

Ol Ari Nyiro, Laikipia Nature Conservancy (LNC) plants Survey



Preliminary Report

By

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Abstract

Despite Laikipia Nature Conservancy (LNC) biodiversity being well documented over time, many species (24) were added to the existing plant list during the plant survey. This included 3 unique species to the area namely; *Raphionacme flanagani* (first record for the region - K3), *Zathoxylum chalybeum* subspecies *molle* (second record for Kenya) and *Vepris* sp. (not matched with any known species at the East African herbarium). This implies that the total diversity of plant species is not yet fully realized and more surveys are required in the future.

Objectives

1. The overall goal was to update existing checklist of plants
2. To collect and identify all plant species.
3. To compile an updated plant checklist.
4. To highlight species of conservation value.

Sampling methods

A plot-less method as developed by Hall and Swaine (1981) and used in modification by Mwachala, *et al.* (2004) was used to record the plant species.

Vascular plant species not encountered in the previous surveys were recorded and specimens collected using standard methods (Foreman & Bridson, 1992). Some plant species were identified on site whereas the difficult and unique ones were collected for confirmation at the East African Herbarium. Identification of indigenous vascular plants followed Agnew and Agnew (1994), Beentje (1994) and the FTEA (Various publications). The recorded plant list was compared with the existing plant checklists to check for the new records for the study area.

Results and discussions

New records

The survey yielded a high number of new records to the existing plant list. A total of 24 new species was recorded mainly in Mlima Kisu and Kutwa. Out of these records, three species were found to be unique to the Conservancy. They include; *Raphionacme flanaganii* (first record for the region - K3), *Zathoxylum chalybeum* subspecies *molle* (second record for Kenya) and *Vepris* sp. (not matched with any known species at the East African herbarium). Below is a table of the new records;

Family	Genus	Species	Site
Acanthaceae	Dyschoriste	naghchana	Mlima Kisu
Aizoaceae	Delosperma	nakurense	Mlima Kisu (Shimo ya Jangili)
Apocynaceae	Raphionacme	flanaganii	Mlima Kisu
Apocynaceae	Tylophora	caffra	Kutwa
Asteraceae	Kleinia	odora	Mlima Kisu
Bignoniaceae	Stereospermum	kunthianum	Kutwa & Jela Nugu
Brassicaceae	Coronopus	didymus	LNC Center
Combretaceae	Combretum	collinum	Kutwa
Cyperaceae	Cyperus	rubicundus	Mlima Kisu
Euphorbiaceae	Euphorbia	tirucalli	Mlima Kisu
Fabaceae	Albizia	amara	Kutwa
Fabaceae	Alysicarpus	rugosus	Boromoko
Fabaceae	Astragalus	atropilosulus	Boromoko
Fabaceae	Indigofera	vohemarensis	Mlima Kisu
Loranthaceae	Oncocalyx	fischeri	Mlima Kisu
Orchidaceae	Dendrobium	sp.	LNC main gate (Alpha 3)
Orchidaceae	Eulophia	orthoplectrum	Base between Mlima Nairobi and Mlima Mtamayu
Orchidaceae	Eulophia	petersii	Mlima Kisu
Poaceae	Pennisetum	procerum	Jela Nugu
Rubiaceae	Gardenia	volkensii	Kutwa

Rubiaceae	Pavetta	gardeniifolia	Mlima Kisu & Mukutan
Rutaceae	Vepris	sp. ?nov.	Mlima Kisu
Rutaceae	Zanthoxylum	chalybeum var. molle	Mlima Kisu
Scrophulariaceae	Buttonia	natalensis	Mlima Kisu

Unique plants from Ol Ari Nyiro, Laikipia Nature Conservancy – collected in Nov. 2014



Raphionacme flanagani (Apocynaceae) - **new record for K3**



Vepris sp. ?nov. (Rutaceae) - **unmatched at EA Herbarium**



Zanthoxylum chalybeum ssp. *molle* (Rutaceae) - **second collection (and locality) for Kenya**

Kenya endemic species that occur in LNC

Among the identified species, a few are Endemic to Kenya based on the Kenya Endemics; List of East African Plants (LEAP), 2011. *Justicia leikipiensis* S.Moore, which is a regional endemic known only from the greater Laikipia County and Uganda, is common here. However, *Juniperus procera* (Cedar) is listed in the IUCN Red Plant list (1997, latest version?) categories of species of conservation importance as a Lower Risk/near threatened ver 2.3 species (see appendix for map of floral regions). This is one of the key species that needs protection to reduce its threat of extinction as a result of unsustainable utilization by humans worldwide.

