

**Plant Diversity Comparison between natural Bamboo  
(*Sinarundinaria alpina*) and Exotic Tree Plantations (*Cupressus  
lusitanica*) in South Kinangop Area of the Aberdare Range**

**Report for The Bamboo Trading Company  
[www.thebambootradingcompany.com](http://www.thebambootradingcompany.com)**

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*Impatiens fischeri*

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## 1. Background

The Bamboo Trading Company (BTC) requested a botanical study of the Southern Kinangop Forest Reserve as part of their feasibility study and Environmental and Social Impact Assessment (ESIA) for a proposed energy project. This study is restricted to a rapid comparison of the diversity of associated plant species found within the indigenous bamboo zone versus that found within the Kenya Forest Service (KFS) plantations.



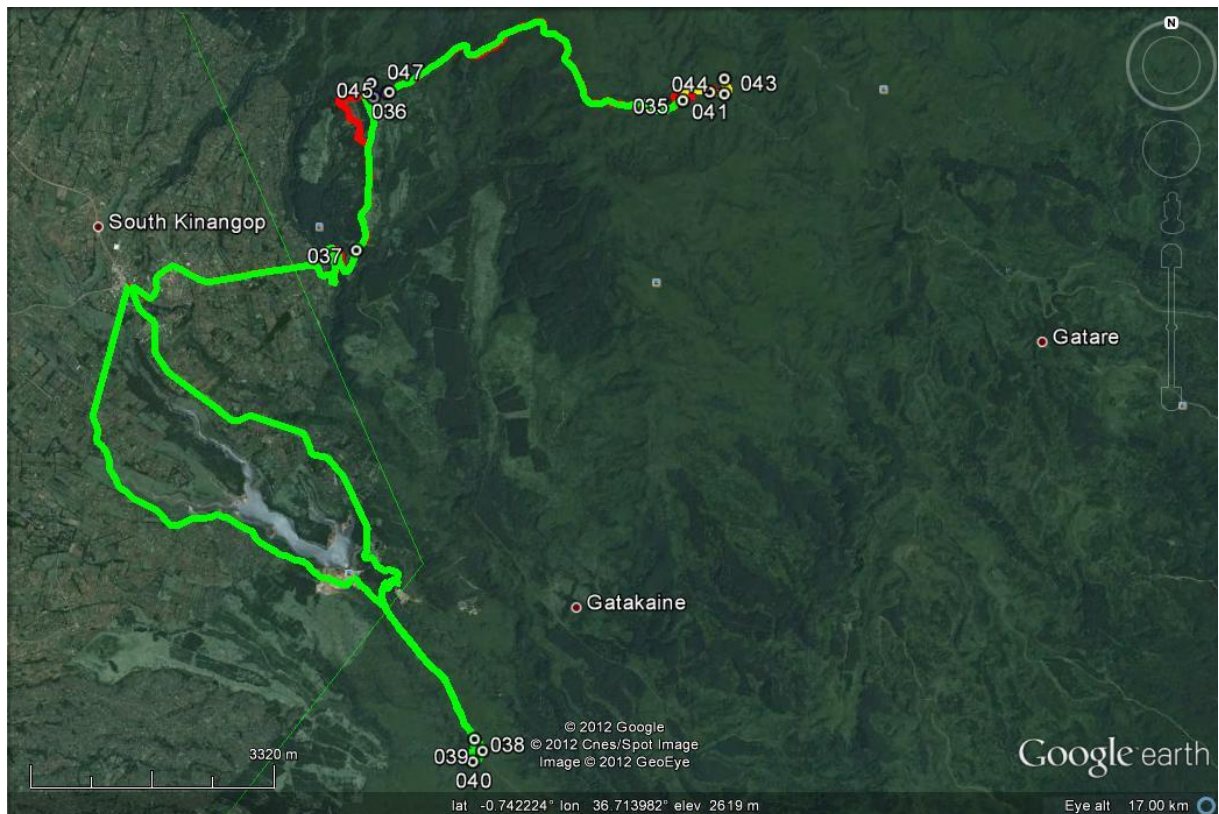
Bamboo and *Erica arborea* at GPS pt 035

The area of bamboo in the entire Aberdare range was reported as 647 km<sup>2</sup> (Wimbush, 1945) or approximately 20% of the total reported for Kenya (O'Meara, 2012). No figure can be found for the area of the plantations within the Forest Reserve (FR) but a total for the whole country in 1991 was estimated as 1600 km<sup>2</sup> (Wass, 1995) and more recently 1350 km<sup>2</sup> (KFS call for tenders, Standard Newspaper, 14<sup>th</sup> June 2012). Due to a long period of closure of the plantations under a 'logging ban' the condition of these areas has deteriorated from a forestry perspective, but possibly improved in terms of natural biodiversity. The ban on harvesting was also applied to bamboo poles and it is the recent adoption of a new Bamboo Policy by KFS that has led to the BTC proposal. Thus the bamboo areas have had little disturbance over several years prior to this study.

