Census of the Vegetation Present At Wild at Tuli, Central Tuli Block, Botswana

INTRODUCTION

The central Tuli Block is a relatively understudied and isolated area in terms of scientific research. Its landscape and climate closely resembles that to be found on the South side of the Limpopo River, which it abuts, but has experienced very little of the scientific research that has been conducted on the South African side of the border. For this reason we felt it was necessary to perform a census of the vegetation in the area simply to get a better understanding of the diversity of plants and what this would mean for the mammal and bird species which are and could be found in the area. Plants are the base unit for most ecosystems on land and as such it is essential to know which plant species are in an area which is being conserved so you can better understand the reasons for animal distributions, populations and fluctuations as well as knowing whether or not prospective reintroductions of previously extinct species would be successful in the area or areas similar to it.

METHODS

Area: The census was conducted on the game farm Mothomololo, where Wild at Tuli Safaris is situated, the area will hereafter by referred to as Wild at Tuli. Wild at Tuli is a 5000 hectare property with approximate dimensions of approximately 20km by 4 to 0.6km. The property runs along the Limpopo River in the South-East and borders one of Botswana's many veterinary fences to the North-West. The area falls within the broad label of southern African savannah biome. The landscape is unique to Botswana and is characterised by large numbers of granite outcrops, colloquially referred to as 'Kopjes'. The farm is therefore made of 3 distinct vegetation types as a result of the 3 very different habitats found there. The first of these is riverine, which is found in a thin strip, no more than 400m wide, along the banks of the Limpopo and on its islands, secondly, kopje vegetation which is found growing on the rocky outcrops. The final type is referred to as Mopane Woodland due to the overwhelming presence of Mopane (Colophospermum mopane) and is found across most of the flat land away from the river. Due to variability in access to the 3 types of vegetation, different methods were used to sample and record the vegetation that was found in these areas.

Vegetation and Substrate Survey Method:

Mopane Woodland and Riverine: Vegetation was sampled in these two habitats in the same manner. Transects of varying length were conducted at random across the property and then recorded on Google Earth to ensure all areas of the property were sampled. These transects were then walked by 2 samplers. The first carried a pole 1m in length at waist height with half the pole protruding from each side of the sampler's hands. They then walked in as straight a line as could be managed depending on the terrain in a direction determined by the area which needed to be sampled. Every woody plant that was touched by the pole was recorded by the second sampler. Effort was made to ensure game paths and other natural features were not followed which may have confounded results and also to keep the pole at the same level throughout each sampling session. Trees which passed below the pole were not recorded as they were deemed too young to be properly established. A transect was

complete when 100 samples had been collected. Transect lengths varied from 400m to 2.5km depending on the density of vegetation in the area.

The substrate was recorded in the Mopane woodland and riverine by placing a pole on the ground approximately every 2m and recording what type of substrate was hit. The transects followed the same paths as the vegetation census. The study recognised 7 different substrate types: rock, soil, organic matter, non-woody vegetation, termite mounds, river sand and artificial surfaces. If immature woody vegetation was struck then this was also recorded as a separate type. Organic matter was defined as anything which was no-longer living but was derived from biotic origins and had not completely decomposed into soil, i.e. leaf litter, animal dung and bones. Non-woody vegetation was defined as all grasses, sedges and low growing soft stemmed flowering plants. Two samplers were used each time to record the samples and 200 samples were collected for each transect.

Kopje: Due to problems accessing large area of the kopjes for effective sampling no repeatable surveys were conducted in the same manner as for Mopane Woodland and Riverine. Instead basic collation of tree species was recorded with observed relative abundances. No substrate survey was conducted as it was evident that the most common substrate type was rock and all soil or organic matter in which plants were growing was largely isolated in cracks in the rocks surface.

Small Plants: Small plants were sampled by walking in the bush in various habitat types, collecting and identifying them for the general purpose of better understanding the diversity of plants in the area. Again, no formal survey of small flowering plants was conducted as this time.

NB: Several Grewia species, commonly called Raisin Bush, were observed but due to identification difficulties during winter and their tendency to interbreed they are treated here as a single entity.

RESULTS

General Results: Over the course of the study 6300 samples of woody vegetation and 12400 substrate samples were collected across the 2 vegetation types that were sampled in the same manner. 48 species of tree were recorded across the property (appendix 1). 35 species of tree were recorded during the survey of Mopane woodland and riverine of which only 6 species accounted for more than 1% and those 6 species accounted for a total of 98.27% of all species recorded on the property. By far the most abundant was Mopane with 60.60% of the sample (Figures 1). Figure 2 shows the proportions of the remaining 1.3% of species which were recorded fewer than 10 times. In the substrate survey soil was the most abundant substrate type accounting for 58.22%, followed by organic matter at 17.84% and non-woody vegetation at 14.10% (Figure 3).

Figure 1. Major (>10 recorded) Vegetation Species at Wild at Tuli between Oct 2012 and Der 2013