Kenya endemic species known to occur in LNC

Family	Genus	Species	Floral regions (Kenya)
ACANTHACEAE	<i>Justicia</i>	<i>regis</i>	1,2,3
ACANTHACEAE	<i>Thunbergia</i>	<i>gibsonii</i>	3,4
ALOACEAE	<i>Aloe</i>	<i>francombei</i>	3
ALOACEAE	<i>Aloe</i>	<i>lateritia</i>	1,3,4,5,6
COMPOSITAE	<i>Vernonia</i>	<i>galamensis</i>	1,2,3,4,5
EUPHORBIACEAE	<i>Euphorbia</i>	<i>crotonoides</i>	6
EUPHORBIACEAE	<i>Euphorbia</i>	<i>heterochroma</i>	4,6,7
LEGUMINOSAE	<i>Crotalaria</i>	<i>brevidens</i>	3,4,7

MALVACEAE	<i>Hibiscus</i>	<i>fuscus</i>	3,4
MALVACEAE	<i>Hibiscus</i>	<i>vitifolius</i>	4
RUBIACEAE	<i>Kohautia</i>	<i>caespitosa</i>	3
RUBIACEAE	<i>Pentas</i>	<i>parvifolia</i>	4,6,7
RUBIACEAE	<i>Pentas</i>	<i>zanzibarica</i>	3

Threats to biodiversity

Although no detailed scrutiny was done to assess the threats to biodiversity conservation in LNC, numerous herds of cattle were observed in different parts of the Conservancy. Lokwakipi in particular was most affected with cows and goats found grazing on the site and a fresh and old cow carcass observed. Obvious signs of biodiversity loss as a result of wanton illegal grazing and numerous cattle pathways as well as laundry activities were seen. As a result of this high disturbance, more invasive plant species and weeds were recorded in Lokwakipi than the other sites visited during the plant survey. These are *Bidens pilosa*, *Senna septemtrionalis*, *Ageratum conyzoides*, *Caesalpinia decapetala*, *Euryops chrysanthemoides*, *Tagetes minuta* and *Apium leptophyllum*.



a) Pathways created by cattle

b) litter (polythene bags) near water bodies



Illegal grazing which sometimes end up with cattle being fed on by carnivores

Conclusion and recommendations

Based on the high number of new records during the survey, Laikipia Nature Conservancy is without doubt an important plants area. This owes its pride to the change of land use from a cattle ranch to a nature conservancy which has seen an increase in vegetation cover over the last few years especially in the drier parts. The three unique species recorded in the Conservancy further emphasizes the importance of this area in biodiversity conservation.

It is therefore recommended that further biodiversity surveys be carried out in the future during wet and dry seasons. The focus should be in the least studied areas including the gorges in Mlima Kisu and Kutwa areas.

Drastic measures to reduce habitat disturbance need to be taken to control the influx of invasive species into the Conservancy. Protection of private property by the government is particularly vital to stop community cattle invasion of this important biodiversity area and prevent any human-wildlife conflict that may result due to cattle loss by predators in the protected area.

References

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2. Beentje H.J., 1994. Kenya, Trees, Shrubs and Lianas. National Museums of Kenya, Nairobi.
3. Flora of Tropical East Africa, (Plant families are in numerous individual publications).
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6. Muasya J. M, Trumam P.Y., Okebiro D.N., 1993. Checklist of the Plants of Ol Ari Nyiro and the Mukutan Gorge

