

Expert opinion on Desired State of Sundays Spekboom Thicket in Addo Elephant National Park



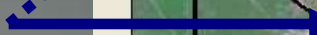
Izak Smit (SANParks), Marietjie Landman (NMMU), Richard Cowling (NMMU) &
Angela Gaylard (SANParks)

1985

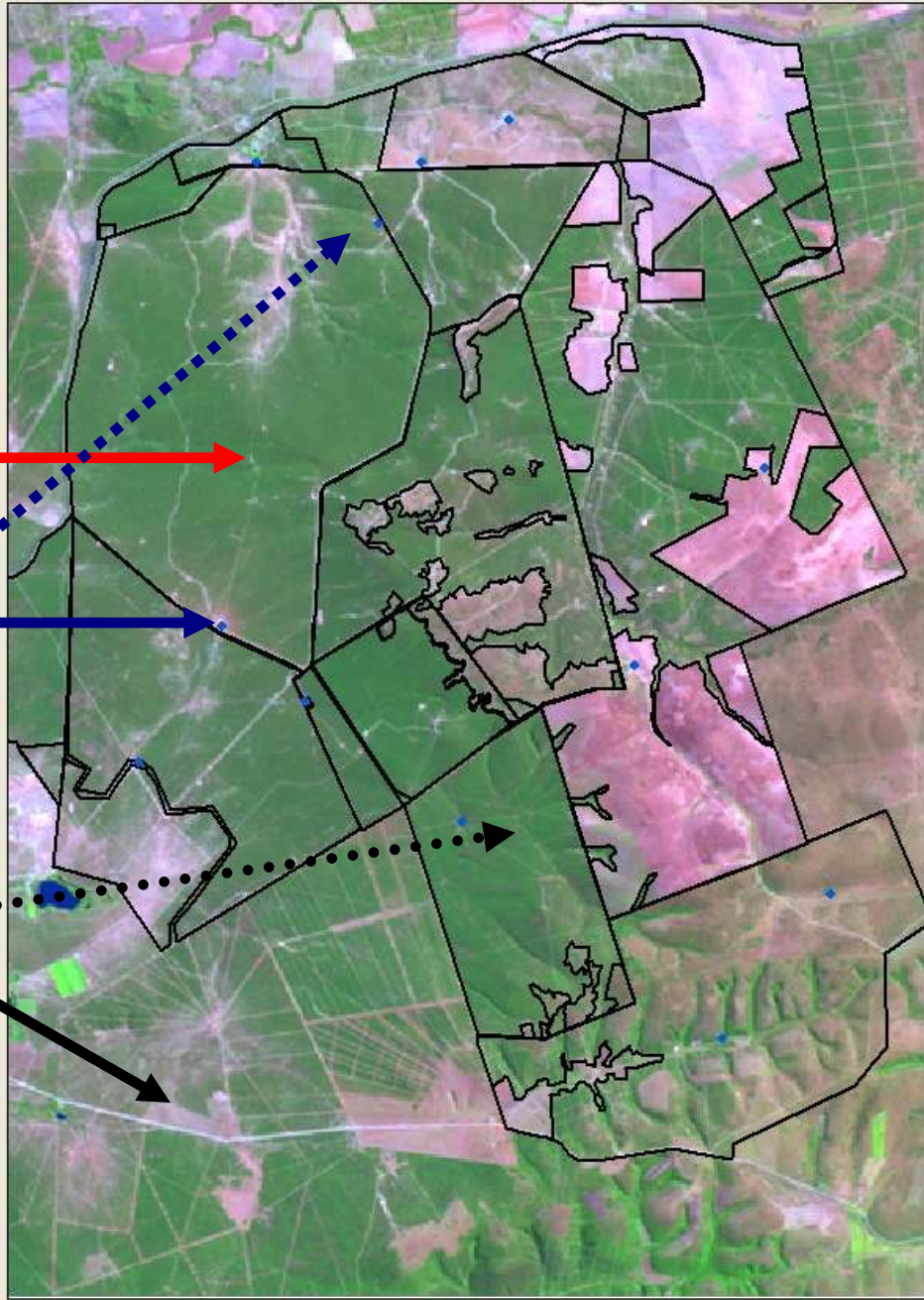
Thinning of thicket



Development of
piosphere



Transformation



Addo Elephant
Main Camp
largely consists
of Sundays
Spekboom
Thicket (plus
bontveld &
transformed land)

Relatively small
enclosed area
with
megaherbivores
(elephant, black
rhino & buffalo)