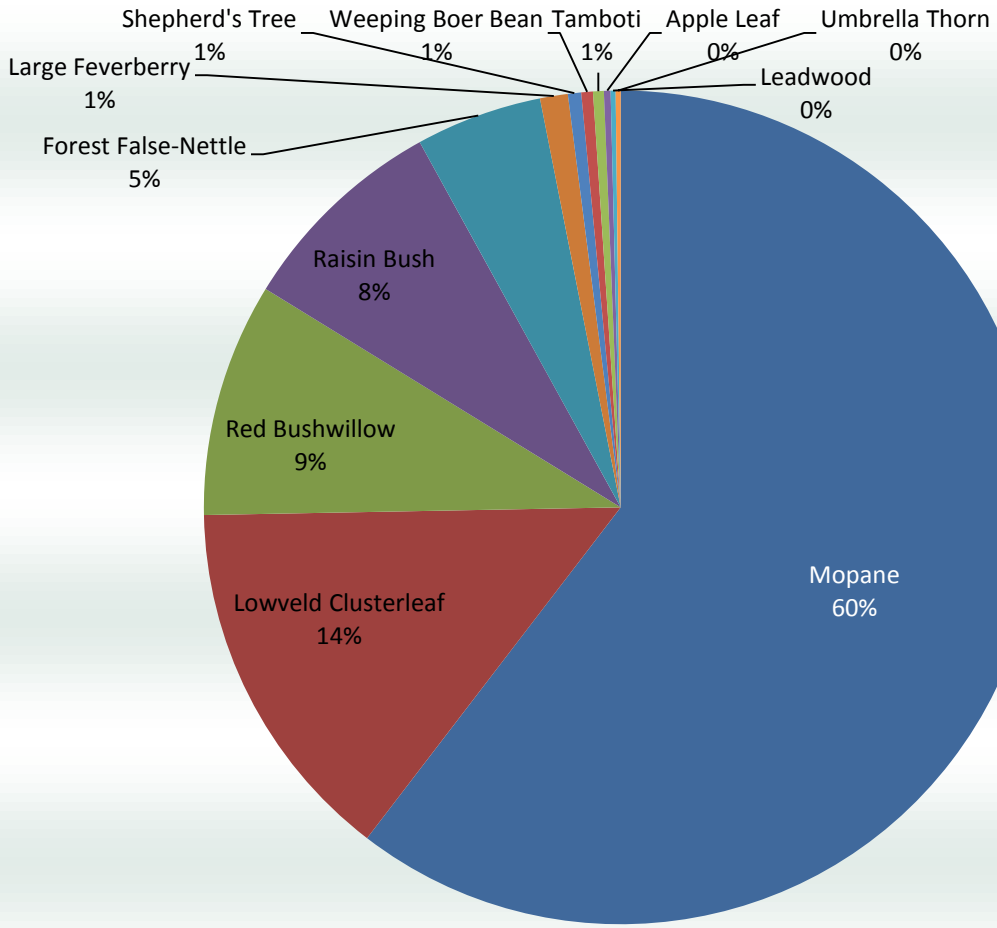


Figure 2. Minor (<10 recorded) Vegetation Species at Wild at Tuli between Oct 2012 and Dec 2013

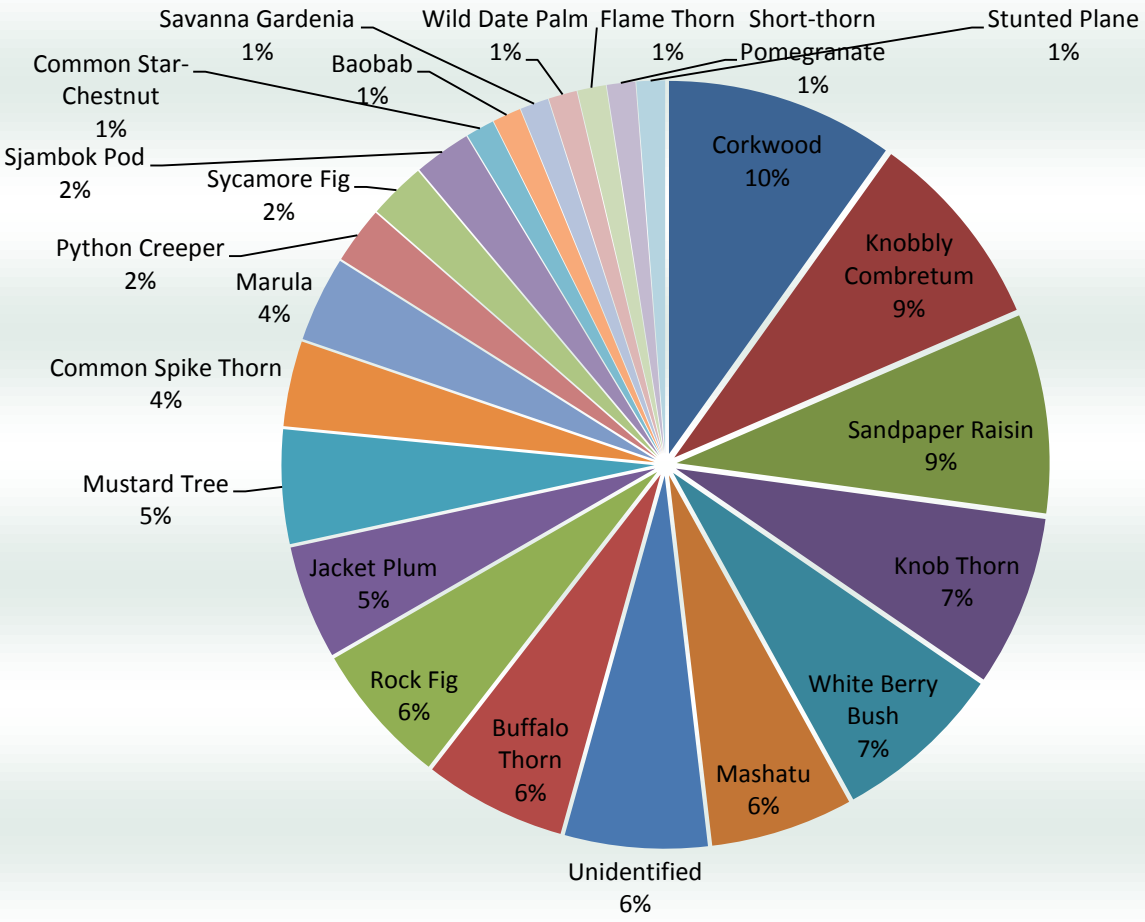
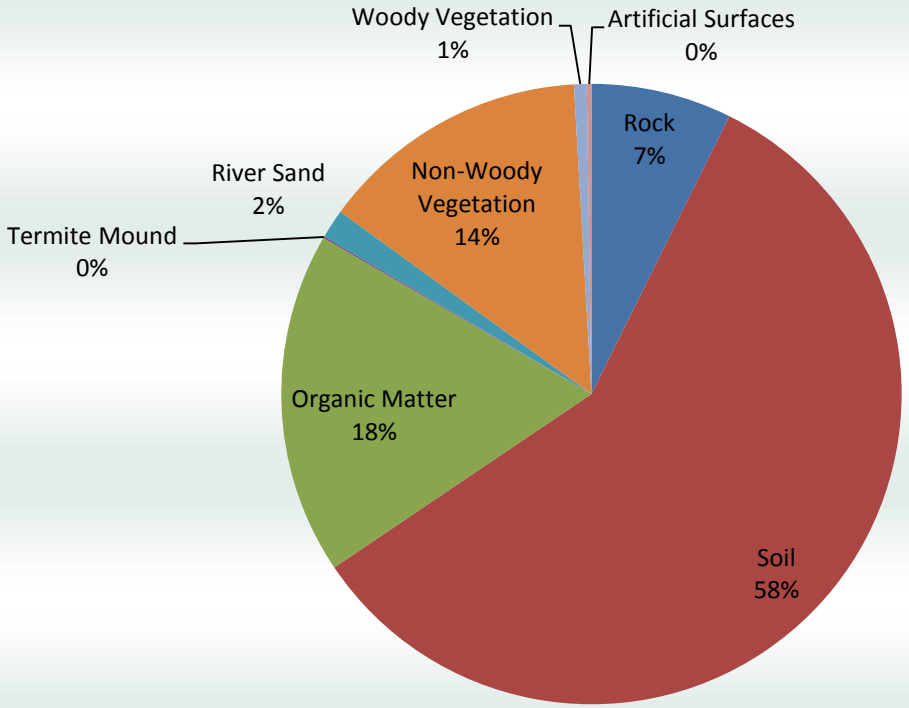