Appendix 1: GEOGRAPHICAL DIVISION OF THE FLORA OF KENYA



Appendix 2: List of plant species recorded in Laikipia Nature Conservancy

Family	Species
ACANTHACEAE	Barleria submollis Lindau
ACANTHACEAE	Barleria ventricosa Hochst. ex Nees
ACANTHACEAE	Blepharis maderaspatensis Heine ex Roth
ACANTHACEAE	Dyschoriste clinopodioides Mildbr.
ACANTHACEAE	Hygrophila schulli (Buch.-Ham.) M.R.Almeida
ACANTHACEAE	Hypoestes forskoolii (Vahl) R.Br.
ACANTHACEAE	Isoglossa laxa Oliv.
ACANTHACEAE	Justicia anagalloides T.Anderson
ACANTHACEAE	Justicia calyculata Deflers
ACANTHACEAE	Justicia debile (Forsk.) Vahl
ACANTHACEAE	Justicia diclipteroides Lindau
ACANTHACEAE	Justicia leikiapiensis S.Moore
ACANTHACEAE	Justicia regis Hedren
ACANTHACEAE	Ruellia patula Jacq.
ACANTHACEAE	Thunbergia alata Bojer ex Sims
ACANTHACEAE	Thunbergia gibsoni S.Moore
Acanthaceae	Crabbea velutina S.Moore
Acanthaceae	Crossandra sp.
Acanthaceae	Phaulopsis imbricata (Forssk.) Sweet
Actiniopteridaceae	Actiniopteris radiata (Sw.) Link
Actiniopteridaceae	Actiniopteris semiflabellata Pic.Serm.
Adiantaceae	Cheilanthes sp.
Adiantaceae	Doryopteris concolor (Langsd. & Fisch.) Kuhn
Aloaceae	Aloe ?lateritia Engl.
Aloaceae	Aloe secundiflora Engl.
AMARANTHACEAE	Achyranthes aspera L.
AMARANTHACEAE	Aerva lanata (L.) Juss
AMARANTHACEAE	Alternanthera caracasana Kunth
AMARANTHACEAE	Alternanthera pungens Kunth
AMARANTHACEAE	Cyathula polycephala Baker
AMARANTHACEAE	Gomphrena celosioides Mart.
AMARANTHACEAE	Psilotrichum elliotii Baker
AMARYLLIDACEAE	Boophone disticha (L.f.) Herb.
AMARYLLIDACEAE	Crinum macowanii Baker
AMARYLLIDACEAE	Scadoxus multiflorus (Martyr) Raf.
Anacardiaceae	Lannea edulis (Sond.) Engl.
ANACARDIACEAE	Ozoroa insignis Delile
ANACARDIACEAE	Rhus natalensis Bernh. ex C.Krauss
ANACARDIACEAE	Rhus pyroides Burch. var. pyroides

ANACARDIACEAE	<i>Rhus vulgaris</i> Meikle
ANTHERICACEAE	<i>Chlorophytum silvaticum</i> Dammer
APIACEAE	<i>Centella asiatica</i> (L.) Urb.
APIACEAE	<i>Diplolophium africanum</i> Turcz.
APIACEAE	<i>Ferula communis</i> L.
APIACEAE	<i>Heteromorpha trifoliata</i> (H.L.Wendl.) Eckl. & Zeyh.
APIACEAE	<i>Steganotaenia araliacea</i> Hochst.
APIACEAE	<i>Torilis arvensis</i> (Huds.) Link
APOCYNACEAE	<i>Acokanthera oppositifolia</i> (Lam.) Codd
APOCYNACEAE	<i>Carissa spinarum</i> L.
APOCYNACEAE	<i>Rauvolfia caffra</i> Sond.
APOCYNACEAE	<i>Ceropegia cufodontii</i> Chiov.
APOCYNACEAE	<i>Ceropegia meyeri-johannis</i> Engl.
APOCYNACEAE	<i>Marsdenia schimperi</i> Decne.
Aponogetonaceae	<i>Aponogeton</i> sp.
ARACEAE	<i>Arisaema</i> sp.
ARALIACEAE	<i>Cussonia holstii</i> Harms Engl.
Asclepiadaceae	<i>Gomphocarpus fruticosus</i> (L.) Aint.f.
Asclepiadaceae	<i>Gomphocarpus physocarpus</i> E.Mey.
Asclepiadaceae	<i>Pachycarpus concolor</i> ssp. <i>Rhinophyllus</i>
Asclepiadaceae	<i>Sarcostemma</i> sp.
Asclepiadaceae	<i>Sarcostemma viminale</i> (L.) R.Br.
ASPARAGACEAE	<i>Asparagus africanus</i>
ASPARAGACEAE	<i>Asparagus asparagoides</i> (L.) Druce
ASPARAGACEAE	<i>Asparagus falcatus</i> L.
ASPARAGACEAE	<i>Asparagus flagellaris</i> (Kunth) Baker
ASPARAGACEAE	<i>Asparagus racemosus</i> Willd.
ASPLENIACEAE	<i>Asplenium aethiopicum</i> (Burm.f.) Bech.
ASPLENIACEAE	<i>Asplenium</i> sp.
Asteraceae	<i>Acanthospermum glabratum</i> (DC.) Wild
ASTERACEAE	<i>Acmella caulirhiza</i> Delile
ASTERACEAE	<i>Ageratum conyzoides</i> L.
ASTERACEAE	<i>Aspilia mossambicensis</i> (Oliv.) Wild
ASTERACEAE	<i>Aspilia pluriseta</i> Schweinf.
ASTERACEAE	<i>Berkheya spekeana</i> Oliv.
ASTERACEAE	<i>Bidens biternata</i> (Lour.) Merr. & Sherff
ASTERACEAE	<i>Bidens pilosa</i> L.
ASTERACEAE	<i>Blumea axillaris</i> (Lam.) DC.
ASTERACEAE	<i>Bothriocline fusca</i> (S.Moore) M.G.Gilbert
ASTERACEAE	<i>Cineraria deltoidea</i> Sond.
ASTERACEAE	<i>Cineraria grandiflora</i>
ASTERACEAE	<i>Conyza bonariensis</i> (L.) Cronquist

