Baseline Vegetation Assessment of the Colchester Section of the Greater Addo Elephant National Park

Promotor: Prof E.E. Campbell

Co-Promotor: Prof R. M. Cowling

Thicket and Elephants

Elephants are an integral part of the Thicket ecosystem, but they are causing major damage to the flora of the Greater Addo Elephant National Park

Why?

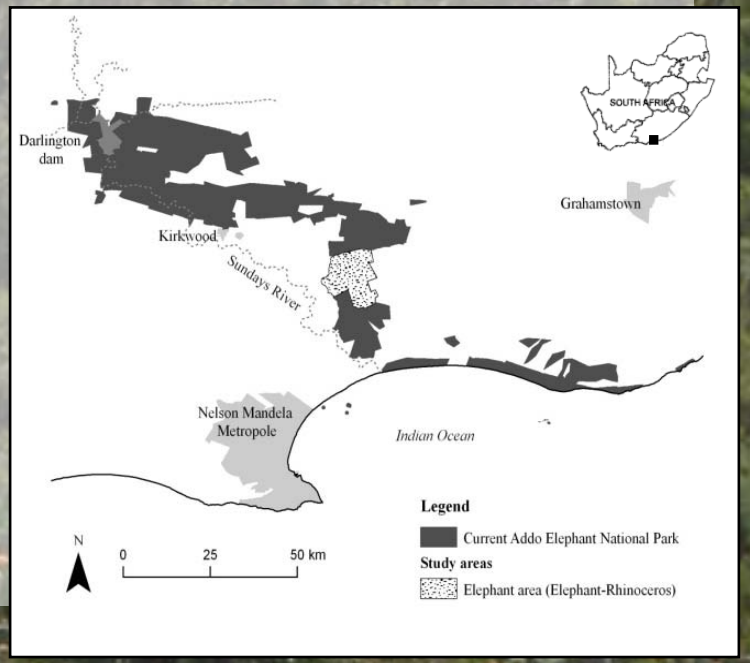
And

What to do?

Greater Addo Elephant National Park

Mandate to conserve elephants AND “preserve intact a viable example of valley bushveld” (Hall-Martin and van der Walt 1979)

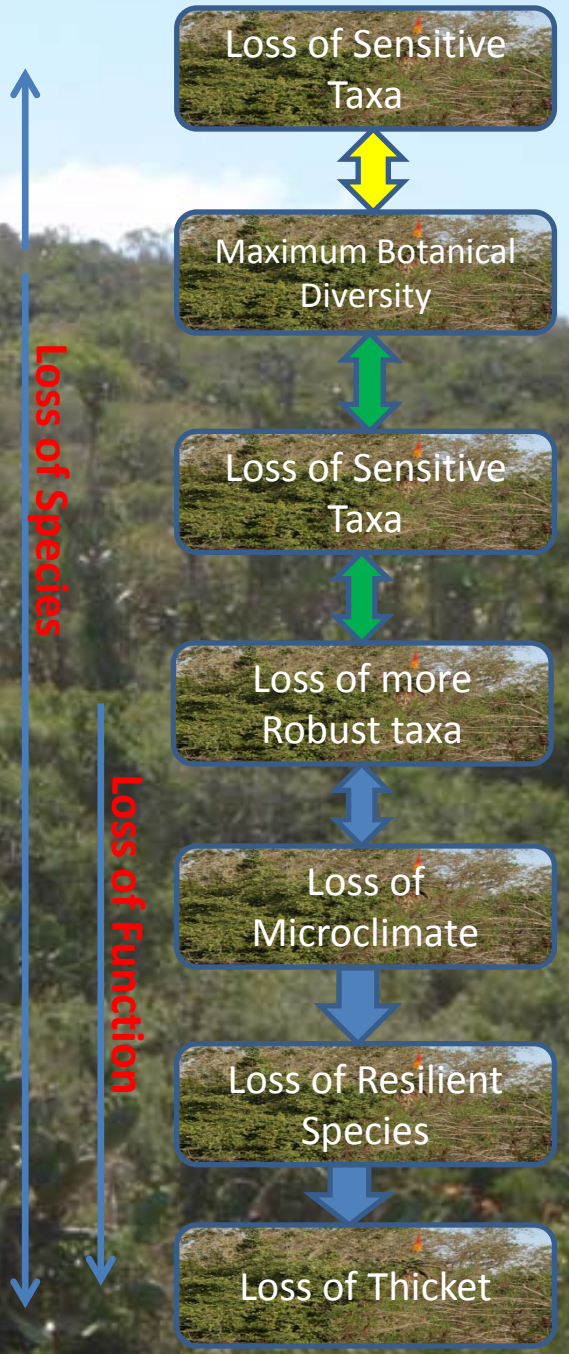
Elephant density fluctuates as high as 3.8 elephants.km^{-1}



Looking for Thresholds

Balancing act between conserving megaherbivores and maintaining the flora and ecosystem processes of Thicket

Can we identify utilization thresholds in Thicket?

