, Slingsby J, Procheş Ş

Biomes are continuously evolving as climates and landscapes change. Environmental change can force lineages occurring in a given biome to either disperse out of the biome, or evolve and adapt to changes within the biome. While environmental changes are occurring continuously over geological time, cases of colonisation of substantially different habitats are comparatively rare. This study aims to provide an overview of the plant lineage transitions from one biome to another in southern Africa, and discuss these in connection with biome evolution. We reconstructed the biome associations of the common ancestors of extant species for each of 25 plant lineages, allowing us to examine the frequency, timing and nature of transitions between biomes. Unsurprisingly, we found that transitions are more common between biomes that have more similar environmental conditions. For instance, the highest number of transitions occurred between Fynbos and Succulent Karoo, both winter-rainfall biomes. Inferences from dated phylogenies suggest that the transitions were clustered during the Paleogene, when modern southern African biomes took shape

Vegetation Map updates 2006-2012: Focusing on Fynbos

A. Dayaram[1], A. Skowno, L.W. Powrie

South African National Biodiversity Institute, Kirstenbosch National Botanical Garden, Rhodes Drive, Private Bag X7, Claremont, 7735.

A.dayaram@sanbi.org.za

The Vegetation map of South Africa, Lesotho and Swaziland is used by researchers, conservation planners and practitioners. The wide application of the resource highlights the need for the vegetation map to have accurate data inputs, a reliable map and clear vegetation type descriptions. The first version of the VegMap of Southern Africa was based on the best available data in 2006 and now involves a continuous and iterative process to improve the maps relevance and accuracy. Two updates to the map have been published since the original 2006 version. Changes have included additions, deletions, and alterations to the boundaries of vegetation types. These updates have been based submitted suggestions and queries from several botanists and ecologists. The three versions of the map were compared (2006, 2009, 2012) and the patterns that emerged highlighted the need for fine scale data from Gauteng, Limpopo, Eastern Cape, Northern Cape, Orange Free State and the North-West province. Areas of the Western Cape, Mpumalanga and KwaZulu-Natal have been refined with fine scale mapping and provincial projects. The Western Cape province had the second highest total updated land area. Most changes in the province were boundary adjustments to existing vegetation types with a few new vegetation types and sub-types added. Areas updated within the Fynbos region include parts of the Kamiesberg, Hopefield, Leipoldtville, Bokkeveld, Namaqualand, Matjiesfontein, Montagu, Overberg and Kogelberg. This work followed the framework used by the Vegetation Map project allowing for efficient inclusion in the map. Overall, while significant progress has been made in the Fynbos- the biome is diverse and still remains largely undersampled. Therefore, large areas of the Fynbos still require refinement and updating on the Vegetation Map.

Cape Mountain Interface Zones: Trails, Conservation &Connectivity

Keywords: montane interface zone, trails, micro-corridors

Saintz, G. [1]

[1] Rim of Africa - Cape Mountains and Trails Initiative
galeo@rimofafrica.co.za

Montane Fynbos and Renosterveld along the Cape Fold Range at elevation above 400m, although relatively better protected than its counterpart lowland species, face distinct challenges. Projects being undertaken by the Rim of Africa initiative to enhance connectivity between communities and conservation, between mountain corridors and the lowlands along the length of the Cape Mountains aim to address some of the challenges the conservation of the mountain Fynbos and its connectivity to lowland regions faces. The interface zone between mountain land and surrounding farm lands is our area of focus. How do we create micro-corridors into the lowlands. What is happening with birds and aquatic life at these interface zones? What roles can trails play in this space to bring greater awareness to the conservation of the ecotone and ecocline dynamics in the interface zone? Increasing agricultural activity into mountain areas threatens some of these low-lying connection points. Climate change is likely to influence the movement of species along the ecocline. A well maintained and used system of trails can bring both economic and ecological benefits to these interface zones. Revenue from trails is long term sustainable use of the landscape, giving access not only for the education of an increasing urban population removed from nature and biodiversity conservation issues, but also for flower harvesting, alien clearing and fire break management in mountainous parts of the Cape.

Table Mountain Fund: Climate Change Corridors within the Cape Floristic Kingdom –Intervention Report.

Keywords:Cape Floristic Region, Climate Change, Climate Change Adaptation, Corridors, Threats, Opportunities

Dlamini, CS[1]
[1]WWF South Africa, C/O Table Mountain Fund, Centre for Biodiversity Conservation, Kirstenbosch National Botanical Gardens, P. O. Box 23273, Claremont 7735, Cape Town, South Africa.
Cdlamini@wwf.org.za

In 2009, the Table Mountain Fund commissioned a report that focused on the Climate Change Scenarios for the Cape Floristic Region. This technical report prioritized a set of the most biodiversity significant and threatened climate-adaptation corridors within the Cape Floristic Kingdom and illustrated the potential costs and benefits of protecting them and maintaining their adaptive capacity. Subsequently, in 2014 this work was taken a step further to develop an intervention report from the Climate Scenarios report.
In the first phase of the preparation of the intervention report, a matrix for collating data on each of the identified corridor sites was developed. Key partners were identified and asked to provide a range of expert driven information that would assist in the development of the implementation roadmap. This matrix has helped identify the work that is already being undertaken in each of the corridor sites and which role-player is undertaking the work. It identifies what the threats and opportunities are and also starts to identify where immediate actions should be focused. It has identified which areas are potential “low-hanging fruit” that perhaps need minor focused interventions to achieve desired results. Corridors that have little or no activity taking place within their boundaries have also been highlighted.
During October 2014, a stakeholder workshop with all relevant stakeholders was held. For effective implementation, it was recognized that this report needs to integrate with and add value to the three related existing documents guiding protected area expansion in the Province in order to support implementation of these plans. These plans are: 1) the Western Cape Provincial Biodiversity Strategy and Action Plan, 2) Western Cape- Protected Area Expansion Strategy, 3) the Western Cape Climate Change Response Strategy (DEADP). It must be noted that this report does not look at the specific cadastral level. Consequently, this report can be used as a tool to communicate to partners what is happening in the landscape with regards to corridors. The detail in the Matrix will primarily serve this purpose, however a succinct narrative summary is additionally listed within the report

Keynote Address:

Improving projections of the future distribution of the Fynbos and Succulent Karoo biomes using Dynamic Vegetation Models

Glenn R. Moncrieff[1], Simon Scheiter, Jasper A. Slingsby, Guy F. Midgley, Steven I. Higgins

Centre for Biodiversity Conservation, Kirstenbosch Garden, Private Bag X7, Rhodes Drive, Claremont

glenn@saeon.ac.za[1]

The distribution of South African biomes is expected to be drastically altered by climatic change and increasing atmospheric CO2 in the 21st century. Developing the capacity to anticipate these changes is of critical importance if we are to mitigate and efficiently adapt to the reorganization of South African vegetation cover. Most previous work attempting to project global change impacts on vegetation in the greater CFR has involved approaches that correlate present climate with plant or biome distributions, then extrapolate these correlations to estimate distributions under projected future climatic conditions. Dynamic Vegetation Models (DVMs) simulate the impact of climate and CO2 change on plants using physiological principles and explicitly model vegetation dynamics and disturbance, rather than using simple climate correlations. DVMs were originally conceived of as a tool for simulating global change impacts on vegetation patterns at the global or continental scale, ignoring range-restricted vegetation types. Therefore plant types and processes important in determining the distribution and functioning of our most biodiverse and threatened biomes, particularly Fynbos and Succulent Karoo, are absent or poorly represented. We proposed to modify an existing DVM - originally intended for tropical biomes and parameterized specifically for Africa - to include the plant types and ecological processes relevant in these neglected South African biomes. We describe our efforts to include novel representations of shrub fueled fires and nutrient constraints, and provide some initial results and projections of future biome distributions.

Blurring of biome boundaries in the Cape, with special reference to the West Coast

Key words: fynbos, strandveld, dune, thicket, biome, leaching, gradients

Low, A.B.[1*] and Powrie, L.W.[2]

[1]Coastec, P O Box 370, Rondebosch, 7700
[2] South African National Botanical Institute, Kirstenbosch
* coastec@mweb.co.za

Although our human nature drives us to draw finite biome and vegetation type boundaries, in reality these are often a best guess for fitting a line within some or other ecotone.
Most commonly these ecotones occur where there is an increase in rainfall along the same substrate. Key examples in the Cape are a gradient of succulent karoo to renosterveld to fynbos to forest on shale or granite; or a gradient of succulent karoo to fynbos to forest on sandstone, with the absence of renosterveld. These patterns typify the gradient from wet inland mountains into the dry karoo, where in many cases sandstone acts as a broad constant (texture and chemistry) and rainfall the variable.
But an intriguing pattern is found on soils which *in situ* can transform chemically with time. These are invariably substrates which (a) have a high potential leaching capacity and (b) have an elements(s) which is subject to leaching and in which the chemical nature of the soil is altered over time. The West Coast provides an excellent example of this phenomenon.
Here leaching of calcareous sands has produced two major outcomes: firstly pH decreases resulting in acidic soils; secondly, in parallel with leaching, is a decrease in most nutrients, particularly cations such as calcium. This produces extremes of both substrate and vegetation.
Two facets of this differentiation will be discussed. The first is the classification of the calcareous and non-calcareous sand flora and vegetation, and secondly the nature of the ecotone between thicket and fynbos.
Detailed vegetation mapping on the West Coast south of Saldanha shows thicket and fynbos separated by a unit which represents a mix of species from both extremes. This in turn suggests the thicket versus fynbos biome boundary in this region is blurred. With time, two scenarios can be painted:

(i) Coastal sands will continue leaching until all soils reach maximum acidity and support only fynbos
(ii) Coastal sands will continue to feed into the system from the south and south-west and provide a continuous supply of calcareous material, thus ensuring the process is unending.

We analyse floristic and vegetation (plot) and soil data along the gradient between dune thicket (calcareous) and fynbos (non calcareous), focusing on the region between Saldanha and Blaauwberg and provide insights into this intriguing and often baffling biome divide.

Scaling Patterns Of Landscape Heterogeneity

Bailey, C.[1]*, De Klerk H.M.[1], Munch Z.[1,] Hui C.[2]
[1]Department of Geography and Environmental Studies, Stellenbosch University, Private Bag x1, Matieland, 7602, South Africa
[2]Department of Mathematical Sciences,Mathematics Division, Stellenbosch University,Private Bag x1, 7602 Matieland, South Africa

Landscapes are spatially heterogeneous areas that manifest themselves as mosaics of interacting ecosystems or patches of varying size, shape, composition, and productivity. Patches are homogenous areas of habitat that differ from their surroundings. Each patch exists within a collage of other patches which together form landscape patterns. These patterns are shaped by complex interaction between biotic and abiotic factors which create dynamic ecosystems of varying size and shape. As such, landscapes have multiple descriptive characteristics. A pervasive confounding factor for quantifying landscape heterogeneity and productivity, however, is spatial scale. Landscapes exhibit different patterns at different spatial scales, indicating a scale multiplicity relationship. Much research has been done to try and establish how scale and scaling influences not only the visual perception of landscapes but also the metrics associated with describing these. Currently, most ecological studies are conducted at fine scale and extent. This is problematic, since ecological pattern-processes occurring at a fine scale or extent may not be representative of or applicable to those occurring at a broader scale. Ecologists are thus scaling up, not only in order to understand the complex and dynamic interactions between land and atmosphere, but also to try and convey information about fine scale ecological patterns and processes to broad scale applications. Fortunately, the rapid technological development in the field of remote sensing has come to the aid of ecologists. Satellite images and remotely sensed proxies now offer a large quantity of data that are useful in the study of ecological processes across space, time and scale. This study shows how patterns of NDVI scale from 30m-1km and how these differ depending on scaling techniques used and metrics being considered

High and dry – future of the fynbos bird endemics under climate change

Phoebe Barnard, Alan T.K. Lee[1,2] and Mark Brown[3,4]
[1] Kirstenbosch Research Centre, South African National Biodiversity Institute, Private Bag X7, Claremont 7735, South Africa
[2] DST-NRF Centre of Excellence at the Percy Fitzpatrick Institute of African Ornithology, University of Cape Town, Rhodes Gift, 7700, South Africa.
[3] Nature's Valley Trust, PO Box 230, The Crags 6602, South Africa.
[4] University of KwaZulu-Natal, School of Biological and Conservation Sciences, Private Bag X101, Scottsville, Pietermaritzburg 3209, South Africa.

The South African Fynbos biome, a global biodiversity hotspot with high endemism and species richness, has six endemic bird species. Little has been known about population sizes or realized distribution ranges of these six species, but projected range modelling based on occurrence from the South African Bird Atlas Project (SABAP) suggested pretty high vulnerability of these species to climate change. We estimated global population sizes for these six endemics based on densities calculated from Alan Lee's two intensive biome-wide point count surveys in 2012. We modelled regions of suitable climatic space, and established that mean annual temperature and the temperature of the warmest quarter of the year seem to limit Cape Rock-jumper *Chaetopsfrenatus*and Protea Canary *Serinusleucopterus*ranges. Both species have seen an apparent >30% decrease in range and reporting rates (a proxy for abundance) in the twenty years between SABAP atlasing periods (1987-1991 and 2007-ongoing). The Cape Rock-jumper result is unexpected: encounter rates are higher in shorter vegetation, dry slopes and habitats with more recent occurrence of fire – all proxies for proximate causes of climate change on the Fynbos. Although coastal plains are highly transformed, mountain Fynbos is of course the best protected of all the world's Mediterranean-climate habitats, with

relatively little anthropogenic land transformation. Long term weather datasets from the Fynbos demonstrate significant warming since 1960. We conclude that these bird range decreases are consistent with the loss of suitable climate space and inability of these species to adjust physiologically to increasing temperatures.