ASTERACEAE	<i>Conyza pyrhopappa</i> Sch.Bip. ex A.Rich.
ASTERACEAE	<i>Conyza schimperi</i> Sch.Bip. ex A.Rich. ssp. <i>longepapposa</i> R.E.Fr.
ASTERACEAE	<i>Conyza steudelii</i> Sch.Bip. ex A.Rich.
Asteraceae	<i>Cotula abyssinica</i> Sch.Bip.
Asteraceae	<i>Crassocephalum</i> sp.
Asteraceae	<i>Crassocephalum vitellinum</i> (Benth.) S.Moore
Asteraceae	<i>Crassocephalum x picridifolium</i> (DC.) S.Moore
ASTERACEAE	<i>Dichrocephala integrifolia</i> (L.f.) Kuntze
Asteraceae	<i>Echinops amplexicaulis</i> Oliv.
ASTERACEAE	<i>Emilia discifolia</i> (Oliv.) C.Jeffrey
Asteraceae	<i>Euryops brownei</i> S.Moore
ASTERACEAE	<i>Felicia muricata</i> (Thunb.) Nees
ASTERACEAE	<i>Galinsoga parviflora</i> Cav.
ASTERACEAE	<i>Gnaphalium unionis</i> Sch.Bip. ex Oliv. & Hiern
ASTERACEAE	<i>Gutenbergia rueppellii</i> Sch.Bip.
ASTERACEAE	<i>Gutenbergia</i> sp.
ASTERACEAE	<i>Helichrysum forskahlii</i> (J.F.Gmel.) Hilliard & B.L.Burt
Asteraceae	<i>Helichrysum glumaceum</i> DC.
Asteraceae	<i>Helichrysum meyeri-johannis</i> Engl.
ASTERACEAE	<i>Helichrysum odoratissimum</i> (L.) Less.
ASTERACEAE	<i>Helichrysum schimperi</i> (Sch.Bip.) Moeser
ASTERACEAE	<i>Hirpicium diffusum</i> (O.Hoffm.) Roessler
ASTERACEAE	<i>Kleinia abyssinica</i> (A.Rich.) A.Berger
ASTERACEAE	<i>Kleinia petraea</i> (R.E.Fr.) C.Jeffrey
ASTERACEAE	<i>Lactuca inermis</i> Forssk.
Asteraceae	<i>Launaea cornuta</i> (Hochst. ex Oliv. & Hiern) C.Jeffre
Asteraceae	<i>Osteospermum vaillantii</i> (Decne.) Norl.
Asteraceae	<i>Piloselloides hirsuta</i> (Forssk.) C. Jeffrey
ASTERACEAE	<i>Psiadia punctulata</i> (DC.) Vatke
Asteraceae	<i>Schkuhria pinnata</i> (Lam.) Kuntze
ASTERACEAE	<i>Senecio hadiensis</i> Forssk.
ASTERACEAE	<i>Senecio syringifolius</i> O.Hoffm.
ASTERACEAE	<i>Solanecio angulatus</i> (Vahl) C.Jeffrey
ASTERACEAE	<i>Solanecio cydoniifolius</i> (O.Hoffm.) C.Jeffrey
ASTERACEAE	<i>Sonchus asper</i> (L.) Hill
ASTERACEAE	<i>Sphaeranthus suaveolens</i> (Forssk.) DC.
ASTERACEAE	<i>Tagetes minuta</i> L.
ASTERACEAE	<i>Tarchonanthus camphoratus</i> L.
ASTERACEAE	<i>Vernonia brachycalyx</i> O.Hoffm.
Asteraceae	<i>Vernonia galamensis</i> (Cass.) Less.
ASTERACEAE	<i>Vernonia schweinfurthii</i> Oliv. & Hiern
ASTERACEAE	<i>Vernonia smithiana</i> Less.