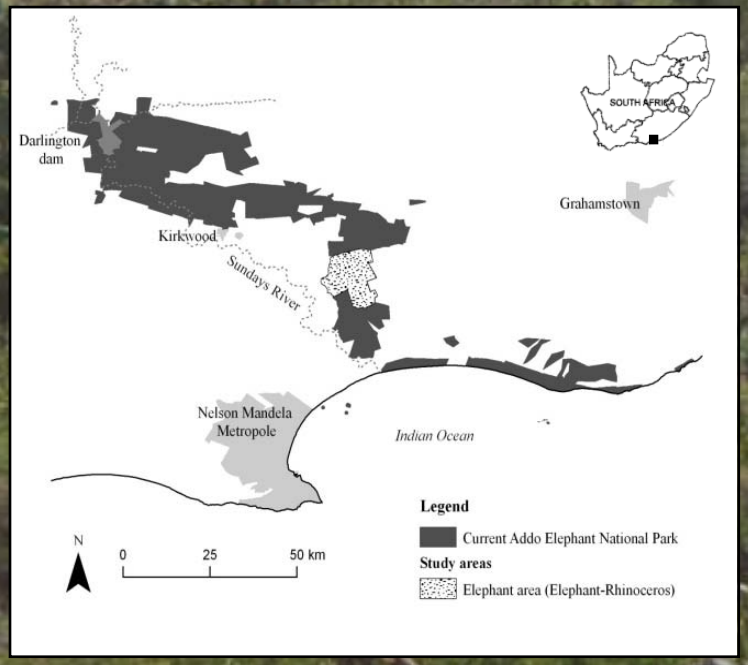


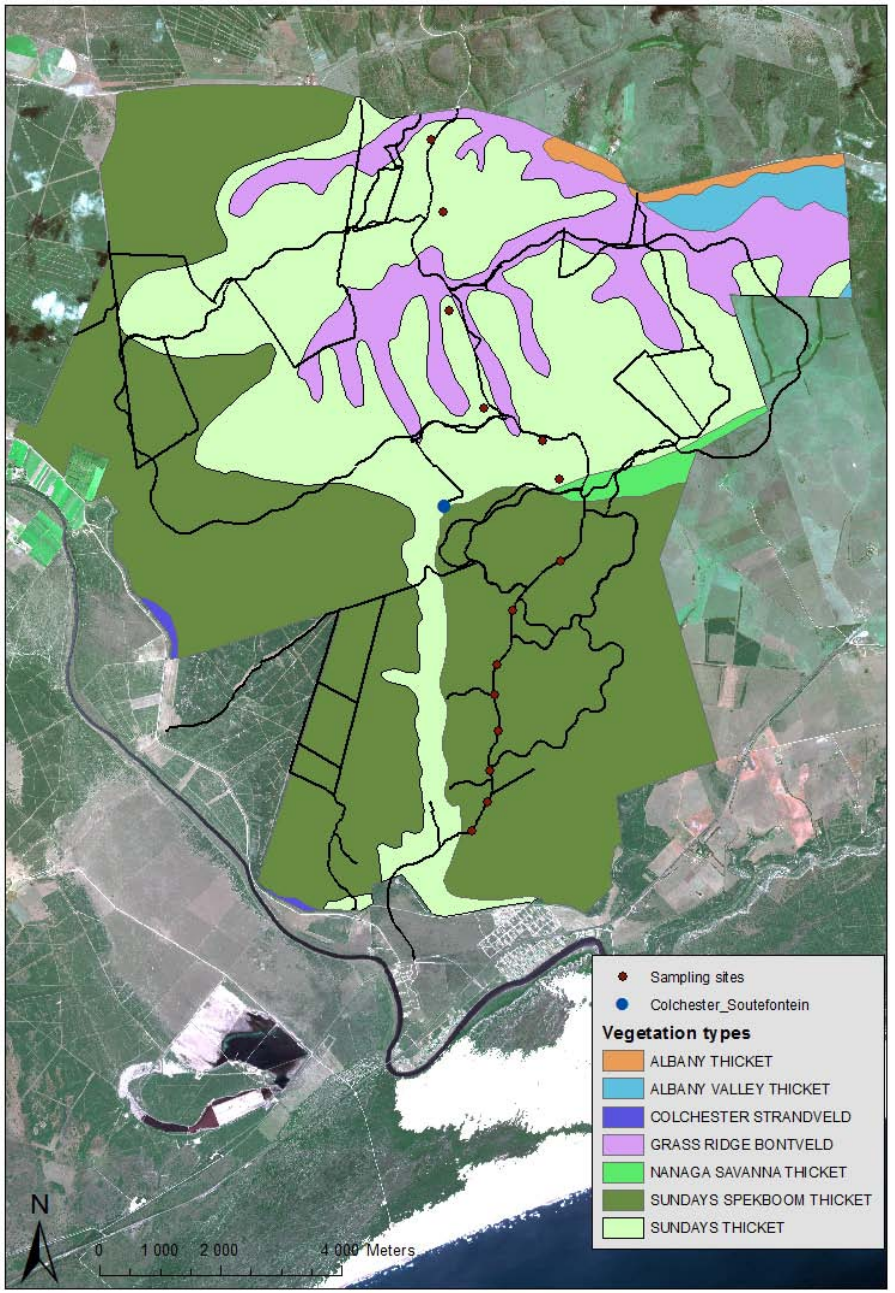
Thicket types

Aim

Describe the species composition and height structure of Spekboom Thicket and (mesic) Thicket vegetation types in the Colchester section of the GAENP

Study site


SOUTH AFRICA
Darlington dam
Grahamstown
Kirkwood
Sundays River
Nelson Mandela Metropole
Indian Ocean
N
0
25
50 km
Legend
Current Addo Elephant National Park
Study areas
Elephant area (Elephant-Rhinoceros)


Sampling sites
Colchester_Soutefontein
Vegetation types
ALBANY THICKET
ALBANY VALLEY THICKET
COLCHESTER STRANDVELD
GRASS RIDGE BONTVELD
NANAGA SAVANNA THICKET
SUNDAYS SPEKBOOM THICKET
SUNDAYS THICKET
N
0
1 000
2 000
4 000 Meters

Materials and Methods

14 sampling sites selected

- 8 in Spekboom Thicket (VT)
- 6 in Thicket (T)