Figure 3. Overall Substrate Types at Wild at Tuli between Oct 2012 and Dec 2013



Riverine: Riverine areas were dominated by a low level layer of Forest False-Nettle (Acalypha glabrata) interspersed with larger trees. Forest False-Nettle accounted for 50.83% of 600 samples in the riverine. A total of 25 species were recorded in the riverine vegetation areas, with Large Feverberry (Croton megalabotrys) (11.12%) and Raisin Bush (Grewia spp.) (11%) being the second and third most abundant species (Figures 4). Figure 5 shows the composition of the other 4% of species recorded on less than 5 occasions. Riverine substrate surveys showed soil (64.2%) and organic matter (28.4%) to be most abundant totalling 92.6% collectively (Figure 6).

Figure 4. Major (>5 records) Riverine Species recorded at Wild at Tuli between Oct 2012 and Sep 2013

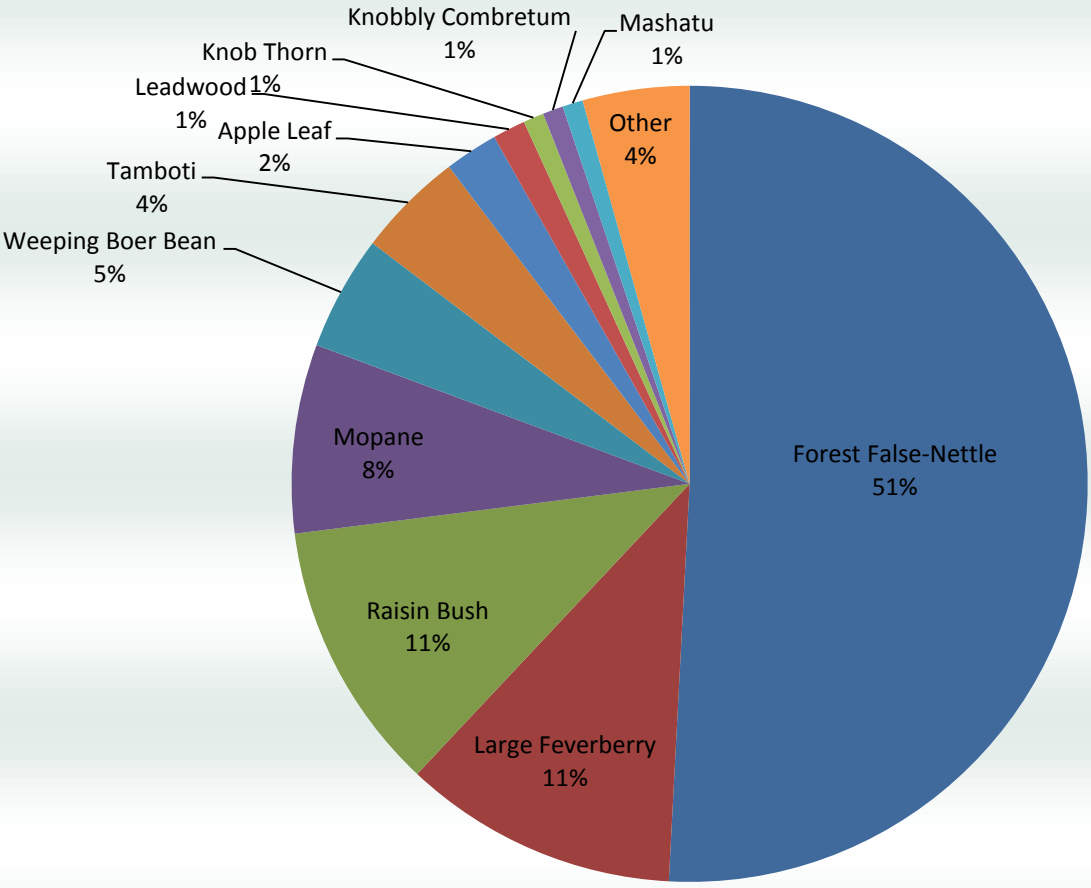


Figure 5. Minor (<5 records) Riverine Species recorded at Wild at Tuli between Oct 2012 and Sep 2013