## 2. Methodology

An exploratory visit was made to the south Kinangop on 1<sup>st</sup> June with BTC's Bamboo expert and the team setting out bamboo plots to measure biomass. Due to the limited time given for the diversity study (2 days) it was decided to adopt a simple walking line transect and to do three transects, one 'bamboo' below Sasumua Dam (pts 038-040, see Google Map), another 'bamboo' above the forest station at the end of the road (pts 041-044) and one 'plantation' above the forest station (pts 045-047). The survey was carried out between 7<sup>th</sup> to 9<sup>th</sup> June by QL and PL using their own vehicle and camping at pt 035 for 2 nights.





Tracks 1<sup>st</sup> June to 9<sup>th</sup> June inclusive

No decision was made on the length of the transect until the recording began and it was found that by walking along the bamboo boundary with the road, the number of new species recorded dropped off after 200m. Thus for all 3 surveys a point was chosen on the road, marked by GPS, 200m was walked along the road recording all species encountered, another GPS point was recorded, a line was then walked at right angles into the bamboo/plantation for a further 200m recording addition species and then an end point was marked. No prior investigation of the composition was made, thus on the first survey the line into the bamboo moved into a patch of mixed montane forest and the third survey, the *Cupressus* plantation, found that after 160m the mature plantation ended and the walk at right angles after 200m (pt 046) was outside in new plantings of *Cupressus lusitanica* with open *Pennisetum clandestinum* grass in between. This grass was manifestly heavily grazed by livestock and was much more diverse than if the line had run within the completely shaded mature plantation.

The plant species were recorded as “sight records” (SR) when there was no doubt over their identification. If the plant was known to QL, but needed confirmation, a temporary specimen was collected for later keying using UKWF2 (Agnew & Agnew, 1994). When the plant’s identity needed checking, a voucher specimen was collected (HS) for drying and later identification in the Nairobi Herbarium (Beentje, 1994; FTEA, 1952-; Ibrahim & Kabuye, 1988; Haines & Lye, 1983).

### 3. Results

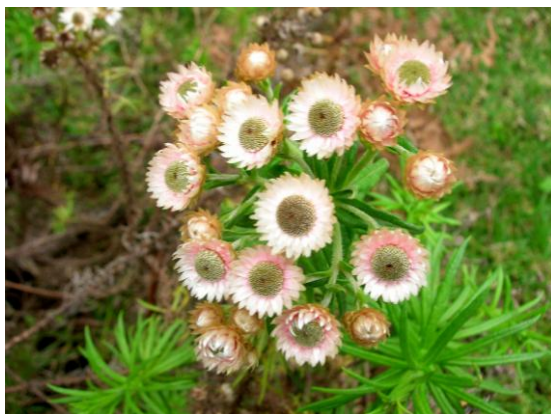
The list of plant species recorded is shown in the Appendix. A summary of the transects and the number of taxa recorded is as follows:

Survey No.	GPS Points	Direction	Altitude (m)	No. of Plant Taxa	Total per site	Comment
1 Bamboo	038 - 039	SSE	2480 – 2475	<b>60</b>		Downhill, afternoon shade
1 Bamboo	039 - 040	SW	2475 – 2460	<b>44</b>	<b>104</b>	Downhill leading to montane forest, medium shade
2 Bamboo	041 - 043	E	2780 – 2770	<b>57</b>		Almost level, much sun
2 Bamboo	043 - 044	N	2770 – 2800	<b>8</b>	<b>65</b>	Uphill, full shade
3 Plantation	045 - 046	WSW	2700 – 2680	<b>71</b>		Downhill, little morning sun
3 Plantation	046 - 047	NNW	2680 – 2700	<b>19</b>	<b>90</b>	Uphill, young plantation - full sun

#### 4. Discussion

The total number of plant taxa recorded over the 3 surveys is 160. Of these 22 are recorded from all 3 sites, 55 from 2 of the 3 sites and 84 from just one site. The expected large difference in diversity between the natural bamboo areas and the plantation was not found, in fact the plantation site proved to have more species than the second bamboo site. This is understandable when it is realised that the second ‘leg’ of plantation survey was not through mature plantation but through open grassland with young trees. The extra diversity encountered at the first site (104) can be explained by the fact that the second part of the second ‘leg’ ran into a patch of montane forest and thus a different group of species.

A probable average number of taxa for pure bamboo sites would be around 80 taxa and that of mature, closely planted plantation around 70. This does not seem to be a huge difference and could be attributable to factors such as altitude, soil, sunlight (orientation), and predation. Only more complex ecological surveys would adjust for these factors. Studies on the ‘bamboo cycle’ (Wimbush, 1945; Agnew 1985) show that there is a succession process following the death of bamboo after flowering and thus the age of a bamboo area in terms of how far through its cycle will influence the composition of associated species.