Session 2: Use and Stewardship

Geophytes and hunter-gatherers in the Cape

Keywords: Geophyte; hunter-gatherers, Stone Age, calories, edible

Singels E [1], Esler K.J. [2] ,Parkington J.E.[1]
[1]Department of Archaeology, University of Cape Town, 3.27 Beattie Building, University Avenue, Upper Campus, Rondebosch, 7700
[2]. Department of Conservation Ecology and Entomology, Stellenbosch University, 3001 J.S. Marais Building, Victoria Street, Private Bag X01, Matieland, 7602, South Africa

Geophytes are plants which possess underground storage organs and serve as a staple source of carbohydrates for many hunter-gatherer societies. Geophytes also feature prominently in discussions of diets of early modern humans. While the way of life of hunter-gatherers in South Africa's Cape is no longer in existence, there is extensive historical and archaeological evidence of hunter-gatherers' use of such plants as foodstuffs. This is to be expected, given that the Cape supports the largest concentration of geophytic plants globally. The Cape is the location of several Middle Stone Age sites that are highly significant to research on the origins of behaviourally modern humans, and this provides the context for our research. To better understand the possible role geophytes could have played in hunter-gatherers diets, different lines of evidence will be investigated. Based on preliminary studies, the abundance and biomass of edible geophytes can be great. Furthermore, these preliminary results show that geophytes could satisfy all the calorie needs of a person, within two hours of foraging. We hope to expand these experiments to be able to estimate how much energy it took to forage for different geophytes in different habitats. Ultimately we hope to be able to gauge how energetically profitable, it might have been to forage for geophytes as a whole. This will help us understand how prehistoric people were able to survive in the Cape through the Middle and Later Stone-Ages.

Sustainable Harvesting of Wild Fynbos – Developing an Assurance Programme

Keywords: fynbos harvesting, Sustainability Initiative of South Africa (SIZA), assurance programme

Bailey, R.V.[1], O'Grady, K.[1], Botha, B.[1] and Lourens, JN [2]
[1] Flower Valley Conservation Trust
[2]LourensBoerdery,Certified Fynbos Harvester, Napier

Retailers are under increasing pressure to source ethically-produced products – both from consumers, and to a certain extent from shareholders. While the emphasis to date has been on the food sector, other industries – including the fynbos industry – are also being scrutinised. The Sustainable Harvesting Programme, driven and coordinated by Flower Valley Conservation Trust, has to date, with industry partners, tested a programme for sustainability with the wild fynbos harvesting sector. The Programme introduced a toolkit to support sustainable practices, and to provide monitoring support to better understand what constitutes sustainable fynbos harvesting.

Now the Programme is being taken to a new level: as an assurance programme. Five years ago steps were taken to launch the Sustainability Initiative of South Africa (SIZA), a social and labour self-improvement and audit system, which today supports the agricultural sector. The Sustainable Harvesting Programme has followed a similar route – to ultimately provide the markets with assurance that certain environmental and labour standards are being met within the wild fynbos harvesting sector. Currently the Programme is being aligned to SIZA's environmental framework. The Sustainable Harvesting assurance programme is now being introduced to relevant stakeholders to ensure broad buy-in and support.

When biomes know no boundaries: implications for honeybush production (*Cyclopia spp.*) across social-ecological boundaries

Keywords: Honeybush; Fynbos biome; social-ecological system boundaries

Malgas, R.R.[1], Klein, J.[2] and Jilisen, B.[3]
Department Conservation Ecology and Entomology, Stellenbosch University, Private Bag x1, Matieland, 7760, South Africa[1]
Wageningen University and Research Centre, Droevendaalsesteeg 4, 6708 PB; PO Box: 9101, 6700 HB; Wageningen, The Netherlands[2]
Van Hall Larenstein, University of Applied Sciences, Agora 1, PO Box 1528, 8901 BV, Leeuwarden, The Netherlands[3]

Honeybush (*Cyclopia spp.*) grows along the southern cape regions and spans provincial boundaries of the Western and Eastern Cape Provinces. Although the plants occur well within the Fynbos biome, a host of institutional and biophysical boundaries are present in the honeybush landscape. How land-users negotiate these boundaries has implications for the conservation and sustainable use of honeybush. A total of 47 interviews included small-scale land-users in the Overberg, and small-scale and large-scale land-users in the Langkloof. The major motivation for interviewees cultivating, harvesting or processing honeybush was for income generation. For cultivators it was cited as a welcome source of extra income to supplement other farming activities (e.g. fruit) or as a side-income during retirement. For the wild harvesters, however, honeybush is the major income source. By comparison, only 47% of the interviewees at Genadendal reported any involvement with honeybush at present, showing a gap in production and a break with past practices of wild harvesting. Constraints mentioned included vandalism, a lack of interest by fellow village inhabitants, lack of financial resources and lack of infrastructure. Illegal harvesting and transporting harvested honeybush plants across the provincial borders between Eastern Cape and Western Cape are also significant factors. Almost all interviewees across the two regions reported that they are unable to increase or improve their production because they have limited or no access to land favourable for (honeybush) cultivation or for wild harvesting. Conservation-oriented land-users and government officials rightfully fear that uncontrolled harvesting will lead to extinction of a resource that is highly valued locally and internationally. Governance of the resource across tenure and provincial boundaries is problematic at this stage. We explore the roles of social-ecological boundaries and their conservation implications for one of South Africa's unique Fynbos products.

Potential ecosystem services and disservices of arthropods associated with *Cyclopia* spp. (Honeybush).

EL Slabbert*, R. Malgas, R. Veldtman, & P. Addison
Department of Conservation Ecology and Entomology, Stellenbosch University, Private Bag X1, Matieland, 7600
*E-mail: eleonore@sun.ac.za

Cyclopia species, commonly known as Honeybush, are endemic to the Eastern and Western Cape of South Africa. Honeybush has historically and is currently being used for making tea, and has more recently been proven to have medicinal use properties. Honeybush tea is classified as a black tea, which is globally recognized as one of the largest markets. The growing demand for Honeybush tea calls for further commercialization of the industry and a shift away from the predominantly (70%) wild harvested supply. Taking a cue from the Rooibos industry in terms of its current pest challenges it seems only wise to timely develop in the commercialization journey of *Cyclopia* spp. to understand its ecology in avoiding similar issues. The current study address the lack of base line knowledge on arthropods associated with Honeybush and serves to identify potential 'pest risk' arthropods and those with potential ecosystem service value for sustainable Honeybush production.
Seven sampling methods for monitoring epigeal and epidaphic arthropods where used on a monthly schedule over a 12 month period, commencing April 2014. Clear seasonal trends were seen for insect species richness and diversity of Hymenoptera, Lepidoptera and a selection of Hemiptera. Within the diverse predator-parasitoid complex parasitoids form the predominant component with potential as pest biocontrol agents. Several parasitic wasps (Hymenoptera) have been identified to be direct parasitoids of potential Lepidoptera and Hemiptera pests. Research outcomes are relevant towards informing cultivation and management practices promoting a sustainable productive agroecosystem for the commercialization of *Cyclopia* spp. Furthermore these findings form the basis for further research on native biocontrol agents for the integrated pest management of cultivated Honeybush.

Mamre: A walk-in kitchen in the Fynbos

Ebrahim, I. [1*], Marais, A.R.[2] and Herman, K.F. [3]
[1]Custodians of Rare and Endangered Wildflowers, South African National Biodiversity Institute & Botanical Society of South Africa, Kirstenbosch Research Centre
[2]Custodians of Rare and Endangered Wildflowers, GroenSebenza Pioneer, Kirstenbosch Research Centre
[3]Custodians of Rare and Endangered Wildflowers, GroenSebenza Pioneer, Mamre
[*]I.Ebrahim@sanbi.org.za

The second addition to our series of films documenting the traditional uses of plants in Mamre focusses on the edible flora used by the local residents. Mamre has a rich history of plant utilization and many interesting recipes and uses for plants have emerged from this community. Some consume it for health benefits, others just believe in eating organic, natural harvested food. In this video we will document some of the plants people use in Mamre as well as some of the unique dishes that have originated in this town. We will interview a few knowledgeable residents about the plants and how to utilize it. This information will then be documented on film as well as a questionnaire to be completed by the selected residents. In addition we will develop a plant identification guide that locals can use to positively identify the plants that are used in these recipes. In this way we can contribute to preserving the indigenous knowledge of the Mamre community. This video will also be used in the community to create awareness about the natural resources in Mamre and the importance of a healthy, natural lifestyle.

Reviewing the business case of the Biodiversity and Wine Initiative (BWI)

Fuller, S and Kotze, I
WWF SA

The Biodiversity and Wine Initiative (BWI) is a unique business-conservation-industry partnership that brings together private landowners in a common understanding and assurance of following sustainable production practices within their vineyards and cellars, as well as a strong commitment to being stewards of their local biodiversity in their non-productive landscape - currently representing over 140,000 hectares of conservation land within the Cape Floral Kingdom. 2015 is a significant year for BWI as we celebrate 10 years of conservation action and success in the Cape winelands. In reaching this milestone, we have undertaken a comprehensive review of the BWI model - both internally, and through our membership base and industry discussion groups - evaluating our initial aspirations and objectives, challenges and successes achieved to date. Through this process, the current and emerging needs for the programme within the industry were highlighted and the result was the definition of a new pathway for BWI which best directs our contribution and resources to maximum effect. The presentation will share some of the lessons learnt along the journey and outline the latest strategy and positioning for WWF Sustainable Agriculture programme within the fruit and wine landscapes.

Wednesday 5th August 2015

Session3: Conservation

Keynote Address:

Outcomes of the IUCN World Parks Congress

Key words: Protected Areas, World Heritage Sites, Marine Protected Areas, Aichi Targets, Promise of Sydney

Cowell, C. [1*]
[1]Regional Ecologist, Cape Cluster, South African National Parks
* carly.cowell@sanparks.org

The IUCN World Parks Congress is the definitive global forum on protected areas. The Congress is held every 10 years, setting the agenda for protected areas conservation for the decade to come. The theme of the 2014 Sydney Congress was "*Parks, people, planet: inspiring solutions.*" It consisted of eight stream sessions, four theme sessions, six world leader dialogues, capacity developments workshops, E-poster sessions and pavilion exhibitions. The objectives of the World Parks Congress are to develop solutions drawn from practice that are inspired, innovative and successful, and to position parks within goals of economic and community well-being, by increasing understanding of the vital role in conserving biodiversity. The long-term goal of the World Parks Congress is the achievement of Target 11: of the Convention on Biological Diversity's Aichi Biodiversity Targets which aims to conserve at least 17% of terrestrial and inland water and 10% of coastal and marine areas by 2020. While current trends show that the world is on track to meet the target on the expansion of protected areas (the number of PA have doubled since the last WPC held in 2004), it is globally recognized, biodiversity loss is still increasing. A key output of the congress was the Promise of Sydney, is a deliberate statement capturing the boldest and most strategic thinking of the congress and collectively represents the outcomes of the 2014 World Parks Congress. It reflects a set of high-level aspirations and recommendations for the changes needed in the coming decade to enhance implementation of conservation and development goals for parks, people and the planet. This presentation will highlight the main outcomes of the Congress and The South African promise as part of the Promise of Sydney.

Assessing Management Effectiveness of City's protected areas as a key tool in climate change resilience

Keywords: management effectiveness; protected areas; climate change resilience

Julia Wood*, Pippin Anderson, Cliff Dorse and Pat Holmes
* Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town;
julia.wood@capetown.gov.za

The City of Cape Town was the first conservation organisation in South Africa to apply the WWF's Management Effectiveness Tracking Tool (METT) and adapt it to South African needs. The METT-SA has now been applied to all Provincial and National protected areas in South Africa. In addition, the international version of the METTs is now also a requirement of all World Bank / GEF funded programmes. In addition to the METTS, since 2007, each of the City's protected areas has undertaken the Protected Area (PA) Review which is a more detailed assessment. The tools will be assessed in terms of their contribution to management effectiveness and climate change adaptation.

HELP WANTED: In meeting our Protected Area targets.

Keywords: protected areas, conservation planning, collaboration

Maree K.[1], Pence G.[1], Purnell K[1] and Koopman R.[1]
[1]Cape Nature, Assegaaibosch Nature Reserve, Stellenbosch, Jonkershoek, 7599
kmaree@capenature.co.za
021 799 8731

By 2020, at least 17 % of terrestrial and inland water areas and 10 % of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically

representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.
Although the semantics game may allow us to escape the gallows, the true intention of this target (i.e.to meaningfully safeguard, in perpetuity, a representative sample (17%) of all biodiversity contained within our custodianship, by the year 2020) remains a distant pipe-dream for the WCP. According to our revised WC Protected Area Expansion Strategy, we have already conceded to not meeting this target by 2020 but rather by 2030. Our strategy requires us to triple that achieved over the last five years in the following five years – and then again in the next two five-year cycles thereafter. The confirmed budget in place, however, allows us to deliver one third of what was achieved in the last five years, i.e. 14% of what we need to achieve. We take an earnest look at how the province can meaningfully deliver on our political commitments and call on the audience to help answer the questions: Who are 'the powers' which require convincing in order to appropriately resource provincial expansion programmes; and how do we convince them?

The WWF-SA's Land Programme – where we are and where we are going

Keywords: Protected area expansion, alternative management

Mendela, T[1]., Bell, W[2]. And Rossenrode, T[3].
WWF-SA, Land programme, PO Box 23273, Claremont, 7735
tmendela@wwf.org.za[1]
wbell@wwf.org.za[2]
landadmin2@wwf.org.za[3]

The Land Programme was developed in 2010 by WWF South Africa to establish new protected areas and expand existing ones across South Africa. It falls under the place based Fynbos and Succulent Karoo Programme with implementation in the respective biomes. The Land Programme works with all levels of government from local to national as well as investing in conservation partnerships across South Africa to implement its programme objectives. Land programme also contributes to other alternative projects, for expansion and proclamation of protected areas, that includes the bringing together of conservation stewardship, land reform and rural development.
To protect our most critically threatened ecosystems, WWF has focused its attention on the most vulnerable areas – the Fynbos, Grasslands and Succulent Karoo biomes. WWF has been instrumental in the expansion of protected areas in the Fynbos biome, linking natural corridors and securing critically endangered veld not previously conserved. WWF has also worked closely with the National Parks Trust of South Africa and the Table Mountain Fund, both of which play critical roles in supporting conservation efforts in the Cape Floral Kingdom.
Most of the land acquired by WWF is managed by conservation partners, such as CapeNature, the Northern Cape Department of Environment and Nature Conservation and SANParks, through formal contractual agreements. These agreements allow WWF to purchase land in diverse areas but we are however limited by the capacity within our partner organisations to take on the management of additional land. The opportunity therefore exists for the Land Programme to investigate alternative approaches to landscape-scale management. The Land Programme aims to use innovative means to achieve its objectives and to explore a socially inclusive approach to WWF's Protected Area expansion.