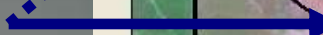


2009

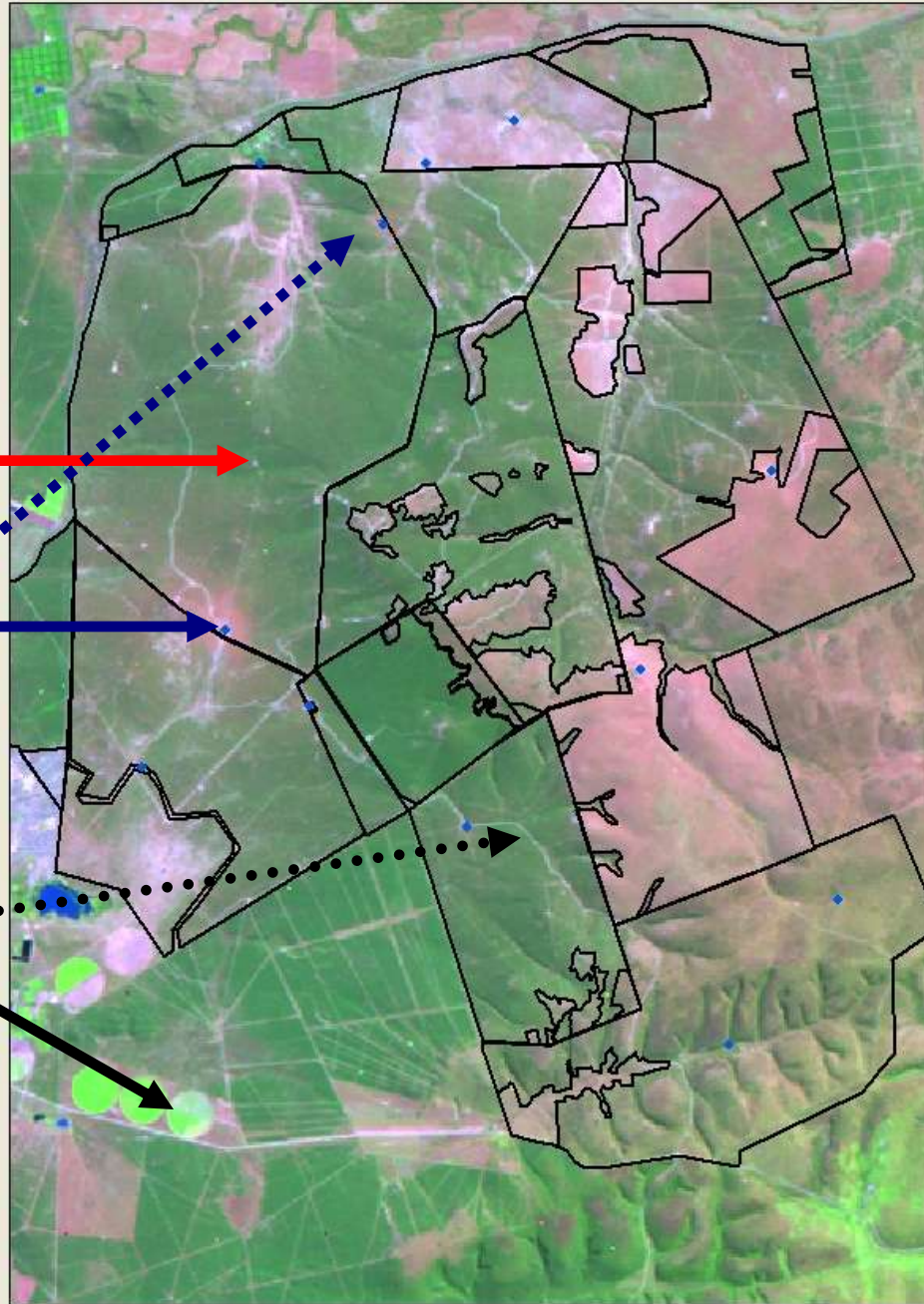
Thinning of thicket



Development of
piosphere



Transformation



Thicket canopy seems to be changing and needs to be monitored (also, since it may be proxy for other important characteristics of thicket)

Which begs the question...

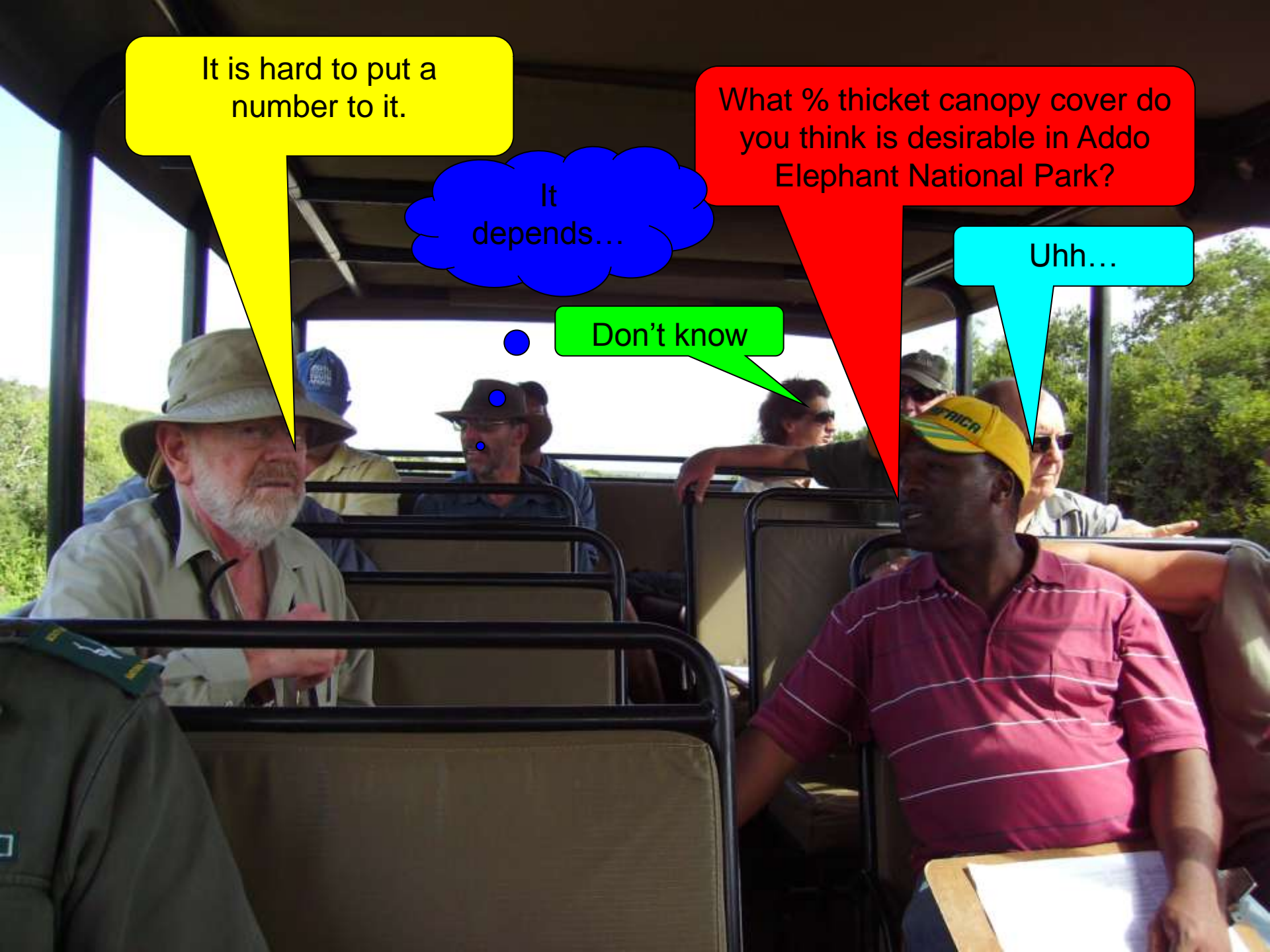
It is hard to put a number to it.

It depends...

Don't know

What % thicket canopy cover do you think is desirable in Addo Elephant National Park?

Uhh...



Boetie, now this is
what thicket should
look like!



I guess this thicket is
OKish, but I miss
Capparis



This thicket patch
needs some
restoration...