Asteraceae: *Helichrysum argyranthum* & *Berkheya spekeana*

Species composition is not very surprising with a majority of ‘weedy’ or ruderal plants, particularly those in the ‘Daisy’ family Asteraceae with a total of 28 taxa noted. A number of sedges (Cyperaceae) and grasses (Poaceae) were recorded as well as several ferns. Also well represented were the families Acanthaceae and Lamiaceae.

One way of interpreting the different compositions is to look at the rarity of individual species. Although obviously no figures exist for the overall total numbers of each taxon,



their distributions are fairly well known. We then find that 3 of the plants recorded in the bamboo areas have very limited distributions: *Impatiens hoehnelii* is a Kenyan endemic; *Impatiens fischeri* (cover photo, not recorded within transects but at pt 039) is only known from the Aberdares and Mt Kenya; the large clumped grass (*Eragrostis amanda*) recorded in the first bamboo area is restricted to the Aberdares and Kieni (Ibrahim & Kabuye, 1988). *Oreoschimperella aberdarensis* is also endemic and only known from 4 areas in Kenya (FTEA, 1952-). This plant was not recorded during the survey but is known from the area. Only one plant found in the plantation area has similar limited distribution, *Rubus friesiorum* is restricted to the Aberdares and Mt Kenya (FTEA, 1952-). If a more extensive survey and comparison were made, it is most likely that the bamboo zone species would be found to be more restricted in range and could be considered of more 'value' than the more widely distributed plants growing in the plantations.



Cyperaceae: *Cyperus tomaiophyllus* and *Carex* cf. *conferta*.



Lamiaceae: *Plectranthus alpinus* & *Stachys aculeolata*

## 5. Conclusion

Although the number of different plants (diversity) found in the two habitats is not hugely different, perhaps the 'quality' of plants in the bamboo zone is higher due to their more restricted range. This study provides an initial assessment of the issue and it is recommended that more comprehensive sampling is undertaken to provide a clearer understanding of the issue.

The presence of the noxious, yellow flowered weed *Senecio madagascariensis* (Fireweed) was noted throughout the area and every effort should be made to remove it.

## 6. References

- Agnew, A.D.Q. (1985) *Cyclic sequences of vegetation in the plant communities of the Aberdare Mountains, Kenya*. Journal of the East Africa Natural History Society and National Museum, 75, 1-12.
- Agnew, A.D.Q. & S. Agnew (1994). *Upland Kenya Wild Flowers: a Flora of the Ferns and Herbaceous Flowering Plants of Upland Kenya*. 2nd edition. East African Natural History Society, Nairobi.
- Beentje, H.J. (1994). *Kenya Trees, Shrubs and Lianas*. National Museums of Kenya, Nairobi.
- Flora of Tropical East Africa (FTEA). (1952–). Authors Various. Crown Agents for Overseas Governments and Administration, London; Balkema, Rotterdam & Royal Botanic Gardens, Kew.
- Haines, R.W. & K.A. Lye (1983). *The Sedges and Rushes of East Africa*. East Africa Natural History Society, Nairobi.
- Ibrahim, K.M. & C.H.S. Kabuye (1988). *An Illustrated Manual of Kenya Grasses*. FAO, Rome.
- O'Meara L. (2012). *Energy Proposal*. Unpublished Report, The Bamboo Trading Company. Nairobi
- Schmitt, K. (1991). *The Vegetation of the Aberdare Nation Park Kenya*. Univ.-Verl. Wagner. Innsbruck.
- Wass P (Ed.) (1995) *Kenya's Indigenous Forests: Status, Management and Conservation*. IUCN, Gland, Switzerland, and Cambridge, UK.
- Wimbush, S.H. (1945). *The African Alpine Bamboo*. Empire Forestry Journal 24:33-39.