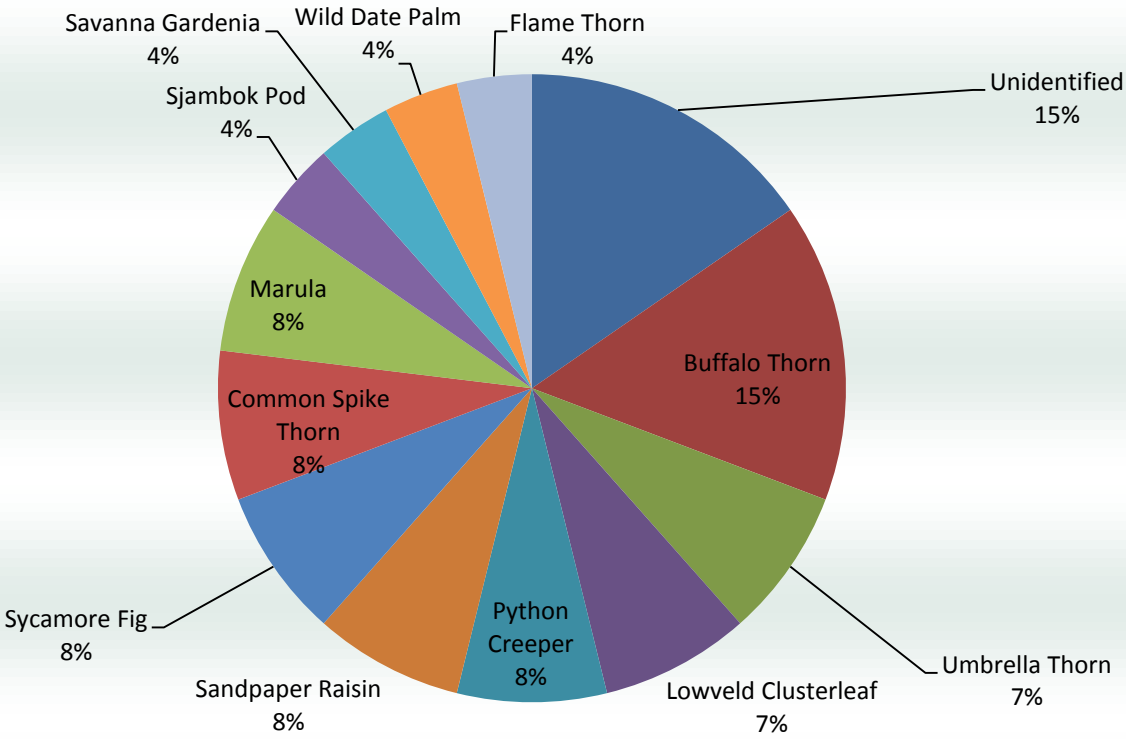
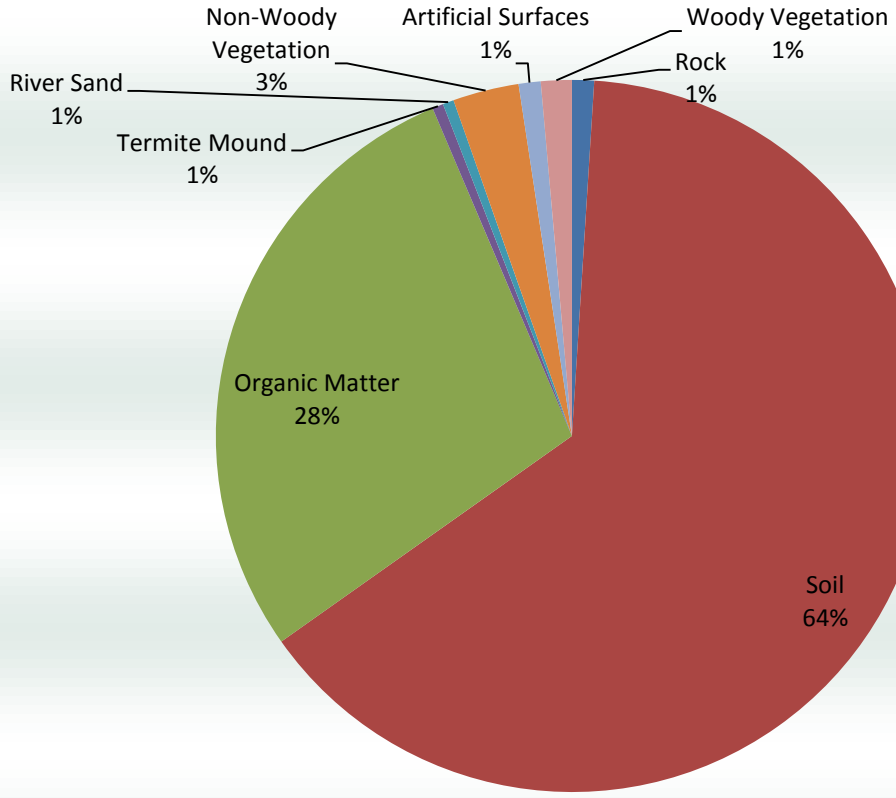


Figure 6. Riverine Substrate Types at Wild at Tuli between Oct 2012 and Sep 2013



Mopane Woodland: The Mopane woodland showed a much lower diversity than the riverine. At total of 5700 vegetation samples were taken. Only 6 species were recorded on more than 10 occasions out of a total of 24 recorded species. Those species were Mopane (65.11%), Lowveld Cluster-leaf (*Terminalia prunoides*) (15.56%), Red Bushwillow (*Combretum apiculatum*) (9.89%), *Grewia* spp. (7.81%), Shepherd's Tree (*Boscia* spp.) (0.56%) and Umbrella Thorn (*Acacia tortilis*) (0.16%) (Figure 7). Figure 8 indicates the composition of the remaining 18 species and 0.89%. The substrate in the Mopane woodland showed soil again to be most abundant (57.69%) but organic matter, non-woody vegetation and rock were much more prominent accounting for 16.91%, 15.08% and 7.89% respectively (Figure 9).

Figure 7. Mopane Woodland Major (>10 records) Species recorded at Wild at Tuli between Oct 2012 and Sep 2013

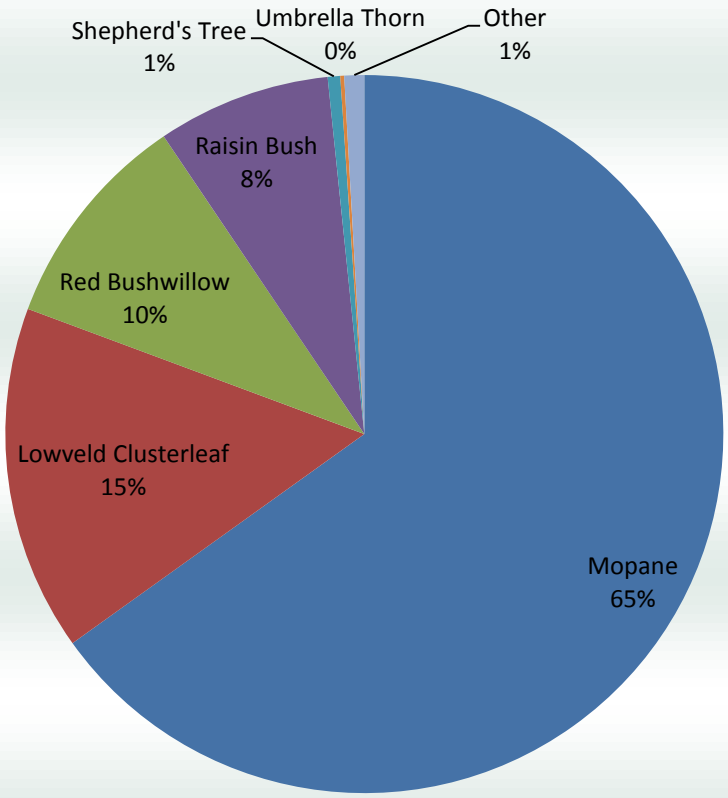


Figure 8. Mopane Woodland Minor (<10 records) Species recorded at Wild at Tuli between Oct 2012 and Sep 2013