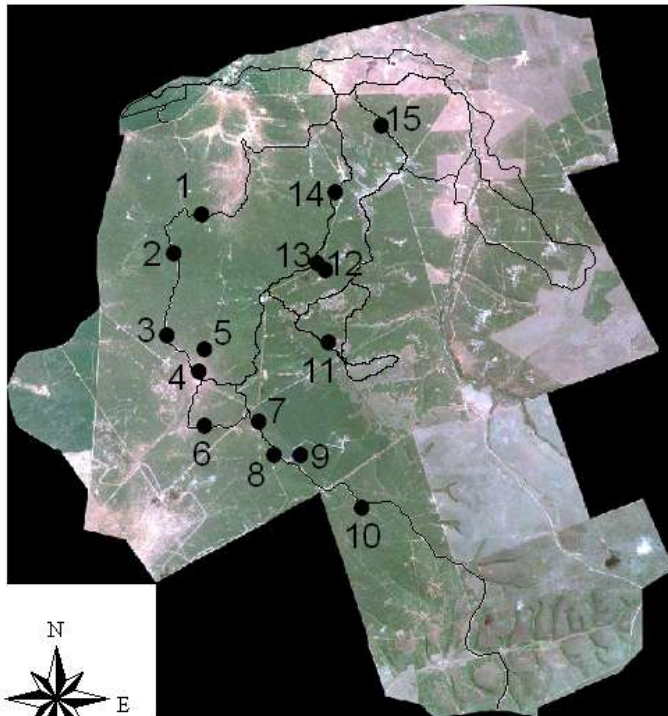


This thicket is bugged –
lets go!



Approach

- “Reverse engineer” the elusive answer to a simple question
- Expert opinion followed by fieldwork on 15 plots of 50 x 50 m (23 questions)
 - 20 scientists
 - 10 managers
 - 12 farmers



Varied questions (23 questions + overall score)

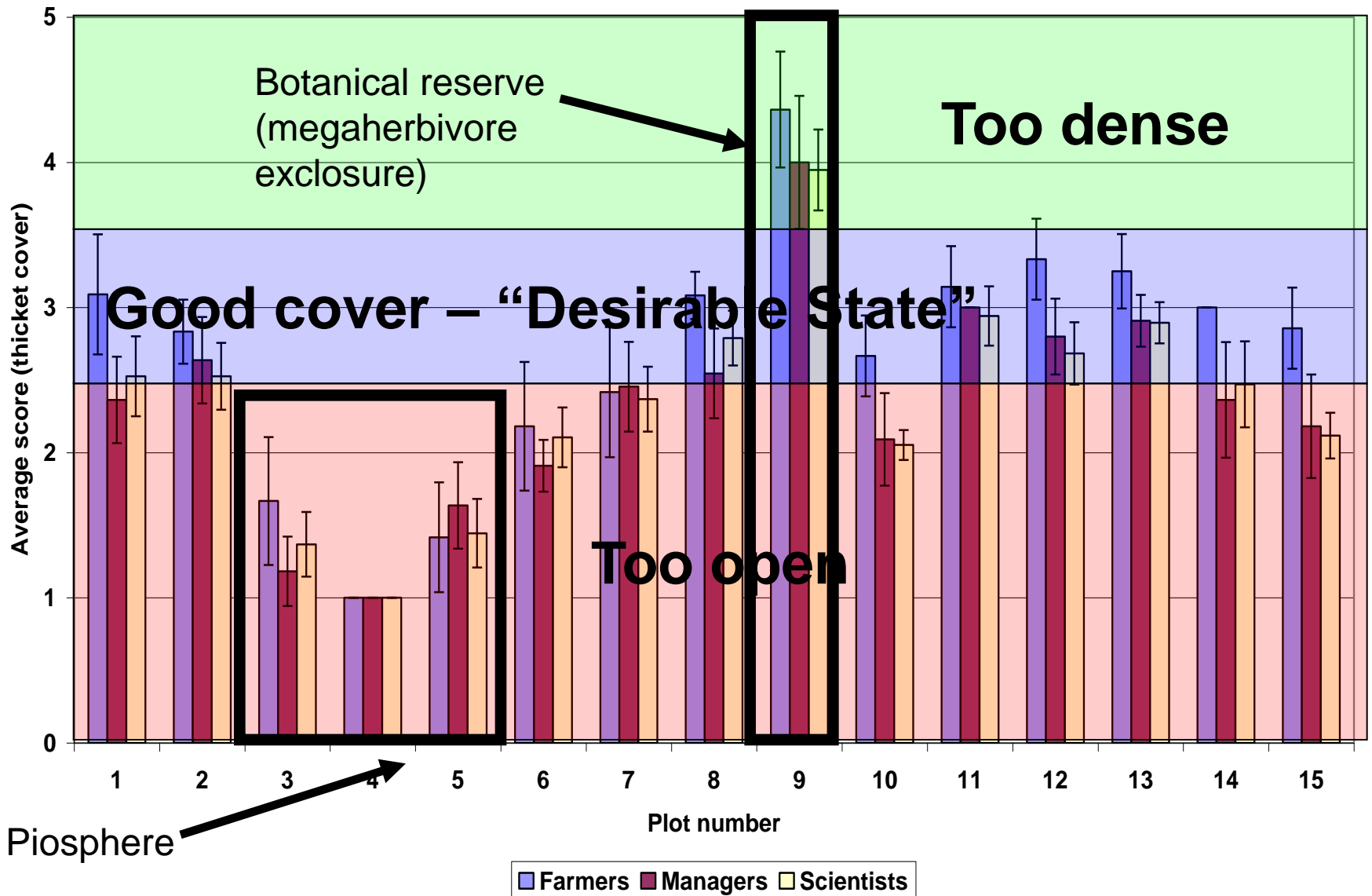
Please mark one statement per line best describing your assessment of the plot. Please answer all questions and use the "don't know" option sparingly - there is no right or wrong answer as all statements are based on your value judgment. Feel free to comment in the spaces provided if you want to expand on your assessment.

Name of observer _____

Plot Nr _____

Question							Comment (optional)
1	I am a commercial livestock farmer	I am a commercial game farmer	I am a subsistence farmer	I am a manager of Sundays Spekboom Thicket (SANParks, EC Parks, etc.)	I am a scientist	I am a	
2	There are far too many open spaces between the thicket clumps/patches	There are too many open spaces between the thicket clumps/patches	There are about the right number of open spaces between the thicket clumps/patches	There are too few open spaces between the thicket clumps/patches	There are far too few open spaces between the thicket clumps/patches	Don't know	
3	The thicket clumps/patches are far too small	The thicket clumps/patches are too small	The thicket clumps/patches are about the right size	The thicket clumps/patches are too big	The thicket clumps/patches are far too big	Don't know	
4	The top of the canopy is far too low	The top of the canopy is too low	The top of the canopy is about the right height	The top of the canopy is too high	The top of the canopy is far too high	Don't know	
5	The density of foliage/leaves in the thicket clumps is far too sparse	The density of foliage/leaves in the thicket clumps is too sparse	The density of foliage/leaves in the thicket clumps is about right	The density of foliage/leaves in the thicket clumps is too dense	The density of foliage/leaves in the thicket clumps is far too dense	Don't know	
6	The diversity (or number) of trees and tall shrub species is very poor	The diversity (or number) of trees and tall shrub species is poor	The diversity (or number) of trees and tall shrub species is average	The diversity (or number) of trees and tall shrub species is good	The diversity (or number) of trees and tall shrub species is very good	Don't know	
7	The grass & forb cover is very poor	The grass & forb cover is poor	The grass & forb cover is average	The grass & forb cover is good	The grass & forb cover is very good	Don't know	
8	There are far too few succulent & bulb species present	There are too few succulent & bulb species present	There is an average number of succulent & bulb species present	There is a good number of succulent & bulb species present	There is a very good number of succulent & bulb species present	Don't know	
9	Animal browsing on this site needs to be drastically reduced	Animal browsing on this site needs to be reduced	Animal browsing on this site seems about right	Animal browsing on this site needs to be increased	Animal browsing on this site needs to be drastically increased	Don't know	
10	This site will definitely not be able to recover to healthy thicket if animals are removed for 20 years	This site will not be able to recover to healthy thicket if animals are removed for 20 years	This site may be able to recover to healthy thicket if animals are removed for 20 years	This site will recover to healthy thicket if animals are removed for 20 years	This site does not need to recover, it is already healthy thicket	Don't know	
11	There are far too few seedlings and suckers	There are too few seedlings and suckers	There is adequate seedlings and suckers	There is a good number of seedlings and suckers	There is a very good number of seedlings and suckers	Don't know	
12	There is far too little soil organic matter (litter mulch) present	There is too little soil organic matter (litter mulch) present	There is adequate soil organic matter (litter mulch) present	There is a good layer of soil organic matter (litter mulch) present	There is a very good layer of soil organic matter (litter mulch) present	Don't know	