The River Health Programme (SASS5) assessments in Keisie and Kingna Rivers in the Montagu area.

Keywords: River Health Programme, ecological status, major impacts, management actions, Adopt-a-River

T Bushula
Resource Protection, Department of Water Affairs
bushulat@dws.gov.za

The National River Health Programme assesses the ecological status of the river ecosystems in South Africa. This uses SASS5, fish, riparian vegetation as biological indicators; as well as geomorphology, IHI and water quality as drivers. The Department of Water and Sanitation assesses sites in Kingna and Keisie Rivers in the Montagu area as part of the River Health Programme. 4

sites were surveyed between 2009 and 2014 in different seasons to give an indication of the state of these rivers. Only SASS5 will be reported on for the purpose of this paper. The results indicate that these rivers are in fair to poor condition. The main impacts are alien vegetation, bed and channel modification due to bulldozing of river bed and banks, inundation of channel by reeds due to nutrient enrichment from agricultural run-off and waste water treatment works. The management actions recommended for these rivers are: removal of alien vegetation; good agricultural practises by creating buffer zones between agriculture and rivers that will reduce water quality impacts in rivers, restoration of river banks, ensuring waste water treatment works discharges are compliant with the water quality requirements of permits/authorisations. The Department has an Adopt-a-River Programme, a voluntary programme that aims at involving locals in water resource management. This involves a stakeholder engagement process, where different stakeholders identify problems and propose solutions. It also looks at resources available, and how they can be distributed to enable a positive change.

The Knersvlakte Nature Reserve – A botanical review of plant species representation, endemism and status

Keywords: Knersvlakte, plant species representation

Knight, L.I[1].
[1]Cape Nature, Assegaaibosch Nature Reserve, Jonkershoek, Stellenbosch, 7599

The Knersvlakte Nature Reserve was officially opened on Heritage Day, 24 September 2014. The Knersvlakte is a 10 000 km^2 bioregion in the Succulent Karoo, and is renowned for its rich succulent flora associated with quartz fields. The Knersvlakte has the highest concentration of plant taxa throughout Southern Africa's six (6) quartz fields, and is threatened by agriculture, mining of diamonds, gypsum, limestone, marble and the poaching of succulents, bulbs and reptiles. There are presently 1 372 described plant species in the Knersvlakte, of which 190 are endemic and 155 are threatened. The 855 km^2 nature reserve was formally protected to conserve a representative sample of these plant species. The current aim is to determine how many plant species are represented within the nature reserve, how many are endemic, and their conservation statuses. These will be ascertained by examining plant data from CapeNature's State of Biodiversity (SOB) database, which will then subsequently be used to guide future management plans.

SANParks Species of Special Concern Monitoring Programme: Agulhas National Park

Keywords: Groundtruthing, Species conservation, Threatened species

Trevor Adams[1*]& Carly R. Cowell[1]
[1]Terrestrial Biotechnician, Cape Research Centre, South African National Parks
[1]Regional Ecologist, Cape Research Centre, South African National Parks
[*]Trevor.Adams@sanparks.org

The Agulhas National Park (ANP) was declared in 1999 and is a national park situated on the Agulhas Plain in the Overberg region of the Western Cape. The Agulhas Plain is the southernmost portion of the Cape Floristic Region, an area of unique floristic diversity and endemism. The region is home to many different forms of Fynbos, wetlands and coastal Renosterveld vegetation, which are now fragmented by agriculture and also threatened by alien plant infestation and urban development. South African National Parks (SANParks) is mandated to conserve plant and animal species within national parks and the ecosystems they represent. With a primary mandate being the conservation of these species, monitoring is an essential component of measuring the performance of national parks. The primary focus of the Species of Special Concern (SSC) Biodiversity Monitoring Programme is to provide guidelines for the management and successful conservation of threatened species and species of conservation or management concern. Prioritizing the monitoring of SSC proceeds as follows: Identifying which species are considered SSC for a particular park, ranking the species for monitoring using a set of predetermined criteria, providing decisions as to which species are to be monitored and taking management actions based on monitoring data. This presentation provides an outline of the approach applied (methods, procedures and preliminary results) to survey SSC plant species in ANP. A species list for the Agulhas Plain was obtained from the South African National Biodiversity Institute (SANBI) BRAHMS database and species on this list were prioritized for ground truthing. To date a team of ANP field rangers and CRC scientist have ground-truthed and mapped approximately 50 SSC species within the park.

Conservation Management in Agulhas National Park

Keywords: Restoration, alien-clearing, tourism

Appel, A. [1*]
[1]Senior People and Conservation Officer, Agulhas National Park, South African National Parks
* Alliston.Appel@sanparks.org

Agulhas National Park seeks to maintain and manage the long-term persistence of biodiversity patterns and processes. While the overall goal is to consolidate a range of viable terrestrial, aquatic and marine ecosystems characteristic of the Agulhas area, the health of the systems in the park must also be safeguarded. This is done through the development of responsible tourism practices in the park. One of Agulhas National Park's most iconic spots of interest and an important historic site is the Southern-tip and lighthouse, which is currently being up-graded to showcase this element of the park. Another icon within the park is the Ratelriver homestead, which is one of the oldest on the Agulhas Plain. This too is being renovated to enable revenue generation for the park. Working in conjunction with scientific services the park is ensuring that the restoration of these areas for tourism purposes also ensures the continued healthy functioning of the ecosystems they are in. Other ecosystems and ecosystem processes in the park are under threat from invasive alien species which are a high priority and are being cleared by the park. Further programs are also being developed for wetland restoration and interventions on the Agulhas Plain.

The utilization of habitats neighboring the Table Mountain National Park by small to medium fauna: preliminary findings from Westlake Conservation Centre

Keywords: Habitat condition, camera traps, fauna

Wood, J.[1] and Mossop, L.H.[1*]
[1] Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town
*Leighan.Mossop@capetown.gov.za

Westlake Conservation Centre is a 17 ha property within the urban edge of Westlake, with a range of historical land-use practices, with areas of different habitat conditions and was partially burnt in the March 2015 Peninsula wildfires. A preliminary camera trapping exercise was initiated to determine the level of fauna activity on the site in relation to human activity and the different habitat conditions, the objective being to determine the degree to which semi-natural spaces within the urban edge are used by fauna and thus the significance of contribution of these open spaces to maintaining healthy ecosystems.
Three habitat conditions were identified and sampled: *Natural habitat* areas being areas still with natural vegetation elements and undisturbed soil substrate; *Disturbed habitat* being areas where soil has been disturbed by previous landuse, lacking or missing natural indigenous vegetation communities, but existing vegetation allowing for some ecosystem function; and *Transformed areas* with infrastructure, hardened surfaces, and associated mowed lawns.
Cuddeback white flash automatic trigger cameras were set up at standard heights to take photos with a 1 min recharge time. Between 6 and 16 camera traps were set distributed over the different habitat types, at 28 locations. Trapping effort over two months totalled 671 trapping days.
The poster displays preliminary results including low negative correlation between level of human use and level of fauna use. Results of comparison between relative frequency of use of the areas of different habitat condition by fauna are also presented. The project is ongoing, including sampling of areas inside the neighbouring Table Mountain National Park in similar habitat condition; and repeat of the survey over the next two years to determine change in habitat use over time.

A Con in Conservation

Keywords: wildlife, rehabilitation, sanctuary, ambassador species, anthropomorphism, responsible tourism

Gibbs-Halls, V.M.
Biodiversity and Coastal Management – Eden District Municipality

Wildlife tourism is "tourism undertaken to view and/or encounter wildlife." It can take place in a range of settings, from captive, semi-captive, to in the wild, and it encompasses a variety of interactions from passive observation to feeding and/or touching the

species viewed" (Newsome et al., 2005). A distinction is made between consumptive and non-consumptive wildlife tourism. More passive wildlife experiences, such as viewing, photographing, and feeding are typically referred to as non-consumptive. Wildlife encounters that involve capturing or killing animals, such as hunting and fishing, are generally considered to be consumptive. There is much debate over what is or isn't non-consumptive tourism behaviour, and whether or not consumptive behaviour should even be categorised as wildlife tourism. Many animal facilities offer close contact with wild animals, giving tourists and visitors close-up photo, feeding, and even petting opportunities, often for an additional fee. Facilities frequently claim that this fee goes directly to the upkeep of the animal and/or the conservation of the species. Unfortunately, many of these 'close encounters' animals are kept in poor conditions, fed an inadequate diet, and are sedated to ensure their compliance. In some cases, animals are regularly physically abused to keep them compliant. Species for close encounter opportunities may have also been obtained illegally, breaking both national and international laws. In spite of the facilities' claims, there is often no evidence that any of the profits or activities actually benefit species conservation. The opportunity to play with cubs or walk with "tame" adult big cats, such as lions and cheetahs, is offered by various tour operators, alongside claims that the fees paid will benefit the species in the wild. The animals used, or the cubs born to them, are rarely if ever set free. The "big cat encounter" and "elephant back safari" industry is just that – an industry, designed to make money for its owners and operators.

Keynote Address:

A strategy to conserve South Africa's plant species

Raimondo, D.C[1].,
[1]South African Nation Biodiversity Institute

South Africa is signatory to the Convention on Biological Diversity and is committed to the implementation of a national strategy to conserve plants that aligns with the Global Strategy for Plant Conservation (GSPC). Between 2013 and 2015, SANBI led the process to develop a National Strategy for Plant Conservation. With the highest level of plant endemism of any of South Africa's nine biomes, conservation work in the Fynbos is key to ensuring that targets of South Africa's Plant Conservation Strategy will be met. Here the results of this strategy will be presented including 16 outcome oriented targets which range from producing online floras and red list assessments; through to the in situ and ex situ conservation of threatened plants; to the sustainable use of production land and the sustainable utilisation of harvested plant species. Some suggested activities for engagement by the Fynbos conservation community with the strategy will be made.

Unitingdifferentinterestsfortheconservation of biodiversity in Colombia (Mainstreaming)

María Fernanda González
Instituto de Investigación en Recursos Biológicos Alexander von Humboldt

Colombiaisconsidered oneof the most diversecountries in the world. Its greatdiversitynot onlyrefers to thespecies richness,if not also to the high variety ofecosystems. Althoughnot knownwith certaintythe total number ofspecies inthe country, because many of them are yet to be discovered. The numbers recordedto date indicatethatColombiaisat the topworldwide interms of number ofspecies:is the first countryinnumberof birds and amphibians, second in plants andfreshwater fishand third inreptiles. Withtheexpansion of thecountry'spopulation, and theimplementation of a government'sdevelopment plan basedonaneconomycentredonextractionpatterns, theconservation of thesespecies and ecosystemsis at seriousrisk. Forthis reason it isa priorityto implement strategies,with differentstakeholders, thatensuretheprotection of thecountry'sbiologicaldiversity as well as themitigation and prevention of threats and to contribute to itsproper use. Here I present a research collaboration between the Humboldt Institute (National Research Institute of Biodiversity in Colombia) and Ecopetrol, the biggest oil company of the country. Theidentification of surrogates of conservation, theformulation of conservationgoals, theprioritization of keyareas and theformulation of conservationstrategiesbasedonthepreservation, restoration and sustainable use of theterrestrialarea of Colombia excludingtheamaon (60% ~700,000 Km^2). Thisresearchaims at givingproperguidelines to managetheterrestrialareas and findingcommonpointsbetweendevelopment and biodiversityconservation. Itishopedthatthisexamplemay be usefulforconservationpractitioners in the Fynbos region.

Collective impact for impact at scale

Keywords: Collective Impact, Strategy, Impact at Scale, Socio-ecological transitions

Morkel, A.
Private Phd development,
augustine_morkel@yahoo.com

With billions invested annually in conservation, why are the negative trends continuing? While some argue there are insufficient resources or capacity, others argue there is inefficiency in the way organisations work with each other. The CAPE strategy, implemented in 2000 was an attempt to create collective impact and a collaborative governance solution for the CFR. Now in the final 5 years of the 20 year strategy, did it achieve the return conservation investment planned? Is the strategy still relevant or has it become out-dated?
There has been a growing body of knowledge focussed on collective impact and collaborative governance in socio-ecological transitions as well as a growing trend for investment to achieve impact at scale. This ideal of impact at scale is not only an investment construct but a strategic construct – how do we achieve a lot with a little? The transition theories have provided insights into how impact at scale as a strategic construct can be deployed through the multi-level perspective (Geels, 2004). In this approach, systemic change can take place through targeted innovation (micro – e.g. Working for Water) on priority regime changes (meso- e.g. Institutional ineffectiveness) as the regime responds to landscape scale dynamics (macro – e.g. Species loss). Do initiatives, like CAPE, have a systemic change focus or are we trying to solve a problem that is locked into an iterative process of devaluation and the only way for impact to be achieved is through systemic change?
The purpose of this paper is to introduce a socio-ecological transition perspective into conservation strategy constructs to achieve impact at scale through the scaling up of innovative and catalytic initiatives.

Kirstenbosch: The long walk to emi'dom

Keywords: Security, Kirstenbosch, EMI, Law enforcement

Le Roux, E.R.
Kirstenbosch National Botanical Garden, Estate Manager.

The Kirstenbosch National Botanical Garden received more than one million visitors in the 2014/2015 financial year. The safety and happiness of our visitors is the number one priority in the daily operations in our garden. Over the years, Kirstenbosch has been regulated under a number of different pieces of regulation including the National Forest Act and presently, the NEMBA. In 1986, by laws were set up for all gardens under the Forest Act but things became complicated when the aforementioned Act was repealed and replaced by the NEMBA. There were questions over whether our law enforcement officers could still enforce the bylaws and there were differences of opinion. The matter was investigated and we discovered that since Kirstenbosch forms part of a National Heritage Site it could fall under the Protected Areas Act regulations. A decision was reached to give Environmental Management Inspector powers to the law enforcement team at Kirstenbosch to enforce the Protected Areas regulations. After two years of struggle, in August 2014, EMI powers were given to four Kirstenbosch law enforcement staff, making them the first ever EMIs of the South African National Biodiversity Institute.

Baboon Monitoring at Local Authority level - making use of National Funding and Partnerships. The Pro and Cons.

Steyn, L
Environmental Specialist ,Overstrand Municipality.