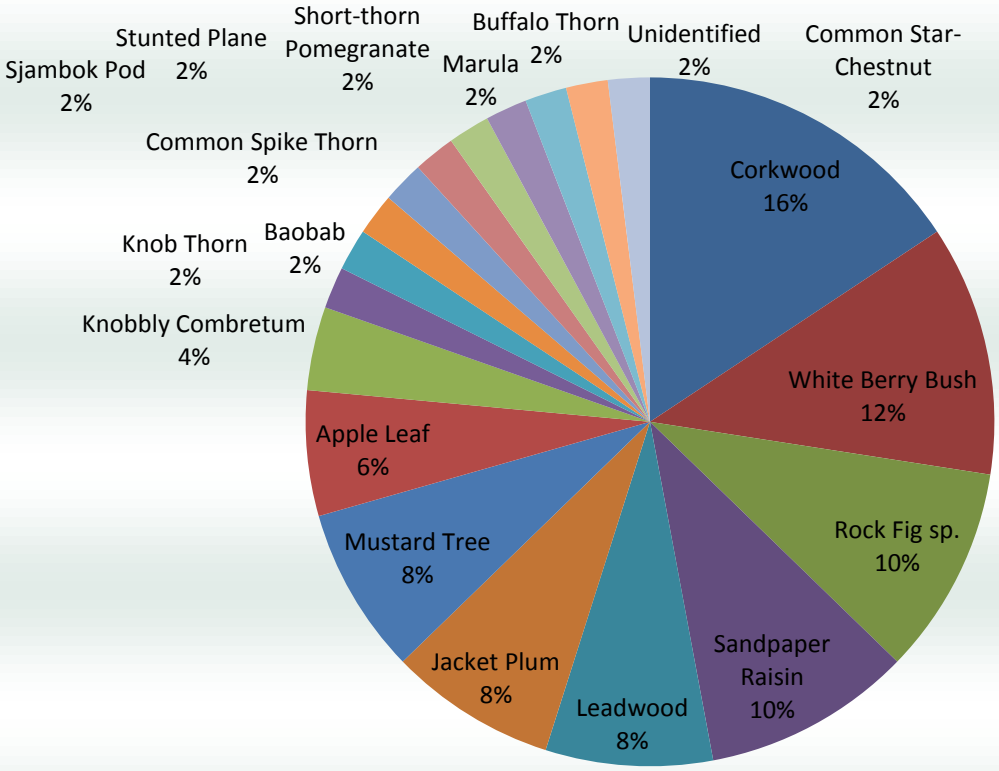
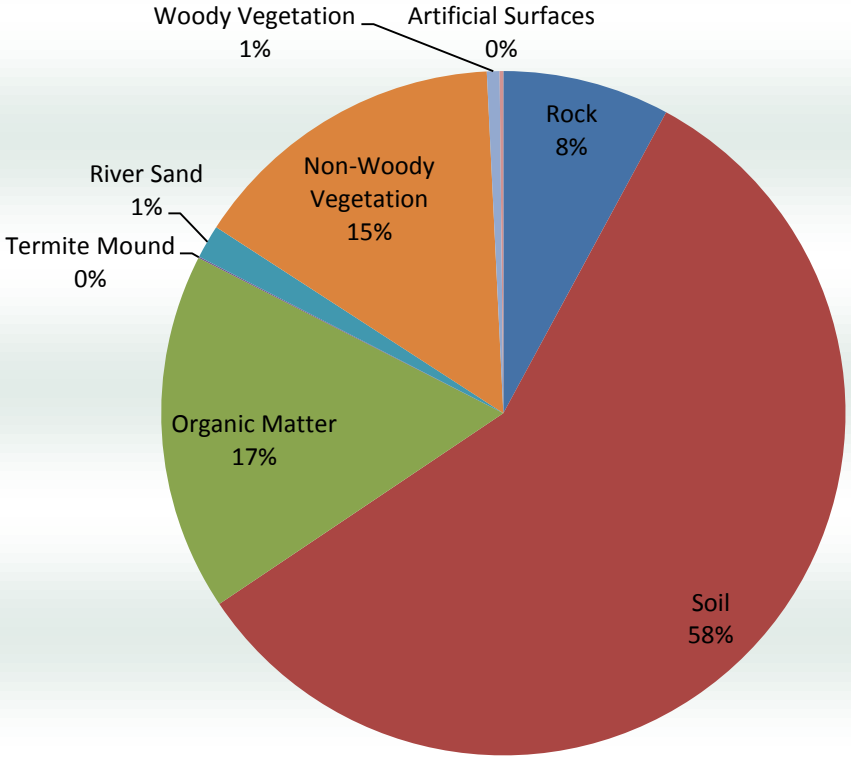


Figure 9. Mopane Woodland Substrate Survey



Kopje: No substrate survey was conducted for the kopjes, however it can be assumed that >80% of the viewable surface substrate on the kopjes was bare rock; the remaining 20% would likely consist solely of organic matter, soil and non-woody vegetation. 21 species of tree were recorded on the kopjes. The diversity of species differed between the kopjes in the northern part of the property and those in the south. White Seringa (*Kirkia acuminate*) and Stunted Plane (*Ochna inermis*) were most visibly more abundant in the south whereas Carrot Trees (*Steganotaenia araliacea*) were virtually non-existent in the south but were regularly observed in the north. *Grewia* spp. was common on kopjes throughout the property. Most kopjes also had small clusters of both Marula (*Sclerocarya birrea*) and *Euphorbia* spp.

Small Plants: No abundance or distribution data was collected with regards to small flowering plants. However, a basic inventory of species was created and a total of 125 non-tree flowering species were recorded (appendix 2).