3 x 30m

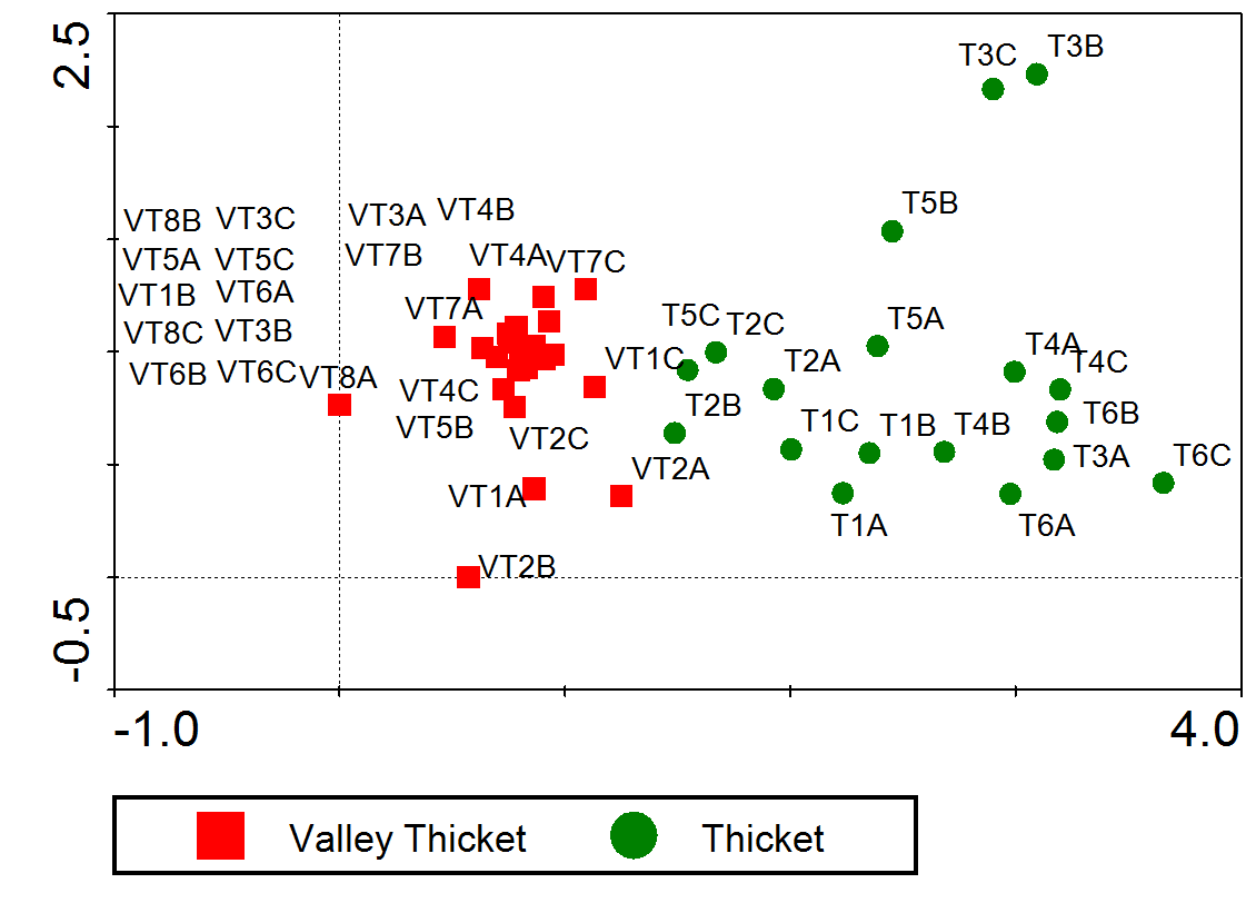
at each

1m wide

TOTAL OF

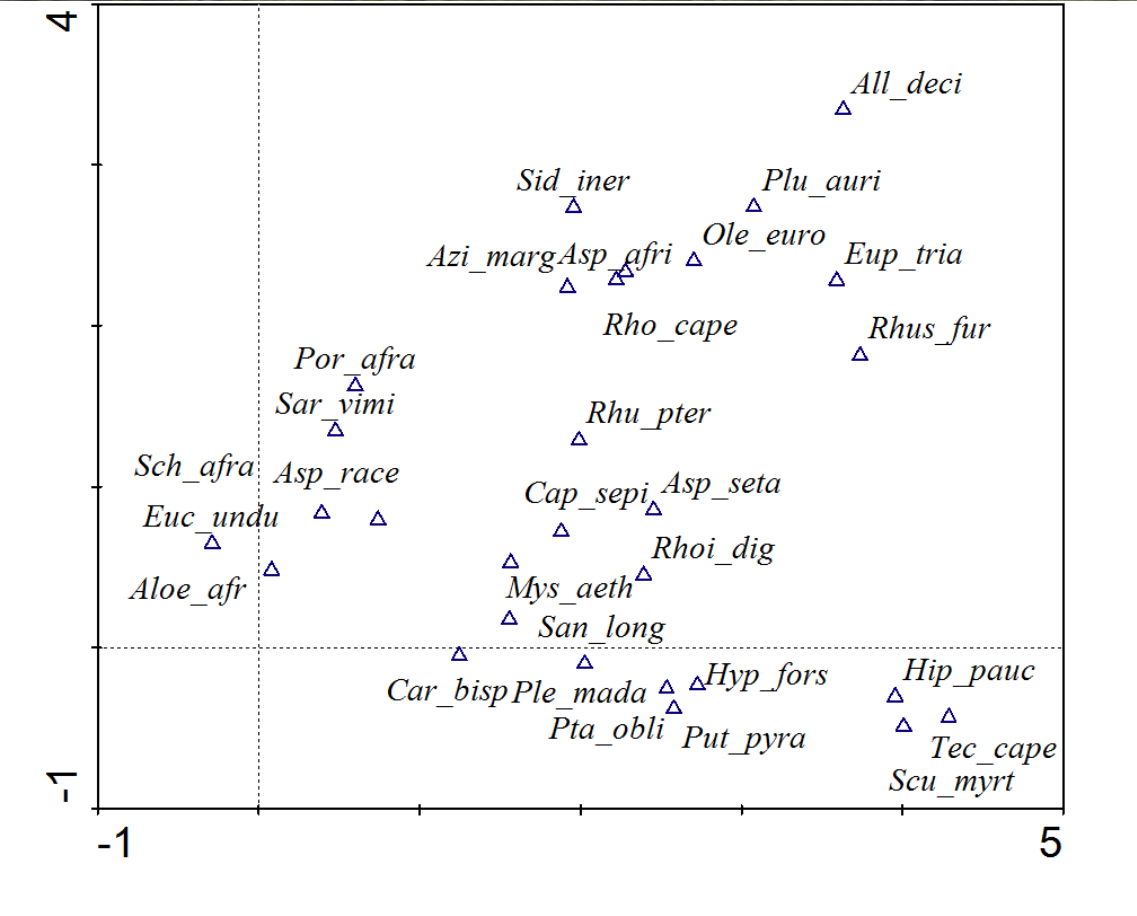
- 42 line transects
- 84 belt transects, made of
- 1 260 1m x 2m quadrats
- 61 x 42 = 2 562 height measurements