Plot scores for canopy cover



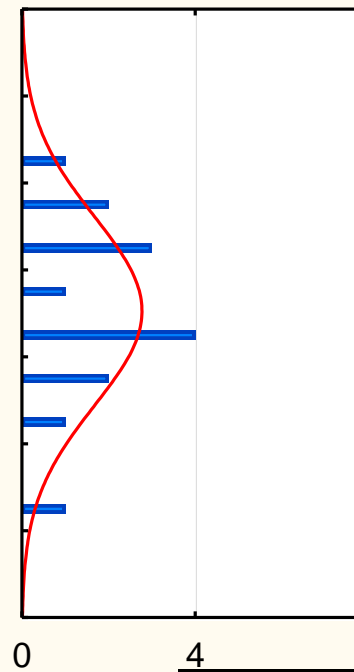
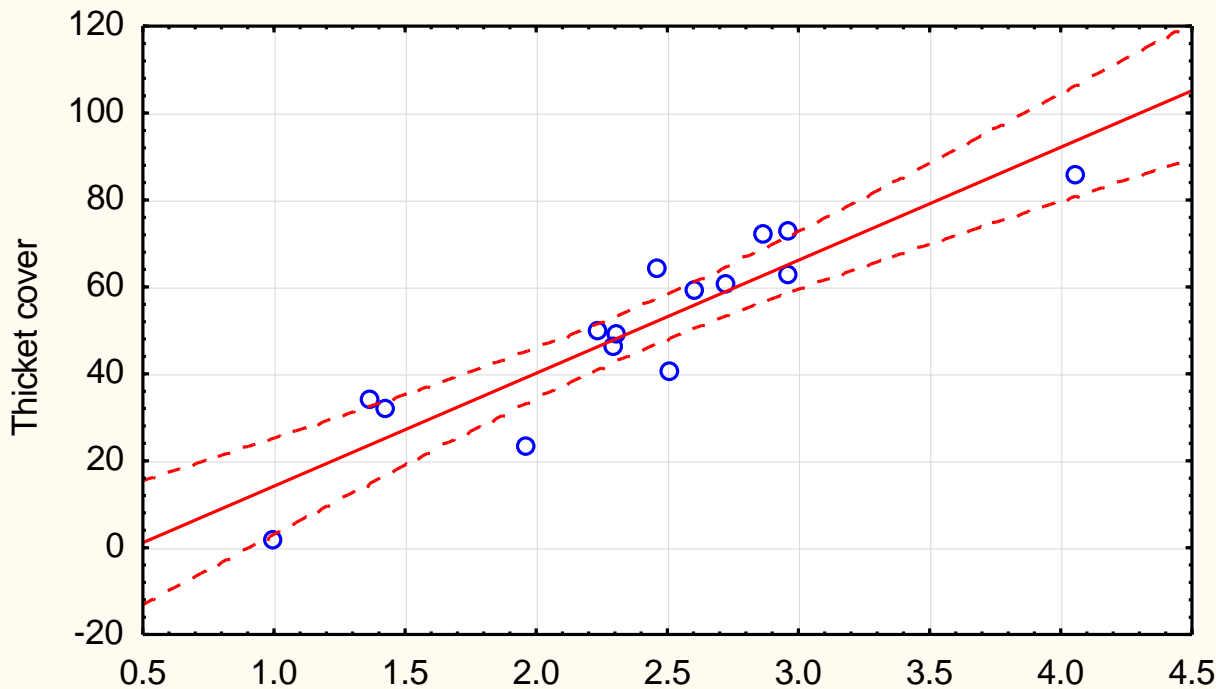
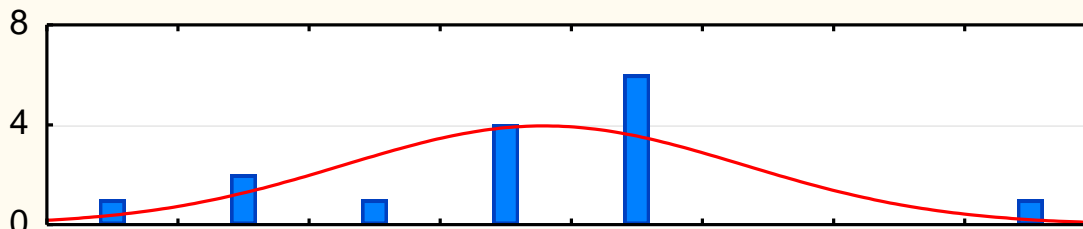
Scatterplot: Q2 vs. Thicket cover (Casewise MD deletion)

$$\text{Thicket cover} = -11.85 + 26.000 * \text{Q2}$$

Correlation: $r = .91092$

X: Q2
 N = 15
 Mean = 2.385633
 Std.Dv. = 0.756028
 Max. = 4.062500
 Min. = 1.000000

Y: Thicket cover
 N = 15
 Mean = 50.171185
 Std.Dv. = 21.578874
 Max. = 85.333333
 Min. = 1.900000



0.95 Conf.Int.

Field measured % thicket cover

Expert opinion score (thicket canopy cover)