The Overstrand Municipality has been involved in Baboon Monitoring sincethe year 2002. Before that CapeNature had procured funding for a two-yearproject in Hermanus which stopped after funding ran out.
As the public had become used to baboon monitoring in the Overstrand, theMunicipality carried on with the program. By 2013 the budget for monitorsin Hermanus was costing R 1,350, 000 per year. As the Council could no longer afford this, they sourced other means of funding.

CoastCare was initiated during 2002 and became a very successful PilotProject in the Overstrand. CoastCare, now known as the Working for theCoast Project, was identified as implementer and funding was requested andreceived. The contribution of the Overstrand Municipality dropped from R1,350,000 to R 75,000 annually which is used for kilometers. Management ofthe project is handled by the Local Authority Environmental Section.
The total cost of 16 monitors in Hermanus and 8 in Pringle Bay is R75,000. Inaddition the Pringle Bay Ratepayers Association supply and maintain threemountain bicycles for patrolling and fund that team's weekend overtime.
Equipment and protective clothing was supplied by WftC. The complete budget for theOverstrand Baboon Monitoring Project from WftC was approx R 1,5 million annually for the last two years.
A new two-year cycle will start on 1 July 2015 with a budget not lessthan the previouscycle. A break of up to two months is not uncommon until the start of the new two year project is funded. It must be understood that the workers and theirsupervisors are paid by and work for EPWP [Expanded Public Works) Programand have to abide by their rules and regulations, therefore no overtime ispaid although it involves seven days a week plus public holidays. Time offwork is also given to trainees. Overtime worked is paid for by giving timeoff, which means that extra staff is needed.

Thursday 6th August 2015

Session 4: Ecology

Keynote Address:

The long road to a biosphere reserve

Keywords: CAPE, Gouritz Initiative, Gouritz Cluster Biosphere Reserve, partnerships

Schutte-Vlok, A.[1*]
[1.]Scientific Services, Western Cape Nature Conservation Board, Private Bag X658, Oudtshoorn, 6620.
* avlok@capenature.co.za

Fifteen years after the launch of the Cape Action Plan for the Environment (CAPE), the recommended Little Karoo mega-conservation area has evolved into the Gouritz Cluster Biosphere Reserve (GCBR). The International Coordinating Council of UNESCO's Man and Biosphere Programme finally approved the designation of the GCBR at the meeting held in Paris in June 2015. For the GCBR it has been a long journey with many challenges and obstacles to overcome, but also numerous highlights and success stories along the way. The presentation will focus on the evolution of the GCBR to date and the plans for the future.

Rodents and baboons reduce seed cone production of *Proteaneriifolia*

Keywords: rodents, florivory, baboons

Botha, P.W.* and Pauw, C.A.
Department of Botany and Zoology, Stellenbosch University
*pieterwbotha@gmail.com

Rodents are important pollinators and seed predators of fynbos Proteaceae, but their role as florivores have received little attention. Chacma baboons (*Papiohamadryasursinus*) are known to feed on Proteaceae inflorescences, however, their effect on plant reproduction has not been assessed. We recorded the extent of damage by rodents and baboons to inflorescences of the dominant shrub *Proteaneriifolia* in 20 x 20 m plots in the Jonkershoek Nature Reserve near Stellenbosch. Damage was

distributed patchily across the landscape. Rodents damaged up to 23% of the inflorescences per plot by feeding on pollen presenters. We observed the striped mouse (*Rhabdomyspumilio*) climbing up plants to engage in this behaviour. Up to 14% of inflorescences in some plots were destroyed by rodents gnawing through inflorescence stems. Baboons damaged or destroyed 12% to 29% of inflorescences at 3 study sites, but did not forage at 3 other study sites. Among plant individuals affected by baboons or rodents, a mean proportion of 0.49 ± 0.31 (SD) of individuals' inflorescences were damaged or destroyed. Florivory by rodents and baboons can thus reduce the fecundity of *P. neriifolia* significantly. *Protea* inflorescences may be an important seasonal food source for certain rodents. In an evolutionary context, rodent florivory may have been an important selective force that caused certain Proteaceae species to shift to rodent pollination. Further work is needed to determine which rodent species feed on *Protea* inflorescences and whether rodent florivory is widespread in fynbos.

Exploring the antagonistic effects of climate change and increased atmospheric CO2 concentrations on drought stress in a widespread Fynbos species.

Kellermann, K
University of Cape Town

The unique vegetation of the Cape Floristic Region (CFR) is expected to experience increased temperatures and altered rainfall, affecting plant hydraulic stress. Increased CO2, on the other hand, is expected to relieve hydraulic stress in plants that utilize the C3 pathway for photosynthesis (most fynbos species). Higher concentrations reduce the time stomata are kept open for CO2 uptake, reducing water loss. I established trait-climate relationships in *Protearepens*(L.) by exploring xylem anatomic variation across climatic gradients in the CFR, and used these as the basis for the expected trait-level responses to temporal climate change and elevated CO2 when comparing contemporary traits with a dataset collected 20 years ago.
Results from field surveys and a common garden experiment indicate that vessel morphology of *P. repens*is constrained by growth temperatures, rather than water availability, likely due to the plants ability to shut down during periods of drought stress. Increased temperatures facilitate greater growth and larger vessel diameters. Change in xylem vessel diameters of representative populations over 20 years indicate to what extent *P. repens*are experiencing drought stress. Increased vessel sizes may be partially due to the potential alleviating effect of increased atmospheric CO2, contributing to the significant increases in vessel diameters beyond expected predictions.
The common garden experiment further revealed that each population is highly adapted to their local climatic conditions, suggesting that the ability of *P. repens*to respond to climate change may be strongly constrained by genetic structuring among populations. Consequently, while *P. repens*utilise limited phenotypic plasticity in order to respond rapidly to climate change, genetic limitation suggests that each population may reach its own physiological limits and be threatened with local extinction far sooner than one would expect based on the climatic tolerance of the species as a whole.

Observing the "small and hairy": the use of remote cameras in pollination studies

Steenhuisen, S.-L.1*, Balmer, A.2, Zoeller, K.1, Kuhn, N.1, Hansen, D.2, Johnson, S.D.3 and Midgley, J.1
1Department of Biological Sciences, University of Cape Town, P/Bag X3, Rondebosch, 7701
2Institute of Evolutionary Biology and Environmental Sciences, University of Zurich, Winterthurerstrasse 190, CH-8057, Zurich, Switzerland
3School of Life Sciences, University of KwaZulu-Natal, P/Bag X01, Scottsville, 3209, South Africa.
*sandysteenhuisen@gmail.com
Remote cameras have traditionally been used to observe large game for the purposes of hunting or game counts. In the past 5 years, pollination ecologists have adapted this technology to observe vertebrate visitors to flowers. In the large ancestrally bird-pollinated African genus, Protea, 35 of the 85 species have been suggested as rodent-pollinated. Motion/infrared sensor cameras used to monitor flower visitors to eleven of these suspected rodent-pollinated Protea species have revealed that they were pollinated by not only several rodent species, but also mongoose, genet and Elephantulus shrews, and several nectar-feeding bird species. This study highlights the merits of using camera traps in conjunction with conventional methods of rodent trapping and field observations of flower visitors.

Conserving Living Landscapes: Investigating impacts of livestock grazing and assessing rangeland restoration potential in Overberg Renosterveld

Keywords: Grazing, Overberg Renosterveld, Soil Seed Banks

Poulsen, Z.C[1]. Chimphango, S.M[1]. Muasya, M.[1] Hoffman, M.T[2]. Anderson, P.M[3]. Curtis, O.E[4].
[1]Department of Biological Sciences[1], Plant Conservation Unit[2] and Department of Environmental and Geographical Sciences[3], University of Cape Town, Rondebosch 7701
[4]Overberg Lowlands Conservation Trust, 3 De Kock Street, Napier, Western Cape, 7270
zoe.poulsen@hotmail.co.uk

Renosterveld vegetation is one of the world's most species diverse Mediterranean type shrublands and forms part of the Fynbos Biome in South Africa's Cape Floristic Region (CFR). It is particularly known for its extraordinary diversity of geophytes. In the Overberg region there are four different renosterveld types, all of which are classified as being Critically Endangered and are considered to be "100% irreplacable" owing to transformation for agriculture. Only 4-6% of its former extent remains. Continuous heavy grazing by domestic livestock and mismanagement are also significant threats.
This research will provide valuable baseline data on responses of renosterveld vegetation to varying degrees of livestock grazing. It also aims to develop a protocol and conceptual model to use ecological thresholds and alternate stable states theory in order to evaluate restoration potential of overgrazed renosterveld and furthermore prioritise sites for restoration interventions. It This will be done using a combination of baseline vegetation surveys using Modified Whittaker Plots, soil seed bank studies and fenced grazing exclosures.
Preliminary results suggest that species diversity is overall higher at heavily grazed sites but often included a significant component of non-native ruderal and grass species. Plant productivity of keystone Overberg renosterveld species such as *Aspalathusnigra, Asparagus capensis*and *Themedatriandra*was significantly decreased with increased grazing impact. Sheep have been found to graze less selectively than cattle and have a far greater negative impact on the veld. Findings highlight the importance of effective management of domestic livestock grazing in conserving renosterveld vegetation in the Overberg.

Gender-specific culm-felling of *C.congesta (*Restionaceae*)* by *R.pumilio (*Muridae*)*

Keywords: Dioecy, plant-animal interactions

Van Blerk, J.[1], West, A.G.[2], Midgley, J.[3]
[1] MSc student, University of Cape Town
[2]Supervisor, University of Cape Town
[3]Co-supervisor, University of Cape Town

We report on a previously undocumented phenomenon, occurring in Fynbos, involving interaction between the dioecious restio, *Cannomoiscongesta*and the striped mouse, *Rhabdomyspumilio. R.pumilio*were observed to fell down the culms of female *C.congesta*plants in order to acquire the nut-like seeds borne terminally on female culms. Male *C.congesta*plants were not targeted by culm-felling due to their lack of seeds. The plant-gender-specific interaction with *R.pumilio*lead to noticeable plant-level morphological differences between *C.congesta*sexes. Females had the majority of their culms felled before senescence, leaving many culm-stumps which dominated canopies. Males did not have their culms felled resulting in canopies dominated by senesced material.
We investigated the potential implications of this gender-specific interaction on seed fate, nutrients, physiology, phenology and microclimate.
Culm-felling allowed *R.pumilio*to predate on large numbers of seeds before they were dropped naturally from plants. This prevented myrmecochorous ants from dispersing seeds and is likely to limit *C.congesta*recruitment.
Females experienced remobilised nutrient losses due to the loss of culms before senescence. However, this did not affect the nutrient status of soils or remaining culms relative to males. There was a difference in the timing of new growth, water use efficiency(WUE) and photosynthetic performance between sexes.
Lower WUE in females could best be explained through delayed female growth coinciding with lower light and increased soil moisture. Gas exchange confirmed that differing WUE was probably due to delayed growth and not due to maintained Ci differences throughout the year. Whether delayed growth was directly linked to culm-felling remains unresolved.
This study shows that culm-felling by *R.pumilio*has morphological, reproductive and potentially some physiological, phenological and microclimatic consequences for female *C.congesta*plants. It is not yet known how widespread the culm-felling phenomenon is, how long it has been a part of certain ecosystems, or whether it presents a threat to the reproductive success of nut-forming restios.

Session 5: Citizen Science and Environment Education

Citizen Scientist's contribution to taxonomy

Key words: Threatened plants, citizen scientists, taxonomy,

Ebrahim.I[1] , Magee, A[2]
[1] CREW, SANBI
[2]. Compton Herbarium, SANBI

The Custodians of Rare and Endangered Wildflowers (CREW) works with a network of citizen scientists to monitor and conserve rare and threatened plants. In the pursuit of relocating these threatened plants our volunteers have discovered a number of new species as well as rediscovered species that was thought to be extinct. In addition to this ans which is not often reported are the collections volunteers make to help taxonomist describe species and delineate species that are in taxonomic complexes. We will present data on the number of collections made by citizen scientists involved in the CREW programme and share case studies of how the specimens collected by volunteers has contributed to taxonomy.

The South African Plant Red List: An update and the contributions of Citizen Science

Keywords: South African Plant Red List, citizen science, species data

Von Staden, L.[1], Van der Colff, D. [1,2,3*], Ebrahim, I. [1,2]& Raimondo, D.C. [1]
[1]Threatened Species Program, South African National Biodiversity Institute
[2]Custodians of Rare and Endangered Wildflowers, South African National Biodiversity Institute
[3]The Botanical Society of South Africa, Kirstenbosch
*D.vandercolff@sanbi.org.za

The Red List of South African plants has gone through many changes since its inception, from only providing status information on plants species to having an influence on both the fine and national scale. The South African Red List process has fully adopted the standards of the IUCN for doing assessments, however two categories (Rare and Critically Rare) has been added that are more relevant to the South African context. The data used in the Red List assessments has been sourced from a range of contributors; here we focus on the utility of citizen scientist contributions from projects like the Custodians of Rare and Endangered Wildflowers (CREW) to more recently iSpot, as well as individual observations from amateur botanists to professional consults. Here we present the latest update of the Red List and illustrate how the expanded source data has resulted in not only an increased number of plants species being assessed but also the discovery of new species and range extensions, that has a significant influence on species current status.

Establishing and maintaining a formal spotter network for SANBI's Invasive Species Programme (SANBI: Invasive Species Programme)

Ruqaya Adams

The South African National Biodiversity Institute's Invasive Species Programme (SANBI-ISP) aims to detect and document new naturalising alien invasive species which threaten South Africa's biodiversity and social well-being. It is important to detect the presence of invasive species before they become well established so that eradication efforts are more economical and more likely to succeed. To maximise our efforts in locating new invasive species, we aim to increase the number of eyes on the ground. With this in mind we propose the need to establish and maintain a structured spotter network for ISP - Western Cape team. The Spotter's Network will includescientists, researchers and stakeholders in the conservation sector and anyone that may be interested in helping us find these new alien invasive plants. Although the project is in its initial planning phase we aim to ultimately have a network of spotters across the Western Cape actively helping to report and respond to emerging invasive species.

iSpot Identification Keys: The Ins and Outs of iSpot Identification Keys

Ebrahim, I. [1*] and von Gunten. A.[2]
[1]Custodians of Rare and Endangered Wildflowers, South African National Biodiversity Institute & Botanical Society of South Africa, Kirstenbosch Research Centre
[2]Custodians of Rare and Endangered Wildflowers, National Research Foundation Intern, Kirstenbosch Research Centre
I.Ebrahim@sanbi.org.za

iSpot is an interactive informative website which provides a platform for citizen scientists and the public to contribute information and share knowledge about all biodiversity. The information shared is used in SANBI's conservation and species databases and provides valuable information used in important management decision making. The iSpot identification keys are used as a taxonomic identification tool in order to identify species through a selection process of confirming and eliminating various characters. The iSpot key then highlights the most likely species identifications based on the characters that was identified. We will show the process of developing an iSpot interactive identification key, demonstrate its usefulness and showcase the keys available on the iSpot website.