DISCUSSION

The data shows that Mopane is overwhelmingly the most abundant tree species at Wild at Tuli. The species dominates the flat open country away from the Limpopo River. *Grewia* spp, Lowveld Terminalia and Red Bushwillow form isolated strands amongst the expanse of Mopane. The riverine areas are densely populated with trees but are very limited in terms of area. The medium height undergrowth is dominated by Forest False-Nettle which is not immediately obvious as the large trees appear more striking at first glance but are in fact relatively widely dispersed across the area. Weeping Boer Beans (*Schotia brachypetala*), Tamboti (*Spirostachys africana*) and Apple Leaf (*Philenoptera violacea*) were the most common large trees in the riverine but represented only 11% of riverine vegetation and less than 3% of the overall abundance of tree species on the property.

The reason for this diversity and distribution of species is most likely linked to the abundance of water. For example several riverine species such as Apple Leaf and Leadwood (*Combretum imberbe*) were found occasionally in the mopane woodland. They were usually located along drainage lines which had sufficient year round ground water. The area as a whole is very dry, experiencing less than 300mm of rain annually. This means that only hardy species such as Mopane can survive away from permanent water or ground water sources. Mopane also produces chemicals known as secondary metabolites which it secretes into the soil from its roots. These chemicals inhibit the growth of other species allowing Mopane to take over large areas. The species found on kopjes are even hardier than those found on the flat ground as they are much further from water sources and so often are quite soft woods which are capable of holding large amounts of water such as Corkwoods (*Commiphora* spp.) or Baobab (*Adansonia digitata*) or succulents like *Euphorbia*'s.

The composition of tree species which was discovered is important for understanding why certain species are present and others are not. For example the very low population of Giraffe in the area is most likely linked to the almost total lack of suitable browse trees for them in the form of *Acacia* species. As the land is dominated by Mopane, only species which are able to feed on Mopane with its high tannin levels are able to survive. This relates to all levels of the animal kingdom from invertebrates to mammals and birds. Only certain species of insect can tolerate Mopanes tannin levels and therefore the species which feed on insects are limited to those which feed on those unique species which can survive feeding almost entirely on Mopane.

The substrate survey tells us that the ground in the Mopane woodland is largely soil which in itself is good as it provides ample locations for new plants to sprout. However when compared to the riverine substrate survey it becomes clear that there is a dramatic shortage of organic matter at the surface and it contains more nutrients than silica or clay based soils which are present across the property. More organic matter on the surface of the land is important as it acts as an immediate energy and nutrient source for new growth as well as a protective layer for new shoots from wind, excessive sun exposure, water and animals. Without this layer seeds from plants are easily blown or washed away

or eaten by birds or other animals before they have a chance to root. This is evidenced in the kopjes where plants are only able to grow in the protected crevices of the rocks and very few species are able to germinate and send out shoots on the bare rock surfaces.

One surprising discovery of this study has been the high diversity of smaller flowering plants. Despite the landscape appearing to consist of only 3 major components, within these areas there is a large variation of micro-climates allowing this large diversity to have developed and survived. Much further study is required in this area as no demographic data was collected and several recorded species are protected in South Africa due to their scarcity there, e.g. Kwebe Hills Stapelia (*Stapelia kwebensis*). This study also highlighted the number of alien species which exist in the area, a total of 10 alien species were recorded and efforts must be made to study the impacts they are having on the environment and if necessary removal of these species should take place.

APPENDIX I

Table 1. List of Tree Species observed at Mothomololo Farm, Botswana between October 2012 and December 2013 .

ENGLISH NAME	SCIENTIFIC NAME	MOPANE(M)/RIVERINE(R)/KOPJE(K)
Family ANACARDIACEAE		
Marula	*Sclerocarya birrea*	M/R/K
Family APIACEAE		
Carrot Tree	*Steganotaenia araliacea*	K
Family ARECACEAE		
Wild Date Palm	*Phoenix reclinata*	R
Lala Palm	*Hyphaene coricea*	R
Family ASTERACEAE		
Wild Camphor Bush	*Tarchonanthus camphoratus*	M/K
Family BIGNONIACEAE		
Trumpet Thorn	*Catophractes alexandri*	M
Bell Bean Tree	*Markhamia zanzibarica*	K
Short-Thorn Pomegranate	*Rhigozum brevispinosum*	M
Family BOMBACACEAE		
Baobab	*Adansonia digitata*	M/R/K
Family BURSERACEAE		
Tall Common Corkwood	*Commiphora glandulosa*	M/K
Zebra-bark Corkwood	*Commiphora merkei*	M
Common Corkwood	*Commiphora pyracathoides*	M
Family BORAGINACEA		
Sandpaper Bush	*Ehretia amoena*	K
Family CACTACEAE		
Sweet Prickly Pear*	*Optunia ficus-indica*	R
Family CAESALPINIACEAE		
Sjambok Pod	*Cassia abbreviata*	M/R
Mopane	*Colophospermum mopane*	M/R/K
Weeping Boer-bean	*Schotia brachypetala*	R
Family CAPPARACEAE		
Shepherd's Tree	*Boscia albitrunca*	M/K
Stink Shepherd's Tree	*Boscia foetida* subsp. *rehmanniana*	M/K
Family CELASTRACEAE		
Transvaal Saffron	*Cassine transvaalensis*	M
Red Spike-thorn	*Gymnosporia senegalensis*	M/R
Family COMBRETACEAE		
Lowveld Clusterleaf	*Terminalia prunoides*	M/R/K
Red Bushwillow	*Combretum apiculatum*	M/K