ASTERACEAE	<i>Helichrysum nudifolium</i> (L.) Less. var. <i>nudifolium</i>
ASTERACEAE	<i>Helichrysum nudifolium</i> (L.) Less. var. <i>oxyphyllum</i> (DC.) Beentje.
ASTERACEAE	<i>Inula decipiens</i> E.A.Bruce
Balsaminaceae	<i>Impatiens</i> sp.
BASELLACEAE	<i>Basella alba</i> L.
BORAGINACEAE	<i>Cordia monoica</i> Roxb.
Boraginaceae	<i>Cynoglossum lanceolatum</i> Forssk.
CAESALPINIACEAE	<i>Caesalpinia decapetala</i> (Roth) Alston
CAESALPINIACEAE	<i>Chamaecrista hildebraendtii</i>
CAESALPINIACEAE	<i>Chamaecrista mimosoides</i> (L.) Greene
CAESALPINIACEAE	<i>Pterolobium stellatum</i> (Forssk.) Brenan
CAESALPINIACEAE	<i>Senna didymobotrya</i> (Fresen.) Irwin & Barneby
CAESALPINIACEAE	<i>Senna septemtrionalis</i> (Viviani) Irwin & Barneby
CAESALPINIACEAE	<i>Senna singueana</i> (Delile) Lock
CAMPANULACEAE	<i>Wahlenbergia corymbosa</i>
CAMPANULACEAE	<i>Wahlenbergia virgata</i> Engl.
Campanulaceae	<i>Canarina abyssinica</i> Engl.
CANELLACEAE	<i>Warburgia ugandensis</i> Sprague
CAPPARACEAE	<i>Cleome monophylla</i> L.
CAPPARACEAE	<i>Maerua triphylla</i> A.Rich.
CELASTRACEAE	<i>Gymnosporia arbutifolia</i> (Hochst. ex A.Rich.) Loes.
CELASTRACEAE	<i>Loeseneriella africana</i> (Willd.) N.Hallé
CELASTRACEAE	<i>Maytenus senegalensis</i> (Lam.) Exell
CELASTRACEAE	<i>Mystroxydon aethiopicum</i> (Thunb.) Loes.
Chenopodiaceae	<i>Chenopodium carinatum</i> R.Br.
CLUSIACEAE	<i>Garcinia livingstonei</i> T.Anderson
COMBRETACEAE	<i>Combretum molle</i> R.Br. ex G.Don
COMMELINACEAE	<i>Aneilema aequinoctiale</i> Kunth
COMMELINACEAE	<i>Commelina africana</i> L.
COMMELINACEAE	<i>Commelina benghalensis</i> Wall.
COMMELINACEAE	<i>Commelina diffusa</i> Burm.f.
COMMELINACEAE	<i>Commelina latifolia</i> Hochst. ex A.Rich.
COMMELINACEAE	<i>Commelina reptans</i> Brenan
COMMELINACEAE	<i>Commelina subulata</i> Roth
COMMELINACEAE	<i>Cyanotis barbata</i> D.Don
COMMELINACEAE	<i>Cyanotis foecunda</i> Hassk.
Commelinaceae	<i>Aneilema hockii</i> De Wild.
CONVOLVULACEAE	<i>Cuscuta kilimanjari</i> Oliv.
CONVOLVULACEAE	<i>Cuscuta</i> sp.
CONVOLVULACEAE	<i>Dichondra repens</i> J.R.Forst. & G.Forst.
Convolvulaceae	<i>Evolvulus alsinoides</i> (L.) L.
CONVOLVULACEAE	<i>Ipomoea blepharophylla</i> Hallier f.