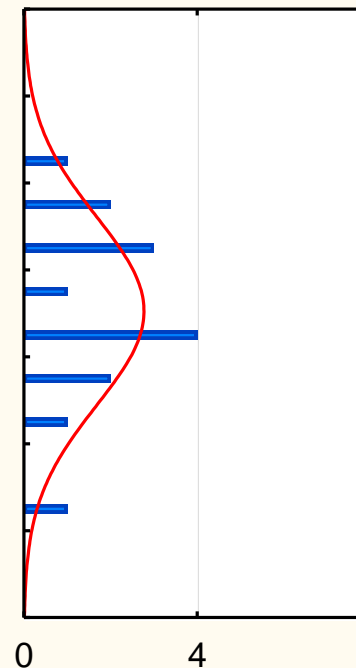
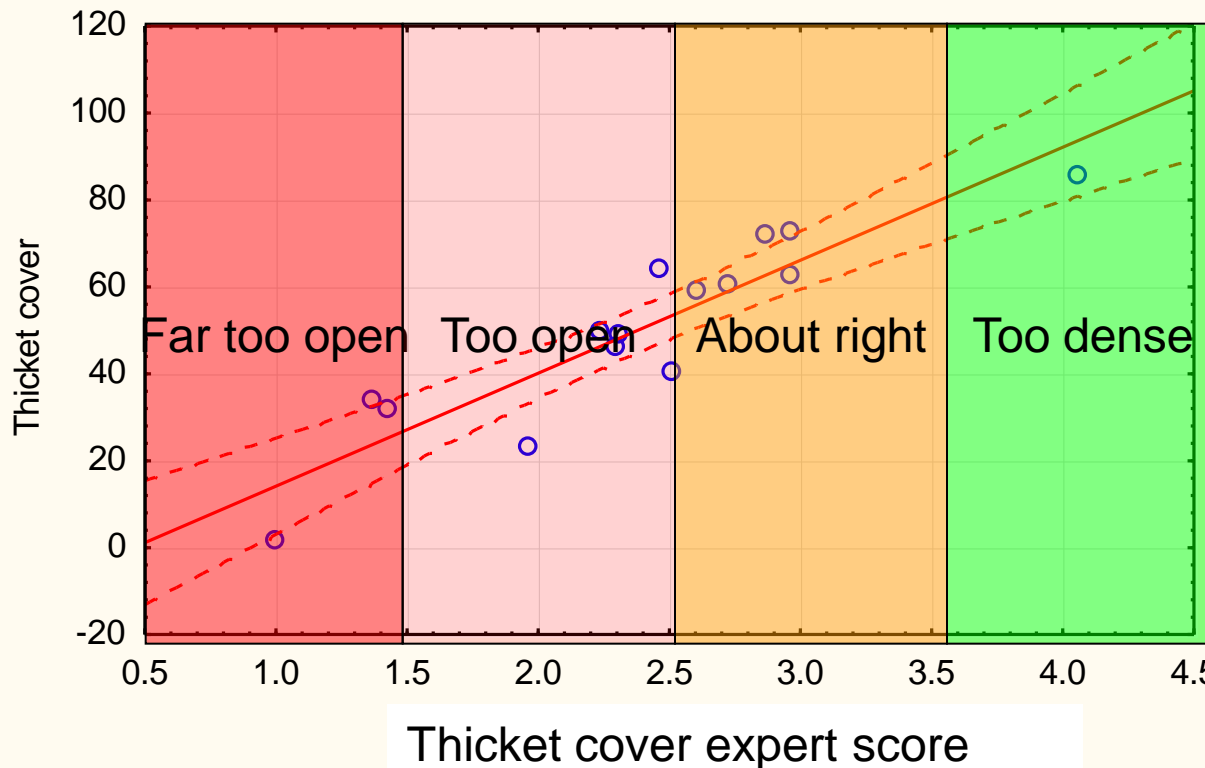
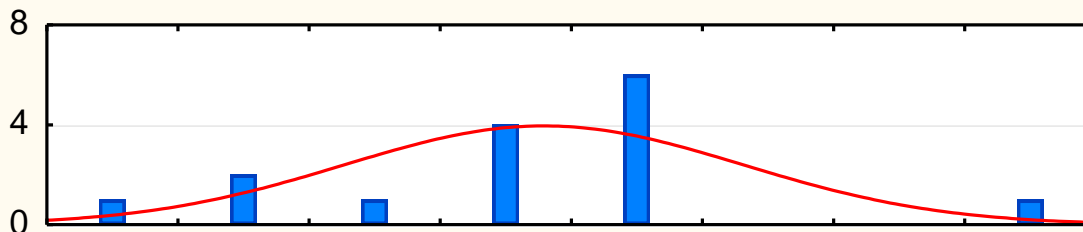
Scatterplot: Q2 vs. Thicket cover (Casewise MD deletion)

$$\text{Thicket cover} = -11.85 + 26.000 * \text{Q2}$$

Correlation: $r = .91092$

X: Q2
 N = 15
 Mean = 2.385633
 Std.Dv. = 0.756028
 Max. = 4.062500
 Min. = 1.000000

Y: Thicket cover
 N = 15
 Mean = 50.171185
 Std.Dv. = 21.578874
 Max. = 85.333333
 Min. = 1.900000