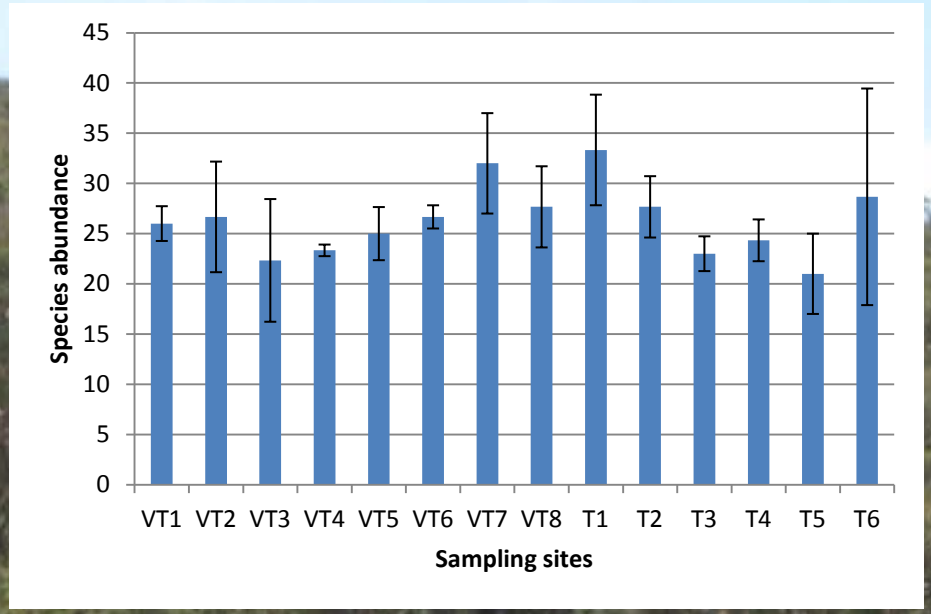
Results: Vegetation types

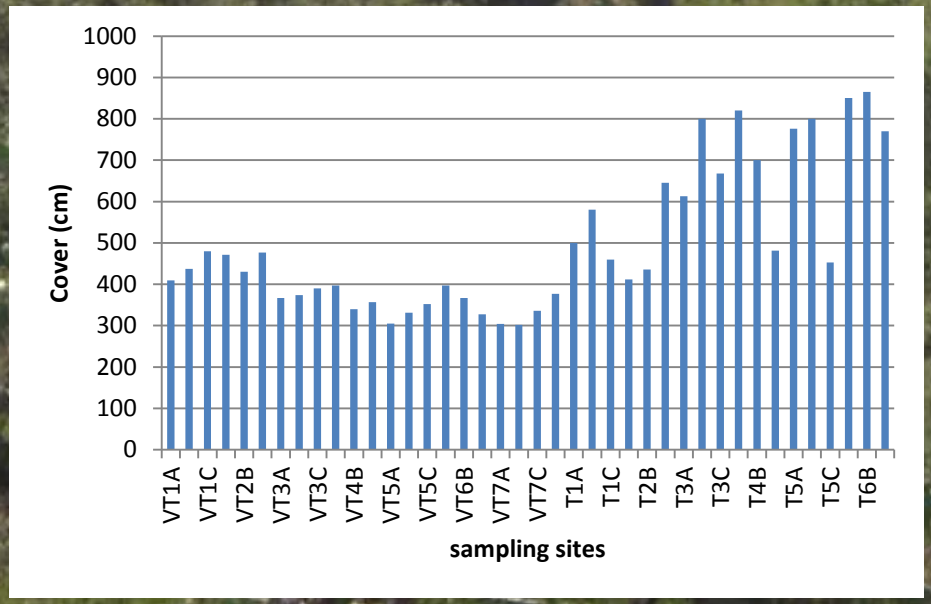


Cumulative % variance: 29.8
Sum of all eigenvalues: 3.411

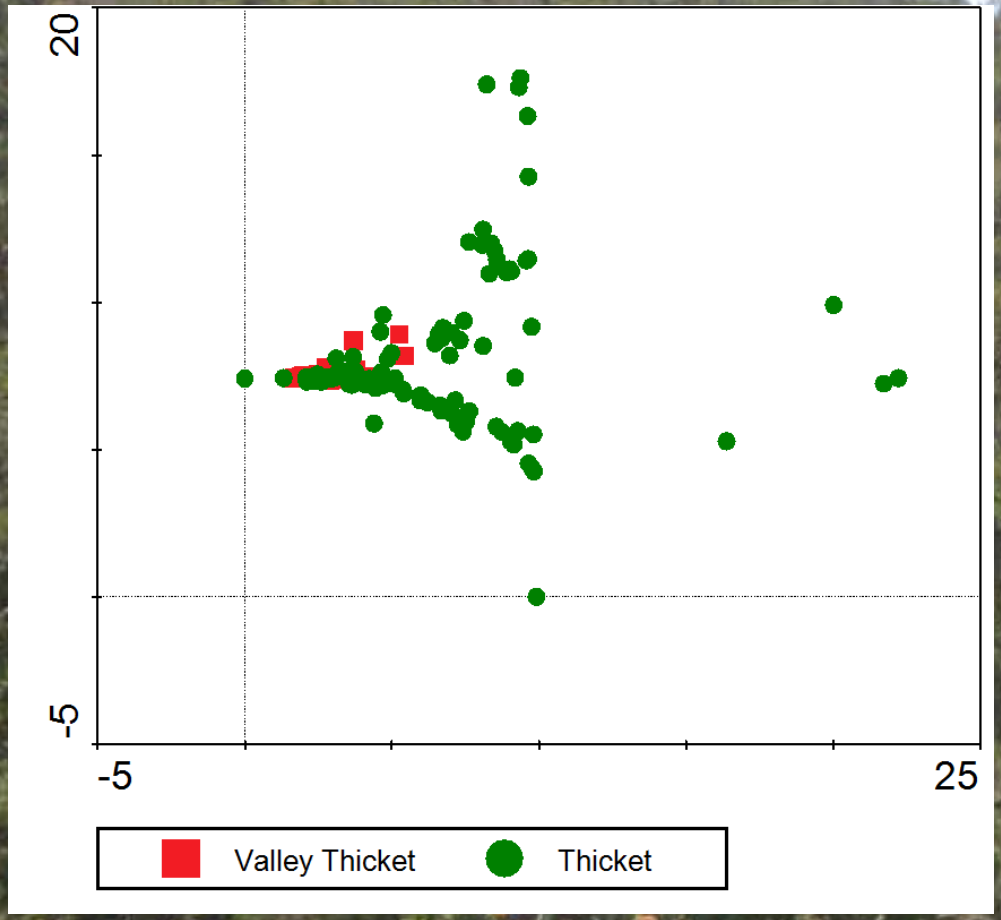
Species


4
-1
-1
5
All_deci
Sid_iner
Plu_auri
Ole_euro
Azi_marg
Asp_afri
Eup_tria
Rho_cape
Rhus_fur
Por_afra
Sar_vimi
Rhu_pter
Sch_afra
Asp_race
Cap_sepi
Asp_seta
Euc_undu
Rhoi_dig
Aloe_afr
Mys_aeth
San_long
Car_bisp
Ple_mada
Hyp_fors
Hip_pauc
Pta_obli
Put_pyra
Tec_cape
Scu_myrt


45
40
35
30
25
20
15
10
5
0
Species abundance
VT1 VT2 VT3 VT4 VT5 VT6 VT7 VT8 T1 T2 T3 T4 T5 T6
Sampling sites