CONVOLVULACEAE	<i>Ipomoea cairica</i> (L.) Sweet
CONVOLVULACEAE	<i>Ipomoea fulvicaulis</i> (Choisy) Hallier f. var. <i>fulvicaulis</i>
CONVOLVULACEAE	<i>Ipomoea kituiensis</i> Vatke var. <i>kituiensis</i>
CONVOLVULACEAE	<i>Ipomoea mombassana</i> Vatke ssp. <i>massaica</i> Verdc.
CONVOLVULACEAE	<i>Ipomoea wightii</i> (Wall.) Choisy
CRASSULACEAE	<i>Crassula alsinoides</i> (Hook.f.) Engl.
CRASSULACEAE	<i>Crassula globulariondes</i> Britten
CRASSULACEAE	<i>Crassula granvikii</i> Mildbr.
CRASSULACEAE	<i>Crassula nodulosa</i> Sch"nl.
CRASSULACEAE	<i>Crassula schimperii</i> Fisch. & C.A.Mey.
CRASSULACEAE	<i>Crassula volkensis</i> Engl. ssp. <i>volkensis</i>
CRASSULACEAE	<i>Kalanchoe densiflora</i> Rolfe
CRASSULACEAE	<i>Kalanchoe glaucescens</i> Britten
CRASSULACEAE	<i>Kalanchoe lanceolata</i> (Forssk.) Pers.
CRASSULACEAE	<i>Kalanchoe</i> sp. (exotic)
Cruciferae	<i>Rorippa microphylla</i> (Boenn.) Hyl.
Cruciferae	<i>Erucastrum arabicum</i> Fisch. & C.A.Mey.
CUCURBITACEAE	<i>Coccinia adoensis</i> (A.Rich.) Cogn.
CUCURBITACEAE	<i>Cucumis</i> sp.
CUCURBITACEAE	<i>Trochomeria macrocarpa</i> (Sond.) Hook.f. ssp. <i>macrocarpa</i>
CUCURBITACEAE	<i>Zehneria</i> sp.
CUPRESSACEAE	<i>Juniperus procera</i> Endl.
CYPERACEAE	<i>Bulbostylis boeckeleriana</i> (Schweinf.) Beetle var. <i>boeckeleriana</i>
CYPERACEAE	<i>Courtoisina assimilis</i> (Steud.) Maquet
CYPERACEAE	<i>Cyperus cyperoides</i> (L.) Kuntze
CYPERACEAE	<i>Cyperus denudatus</i> L.f.
CYPERACEAE	<i>Cyperus dichrostachyus</i> Kük.
CYPERACEAE	<i>Cyperus distans</i> L.f.
CYPERACEAE	<i>Cyperus impubes</i> Steud.
CYPERACEAE	<i>Cyperus involucratus</i> Rottb.
CYPERACEAE	<i>Cyperus laevigatus</i> L.
CYPERACEAE	<i>Cyperus rigidifolius</i> Steud.
CYPERACEAE	<i>Cyperus schimperianus</i> Steud.
CYPERACEAE	<i>Isolepis fluitans</i> (L.) R.Br.
CYPERACEAE	<i>Kyllinga odorata</i> var. <i>major</i> (C.B.Clarke) Chiov.
CYPERACEAE	<i>Schoenoxiphium lehmannii</i> (Nees) Kenth ex Steud.
CYPERACEAE	<i>Cyperus mollipes</i> (C.B.Clarke) K.Schum
CYPERACEAE	<i>Cyperus niveus</i> Retz. var. <i>leucocephalus</i>
DIOSCOREACEAE	<i>Dioscorea asteriscus</i> Burkill
DIOSCOREACEAE	<i>Dioscorea quartiniana</i> A.Rich.
Dioscoreaceae	<i>Dioscorea schimperana</i> Kunth
Dracaenaceae	<i>Sansevieria parva</i> N.E.Br.