Environmental Education Program designed for grade 6 learners in the Cape Winelands District, Western Cape.

Keywords: Environmental Education Programs, curriculum, learners

Van Biljon, J* and van Biljon, G**
**CEO Intaba Environmental Services;*
***MSc Conservation Ecology*

Environmental Education Programs for school learners need to be relevant not only to the end user but also to the various parties involved. The aim of this paper is to share lessons learnt in designing and implementing EE Programs in the Cape Winelands Municipality since 2010. Two EE programs, Greenfingers and Junior LandCare Project will be described with regards to vision, curriculum, logistics and funding. The Greenfingers Project has recorded 2'111 learners participating from 2011-2015. The Junior LandCare Program has recorded 2'871 learners participating from 2014-2015. The Greenfingers Project is run through the Witzenberg Eco-Centre and has various parties involved, namely Cape Nature, Witzenberg Municipality and Intaba Environmental Services. It is currently operating from funding from the Belgium Government. The Junior LandCare Project is funded by the LandCare, Dept. of Agriculture (Western Cape) and Intaba Environmental Services was contracted as service provider in 2014 and 2015 to undertake their ambitious program in five municipalities in the Cape Winelands. .

Session 6: Invasions and restoration

Alien invasions and fynbos restoration: progress over twenty years

Keywords: seed banks, alien clearance, fire

Holmes, Patricia M.
Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town;
patricia.holmes@capetown.gov.za

Two decades ago protocols for restoration were drafted based on an understanding of fynbos recruitment dynamics, community structure and ecosystem function. Results from experimental field trials and applied research in mountain fynbos supported these protocols. For example, sufficient fynbos seed banks remain after two cycles of dense alien invasion to enable autogenic restoration.

However, subsequent research in lowland sand fynbos indicated that the protocols are not universally applicable, as regime shifts occur more rapidly in these ecosystems following disturbance. Additional thresholds to restoration may have been crossed. A threshold is the point at which the dominance of regulating feedbacks that maintain resilience switch to a dominance of positive feedbacks that lead to loss of resilience. In lowland fynbos a biotic threshold may be passed following only one cycle of dense aliens. Seed banks of perennial fynbos species are less persistent in the lowlands. The dominant invader in the lowlands (Australian acacia) alters soil nutrient cycling processes, with nitrogen enrichment lending positive feedback for a regime shift to a weedy, herbaceous community. Positive feedbacks and restoration thresholds may result from disruption to plant-animal interactions and soil microbial communities, as well as being influenced by the dominant invader species present.
Lowland fynbos ecosystems are highly threatened, primarily as a result of habitat loss, and are a priority for conservation. Invasion by aliens is the second most important cause of habitat degradation and restoration is a priority for managers. It is therefore important to investigate whether ecosystems are amenable to restoration. Understanding biotic and abiotic thresholds to restoration assists in devising practical methods to reverse the degradation, or identify sites where too many thresholds have been passed and restoration is impractical. A brief overview of restoration ecology research completed and planned for the fynbos will be presented.

Dynamic modelling to determine restoration recovery potential after invasion control in an endangered Fynbos vegetation type

Keywords: vegetation recovery rates, passive restoration, active restoration, ecological thresholds

Hall, S.[1*], Holmes, P. M.[2], Gaertner, M.[3] and Esler, K.J[1].
[1] Department of Conservation Ecology and Entomology and DST-NRF Centre of Excellence for Invasion Biology (CIB), Stellenbosch University, Private Bag X1, Matieland 7602, South Africa
[2] Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town, P.O. Box 11, Berkley road, Maitland, 7404, South Africa
[3]DST-NRF Centre of Excellence for Invasion Biology (CIB), Department Botany and Zoology, Stellenbosch University, Private Bag X1, Matieland 7602, South Africa
*stuhall@sun.ac.za

A significant challenge in ecological studies is to predict the effect of disturbances and environmental changes on the ecology of species and biotic communities. Dynamic models can assist through capturing structure, composition and functional type responses in systems affected by long-term environmental disturbances. A study at Blaauwberg Nature Reserve over a two year period following clearing of invasive Acacia aimed to determine success of different restoration methods in facilitating the recovery of endangered Cape Flats Sand Fynbos, as well as determining whether ecological thresholds to restoration had been crossed. The data from this experiment was incorporated into a dynamic model to extrapolate how native vegetation will continue to recover over time after different alien clearing methods. Following on from an earlier model illustrating the progression of Acacia invasion in terms of key indicator variableswe expand the scope to include information from a highly degraded site that experienced an extended period of Acacia invasion. The results show that passive clearing without burning results in better recovery than with burning. Both methods lead to poor rates of fynbos vegetation recovery relative to that in uninvaded natural sites that had burnt. For non-sprouting shrub cover, however, the rate of recovery is greatly enhanced by sowing of a fynbos seed mix after clearing and burning. This shows that where a threshold to restoration has been crossed, it can be possible to reverse with the use of an active restoration sowing treatment. Although the soil seedbank at the site had been depleted, enhanced recovery following seed sowing suggests that the site had not crossed an abiotic threshold, in which the soil chemistry has been altered to the extent that fynbos cannot re-establish in the soil.

Post-burn removal methods for *Acacia saligna* in Cape Flats Sand Fynbos

Keywords: restoration, follow-up control, invasion, biodiversity

*A. Krupek[a], M. Gaertner[b*c], P.M. Holmes[bd], K.J. Esler[ab]*

[a] *Department of Conservation and Entomology, Stellenbosch University, Matieland, 7602, South Africa*
[b] *Centre for Invasion Biology, Stellenbosch University,* Private Bag x1, *Matieland, 7602, South Africa*
[c] *Department of Botany and Zoology, Stellenbosch University,* Private Bag x1, *Matieland, 7602, South Africa*

[d] *Environmental Resource Management Department (ERMD), City of Cape Town, Westlake Conservation Office, OuKaapseWeg, Tokai 7966, Cape Town, South Africa*
**Corresponding author. gaertnem@gmail.com*

Cape Flats Sand Fynbos (CFSF) is a critically endangered vegetation type occurring within the CFR, and its largest remaining fragment (at Blaauwberg Nature reserve) is the focus of a large scale invasive plant control and biodiversity restoration project. Large parts of the reserve are invaded by *Acacia saligna*whichis a highly problematic invasive in CFSF and the main target of the control. To mitigate damage caused by this species, stands were removed and burned using block burning (fuel was spread evenly on the ground) which stimulates both the large invasive seed-bank and the indigenous seed-bank in the soil. To account for the rapid recovery of *Acacia saligna* from its massive soil seed bank, three post-burn removal methods were tested (1) cutting the *Acacia* saplings below the coppicing point, (2) cutting the saplings and applying herbicide to the stumps and (3) foliar herbicide spray. We were aiming at finding (1) the most effective post-burn *A. saligna*control treatment, (2) the treatment that causes the least harm to native plant recovery, (3) the most cost-effective treatment, and (4) the treatment that is the most suitable for large scale use. Cutting below the coppicing point of *A. saligna*provided the most effective removal and was also the least damaging to indigenous vegetation recovery. The foliar spray treatment, however, saved the most time and costs. The best method is therefore dependent on the project goals, scale and density of the *A. saligna*invasion. These results may be applicable to other types of fynbos, and to other fire-stimulated invasive *Acacia* species.

Acacia versus Pine: comparing impacts of different invasive trees on highly threatened Lowland Fynbos

Keywords: Active restoration, passive restoration, invasive alien plants

Mostert, E[1], Gaertner, M[1], Holmes, PM[2], Rebelo, A.G.[3] and Richardson DM[1]
[1] Centre for Invasion Biology, Department of Botany and Zoology, Stellenbosch University, Private Bag X1, Matieland 7602, South Africa.
[2] Environmental Resource Management Department, City of Cape Town, Private Bag X5, Plumstead 7801, South Africa.
[3]Invasive Species Programme, South African National Biodiversity Institute, Kirstenbosch Research Centre, Claremont 7735, South Africa

Invasive alien plants have negative impacts on biodiversity, on ecosystem functions and on the delivery of ecosystem services. Management of the invasive alien plants can alleviate these negative impacts. This study's objective is to investigate the autogenic recovery potential of native vegetation after clearing of dense invasive alien vegetation in two critically endangered vegetation types, the Cape Flats Lowland- and Swartland Alluvium Fynbos. Sampling was done in areas previously invaded by either *Acacia saligna* or *Pinusradiata*, and an uninvaded fynbos reference site. Control treatments varied over time scales and management histories with the following variables accounted for: number of fire cycles since canopy closure or rotations of planting (in case of *P. radiata*), time since initial clearing, veld age, number of follow up treatments and adjacent land cover. Vegetation sampling included functional guild representation to investigate structural and functional recovery post-clearing. In terms of overall vegetation structure: uninvaded areas were dominated by perennial indigenous species. Pine areas recovered well in terms of indigenous perennial cover and diversity, but cover decreased with increasing number of rotations. Acacia areas recovered poorly in terms of indigenous cover and diversity: diversity declined with increasing cycles of invasion. Restios had low diversity and cover in all invaded treatments, with diversity more affected by acacia than pine. Overall, pine-invaded areas had lower ericoid shrub cover and diversity than the reference site whereas acacia invaded sites had much lower cover and diversity. The characteristic proteoidoverstorey of fynbos is lost in all invaded treatments and should be re-introduced after one cycle of invasion regardless of the invasive species. Preliminary results indicate that acacia-invaded areas would need additional planting to restore community structure after one cycle of invasion and pine-invaded areas are on the trajectory of recovery.

SANBI's Invasive Species Programme:
What do we do in the Western Cape?

Ernita van Wyk

SANBI's Invasive Species Programme, established in 2008, with a mission to 'protect ecological infrastructure and ecosystem services from the threat of invasive species'. More specifically, the Programme is mandated to prevent impacts of new incursions of invaders through early detection and rapid response. This involves a specified suite of tasks:

(1) to conduct surveillance;

(2) secure accurate taxonomic identity of focus species'

(3) undertake risk assessments to provide scientific basis for taking a particular management action against focus species, and;

(4) to permanently remove species targeted for eradication at the national scale.

Our specific aim is to assess 'suspect' weeds for invasiveness and focus eradication efforts on species with restricted distributions in the country (i.e. few, small populations). The responsibilities of the Programme require collaboration with various partners as we integrate research and implementation for a target list of 50 species for the winter rainfall region. In this presentation, we describe our role and mandate, and showcase a selection of projects in the Western Cape (winter rainfall region) to illustrate how management and research are combined to achieve the goals of the Programme.

Soil vulnerability to erosion and restoration in degraded lands on the proposed Avontuur Nature Reserve.

Keywords: Soil erosion, rehabilitation, vegetation cover

Myeza. S.[1], Oettle N.[1], Schmiedel, U. [2], Kruspe M. [2] and Kayser, L.[2]
[1] Environmental Monitoring Group, P.O. Box 350 Nieuwoudtville 8180, South Africa siya@emg.org.za , dryland@global.co.za
[2]Biocentre Klein Flottbek, University of Hamburg, Ohnhorststrasse 18, 22609 Hamburg, Germany

As a direct result of past land use practices, the Avontuur property has been subjected to devastating soil erosion caused by runoff from soils exposed by injudicious ploughing and overgrazing. This 1,300 ha property on the Bokkeveld plateau in the Northern Cape Province was purchased by WWF in 2008 to conserve its unique biodiversity. Avontuur has three vegetation types; fynbos, tilliterenosterveld and dolerite renosterveld. The property has been farmed for more than 250 years, and its highly specialised and diverse flora has been impacted by grazing, cultivation and the introduction of alien flora. Nevertheless, large areas have retained a remarkable diversity of plant life, with 483 species recorded of which 32 are species of conservation concern. Rehabilitation was undertaken from 2009, applying a set of principles designed to support the low-cost rehabilitation of degraded ecosystems. A range of interventions have been designed and implemented, including spreader banks, permeable barriers and rehabilitation of exposed, clay-crusted subsoil. Seeds of indigenous plants have been introduced in the rehabilitation areas. In 2013 studies were undertaken to determine the benefits and costs of rehabilitation. This paper presents the findings of the studies, an overview of the rehabilitation process and methods used and results achieved in the last 6 years. Cost effective, environmentally friendly and accessible technologies for combating soil erosion, enhancing infiltration of rain and run-off water and promoting revegetation are presented and analysed.

Riparian rehabilitation of private land in the Cape Winelands District, Western Cape focusing on the Berg and Breede River.

Keywords: Riparian rehabilitation, satellite nurseries, plant surveys, harvesting schedules

vanBiljon, J* and van Biljon,G**
**CEO Intaba Environmental Services;*
***MSc Conservation Ecology*

Riparian rehabilitation is a developing field of conservation in the Western Cape and there is not much practical knowledge available for private landowners. Intaba Environmental Services (Pty) Ltd strives to make conservation practical to all people and have been involved in veld rehabilitation over the last 8 years. Knowledge sharing and education is also part of our vision. The aim of this paper is to provide practical lessons learnt in riparian rehabilitation specifically for the Western Cape. In 2015 Intaba has been involved in setting up five satellite nurseries along the Breede and Berg River within the Langeberg, Witzenberg, Stellenbosch and Drakenstein Municipalities with the aim to propagate and plant over 120 000 locality- specific plants along river riparians. This has required co-ordination between role players (Dept. of Agriculture W.Cape- LandCare, private landowners, Water Users Association, Conservancies, NGOs), undertaking plant surveys, developing harvesting schedules and rehabilitation guidelines.