**Appendix**

cat.	No.	family	species	Comment
<b>Bamboo Site 1</b>				
SR	1	Rubiaceae	<i>Oldenlandia monanthos</i> (A. Rich.) Hiern	H
SR	2	Lamiaceae	<i>Clinopodium uhligii</i> (Guerke) Ryding var. <i>obtusifolium</i> (Avetta) Ryding	H
SR	3	Lamiaceae	<i>Platostoma africanum</i> P. Beauv.	H
SR	4	Rubiaceae	<i>Spermacoce princeae</i> (K. Schum.) Verdc. var. <i>princeae</i>	H
SR	5	Selaginellaceae	<i>Selaginella kraussiana</i> (Kunze) A. Braun	F
SR	6	Rosaceae	<i>Alchemilla cryptantha</i> A. Rich.	H
SR	7	Geraniaceae	<i>Geranium kilimandscharicum</i> Engl.	H
SR	8	Malvaceae	<i>Pavonia urens</i> Cav. var. <i>urens</i>	H
HS	15345	Apiaceae	<i>Oenanthe procumbens</i> (H. Wolff) Norman	H
SR	10	Mimosaceae (Leguminosae)	<i>Acacia melanoxylon</i> R. Br.	E
SR	11	Lamiaceae	<i>Plectranthus laxiflorus</i> Benth.	H
SR	12	Vitaceae	<i>Cyphostemma kilimandscharicum</i> (Gilg) Wild & R.B. Drumm. var. <i>kilimandscharicum</i>	C
SR	13	Urticaceae	<i>Droguetia iners</i> (Forssk.) Schweinf. ssp. <i>iners</i>	H
SR	14	Cyperaceae	<i>Cyperus derreilema</i> Steud.	H
SR	15	Oxalidaceae	<i>Oxalis corniculata</i> L.	H
SR	16	Asclepiadaceae (Apocynaceae)	<i>Tacazzea conferta</i> N.E. Br.	C
SR	17	Violaceae	<i>Viola abyssinica</i> Oliv.	H
SR	18	Plantaginaceae	<i>Plantago palmata</i> Hook.f.	H
SR	19	Asteraceae	<i>Adenostemma mauritianum</i> DC.	H
SR	20	Asteraceae	<i>Helichrysum globosum</i> A. Rich.	H
SR	21	Cupressaceae	<i>Juniperus procera</i> Endl.	T
SR	22	Papilionaceae (Leguminosae)	<i>Desmodium repandum</i> (Vahl) DC.	H
SR	23	Rosaceae	<i>Rubus steudneri</i> Schweinf. var. <i>dictyophyllus</i> (Oliv.) R.A. Graham	C
SR	24	Scrophulariaceae	<i>Halleria lucida</i> L.	S
SR	25	Asteraceae	<i>Helichrysum meyeri-johannis</i> Engl.	H photo
SR	26	Ericaceae	<i>Erica silvatica</i> (Engl.) Beentje	H
SR	27	Cornaceae	<i>Afrocrania volkensis</i> (Harms) Hutch.	T
SR	28	Polygalaceae	<i>Polygala sphenoptera</i> Fresen.	H
SR	29	Cyperaceae	<i>Carex chlorosaccus</i> C.B. Clarke	H
SR	30	Iridaceae	<i>Aristea alata</i> Baker	H
SR	31	Lobeliaceae	<i>Monopsis stellarioides</i> (C. Presl) Urb. ssp. <i>schimperiana</i> (Urb.) Thulin	H
SR	32	Amaranthaceae	<i>Cyathula polycephala</i> Baker	H
SR	33	Loganiaceae	<i>Nuxia congesta</i> Fresen.	T
SR	34	Poaceae	<i>Panicum calvum</i> Stapf?	H
SR	35	Poaceae	<i>Eragrostis schweinfurthii</i> Chiov.?	H
SR	36	Asteraceae	<i>Solanecio mannii</i> (Hook.f.) C. Jeffrey	S
SR	37	Ericaceae	<i>Agarista salicifolia</i> (Lam.) G. Don	T
SR	38	Asteraceae	<i>Sonchus afromontanus</i> R.E. Fr.	H