0.95 Conf.Int.

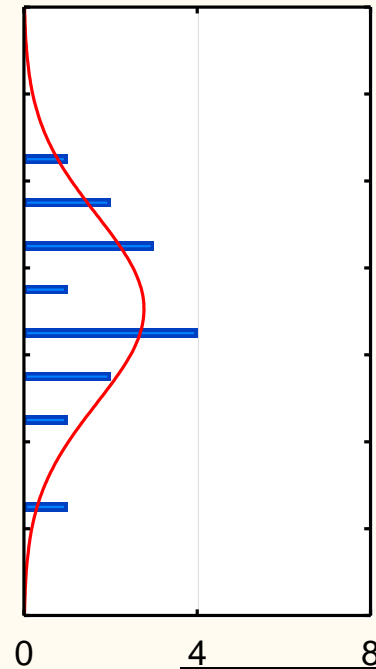
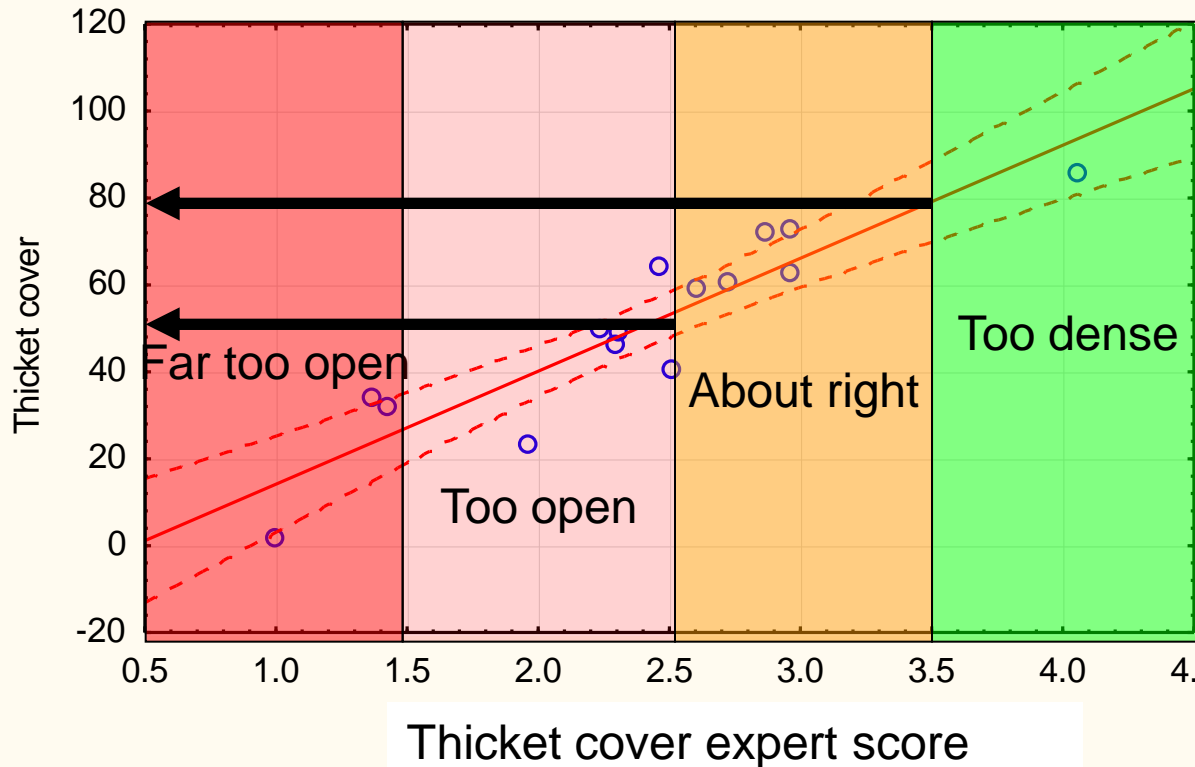
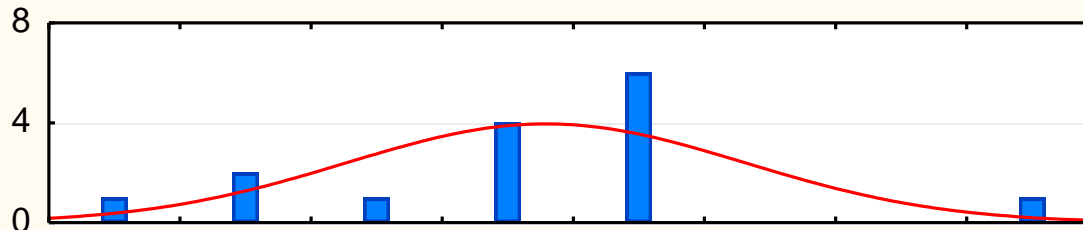
Scatterplot: Q2 vs. Thicket cover (Casewise MD deletion)

$$\text{Thicket cover} = -11.85 + 26.000 * \text{Q2}$$

Correlation: $r = .91092$

X: Q2
 N = 15
 Mean = 2.385633
 Std.Dv. = 0.756028
 Max. = 4.062500
 Min. = 1.000000

Y: Thicket cover
 N = 15
 Mean = 50.171185
 Std.Dv. = 21.578874
 Max. = 85.333333
 Min. = 1.900000



Desirable thicket canopy cover (50% – 80%)

What % thicket canopy cover do you think is desirable in Addo Elephant National Park?





50-80% !

1



2

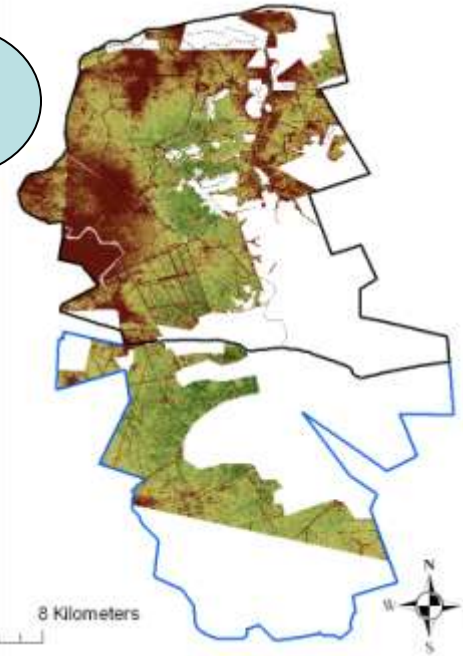
Main Camp Tourist Roads

- Tourist roads
- Main Camp
- Colchester

NDVI in 2008 (SPOT 5)

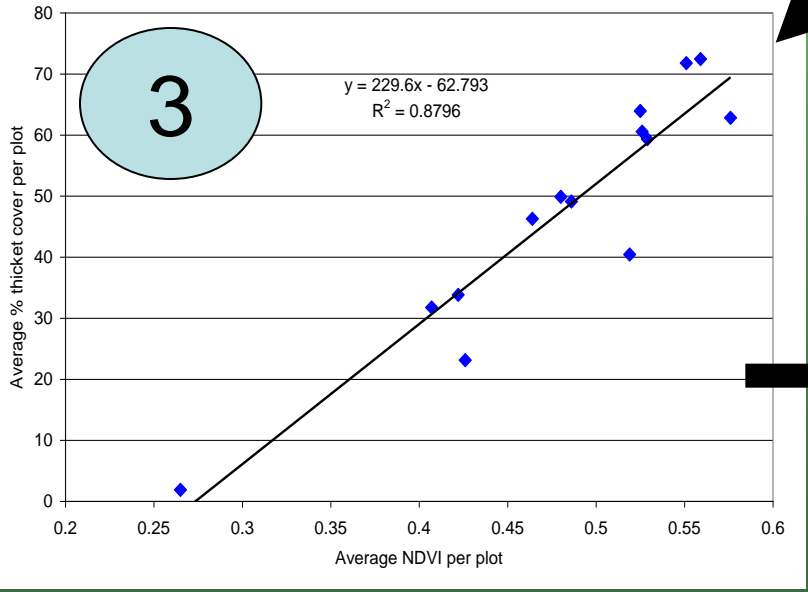
High

Low



Can we map this across the park?