Assessing the invasive status of *Malvaarborea* (tree mallow) in South Africa

Mbada, A F
(SANBI: Invasive Species Programme)

Malvaarborea (L.)Webb &Berthel. (tree mallow) is a perennial shrub native to Western Europe, Mediterranean regions and North Africa. It has widely naturalised in the temperate regions of southern Australia, south-western USA (i.e. California and Oregon), Mexico, South America (i.e. Argentina and Chile), South Africa and New Zealand. It was first recorded as invasive in South Africa in 1926 (record from Mossel Bay). *Malvaarborea* is listed as a 1b species under National Environmental Management: Biodiversity Act (NEMBA) and is regarded as a special effect weed (competitive) under Conservation of Agricultural Resources Act (CARA) legislation.Very little is known about the invasiveness of this species. However, in Australia it has been reported to be reducing biodiversity, soil retention, and seabird habitat. There is no herbicide registered for this species in South Africa. In South Africa we plan to: a) investigate the distribution and reproductive potential of *M. arborea*; b) assess its risks and impacts and c) determine the most effective herbicide for control of *M. arborea*. We plan on using a structured framework developed for risk assessment to identify gaps in knowledge on the species and therefore to guide the research.

Return of the birds: Fynbos birds as an indicator of ecosystem recovery after alien invasive plant clearing in a riparian habitat of South Africa.

Keywords:bird assemblages, invasive plant clearing, riparian habitat

Mangachena J.R.[1*], Gaertner M.[2], Kioko J. I[1]., Geerts S.[1]
[1] Department of Marine and Conservation Science, Cape Peninsula University of Technology, Cape Town, South Africa.
[2] Centre for Invasion Biology, Department of Botany and Zoology, Stellenbosch University, Matieland, South Africa.
*atidazw@gmail.com

Invasive alien plant species pose a major threat to global biodiversity by displacing native vegetation and transforming habitats. A coupling of human activities and the dynamic nature of river systems has resulted in most riparian habitats of the fynbos biome to be highly invaded. Invasive alien plant species has led to a significant decrease in water runoff and thus the national invasive alien plant species program, Working for Water (WfW), has focused much of their clearing on riverine areas. WfW employs a passive restoration approach which involves removing invasive trees but leaving the land to “self repair” without initiatives such as planting native species. Consequently there is an urgent need toevaluate the recovery of native vegetation and ecosystem processes in cleared environments. Here we use, as a case study, the riparian habitat of the Berg River in the Boland, where clearing of mainly *Eucalyptuscamaldulensis* has been on-going for a decade. We employ a chrono-sequence (space for time substitute) approach to assess the success of passive restoration by sampling plant and bird communities Bird and plant surveys were conducted in sites cleared between 1 and 10 years ago. Invaded and native sites act as controls. Habitat characteristics such as vegetation structure, plant species composition, flowering and fruiting, surrounding land use, canopy cover and ground cover that influence bird assemblages are also assessed. Results show a significant difference in bird species richness between invaded and native sites with invaded sites having a subset of bird communities of native sites with certain species completely disappearing following invasion. After 10 years of clearing, bird and plant communities differ from native communities suggesting a need to actively reintroduce selected plant species to aid the restoration of the full bird complement.

Options for the chemical and mechanical control of *Banksia speciosa* in Agulhas National Park, South Africa

NolwethuJubase
(SANBI: Invasive Species Programme)

Banksia species have a long history of ornamental use and value in the cut-flower industry in South Africa. Recent *Banksia* naturalisations have prompted further assessment and control of invasive populations. Two *Banksia speciosa* populations were discovered naturalizing in Agulhas National Park in 2013. Initial risk assessment suggested that this species could have damaging impacts on this protected ecosystem and an attempt to extirpate this species was initiated in 2014. No information

exists on the effective control method and use of herbicides on *Banksia* species, worldwide. We initiated herbicide trials on the larger (1 ha) of the two populations in Agulhas National Park (ANP) using four different herbicides at different rates to determine the most effective herbicide in control for *B. speciosa*. In this study we present preliminary results from these herbicide trials on the *B. speciosa* population in ANP based on herbicide and mechanical treatment between March 2014 and April 2015.

The City of Cape Town biological control insect mass rearing facility

Keywords: Integration, aquatic, *Megamelusscuttelaris*

Nuse, S.
[1] Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town
* Sisanda.Nuse@capetown.gov.za

Biological control is the most cost effective and environmentally friendly control method for invasive plants. To ensure effective and efficient integration of biological control into aquatic weed management , the City of Cape Town's Invasive Species Unit decided to establish insect mass rearing facility at Westlake Conservation Depot. The facility was established in partnership between the City of Cape Town and Rhodes University's department of entomology under leadership of Professor Martin Hill. Four aquatic weed biological control insects are being reared at the facility, *Cyrtobagoussalviniae (Salviniamolesta), Neohydronomusaffinis (Pistia stratiotes), Lysathiasp (Myriophyllumaquaticum)* and *Megamelusscuttelaris (Eichhorniacrassipes)*. So far the biocontrol facility has surpassed all expectations especially with the rearing of *Megamelusscuttelaris*, the water hyacinth hopper. A total of 238 760 *M. scuttelaris* were released at four sites, the Nooitgedacht dam, Zoarvlei, Black River and Kuils River. Since the facility became operational in August 2014, a total of 301 523 insects were released.
Rhodes University trained 10 people from the Bethesda Hout Bay Association for Persons with Disabilities in August 2014. The current staff compliment consists of five people and more jobs will be created with the planned expansion of the facility.

Seed banking as an Integrated Conservation Tool – Nature's Safety Net

Wilman, V
Millennium Seed Bank Partnership - SANBI

The conservation of plants has primarily taken place through the preservation of natural habitats in which they occur. Protected areas which include a representative sample of biodiversity pattern including species and their habitats as well as the evolutionary and ecological processes that allow this biodiversity to persist over time is the ideal conservation goal. This is however often difficult to achieve due to the scale and intensity of human interactions with the environment, and while the pressures on biodiversity remain unyielding, resources available to do the work of protecting, managing and restoring our natural heritage are limited. It is not certain that existing networks of protected areas, particularly in regions of high plant diversity or in urban areas will be sufficient and 'in time' to ensure the long term survival of all our floral diversity. There is therefore a greater need for *ex-situ* activities which can support *in-situ* conservation efforts. An integrated approach that combines the protection of plants in their natural habitats, with an *ex-situ* programme that provides a safety net against extinction in the wild is a possible conservation strategy, providing tools, resources and research to assist in managing and maintaining wild populations .
The Millennium Seed Bank Partnership in South Africa is part of the largest international *ex- situ* plant conservation project in the world, focusing on plant life faced with the threat of extinction and plants of most use for the future. We discuss the role of gene banking as an integrated conservation tool, the science behind banking seed, the beauty of seeds, the MSBP in South Africa, planning for priorities, the practicality of collecting seed for long term storage, and the importance of partnerships.

POSTER ABSTRACTS

The long-term effects of unplanned veld fires on plant diversity in Namaqualand Granite Renosterveld.

Megan B Simons[1, 2], MI Samuels[1,2], CF Cupido[1,2] RS Knight[1], MBV Swarts[2]

[1]University of the Western Cape, Department of Biodiversity and Conservation Biology, Cape Town, South Africa
[2]ARC– API: Rangeland Ecology Unit, BCB Department, University of the Western Cape, Private Bag X17, Bellville 7535, South Africa
SimonsM@arc.agric.za

Renosterveld is one of the most transformed vegetation types in South Africa having less than 9% of the original extent remaining. Namaqualand Granite Renosterveld is a near-endemic and highly threatened vegetation type in Namaqualand. High levels of renosterveld transformation by agriculture and other disturbances such as veld fires are a conservation concern. In addition, renosterveld is under threat from frequent unplanned fires. The aim of this study is to assess the post-fire plant recovery mechanisms adopted by plants and how fires affect the plant diversity of renosterveld over time. This study was conducted in the Leliefontein communal area in Namaqualand. Historical data from NASA fire archive http://rapidfire.sci.gsfc.nasa.gov/ was used

to study the occurrences of fires in the Kamiesberg Uplands. Vegetation sampling commenced from April to September 2014. Ten burned and 10 adjacent unburned sites were selected for the study. The effects of fire on plant diversity and post-fire vegetation recovery were assessed using 10 x 10 m quadrants in each site. The Shannon-Weiner diversity index was used to determine alpha diversity at each site and within each growth form. Preliminary results show that growth forms responded differently to fire when comparing their diversity between the burned and unburned sites. He herbs and succulents showed a significant decrease ($p<0.05$) in alpha diversity in the burned areas whereas graminoids, trees, and non-succulent shrubs did not show any changes in diversity. Over time after the fire, the species and growth form diversities did not change, except for non - succulent shrubs that showed a significant positive increase over time ($p<0.05$), as fire promotes their growth. In general, data points to the fact that plant diversity is not solely affected by fire alone but possibly by livestock grazing and biophysical factors as well. Managing fires should be focused on minimizing the impacts on vegetation particularly the ecosystem processes and the endemic fauna and flora of the Kamiesberg Uplands.

Fires in an urban park: Management Challenges and Opportunities

Keywords: Wildfire, fynbos, Cape Town, Table Mountain National Park

Monique Ruthenberg
Section Ranger, Table Mountain National Park, SANParks
Monique.Ruthenberg@sanparks.org

The Table Mountain National Park, originally declared as the Cape Peninsula National Park in 1998 (Government Gazette 18916) and subsequently changed to the Table Mountain National Park in 2004 (Government Gazette 26305), stretches from Signal Hill in the north to Cape Point in the south. The Park is considered an urban park and is surrounded by the City of Cape Town, with its residential and commercial properties. The total size of the Park is approximately 25,000 ha of which 20,700 ha are already declared and 4,300 ha are being processed for declaration. The Park experiences a fire-prone Mediterranean type climate, with cool, wet winters and warm, dry summers. Fire is a natural component of the Fynbos biome and is required to maintain biodiversity (TMNP Draft Park Management Plan, 2015 - 2025). The incidence of fires as well as the associated risks and threat are greatly increased, particularly due to the urban context. This is exacerbated by the high visitor numbers, multiple access points, large tracts of open access land and multiple and varied user groups. Between 28 February and 7 March 2015 fires raged between Cape Point, Silvermine and Tokai, effectively burning over 5000 hectares of fynbos and plantations. During and after the fires, the TMNP management team experienced first-hand the challenges of not only fighting a mountain fire in the urban context, but also dealing with post fire park closures, access control, media management, conflict with user groups, rehabilitation, monitoring & research, emergency tree felling in the plantation & infrastructure repairs. This poster aims to highlight the management challenges, lessons learnt and opportunities presented during the March 2015 fires.

Generalised pollination in Gomphocarpuscancellatus (Apocynaceae: Asclepiadoideae)

Chirango, Y.T.[1]*, Shuttleworth, A.[2] and Midgley, J.[1] and Steenhuisen, S-L.[1]
[1]Department of Biological Sciences, University of Cape Town, Private Bag X3, Rondebosch, 7700
[2]School of Life Sciences, University of KwaZulu-Natal, Private Bag X01, Scottsville, 3209
*ychirango@rocketmail.com

The asclepiads' (Apocynaceae: Asclepiadoideae) unique morphological and chemical features have made them central systems of study in the evolutionary ecology of plant reproduction, particularly plant-animal interactions and host-plant co-evolution. Commonly known as milkweeds, these plants are well known for their interaction with the Monarch butterfly. Plant-pollinator interactions investigated in the summer rainfall grasslands of eastern South Africa show that most asclepiads are pollinated by specialists. Our study focused on pollinator field observations in the asclepiad Gomphocarpuscancellatus in the Cape. Asclepiads are particularly suited for pollinator field observations as the pollen is packaged in pollinia that are visible with the naked eye. Preliminary results show that a wide range of insects as well as sunbirds visits this Cape milkweed. Of these visitors we observed pollinia attached to various species of bees, wasps, ants, beetles and flies. Onsite photos were taken of the plant visitors, and records of visitation rate and insect behavior on flowers were taken. Pollen placement and pollen loads were further analysed and documented on collected samples using a scanning electron microscope. The results suggest that unlike the species in the summer rainfall region, which are visited by specialists, Gomphocarpuscancellatus in the winter rainfall region has

a generalist pollination system. Further investigations assessing the plant's chemical and physical properties aim to identify why this difference occurs.

Trends in floral trait evolution associated with pollinator shifts in *Protea*(Proteaceae)

S.L. Steenhuisen*[1], A. Balmer[2], R.A.R. Raguso[3], A. Jürgens[4], S.D. Johnson[4] and J. Midgley[1]
[1]Department of Biological Sciences, University of Cape Town, P/Bag X3, Rondebosch, 7701
[2]Institute of Evolutionary Biology and Environmental Sciences, University of Zurich, Winterthurerstrasse 190, CH-8057, Zurich, Switzerland
[3]Department of Neurobiology and Behavior, Cornell University, Ithaca, NY 14853, USA
[4]School of Life Sciences, University of KwaZulu-Natal, P/Bag X01, Scottsville, 3209, South Africa.
*sandysteenhuisen@gmail.com

Evolutionary shifts between pollination systems are often associated with changes in functional floral traits. Shifts from bird to beetle and non-flying mammal pollination in the African plant genus *Protea* (Proteaceae) are most notably associated with modifications in inflorescence size and olfactory cues. Using headspace and solid phase micro extraction (SPME) sampling and gas chromatography-mass spectrometry of inflorescences and dissected floral parts, we compared the emission rates and chemical composition of floral scents between several species from each of the three pollination systems. Bird-pollinated species with larger tall colourful inflorescences emitted small amounts of "green-leaf" volatiles and benzenoid compounds, including benzaldehyde, anisole and benzyl alcohol. Beetle-pollinated species produce shorter and more open inflorescences that emit fruity scents that are more complex and on average 10-fold greater in the amount of scent emitted than odours sampled from bird pollinated species. These fruity scents are dominated by linalool, other monoterpenes and a variety of benzenoids. The highest emission rates and number of compounds was found to be emitted by the nectar in comparison to bracts, petals and pollen of these species. Using Y-maze choice tests, we showed that the most common cetoniine beetle pollinators showed a significant preference for the fruity scent of a beetle-pollinated *Protea* species over that of a sympatric bird-pollinated species. Further choice tests with a common rodent pollinator revealed that these mammals significantly preferred the sour-milk/cheesy odours of nectar from a rodent-pollinated *Protea* species over that of a solution of the same sugar composition. These tests have shown that floral scent plays a functionally significant role in attracting insect and rodent pollinators.