Russet Bushwillow	***Combretum hereonse***	**M/K**
Leadwood	***Combretum imberbe***	**M/R**
Knobbly Creeper	***Combretum mossambicense***	**R**
Family EUPHORBIACEAE		
Forest False Nettle	***Acalypha glabrata***	**R**
Transvaal Candelabra Tree	***Euphorbia cooperi***	**K**
Rubber Euphorbia	***Euphorbia tirucalli***	**R**
Common Tree Euphorbia	***Euphorbia ingens***	**K**
White-berry Bush	***Flueggea virosa***	**M**
Tamboti	***Spirostachys africana***	**R**
Large Feverberry	***Croton megalobotrys***	**R**
Family FABACEAE		
Nyala Tree	***Xanthoceris zambesiaca***	**R**
Apple Leaf	***Philenoptera violacea***	**R**
Family MENISPERMACEAE		
Python Climber	***Cocculus hirsutus***	**R**
Family MIMOSACEAE		
Knob Thorn	***Acacia nigrescens***	**M/R**
Umbrella Thorn	***Acacia tortilis***	**M**
Sickle Bush	***Dichrostachys cinerea***	**M**
Ana Tree	***Faidherbia***	**R**
Family MORACEAE		
Large-leaved Rock Fig	***Ficus abutilifolia***	**K**
Common Cluster Fig	***Ficus sycamores***	**R**
Small-leaved Rock Fig	***Ficus tettensis***	**K**
Family OCHNACEAE		
Stunted Plane	***Ochna inermis***	**K**
Family PEDALIACEA		
Transvaal Sesame-bush	***Sesamothamnus lugardii***	**M**
Family RHAMNACEAE		
Brown Ivory	***Berchemia discolor***	**R**
Buffalo Thorn	***Ziziphus mucronata***	**R**
Family RUBIACEAE		
Savanna Gardenia	***Gardenia volkensii***	**R**
Green Tree	***Psydrax livida***	**M/K**
Family SALVADORACEAE		
Mustard Tree	***Salvadora persica***	**M/K**
Family SAPINDACEAE		
Jacket-Plum	***Pappea capensis***	**K**
Family SIMAROUBACEAE		
White Seringa	***Kirkia acuminata***	**K**
Family STERCULIACEAE		
Common Star-Chestnut	***Sterculia rogersii***	**M/K**
Family TILIACEAE		
White Raisin	***Grewia bicolor***	**M/R/K**
Velvet Raisin	***Grewia flava***	**M/R/K**
Sandpaper Raisin	***Grewia flavescens***	**M/R/K**
Mallow Raisin	***Grewia villosa***	**K**
PRESENCE TO BE CONFIRMED		
Flame Thorn	***Acacia ataxacantha***	**R**

APPENDIX II

Table 2. List of Flower Species observed at Mothomololo Farm, Botswana between October 2012 and December 2013, (*) indicate alien species

ENGLISH/AFRIKAANS NAME	SCIENTIFIC NAME
Family ACANTHACEAE (Acanthus Family)	
1. Limpopo Barleria	*Barleria transvaalensis*
2. Eyelash Flower	*Blepharis subvolubilis* subsp. *subvolubilis*
3. Yellow Justicia	*Justicia flava*
4. No common name	*Justicia protracta* subsp. *protracta*
5. Veld Justicia	*Justicia protracta* subsp. *rhodesiana*
6. Blue Cloak	*Megalochlamys revolute* subsp. *cognata*
7. Seningbossie	*Neuracanthus africanus*
8. Augustusblommetjie	*Petalidium aromaticum* var. *canescens*
9. Veld Violet	*Ruellia cordata*
10. White Veld Violet	*Ruellia patula*
Family AMARANTHACEAE (Amaranth Family)	
11. Bachelor's Button*	*Gomphrena celoioides*
12. Katstart	*Hermbstaedia fleckii*
13. Cat's Tail	*Hermbstaedia odorata* var. *albi-rosea*
14. Silky Burweed	*Kyphocarpa angustifolia*
15. Silwerbossie	*Leucosphaera bainesii*
Family AMARYLLIDACEAE (Amaryllis Family)	
16. Tiny Crinum	*Crinum walteri*
17. Vlei Lily	*Nerine laticoma*
18. Aandblommetjie	*Pancratium tenuifolium*
Family APOCYNACEAE (Oleander Family)	
19. Giant Milkweed*	*Calotropis procera*
20. Cotton Milkweed	*Gomphocarpus fruticosus* subsp. *decipiens*
21. Ghaap	*Hoodia currorii* subsp. *lugardii*
22. Kwebe Hills Stapelia	*Stapelia kwebensis*
Family ASPARAGACEAE (Asparagus Family)	
23. Bushveld Asparagus	*Asparagus suaveolens*
Family ASTERACEAE (Daisy Family)	
24. Wing-stemmed Daisy	*Calostephore divaricate*
25. Hairy Dicoma	*Dicoma tomentosa*
26. Vlei Pompom	*Doellia cafra*
27. Smelter's Bush*	*Flaveria bidentis*
28. Rosulate Geigeria	*Geigeria acaulis*
29. Knoppiesvermeerbos	*Geigeria burkei burkei*
30. Wild Everlasting	*Helichrysum argyrosphaerum*
31. Dwarf Sage	*Litogyne gariepina*
32. Stinkbush/Wild Sage	*Pechuel-Loeschea leubnitziae*
33. Sticky Psiadia	*Psiadia punctulata*
34. Wild Sunflower*	*Verbesina encelioides* var. *encelioides*
35. Narrow-leaved Vernonia	*Vernonia fastigiata*
Family BORAGINACEAE (Forget-me-not Family)	
36. Kalahari String of Stars	*Heliotropium ciliatum*
37. Narrow-leaved Heliotropium	*Heliotropium lineare*
38. Riverbank Heliotropium	*Heliotropium ovalifolium*
Family BYTTNERIACEAE (Chocolate Family)	
39. Groot Gembossie	*Hermannia boraginiflora*
40. Fairy Lights	*Hermannia modesta*
41. Meidebossie	*Waltheria indica*
Family CAPPARACEAE (Caper Family)	
42. Yellow Mouse-whiskers	*Cleome angustifolia* subsp. *petersiana*
43. Single-leaved Cleome	*Cleome monophylla*