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SR	39	Asteraceae	<i>Conyza subscaposa</i> O. Hoffm.	H
SR	40	Convolvulaceae	<i>Dichondra repens</i> J.R. Forst. & G. Forst. var. <i>repens</i>	H
SR	41	Asteraceae	<i>Helichrysum forskahlii</i> (J.F. Gmel.) Hilliard & B.L. Burtt var. <i>forskahlii</i>	H
SR	42	Commelinaceae	indet.	H (sterile)
SR	43	Clusiaceae	<i>Hypericum revolutum</i> Vahl	S
SR	44	Cyperaceae	<i>Pycneus nigricans</i> (Steud.) C.B. Clarke	H
SR	45	Scrophulariaceae	<i>Veronica abyssinica</i> Fresen.	H
SR	46	Rubiaceae	<i>Galium aparinoides</i> Forssk.	H
SR	47	Ranunculaceae	<i>Clematis simensis</i> Fresen.	C
HS	15346	Cyperaceae	<i>Kyllinga odorata</i> Vahl var. <i>major</i> (C.B. Clark) Chiov.	H
SR	49	Rosaceae	<i>Alchemilla fischeri</i> Engl.	H
SR	50	Acanthaceae	<i>Justicia diclipteroides</i> Lindau	H
SR	51	Rubiaceae	<i>Galiniera saxifraga</i> (Hochst.) Bridson	T
SR	52	Berberidaceae	<i>Berberis holstii</i> Engl.	T
SR	53	Tiliaceae	<i>Sparrmannia ricinocarpa</i> (Eckl. & Zeyh.) Kuntze var. <i>macrocarpa</i> (Ulbr.) Weim.	H
SR	54	Cucurbitaceae	<i>Peponium vogelii</i> (Hook.f.) Engl.	C
SR	55	Convolvulaceae	<i>Convolvulus kilimandschari</i> Engl.	C
SR	56	Acanthaceae	<i>Mimulopsis alpina</i> Chiov.?	S
SR	57	Adiantaceae	<i>Pellaea quadripinnata</i> (Forssk.) Prantl	F
SR	58	Papilionaceae (Leguminosae)	<i>Indigofera atriceps</i> Hook.f. ssp. <i>atriceps</i>	H
SR	59	Asteraceae	<i>Laggera brevipes</i> Oliv. & Hiern	H
SR	60	Asteraceae	<i>Conyza bonariensis</i> (L.) Cronquist	H
SR	61	Aspleniaceae	<i>Asplenium buettneri</i> Hieron. var. <i>buettneri</i>	F
SR	62	Rubiaceae	<i>Rubia cordifolia</i> L. ssp. <i>conotricha</i> (Gandoger) Verdc.	C
SR	63	Podocarpaceae	<i>Podocarpus latifolius</i> (Thunb.) Mirb.	T
SR	64	Ranunculaceae	<i>Thalictrum rhynchocarpum</i> Quart.-Dill. & A. Rich.	H
SR	65	Acanthaceae	<i>Phaulopsis imbricata</i> (Forssk.) Sweet ssp. <i>imbricata</i>	H
SR	66	Urticaceae	<i>Droguetia debilis</i> Rendle	H
HS	15347	Cyperaceae	<i>Carex vallisrosetto</i> K. Schum.	H
SR	68	Melianthaceae	<i>Bersama abyssinica</i> Fresen. ssp. <i>abyssinica</i>	T
SR	69	Asteraceae	<i>Senecio syringifolius</i> O. Hoffm.	C
SR	70	Rubiaceae	<i>Psychotria fractinervata</i> E.M.A.Petit	S
SR	71	Acanthaceae	<i>Acanthopale pubescens</i> (Engl.) C.B. Clarke	S photo
SR	72	Acanthaceae	<i>Isoglossa gregorii</i> (S. Moore) Lindau	H
SR	73	Euphorbiaceae	<i>Clutia robusta</i> Pax	H
SR	74	Solanaceae	<i>Solanum nigriviolaceum</i> Bitter	H
SR	75	Menispermaceae	<i>Stephania abyssinica</i> (Quart.-Dill. & A. Rich.) Walp. var. <i>abyssinica</i>	C
SR	76	Salicaceae	<i>Dovyalis abyssinica</i> (A. Rich.) Warb.	T
SR	77	Papilionaceae (Leguminosae)	<i>Parochetus africanus</i> Polhill	H
SR	78	Euphorbiaceae	<i>Euphorbia ugandensis</i> Pax	S
SR	79	Solanaceae	<i>Solanum terminale</i> Forssk.	C



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SR	80	Papilionaceae (Leguminosae)	Crotalaria axillaris Aiton	H
SR	81	Asteraceae	Crassocephalum montuosum (S. Moore) Milne-Redh.	H
SR	82	Rhamnaceae	Rhamnus prinoides L'Hér.	S
SR	83	Aspleniaceae	Asplenium friesiorum C. Chr.	F
SR	84	Meliaceae	Lepidotrichilia volkensii (Guerke) J.-F.Leroy	T
HS	15348	Poaceae	Eragrostis amanda Clayton	H (narrow endemic)
SR	86	Rutaceae	Toddalia asiatica (L.) Lam.	C
SR	87	Lamiaceae	Plectranthus melleri Baker	H
SR	88	Dennstaedtiaceae	Pteridium aquilinum (L.) Kuhn ssp. aquilinum	F
SR	89	Celastraceae	Gymnosporia heterophylla (Eckl. & Zeyh.) Loes.	S
SR	90	Icacinaceae	Apodytes dimidiata Arn. var. dimidiata	T
SR	91	Meliaceae	Ekebergia capensis Sparrm.	T
SR	92	Oleaceae	Jasminum fluminense Vell.?	C
SR	93	Apiaceae	Peucedanum aculeolatum Engl.	H
SR	94	Apiaceae	Hydrocotyle mannii Hook.f. var. mannii	H
SR	95	Polypodiaceae	Lepisorus excavatus (Willd.) Ching	F (lobed fronds)
SR	96	Asparagaceae	Asparagus africanus Lam.	C
SR	97	Urticaceae	Laportea alatipes Hook.f.	H
SR	98	Balsaminaceae	Impatiens hoehnelii T.C.E. Fr.	H (limited distribution)
SR	99	Myrsinaceae	Myrsine africana L.	S
SR	100	Asteraceae	Dichrocephala integrifolia (L.f.) Kuntze ssp. integrifolia	H
SR	101	Lycopodiaceae	Lycopodium clavatum L. ssp. clavatum	F
SR	102	Rhizophoraceae	Cassipourea malosana (Baker) Alston	T
SR	103	Cucurbitaceae	Momordica friesiorum (Harms) C. Jeffrey?	C
SR	104	Solanaceae	Solanum nigrum L. s.l.	H

**Sasumua Dam**

HS	15349	Solanaceae	Cestrum elegans (Neumann) Schltld.	S (exotic)
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**Bamboo Site 2**