Nectar robbing in Erica verticillata: implications for restoration at False Bay Nature Reserve (Rondevlei Section), Kenilworth Racecourse Conservation Area and Tokai Park, South Africa

Ngcana, M

Nectar robbing could be is one of the pervasive forms of anthropogenic disturbance, but its impact on pollination, a potentially sensitive ecosystem process, has not been investigated. The investigation or research on nectar robbing in needed in order to evaluate the impact that nectar robbers have, especially on the plants that are on the verge of extinction or are listed in the red data book critically endangered. Here, I show the way of determining the technique or method to test weather nectar robbing has an impact, the method is to cover the brunches for control and leave others uncontrolled. After putting controls, observations were done on all three sites, when doing so the distance of three meters away from the plant was taken into consideration. I observe the animals or visitors that visited the plant and look at what they are doing when they are in the plant and also take into consideration the weather conditions. After control, the results are documented.

Effects of harvester ants on indigenous and alien plant species in renosterveld vegetation within a variegated agricultural landscape

Keywords: Nieuwoudtville, *Messorcapensis, Medicago*

Donaldson, J.D.*[1,2] and Welsford, M.R.[1]
[1]South African Biodiversity Institute, Kirstenbosch Research Centre, Cape Town, South Africa.
[2]Department of Biological Sciences, University of Cape Town, Cape Town, South Africa.
*J.Donaldson@sanbi.org.za

Ants play a major ecological role in most terrestrial environments. In arid and semi-arid environments, harvester ants can impact on the distribution and abundance of plants through seed dispersal and selective predation. We investigated the effects of seed harvesting by *Messorcapensis*on the distribution and abundance of both indigenous and alien plant species in a variegated landscape near Nieuwoudtville in the Northern Cape with natural and cultivated fields. The introduction of *Medicago* spp. in renosterveld vegetation appeared to increase the density of harvester ant nests in some fields but it was not clear whether increased ant density would result in greater harvesting of indigenous species or an accumulation of alien seeds, especially *Medicago*. The aims of the study were (i) to confirm whether the addition of *Medicago* did increase ant nest density, (ii) to determine whether ants selectively harvested particular indigenous or alien species, and (iii) to determine whether harvesting was likely to impact on the distribution or abundance of either indigenous or alien species. We present the results of nest surveys, soil data from on and off mounds, vegetation surveys on and off mounds, cafeteria experiments to test for selective harvesting, and studies of ant trails and the seeds being taken to the nest. The results show significant differences in soil chemistry on and off mounds, as well as between nests in different landuse types. Ants selectively harvested seeds from certain species such as *Erodium* and *Medicago*and this influenced the composition of the vegetation growing on ant nests. We discuss the results in relation to impacts on indigenous species as well as the spread of introduced plant species in a variegated landscape where ants harvest seeds across different landuse types.

Soundscaping of the Kogelberg Biosphere Reserve to assess complementarity of the core, buffer and transition zones

Aileen C. Thompson, Corinna S. Bazelet, Michael J. Samways

The Cape Floristic Region is a recognized global biodiversity hotspot due to its unprecedented levels of diversity and endemism, and the high levels of threat experienced by this unique fauna and flora. Innovative solutions for the conservation of this threatened biome are in demand as the region is increasingly threatened by climate change and land use transformation. Biosphere reserves, such as the Kogelberg Biosphere Reserves (KBR) in the CFR, are a key solution on the interface between science and application, and are designed with the recognition that humans are an inherent element of natural landscapes. South Africa has a strong precedent for rapid assessment techniques, namely the Dragonfly Biotic Index and the South African Scoring System, as both of these methods rely strongly on aquatic fauna, this leave many niches open wherein terrestrial monitoring techniques can be developed. Grasshoppers have been shown to be indicators of semi-natural grassland habitat quality. As katydids (Orthoptera: Tettigoniidae) are close relative of grasshoppers, the possibility of using katydids as a taxon whereupon a monitoring technique can be based cannot be over looked. A recent PhD project has compared insect acoustic signals across various elevations on a mountain in the CFR and revealed that soundscaping may be an effective technique for assessing the habitat quality within the fynbos. By studying the various species specific calls of male katydids across the three zones of the KBR, it is thought that soundscaping may be an effective way in which to monitor habitat quality across the fynbos biome by focusing on the specific species identified in each zone.

Verlorenvlei Protected Areas Project

Keywords: Verlorenvlei, Moutonshoek, Protected Environment, biodiversity stewardship; estuary; wetlands, Ramsar, IBA

Schröder, S.J.*
BirdLife South Africa: Project Manager

*samantha.schroder@birdlife.org.za

BirdLife South Africa, in partnership with the Wildlife and Environment Society of South Africa (WESSA), has received funding from the WWF Nedbank Green Trust to promote formal protection at the West Coast estuarine wetland of Verlorenvlei and its primary catchment area, the Moutonshoek Valley. Recognised internationally as a Ramsar site and an Important Bird and Biodiversity Area, the site and its catchment support many threatened bird, fish and plant species, illustrating the biological importance of the region. Verlorenvlei sadly remains at risk from multiple threats and unsustainable land uses due to its lack of formal protection at a local level in South Africa. This project aims to address this gap, by employing biodiversity stewardship to achieve formal protection for Verlorenvlei and the Moutonshoek Valley.
In order to protect the water supply to Verlorenvlei a Protected Environment is planned for the Moutonshoek valley. The KromAntonies River, which runs through the Moutonshoek valley, supplies 60 percent of the water quantity and 90 percent of the water quality to Verlorenvlei. The majority of the landowners in Moutonshoek are in favour of forming a Protected Environment. Ten of the landowners have signed Memorandums of Understanding between themselves and CapeNature; the first step in the process of declaring a formal Protected Environment. This dynamic tool allows for the coexistence of agriculture and conservation within the landscape, to the benefit of both.
Around the estuarine wetland of Verlorenvlei itself a landowner needs analysis was conducted to determine the landowner's perceptions towards conservation. The results of this survey will be used to inform further environmental management and formal biodiversity stewardship actions around Verlorenvlei.

The seed to REAL Growth for People, Planet and Business

Dean Ferreira

There is a dire need for advanced (Centre of Management Excellence) management training for nature conservators and environmentalists, specifically the Work Integrated Learning (WIL) year for Nature Conservators. The current educational institutions struggle to find adequate placements for their students and a specific training centre or facility is required for this purpose.
Students are qualifying with bare minimum operational training to perform the tasks required once they are employed. Institutional courses are scientific in nature, without the real practical opportunities to implement this training under "live" conditions. The DK experience will enable the students to take the theory they have learned and put it into practice.
Some skills cannot be taught in a classroom!! These include working with a labour force, understanding what it means to be a manager/coach, planning, implementing and reviewing projects, understanding what it takes to complete a task (you cannot tell someone to dig a hole until you have done it yourself). Understanding who you are as a person, what's your strengths, and weaknesses that could be turned into opportunities.
Currently the experiential year is supposed to fulfil this role but in some cases organisation don't have the capacity or the resources to undertake this function. The quality of the WIL year is determined by the mentor/coach, however many organisations are so under resourced that they cannot provide for all the requirements of the WIL year for these students.
The conservation industry over many years has seen the WIL students as cheap (free) labour, however this is one of their most formative periods in their training and they need to be coached/mentored in all the activities required to be a productive and successful manager/conservator/environmentalist/environmental leader.
At DrieKuilen Nature Reserve these students will not only receive specialist management training, but during this time their activities will enhance the environment they work in and they will leave the Reserve as competent graduates. With competent conservators, an enhanced environment, business will thrive.

The Cape Winelands Shale Fynbos recovery behaviour after the harvesting of *Pinuspinaster*(Cluster Pine) and an ecological burn, at Helderberg Nature Reserve.

Keywords: restoration, burnt area, pine

Kayster, R.[1]

[1] Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town.
Rhonwen.Kayster@capetown.gov.za

The Helderberg Nature Reserve has been under *Pinuspinaster* plantation for approximately 55 years. *P. pinaster*was cleared and an ecological burn was done in these management blocks. The monitoring plots put in place were to answer the following questions: a) are these areas that's been cleared able to recover to fynbos after being burnt, b) Will this area recover fynbos structure and composition, c) How do these areas compare to the area cleared 21-23 years ago and was burnt at the same time (this area was not burnt immediately after being cleared), d) How does it compare to a reference site that was never under pine. The expected outcome is abundance in geophytes which will start appearing after the fire and more so after the first heavy rains in the area. The intensity and severity of the fires were also measured and the expected outcome is that in the pine cleared areas fire intensity and severity were higher than the fire in the natural veld. This could possibly lead to soil scaring in the pine areas were fire was more intense and could also cause a reduction in fynbos recovery in these areas. These areas need to be monitored over a longer period of time to determine the true success of the recovery of fynbos.

What is the potential for the restoration of fynbos from soil stored seed- bank following pine clearing in Table Mountain National Park?

Keywords: Soil seed-bank, restoration, alien plant species

Tyagana, I.N.[1*], Cowell, C.R[1] and van Wilgen, N.J.[1]
[1] Cape Research Centre, South African National Parks, PO Box 216, Steenberg, 7947
[*] nosipho.tyagana@sanparks.org

Invasive alien species have negative impacts on biodiversity and ecosystem function and are a key threat to the conservation of the Cape Floristic Region, especially the Critically Endangered Cape Flats Sand Fynbos vegetation. Table Mountain National Park's Lower Tokai section has been under pine plantations since the 1900s and is currently being cleared as part of the park's management strategy to restore the natural fynbos vegetation. The harvesting of pines presented an opportunity to determine the seed-bank of cleared compartments as regeneration of indigenous species following disturbance is governed by the soil stored seed-bank. The aim of the study is to determine the persistence of native seeds within different compartments, which include compartments cleared without a burn, those where prescribed burning has been applied after clearing, compartments in which active restoration has taken place and a control plantation compartment. We are documenting how diversity differs across the different compartments in terms of species richness, composition and growth form. Soil cores were collected for seed bank viability analysis from 0-5cm depth from 10 plots in each compartment. The soil collected was placed in trays in a greenhouse and watered weekly. Germinating seedlings were counted once a month until they could be identified to genus level. Preliminary results indicate that in all compartments the majority of emerging species were alien herbaceous plants. Work is currently ongoing and the data will give an indication of the ability of soil seed-banks in cleared areas to re-establish natural vegetation. The information will feed into SANParks Biodiversity Monitoring Programme and into the development of protocols for the restoration of the vegetation type.

The most effective method to control and manage *Phragmitesaustralis* at Matjiesrivier Nature Reserve.

SibisisweBalakisi
Nature Conservation Intern, Matjiesrivier Nature Reserve,CapeNature

Most studies conducted on control methods for *Phragmitesaustralis* with supporting literature are from studies done in Europe and North America. *P. australis* is a common reed that can become a problem in river systems if not managed properly. It is often associated with siltation and eutrophication. The result is clogging of river channels and biodiversity reduction due to reeds forming mono-specific stands. *P. australis* is considered a worldwide problem because of its ability to establish quickly. *P. australis*seed profusely and also spreads vegetatively by vigorous rhizomes and stolon's, forming dense stands of monotypic communities. Seeds are dispersed by wind during the winter months, but may also be carried by birds (Ailstock, 2001). According to studies there are at least eight different methods of controlling *P. australis*, some more suitable for aquatic habitats. In many instances an integrated approach is recommended.

During recent years *P. australis* has become a problem at the Matjiesrivier Nature Reserve, invading the river. The main objectives for the study were to determine the long-term control method, the most cost effective control as well as the most effective herbicide for the control of *P. australis*. The research was conducted in a tributary that flows into main stem, the Matjies River. The total treatment area = 8944m^2, divided in 4 treatment blocks of which the average size = 2238 m^2. Blocks were treated with herbicides containing 3 different active ingredients registered for *P. australis*control. To determine the most cost effective treatment method, all resource cost were taken in to consideration.
Results clearly indicate a significant difference in treatment methods, with substantial financial results supporting the most effective treatment method.

Assessing the effectiveness of bio-control in the buffer areas of the Agulhas National Park

Keywords: Alien invasive plants, Bio-control, Ecological functioning and Cape cluster parks

Shezi, S.I.[1*], Kganye, M.[2] , Engel, S. [2] and van Wilgen, N.J.[1]
[1*] Cape Research Centre, South African National Parks, PO Box 216, Steenberg, 7947
[2] Biodiversity Social Projects, South African National Parks
[*] sithembile.shezi@sanparks.org

Invasive alien plants such as Port Jackson *(Acacia saligna)* affect the biodiversity of the Cape Cluster National Parks by outcompeting and displacing native plants. Alien plants are one of the key drivers of the environmental change in the Fynbos biome, leading to changes in the ecological functioning of the ecosystem through community structure and habitat transformation. Bio-control was introduced in some of the Cape Cluster Parks to combat and suppress the spread of certain alien invasive plants as a cost-effective control method. The aim of the current study is to assess the impact of bio-control in buffer areas in relation to re-infestation within the Agulhas National Park. Ten plots of 100m^2 will be selected at the buffer zone of Agulhas National Parks for motoring. The criteria for plot selection will depend on the presence and density of the alien plants. During the monitoring, only 30% of each plot will be sampled for mortality of the agent; presence/absence; reproductive stage of the agent; extent of damage of the alien plant; and the extent of spread of the agent in meters. Furthermore, climatic and other environmental conditions will be recorded to understand their effect on the success or mortality of the agent. Statistical analyses will be conducted in R. Results from this study will be used to inform management and ensure that SANParks reaches its goal of reducing the occurrence of reinfestation of alien plants in the park from surrounding areas following clearing operations. The study will form a baseline for the alien plants management plan using bio-control.