Family COMMELINACEAE (Commelina Family)		
44.	**Benghal Blue Wandering Jew**	***Commelina benghalensis***
Family CONVOLVULACEAE (Morning Glory Family)		
45.	**Blue Haze**	***Evolvulus alsinoides***
46.	**Leaf-flowered Ipomoea**	***Ipomoea crassipes***
47.	**Prickly Stem Merremia**	***Merremia kentrocaulos***
48.	**Small White Seddera**	***Seddera capensis***
Family CUCURBITACEAE (Pumpkin, Cucumber or Gourd Family)		
49.	**Wild Cucumber**	***Cucumis anguira* var. *longaculeatus***
Family CYPERACEAE (Sedge Family)		
50.	**Russet Rock Sedge**	***Cyperus rupestris***
51.	**White Button Sedge**	***Kyllinga alba***
52.	**Golden Sedge**	***Pycreus pelophilus***
53.	**Spring Onion Sedge**	***Schoenoplectus senegalensis***
Family ERIOSPERMACEAE (Eriospermum Family)		
54.	**Small Fluffy Seed**	***Eriospermum porphyrovalve***
Family EUPHORBIACEAE (Rubber Family)		
55.	**Indian Girl***	***Acalypha indica* var. *indica***
56.	**Dolomite Euphorbia**	***Euphorbia griseola* subsp. *griseola***
57.	**Limpopo Euphorbia**	***Euphorbia limpopoana***
58.	**Klein Bont Euphorbia**	***Euphorbia neopolycnemoides***
59.	**Rocky Jatropha**	***Jatropha spicata***
Family FABACEAE (Pea Family)		
60.	**Hairy Pod Cassia**	***Chamaecrista absus***
61.	**Narrow-Leaved Rattle Pod**	***Crotalaria heidmannii***
62.	**Mealie Crotalaria**	***Crotalaria sphaerocarpa* subsp. *sphaerocarpa***
63.	**Hairy Indigo**	***Indigofera heterotricha***
64.	**Creeping Indigo**	***Indigofera holubii***
65.	***No common name***	***Indigofera schimperi* var. *schimperi***
66.	**Grassy False Indigo**	***Microcharis galpinii***
67.	**Bushveld Pig's Tail**	***Ptycholobium contortum***
68.	**Spiny Sesbania***	***Sesbania bispinosa* var. *bispinosa***
69.	***No common name***	***Tephrosia kraussiana***
70.	**Silver Tephrosia**	***Tephrosia purpurea***
71.	***No common name***	***Tephrosia semiglabra***
Family GERANIACEAE (Geranium Family)		
72.	**Dysentry Herb**	***Monsonia glauca***
73.	**Pienk angelbossie**	***Monsonia senegalensis***
Family GISEKIACEAE (Gisekia Family)		
74.	**Rooi-rankopslag**	***Gisekia africana* var. *africana***
Family HYACINTHACEAE (Hyacinth Family)		
75.	**Waxy Albuca**	***Albuca glauca***
76.	**Poison Onion**	***Dipcadi glaucum***
77.	**Groenlelie**	***Dipcadi papillatum***
78.	**Mopane Veld Dipcadi**	***Dipcadi vaginatum***
79.	***No common name***	***Ledebouria luteola***
80.	***No common name***	***Ledebouria marginata***
81.	***No common name***	***Ledebouria* spp.**
82.	**Bushveld Chincherinchee**	***Ornithogalum seineri***
Family LAMIACEAE (Sage Family)		
83.	**Tinderwood**	***Clerodendrum ternatum***
84.	**Mopane Veld Keepsakes**	***Endostemon tenuiflorus***
85.	**Small Purple Keepsakes**	***Endostemon tereticaulis***
86.	**Annual Wild Dagga**	***Leonotis nepetifolia* var. *nepetifolia***
87.	**Dainty Tumbleweed**	***Leucas glabrata* var. *glabrata***
88.	**Bushveld Tumbleweed**	***Leucas sexdentata***
89.	**Wild Basil**	***Ocimum americanum* var. *americanum***
Family LIMEACEAE (Limeum Family)		

90.	**Lintblommetjie**	***Limeum fenestatum***
91.	**Klossarbossie**	***Limeum sulcatum* var. *sulcatum***
	Family LYTHRACEAE (Pride of India Family)	
92.	**Sandsloot-nesaea**	***Nesaea schinzii***
	Family MALVACEAE (Cotton Family)	
93.	**Wild Abutilon**	***Abutilon pycnodon***
94.	***No common name***	***Abutilon rehmannii***
95.	**Bushveld False Hibiscus**	***Cienfuegosia digitata***
96.	**Wild Hibiscus**	***Hibiscus engleri***
97.	**Tiny White Wild Hibiscus**	***Hibiscus micranthus* var. *micranthus***
98.	**Pale Yellow Hibiscus**	***Hibiscus palmatus***
99.	***No common name***	***Hibiscus sidiformis***
	Family MOLLUGINACEAE (Mollugo family)	
100.	**Sierkooltjie**	***Corblchonia decumibens***
101.	**White Star Mollugo***	***Mollugo nudicaulis***
	Family NYCTAGINACEAE (Four-o'clock Family)	
102.	***No common name***	***Boerhana coccinea* var. *coccinea***
	Family OLEACEAE (Olive and Jasmine Family)	
103.	**Wild Jasmine**	***Jasminum sp.***
	Family PEDALIACEAE (Sesame Family)	
104.	**Wild Foxglove**	***Ceratotheca triloba***
105.	**Sac Flower**	***Holubia saccata***
106.	**Wing-seeded Sesame**	***Sesame alatum***
	Family PORTULACACEAE (Purslane Family)	
107.	***No common name***	***Portulaca* cf. *collina***
	Family SAPINDACEAE (Litchi or Soapberry Family)	
108.	**Bushveld Ballon Vine**	***Cardiospermum corindum***
	Family SCROPHULARIACEAE (Snapdragon Family)	
109.	**Carpet Flower**	***Aptosimum lineare***
110.	**Blue Carpet**	***Craterostigma plantagineum***
111.	**Vlei Snapdragon**	***Diclis petiolaris***
	Family SOLANACEAE (Potato Family)	
112.	**Large Thorn-Apple***	***Datura ferox***
113.	**Hairy Thorn-Apple***	***Datura inoxia***
114.	**Bitterappel**	***Solanum delegoense***
	Family SPARRMANNIACEAE (Jute Family)	
115.	**Geel Varingblaartjie**	***Corcherus asplendifolius***
	Family TURNERACEAE (Wormskioldia Family)	
116.	**Haarbossie**	***Piriqueta capensis***
117.	**Yellow Lion's Eye**	***Triciliceras glanduliferum***
	Family VAHLIACEAE (Vahlia Family)	
118.	**Toiingbossie**	***Vahlia capensis* subsp. *vulgaris* var. *vulgaris***
	Family VELLOZICEAE (Vellozia Family)	
119.	**Reënmeterjies**	***Xerophyta humilis***
120.	**Black-stick Lily/Baboons Tail**	***Xerophyta retinervis***
	Family VERBENACEAE (Verbena Family)	
121.	**Bird's Brandy**	***Lantana rugosa***
	Family VIOLACEAE (Violet Family)	
122.	**Pink Lady's Slipper**	***Hybanthus enneaspermus* var. *serratus***
	Family VITACEAE (Vine or Grape Family)	
123.	**Bobbejaandruif/we**	***Cyphostemma sandsonii***
	Family ZYGOPHYLLACEAE (Caltrop Family)	
124.	**Devil's Thorn**	***Tribulus terrestris***