SR	105	Rosaceae	Rubus steudneri Schweinf. var. dictyophyllus (Oliv.) R.A. Graham	C
SR	106	Violaceae	Viola abyssinica Oliv.	H photo
SR	107	Menispermaceae	Stephania abyssinica (Quart.-Dill. & A. Rich.) Walp. var. abyssinica	C
SR	108	Cyperaceae	Cyperus tomaiophyllus K. Schum.	H photo
SR	109	Apiaceae	Agrocharis melanantha Hochst.	H
SR	110	Acanthaceae	Mimulopsis alpina Chiov.?	S
SR	111	Lamiaceae	Plectranthus laxiflorus Benth.	H
SR	112	Asteraceae	Conyza bonariensis (L.) Cronquist	H
SR	113	Asteraceae	Senecio syringifolius O. Hoffm.	C
SR	114	Ericaceae	Erica arborea L.	T
SR	115	Cyperaceae	Carex vallisrosetto K. Schum.	H
HS	15350	Asteraceae	Helichrysum forskahliaii (J.F. Gmel.) Hilliard & B.L. Burt var. forskahliaii	H
HS	15351	Cyperaceae	Cyperus derreilema Steud.	H photo

SR	118	Aspleniaceae	<i>Asplenium buettneri</i> Hieron. var. <i>buettneri</i>	F
SR	119	Lycopodiaceae	<i>Lycopodium clavatum</i> L. ssp. <i>clavatum</i>	F
SR	120	Cyperaceae	<i>Kyllinga odorata</i> Vahl var. <i>major</i> (C.B. Clark) Chiov.	H
SR	121	Berberidaceae	<i>Berberis holstii</i> Engl.	T
SR	122	Asteraceae	<i>Berkheya spekeana</i> Oliv.	H
SR	123	Commelinaceae	indet.	H (sterile)
SR	124	Balsaminaceae	<i>Impatiens hoehnelii</i> T.C.E. Fr.	H photo
HS	15352	Dryopteridaceae	<i>Dryopteris</i> ?	F
SR	126	Ranunculaceae	<i>Clematis simensis</i> Fresen.	C
SR	127	Aspleniaceae	<i>Asplenium friesiorum</i> C. Chr.	F
SR	128	Podocarpaceae	<i>Podocarpus latifolius</i> (Thunb.) Mirb.	T
SR	129	Lamiaceae	<i>Plectranthus alpinus</i> (Vatke) Ryding	H photo
SR	130	Asteraceae	<i>Dichrocephala integrifolia</i> (L.f.) Kuntze ssp. <i>integrifolia</i>	H
SR	131	Thelypteridaceae	indet.	F (sterile)
SR	132	Pteridaceae	<i>Pteris catoptera</i> Kunze var. <i>catoptera</i>	F
HS	15353	Pteridaceae	<i>Pteris buchananii</i> ?	F
SR	134	Boraginaceae	<i>Cynoglossum lanceolatum</i> Forssk.	H
HS	15354	Asteraceae	<i>Conyza newii</i> Oliv. & Hiern	H
SR	136	Geraniaceae	<i>Geranium kilimandscharicum</i> Engl.	H
SR	137	Rosaceae	<i>Alchemilla fischeri</i> Engl.	H
SR	138	Cyperaceae	<i>Pycreus nigricans</i> (Steud.) C.B. Clarke	H
SR	139	Asteraceae	<i>Carduus</i> sp.	H
SR	140	Vitaceae	<i>Cyphostemma kilimandscharicum</i> (Gilg) Wild & R.B. Drumm. var. <i>kilimandscharicum</i>	C
SR	141	Tiliaceae	<i>Sparrmannia ricinocarpa</i> (Eckl. & Zeyh.) Kuntze var. <i>macrocarpa</i> (Ulbr.) Weim.	H
SR	142	Rubiaceae	<i>Galium aparinoides</i> Forssk.	H
SR	143	Euphorbiaceae	<i>Euphorbia ugandensis</i> Pax	S
SR	144	Loganiaceae	<i>Nuxia congesta</i> Fresen.	T
SR	145	Lamiaceae	<i>Clinopodium uhligii</i> (Guerke) Ryding var. <i>obtusifolium</i> (Avetta) Ryding	H
SR	146	Convolvulaceae	<i>Convolvulus kilimandschari</i> Engl.	C
SR	147	Asteraceae	<i>Senecio moorei</i> R.E. Fr.	H
SR	148	Lobeliaceae	<i>Lobelia</i> sp. nr <i>minutula</i>	H
SR	149	Rubiaceae	<i>Oldenlandia monanthos</i> (A. Rich.) Hiern	H
SR	150	Iridaceae	<i>Aristea alata</i> Baker	H
SR	151	Clusiaceae	<i>Hypericum revolutum</i> Vahl	S
SR	152	Polygonaceae	<i>Rumex ruwenzoriensis</i> Chiov.	H
SR	153	Solanaceae	<i>Solanum phoxocarpum</i> Voronts.	T
SR	154	Asteraceae	<i>Sonchus</i> sp.	H
HS	15355	Asteraceae	<i>Senecio madagascariensis</i> Poir.	H Invasive
HS	15356	Asteraceae	<i>Bothriocline fusca</i> (S. Moore) M.G. Gilbert	S photo
SR	157	Rubiaceae	<i>Spermacoce princeae</i> (K. Schum.) Verdc. var. <i>princeae</i>	H
SR	158	Selaginellaceae	<i>Selaginella kraussiana</i> (Kunze) A. Braun	F
SR	159	Lamiaceae	<i>Stachys aculeolata</i> Hook.f. var. <i>aculeolata</i>	H photo
SR	160	Apiaceae	<i>Pseudocarum eminii</i> (Engl.) H. Wolff	C
HS	15357	Asteraceae	<i>Crassocephalum montuosum</i> (S. Moore)	H