Emerging Invaders of the Eastern Cape

Keywords: Emerging invaders, early detection

Jama, K. and Manzana, S.
Invasive Species Programme, South African National Biodiversity Institute,4aRrinces Road Office Park, Vincent , East London.
k.Jama@sanbi.org.za

The Eastern Cape is recognized for its rich biodiversity and scenic beauty comprising six biomes: Forest, Fynbos, Nama Karoo, Savanna, Succulent Karoo and Thicket. This rich biodiversity is threatened by invasive alien species, including well established species as well as some that are not widespread but are nevertheless a potential threat to human livelihoods, economic development and biodiversity. With funding from the Working for Water Programme, SANBI's Invasive Species Programme was formed to detect, evaluate and plan for potential eradication of invasive species that are not yet widespread and which may be feasibly eradicated. In the Eastern Cape the Programme is currently assessing and developing management plans forthe following Category 1a listed species (NEMBA regulations):*Acacia fimbriata, Chondrillajuncea, Cylindropuntia pallida, Cytisusscoparius, Tephrocactusarticulatus, Ulexeuropaeus, Myrtillocactusgeometrizans, Opuntiarobusta andFurcraeafoetida*. In addition the programme is collecting data on the following un-listed species: *Foeniculumvulgare, Rumexcrispus, Verbascumthapsus, Acacia cultriformis*. Here we present our target list for the Eastern Cape region, and encourage the public to report any sightings of the species.

Ecological interactions of plant pathogenic fungi, alien and indigenous vegetation: The case of Banksia, (Proteaceae)

Qongqo, A[1, 2]. Geerts, S.[1] Nchu, F.[2]
[1]Department of Conservation and Marine Sciences Cape Peninsula University of Technology, Cape Town, South Africa
[2]Horticultural Sciences, Cape Peninsula University of Technology, Cape Town, South Africa
qongqoa@gmail.com

Invasive alien plants (IAP's) are a major and an increasing threat to ecosystems worldwide. This includes South Africa where IAP species have a negative impact on biodiversity and the delivery of ecosystem services.The Australian Proteaceae genus Banksia is such a case with one species, *Banksia ericifolia*, categorised as 1a under NEMBA, with a number of other species naturalizing. Preliminary surveys of Banksias spp. in SA revealed that most Banksia species are parasitized by an unidentified fungus and susceptibility to fungal infection appears to vary among Banksia species. It is well-recognized that plant defense against pathogens is influenced by the secondary metabolites. In order to disentangle these interactions between alien plants and fungi, we seek to identify the fungi species, examine the variability in the susceptibility of the different Banksia species and determine antimicrobial activities of extracts of Banksia spp. Fungi identification will be done using robust molecular (polymerize chain reaction [PCR], internal transcribe spacer [ITS] and morphological techniques. In a preliminary trial, antifungal activities of extracts of five Banksia species (*B. coccinea, B. serata, B. ericifolia, B. integrifolia, B. spinulosa*var. colline were assessed against *Fusariumoxysporum,* a broad host range and soil-borne plant pathogenic fungus. Acetone extracts of the two most invasive species, *B. ericifolia*and *B. integrifolia*produced the highest antifungal activity against *F. oxysporum* at a (MIC) of 0.3125 mg/ml and 0.625 mg/ml respectively. The other relatively non-invasive species showed low antifungal activities. These preliminary results suggest a possible association between antifungal activity of plant species and species invasiveness, which can contribute to establishment of efficient risk assessment and bio-control strategies for Banksia spp. in South Africa.

Preservation of the natural vegetation of the Cape Floristic Region: challenges as seen by the new generation of Fynbos ecologists.

Keywords: social-ecological, sustainable conservation and urban development, Effective collaboration, communication and social learning, Cape Floristic Region, biological invasions, climate change, restoration, conservation targets, fire frequency, funding opportunities, stewardship.

AdriaanGroblera, Andrea Beyersa, Bongani Mnisid, Joy Mangachenac, JureneKempd, Petra de Abreub, Stuart Halld
a Nelson Mandela Metropolitan University, PO Box 77000, Port Elizabeth 6031, South Africa; b University of Cape Town, Private Bag X3, Rondebosch 7701, South Africa; c Cape Peninsula University of Technology, PO Box 652, Cape Town 8000, South Africa; d Stellenbosch University, Private Bag X1, Matieland 7602, South Africa

This paper details a series of social-ecological challenges that require addressing to achieve sustainable conservation in the Cape Floristic Region (CFR). Effective collaboration, communication and social learning among academics, managers and decision makers, and across disciplines, sectors and levels, are required for moving towards common goals and visions for the CFR.
In the spirit of collaboration, an online collaborative writing platform to brainstorm and consolidate ideas was used. The ideas include four cross-cutting threats driving change in the region, six challenges that will need to be addressed to tackle threats and three pathways through which sustainability in the region could be achieved. Four major threats to the CFR include, but not limited to habitat loss, biological invasions, ecosystem mismanagement and climate change were considered. The following challenges i.e. controlling invasive alien species, conserving beyond the boundaries of protected areas, considering taxa of

conservation concern, moving toward sustainable cities, managing fire in a changing environment, restoration and managing novel ecosystems are discussed. The paper recommends that there be effective communication, collaboration and participatory learning, implementation of research in conjunction with relevant policies and accessible funding to foster the implementation business strategies in the biodiversity sector in order to move towards sustainability in the region.

Ethology teaches our youth at risk life lessons

Keywords: Environmental Education, Ethology, Life skills

September, J[1] and Ramabulana, P.L[2]
Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town
[1]Jerome.september@capetown.org.za;
[2]Phumudzo.ramabulana@capetown.org.za

In pursuit of raising awareness of the many environmental problems that we face today, the interplay between the Biophysical, Economical and Social components cannot be ignored. Environmental Education in many communities is confronted with a variety of social issues especially amongst the youth. In a realization that the goals of education about the biophysical environment cannot be achieved without addressing some of the social issues, ethology therefore provides some of the answers in confronting behavioural aspects of the social component of the environment. Apart from the many ecosystem services that organisms provide, their behaviour and relationships between and with each other provide a wide variety of lessons that people (especially youth at risk) can learn from in developing oneself and the community. Environmental Educators often come across youth who apart from living in areas with rapid loss of biodiversity and high levels of pollution also need help with personal development. Life skills therefore is inherent is Environmental Education. Closely looking at how members of a particular species relate to one another and respond to daily confrontations can provide valuable life lessons to the youth whose problems at this day and age seem endless. There is more to an organism that can be learned apart from its morphology and role in an ecosystem. This Poster shows by examples what behavioural characteristics people can learn from different organisms.

Toward Liberatory Conservation?
Engaging Environmentalities in Cape Town, South Africa

Goloff, B M

Whether South African protected area governance meaningfully integrates social equity, community empowerment, and ecological sustainability remains hotly debated.My project considered how competing discourses of biodiversity conservation and social justice are expressed in Cape Town nature conservation. Through semi-structured interviews, participant observation, and analyzing government documents, I surveyed a diversity of visions, practices, and assessment mechanisms associated with Cape Town conservation governance and explored how these interact at the Edith Stephens Nature Reserve. Unlike many of the city's other official nature reserves, Edith Stephens Nature Reserve is located in the Cape Flats and proclaims explicit goals of social empowerment. I examined two discourses of "legitimization" to illuminate how "consensus" that conservation involves both "natural" and "social" objectives meant something very different to people I interviewed: community volunteers, nature reserve staff, and mid- and high-level management within the city's Biodiversity Management Branch. I look both at the discourse of competing social legacies of apartheid and of competing "natures" associated with biodiversity. Together, these discourses help explain my interviewees' differing visions of what nature conservation is, for what or whom it is for, and how it is practiced. Some conservationists, especially people historically privileged by apartheid, often separated out efforts advancing social justice as important but external to their core practice of conservation. In contrast, some conservationists and volunteers I met, including those at sites in the historically marginalized Cape Flats, defined nature conservation instead around agendas of

post-apartheid community development. I argue that tension between a discursive "consensus" and the contrasting visions that Cape Town conservationists bring to their work currently impedes meaningful implementation of an integrated social-natural agenda of conservation governance. I also show how aspects of the current context could open doors toward more effectively advancing conservation programs and practices that support both social justice and ecological sustainability.

Interaction between Communities and Nature Reserves within the Dassenberg Coastal Catchment Partnership.

Keywords: Community involvement, awareness

KhuselwaMabuyane,
[1] Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town
*witzandsnature.reserve@capetown.gov.za

The poster will entail the partnership between people and nature, as an intern conducting Environmental Education within the DCCP City Sector. The main aim of the Environmental Education programmes in the area is to engage with the communities and schools. The programmes are used to expand their knowledge about nature such as the Biodiversity Programme and Fire Awareness Campaign.

The programmes are aimed at getting communities be the part of DCCP initiative and to have a common objective towards restoring nature and assist with preventing uncontrolled veld fires by not making fires in open spaces or areas close the reserve.

The community also benefits socially and economically through job creation with projects such as the Extended Public Works Programme. To address the issues the communities have that affect the operation of the reserve and to educate people about those specific issues through awareness campaigns and exhibitions.

The Importance of Snake Awareness in the neighbouring communities within the Klein Dassenberg Conservation Area

Key words: environmental education, uncontrolled fires, Atlantis sand fynbos, awareness, snake identification, communities, and fire season.

Murovhi Rolivhuwa
[1] Biodiversity Management Branch, Environmental Resource Management Department, City of Cape Town
* Greateratlantis.interns@capetown.gov.za

Klein Dassenberg is a pristine biodiversity site forming part of the Dassenberg Coastal Catchment Partnership (DCCP) Initiative within the City of Cape Town. The area covers 314.9 ha of critically endangered Atlantis Sand Fynbos. This poster documents the importance of snake awareness in the neighbouring communities of Pella, Mamre and Atlantis areas.
The critically endangered Atlantis Sand Fynbos should ideally be burnt under normal conditions between 8 to 15 years. However, the proximity of this site to the neighbouring communities means that the area burns every fire season. The fires are largely arson related by neighbouring communities claiming that this would reduce the number of snakes, which are occasionally found in their houses etc. The detrimental impact on the vegetation type itself is of larger concern and as such snake awareness workshops have been arranged where communities would be educated about the importance of snakes in the ecosystem as well as the impact of frequent fires on this vegetation type. The snake awareness shows also assist in snake identification (i.e. types of snakes and venomous /non-venomous snakes), snake behaviour and what to do when snakes are encountered in the area. The aim is to create awareness and educate the communities in the hope that it will lead to less uncontrolled fires and in turn reduce the threat and detrimental effects it has on the important vegetation type.

Floristic composition and ecology of quartz fields in the Greater Cape Floristic Region

Keywords: renosterveld, quartz patches, soils

Groenewald, J.P[1,2]. Muasya, M [1]. Chimphango, S.M[1]. Curtis, O.E[2].
[1]Department of Biological Sciences[1], University of Cape Town, Rondebosch 7701

[2]Overberg Lowlands Conservation Trust, 3 De Kock Street, Napier, Western Cape, 7270
groenewald899@gmail.com

The Greater Cape Floristic Region (GCFR) is well known for its rich plant diversity (9600 vascular plant species, 70% of which are endemic). Renosterveld forms part of the GCFR's Fynbos Biome and is the least studied and most threatened vegetation of this area as it occurs on more fertile soils. Therefore a significant proportion of Renosterveld has been transformed for agriculture.
In the Overberg there are four different types of Renosterveld which are all listed as Critically Endangered.
Quartz patches are unique islands of white quartz pebbles found in Shale and Silcrete Renosterveld. They contain rare and unique plant communities absent from the surrounding shale areas and are not well studied in the Overberg. Quartz fields are more common in the dry Karoo areas. Recent studies by Curtis et al. (2013) and Goldblatt et al. (2013) found six new species endemic to these quartz patches. It is not clear where and why these patches occur as they are not formally mapped. Also, the substrates on which these unique communities occur are poorly understood. In this study, I aim to shed more light on the ecology of these quartz patches in relation to their shale and silcrete hosts.
The key objectives of this study are to characterise the vegetation of quartz patches in Eastern Rûens Shale and Silcrete Renosterveld. This research will also investigate whether edaphic factors (soil type, nutrients, etc) influence the distribution of quartz assemblage. Comparisons will be made between the Overberg quartz patches and other (Succulent & Klein Karoo) quartz fields. This will be done by taking soil samples at different quartz patch sites as well as from surrounding vegetation. Baseline vegetation data will also be collected for each site. Findings from this research will form an important role in informing conservation of Critically Endangered Overberg Renosterveld.

Cape Mountain Interface Zones: Trails, Conservation &Connectivity on the Rim of Africa

Key words: montane interface zone, trails, micro-corridors

Saintz, G. [1]
[1] Rim of Africa - Cape Mountains and Trails Initiative
galeo@rimofafrica.co.za

Montane Fynbos and Renosterveld along the Cape Fold Range at elevation above 400m, although relatively better protected than its counterpart lowland species, face distinct challenges. Projects being undertaken by the Rim of Africa initiative to enhance connectivity between communities and conservation, between mountain corridors and the lowlands along the length of the Cape Mountains aim to address some of the challenges the conservation of the mountain Fynbos and its connectivity to lowland regions faces. The interface zone between mountain land and surrounding farm lands is our area of focus. How do we create micro-corridors into the lowlands. What is happening with birds and aquatic life at these interface zones? What roles can trails play in this space to bring greater awareness to the conservation of the ecotone and ecocline dynamics in the interface zone? Increasing agricultural activity into mountain areas threatens some of these low-lying connection points. Climate change is likely to influence the movement of species along the ecocline. A well maintained and used system of trails can bring both economic and ecological benefits to these interface zones. Revenue from trails is long term sustainable use of the landscape, giving access not only for the education of an increasing urban population removed from nature and biodivesrity conservation issues, but also for flower harvesting, alien clearing and fire break management in mountainous parts of the Cape.

The effect of soil on the habitat preference and distribution of the Landdroskop moss frog and the De Villiers moss frog in the Hottentots Hollands conservation area

Sonja Erasmus

The Landdroskop moss frog (*Arthroleptellalanddrosia)* and De Villiers moss frog (*Arthroleptellavillliersi)* are small cryptic frogs restricted and endemic to the Western Cape. While A. villliersi has been listed as least concerned by the IUCN the A. landdrosia is more sensitive with a conservation status of near threatened. They typically occur in seepage or in permanently moist areas but appear to be absent from specific sites within these habitats. Their distribution can be described as patchy over a range of geographical landscapes and several environmental variables may affect habitat selection. The present study will consider the

effect of selected soil characteristics on their habitat preference and Jonkershoek Nature reserve and Hottentots Holland will be the focus areas for sampling. The depth of the organic layer, soil moisture and soil pH were tested for sites were the species have been recorded as being present and sites were they are absent. Presence and absence will be confirmed for this study through listening to their unique advertisement calls . While some aspects of the study will only be conducted in winter, the preliminary results of the soil analysis will be presented and placed in context with historical distribution data for these species.