3



4

□ Main Camp

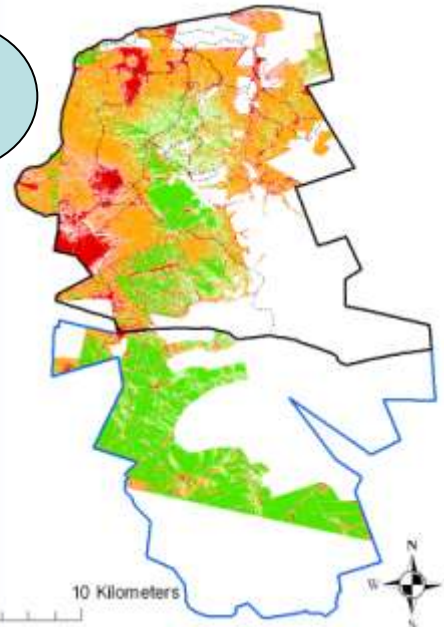
□ Colchester

Main Camp Tourist Roads

— Tourist roads

Overall score (%)

- Red: <20%
- Light Pink: 20-40%
- Orange: 40-60%
- Light Green: 60-80%
- Dark Green: >80%



Fieldwork measured % thicket cover

Remote Sensing variable

Main Camp

Colchester

Main Camp Tourist Roads

Tourist roads

Fieldwork - Percentage thicket cover

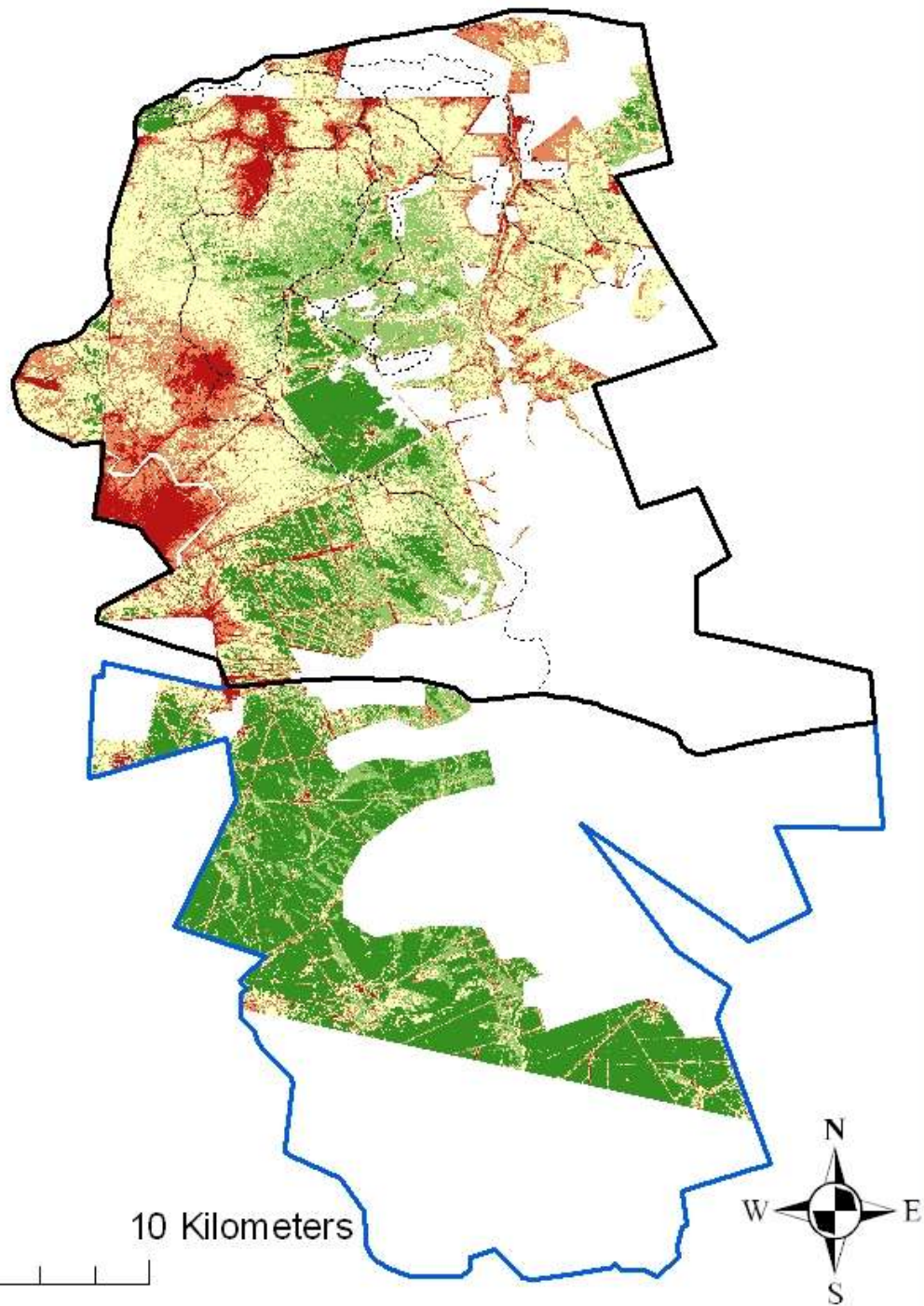
0 - 20

20 - 40

40 - 60

60 - 80

80 - 100



Assessed on a 50m scale

Main Camp Tourist Roads

----- Tourist roads

□ Main Camp

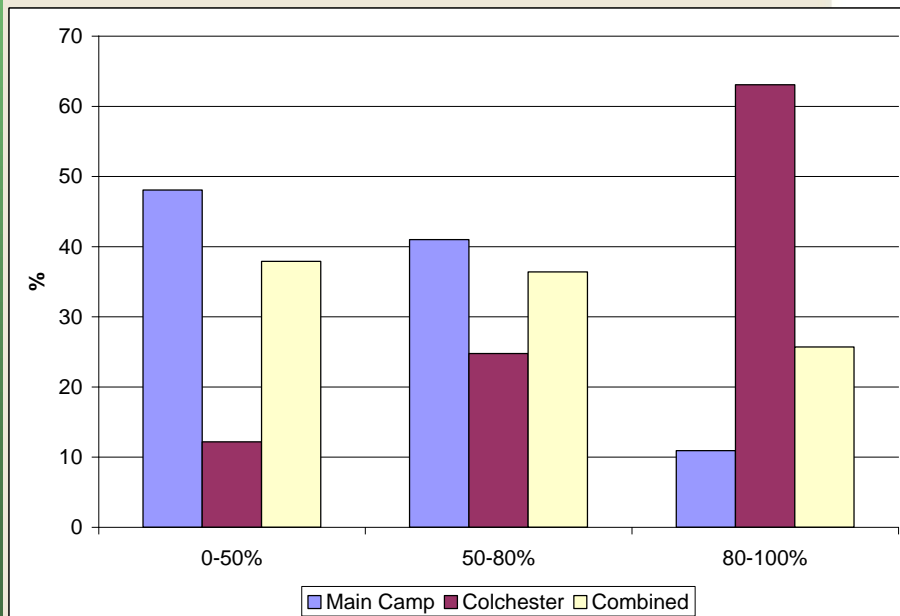
□ Colchester

Percentage thicket cover (TPC)