			Milne-Redh.	
SR	162	Polypodiaceae	Lepisorus excavatus (Willd.) Ching	F
SR	163	Aspleniaceae	Asplenium sp.	F
SR	164	Apiaceae	Hydrocotyle mannii Hook.f. var. mannii	H
SR	165	Cornaceae	Afrocrania volkensii (Harms) Hutch.	T
SR	166	Cucurbitaceae	Lagenaria sphaerica (Sond.) Naudin	C
SR	167	Asclepiadaceae (Apocynaceae)	Tacazzea conferta N.E. Br.	C
SR	168	Araceae	Arisaema mildbraedii Engl.	H
SR	169	Urticaceae	Laportea alatipes Hook.f.	H
<b>Plantation Site</b>				
SR	170	Convolvulaceae	Dichondra repens J.R. Forst. & G. Forst. var. repens	H
SR	171	Amaranthaceae	Cyathula polycephala Baker	H
SR	172	Asteraceae	Dichrocephala integrifolia (L.f.) Kuntze ssp. integrifolia	H
SR	173	Aspleniaceae	Asplenium buettneri Hieron. var. buettneri	F
SR	174	Polypodiaceae	Lepisorus excavatus (Willd.) Ching	F
SR	175	Mimosaceae (Leguminosae)	Acacia melanoxylon R. Br.	T
SR	176	Rosaceae	Rubus steudneri Schweinf. var. dictyophyllus (Oliv.) R.A. Graham	C
SR	177	Papilionaceae (Leguminosae)	Parochetus africanus Polhill	H
SR	178	Asteraceae	Helichrysum schimperi (A. Rich.) Moeser	H
SR	179	Asteraceae	Bothriocline fusca (S. Moore) M.G. Gilbert	S
SR	180	Apiaceae	Agrocharis melanantha Hochst.	H
SR	181	Podocarpaceae	Podocarpus latifolius (Thunb.) Mirb.	T
SR	182	Ranunculaceae	Clematis simensis Fresen.	C
SR	183	Ericaceae	Agarista salicifolia (Lam.) G. Don	T
SR	184	Dryopteridaceae	Dryopteris?	F
SR	185	Papilionaceae (Leguminosae)	Trifolium semipilosum Fresen.	H
SR	186	Lobeliaceae	Monopsis stellarioides (C. Presl) Urb. ssp. schimperiana (Urb.) Thulin	H
SR	187	Violaceae	Viola abyssinica Oliv.	H
SR	188	Lamiaceae	Clinopodium uhligii (Guerke) Ryding var. obtusifolium (Avetta) Ryding	H
SR	189	Ranunculaceae	Thalictrum rhynchocarpum Quart.-Dill. & A. Rich.	H
SR	190	Dennstaedtiaceae	Pteridium aquilinum (L.) Kuhn ssp. aquilinum	F
SR	191	Crassulaceae	Kalanchoe densiflora Rolfe var. densiflora	H
SR	192	Asteraceae	Helichrysum forskahlii (J.F. Gmel.) Hilliard & B.L. Burt var. forskahlii	H
SR	193	Asteraceae	Launaea sp.	H
SR	194	Clusiaceae	Hypericum revolutum Vahl	S
SR	195	Acanthaceae	Justicia diclipteroides Lindau	H
SR	196	Loganiaceae	Nuxia congesta Fresen.	T
SR	197	Asteraceae	Conyza bonariensis (L.) Cronquist	H
SR	198	Urticaceae	Droguetia iners (Forssk.) Schweinf. ssp. iners	H
SR	199	Dryopteridaceae	Polystichum wilsonii H. Christ?	F
SR	200	Melanthaceae	Bersama abyssinica Fresen. ssp. abyssinica	T