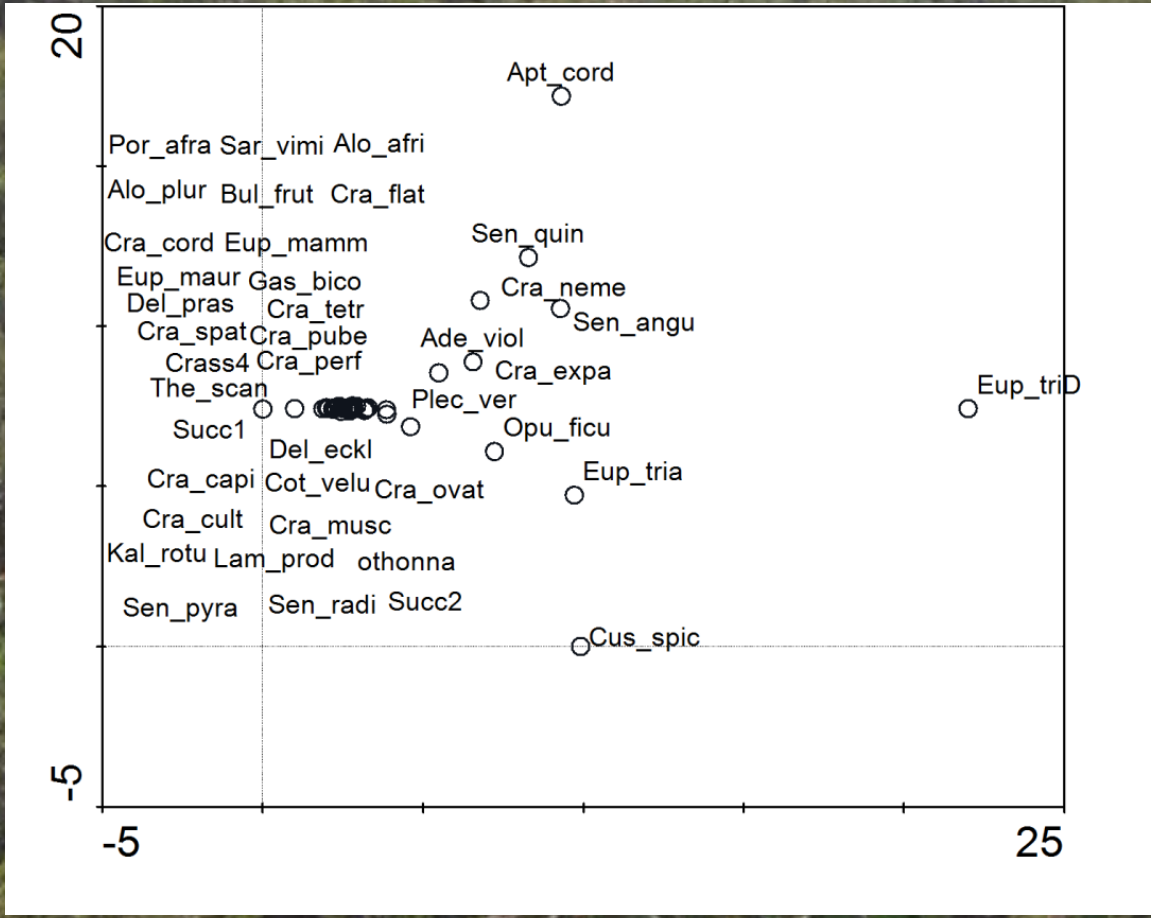

1000
900
800
700
600
500
400
300
200
100
0
Cover (cm)
VT1A VT1C VT2B VT3A VT3C VT4B VT5A VT5C VT6B VT7A VT7C T1A T1C T2B T3A T3C T4B T5A T5C T6B
sampling sites

Strip Transects: Samples



Cumulative % variance: 17.0
Sum of all eigenvalues: 17.066

Strip Transects: Species



Discussion

Two vegetation types ARE different

Unique ecological parameters

Variable utilization by fauna

Individual management requirements

Context

Baseline vegetation study of the two major solid Thicket types

Identify the effects of a high-density elephant population on ‘pristine’ Thicket

Acknowledgements

- Prof. Eileen Campbell and Prof. Richard Cowling

- Botany dept,
- ACE and Zoology dept
- NMMU

- SANParks, GAENP: Tulani, Fire etc.

Personal story