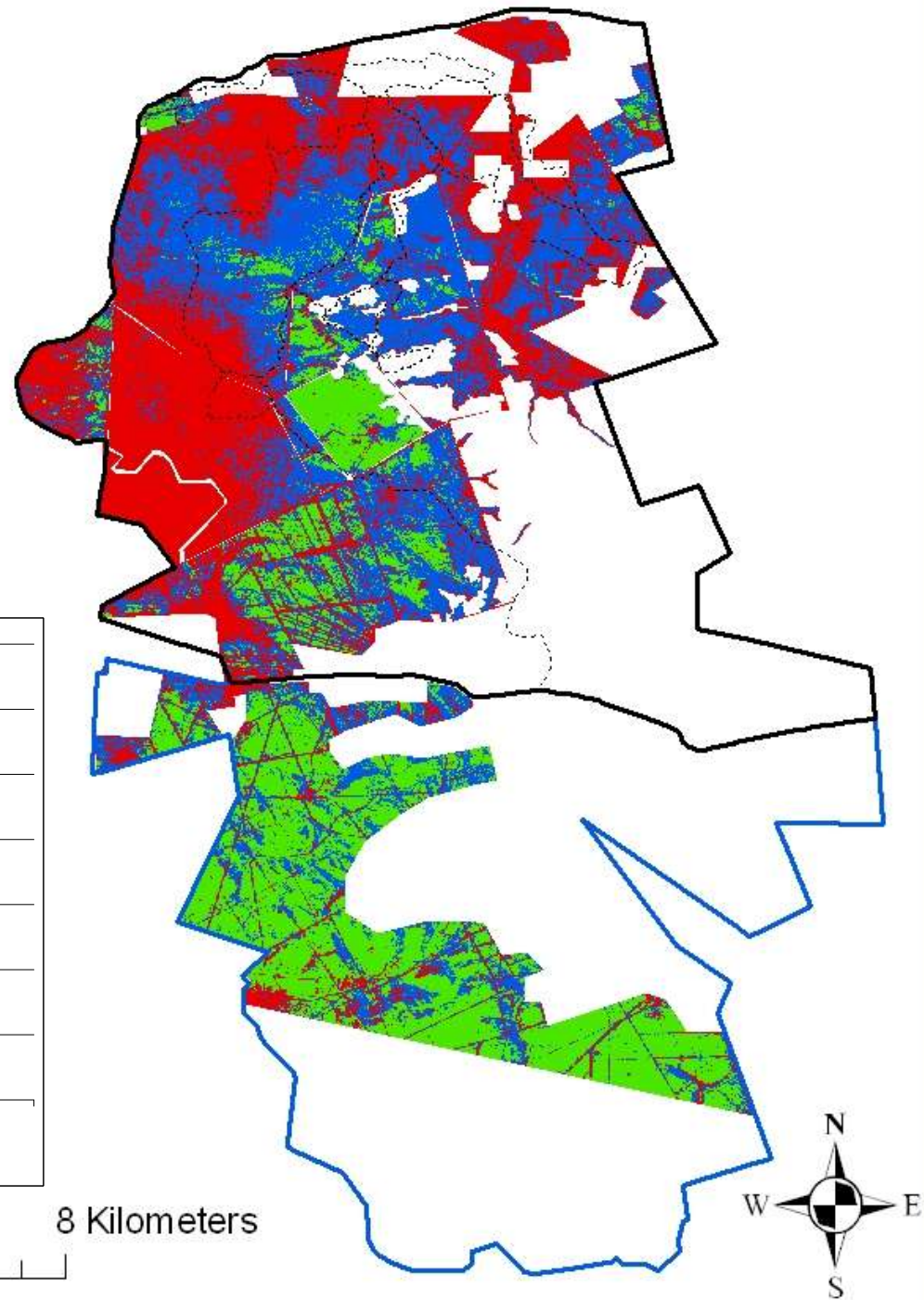
■ Lower TPC exceeded (<50%)

■ Acceptable (50-80%)

■ Upper TPC exceeded (>80%)



0 2 4 8 Kilometers







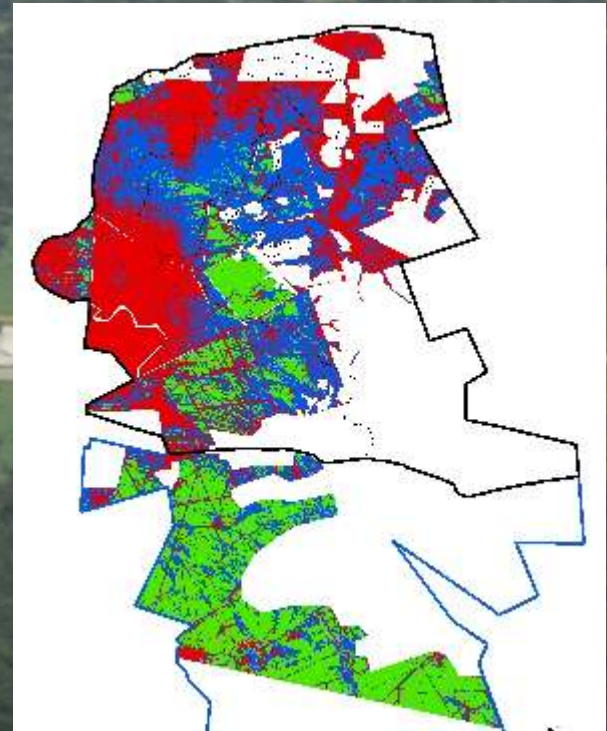






Management Implications

- Inform placing of monitoring plots
- Two methods of monitoring correlate with expert opinion
 - Fieldwork (detailed small-scale)
 - Satellite Remote Sensing (landscape scale)
- Defendable participatory derived “end-point” for monitoring



Summary

- Is thicket canopy cover a sensible variable to monitor, and does it act as proxy for some other thicket characteristics? Yes
- Is it logistically feasible to monitor thicket canopy cover? Yes, one of the easier variables to measure in the field (can be done by non experts) and can be monitored over larger scales using remote sensing imagery (under specific conditions)
- What canopy cover is desirable in AENP? 50-80% cover
- Do different stakeholders agree on the desired state of thicket canopy cover? Surprisingly yes!
- When should SANParks get concerned in AENP? A Threshold of Potential Concern (TPC) will be reached if canopy cover in an unacceptable proportion (tbd) of the park falls outside the 50-80% range

Thank you!

Acknowledgements

All the thicket experts participating
SANParks and NMMU
Thando Mendela (formerly SANParks)
AENP Management, especially John Adendorff