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SR	201	Cornaceae	Afrocrania volkensis (Harms) Hutch.	T
SR	202	Myrsinaceae	Rapanea melanophloeos (L.) Mez	T
SR	203	Asteraceae	Crassocephalum montuosum (S. Moore) Milne-Redh.	H
SR	204	Rosaceae	Alchemilla fischeri Engl.	H
HS	15358	Boraginaceae	Cynoglossum lanceolatum Forssk.	H
SR	206	Rosaceae	Rubus friesiorum Gust. ssp. friesiorum	C (limited distribution)
SR	207	Tiliaceae	Sparrmannia ricinocarpa (Eckl. & Zeyh.) Kuntze var. macrocarpa (Ulbr.) Weim.	H
SR	208	Lamiaceae	Pycnostachys meyeri Guerke	H
SR	209	Asteraceae	Carduus sp.	H
SR	210	Tiliaceae	Triumfetta rhomboidea Jacq.	H
SR	211	Papilionaceae (Leguminosae)	Adenocarpus/Argyrolobium	H
SR	212	Asteraceae	Helichrysum stenopterum DC.	H
HS	15359	Dryopteridaceae	Megalastrum?	F
SR	214	Malvaceae	Pavonia urens Cav. var. urens	H
SR	215	Vitaceae	Cyphostemma kilimandscharicum (Gilg) Wild & R.B. Drumm. var. kilimandscharicum	C
SR	216	Polygalaceae	Polygala sphenoptera Fresen.	H
SR	217	Asteraceae	Helichrysum globosum A. Rich.	H
SR	218	Poaceae	Pennisetum clandestinum Chiov.	H
SR	219	Apiaceae	Peucedanum aculeolatum Engl.	H
HS	15360	Asteraceae	Helichrysum foetidum (L.) Moench.	H photo
SR	221	Solanaceae	Physalis peruviana L.	H
SR	222	Convolvulaceae	Convolvulus kilimandschari Engl.	C
SR	223	Sterculiaceae	Dombeya torrida (J.F. Gmel.) P.Bamps ssp. torrida	T
SR	224	Apiaceae	Hydrocotyle mannii Hook.f. var. mannii	H
SR	225	Araceae	Arisaema mildbraedii Engl.	H
SR	226	Asclepiadaceae (Apocynaceae)	Tacazzea conferta N.E. Br.	C
SR	227	Cucurbitaceae	Zehneria scabra (L.f.) Sond. ssp. scabra	C
SR	228	Asteraceae	Senecio syringifolius O. Hoffm.	C
SR	229	Poaceae	Panicum calvum Stapf?	H
SR	230	Asteraceae	Conyza newii Oliv. & Hiern	H
SR	231	Balsaminaceae	Impatiens pseudoviola Gilg	H photo
SR	232	Solanaceae	Solanum phoxocarpum Voronts.	T
SR	233	Rosaceae	Alchemilla cryptantha A. Rich.	H
SR	234	Pteridaceae	Pteris catoptera Kunze var. catoptera	F
SR	235	Araliaceae	Schefflera volkensis (Engl.) Harms	T
SR	236	Scrophulariaceae	Veronica abyssinica Fresen.	H
SR	237	Plantaginaceae	Plantago palmata Hook.f.	H
SR	238	Solanaceae	Solanum nigriviolaecum Bitter	H
SR	239	Papilionaceae (Leguminosae)	Desmodium repandum (Vahl) DC.	H
HS	15361	Asteraceae	Senecio moorei R.E. Fr.	H photo
SR	241	Lamiaceae	Leonotis nepetifolia (L.) R. Br. var. nepetifolia	H
SR	242	Cyperaceae	Isolepis sp.	H

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SR	243	Cyperaceae	<i>Cyperus rigidifolius</i> Steud.	H
HS	15362	Asteraceae	<i>Conyza schimperi</i> A. Rich.	H
HS	15363	Polygonaceae	<i>Rumex acetosella</i> L.	H Naturalised
SR	246	Asteraceae	<i>Laggera brevipes</i> Oliv. & Hiern	H
SR	247	Asteraceae	<i>Senecio madagascariensis</i> Poir.	H Invasive
SR	248	Commelinaceae	<i>Commelina africana</i> L.	H
SR	249	Oxalidaceae	<i>Oxalis corniculata</i> L.	H
SR	250	Ranunculaceae	<i>Ranunculus multifidus</i> Forssk.	H
HS	15364	Asteraceae	<i>Conyza steudelii</i> A. Rich.	H
SR	252	Geraniaceae	<i>Geranium kilimandscharicum</i> Engl.	H
SR	253	Rosaceae	<i>Rubus volkensii</i> Engl.	C photo
SR	254	Asteraceae	<i>Berkheya spekeana</i> Oliv.	H photo
HS	15365	Asteraceae	<i>Helichrysum argyranthum</i> O. Hoffm.	H photo
SR	256	Asteraceae	<i>Carduus schimperi</i> Sch. Bip.	H photo
SR	257	Asteraceae	<i>Pseudognaphalium luteo-album</i> (L.) Hilliard & B.L. Burtt	H
SR	258	Cyperaceae	<i>Kyllinga alba</i> Nees	H
SR	259	Meliaceae	<i>Ekebergia capensis</i> Sparrm.	T

Key: SR = Sight Record; HS = Herbarium Specimen  
 F = Fern; H = Herb; S = Shrub; C = Climber; T = Tree