Dracaenaceae	<i>Sansevieria robusta</i> N. E. Br.
EBENACEAE	<i>Diospyros abyssinica</i> (Hiern) F.White
EBENACEAE	<i>Euclea divinorum</i> Hiern
EUPHORBIACEAE	<i>Acalypha brachystachya</i> Hornem.
EUPHORBIACEAE	<i>Acalypha fruticosa</i> Forssk. var. <i>englandulosa</i>
EUPHORBIACEAE	<i>Acalypha racemosa</i> Baill.
EUPHORBIACEAE	<i>Acalypha stuhlmannii</i> Pax
EUPHORBIACEAE	<i>Acalypha volkensis</i> Pax
EUPHORBIACEAE	<i>Bridelia micrantha</i> (Hochst.) Baill.
EUPHORBIACEAE	<i>Clutia abyssinica</i> Jaub. & Spach
EUPHORBIACEAE	<i>Croton dichogamus</i> Pax
EUPHORBIACEAE	<i>Croton macrostachyus</i> Delile
EUPHORBIACEAE	<i>Croton megalocarpus</i> Hutch.
EUPHORBIACEAE	<i>Drypetes gerrardii</i> Hutch.
EUPHORBIACEAE	<i>Erythrococca bongensis</i> Pax
EUPHORBIACEAE	<i>Erythrococca fischeri</i> Pax
EUPHORBIACEAE	<i>Euphorbia candelabrum</i> Trémaux ex Kotschy
EUPHORBIACEAE	<i>Euphorbia crotonoides</i> Boiss.
EUPHORBIACEAE	<i>Euphorbia cyparissioides</i> Pax
EUPHORBIACEAE	<i>Euphorbia heterochroma</i> Pax
EUPHORBIACEAE	<i>Euphorbia inaequilatera</i> Sond.
EUPHORBIACEAE	<i>Euphorbia schimperiana</i> Scheele
EUPHORBIACEAE	<i>Margaritaria discoidea</i> (Baill.) G.L.Webster
EUPHORBIACEAE	<i>Phyllanthus fischeri</i> Pax
EUPHORBIACEAE	<i>Phyllanthus maderaspatensis</i> L.
EUPHORBIACEAE	<i>Phyllanthus odontadenius</i> Müll.Arg.
EUPHORBIACEAE	<i>Phyllanthus ovalifolius</i> Forssk.
EUPHORBIACEAE	<i>Ricinus communis</i> L.
EUPHORBIACEAE	<i>Tragiella natalensis</i> (Sond.) Pax & K.Hoffm.
Flacourtiaceae	<i>Dovyalis abyssinica</i> (A.Rich.) Warb.
Flacourtiaceae	<i>Dovyalis macrocalyx</i> (Oliv.) Warb.
Flacourtiaceae	<i>Rawsonia lucida</i> Harv. & Sond.
Gentianaceae	<i>Sebaea brachyphylla</i> Griseb.
Geraniaceae	<i>Monsonia angustifolia</i> A.Rich.
Geraniaceae	<i>Geranium ocellatum</i> Cambess.
Guttiferae	<i>Hypericum annulatum</i> Moris
HAMAMELIDACEAE	<i>Trichocladus ellipticus</i> Eckl. & Zeyh.
Hyacinthaceae	<i>Ornithogalum tenuifolium</i> F. Delaroche
Hydrocharitaceae	<i>Egeria densa</i> Planch.
Hypoxidaceae	<i>Hypoxis obtusa</i> Burch.
ICACINACEAE	<i>Apodytes dimidiata</i> E.Mey. ex Arn.
Iridaceae	<i>Gladiolus newii</i> Bak.

LAMIACEAE	Fuerstia africana T.C.E.Fr.
LAMIACEAE	Leucas calostachys Oliv.
LAMIACEAE	Leucas martinicensis (Jacq.) R.Br.
LAMIACEAE	Ocimum filamentosum Forssk.
LAMIACEAE	Ocimum gratissimum L.
LAMIACEAE	Ocimum kilimandscharicum Baker ex Gürke
LAMIACEAE	Ocimum obovatum Benth.
LAMIACEAE	Plectranthus montanus
LAMIACEAE	Plectranthus sp.
LAMIACEAE	Rothea myricoides (Hochst.) Steane & Mabb.
LAMIACEAE	Tetradenia riparia (Hochst.) Codd
LAMIACEAE	Tinnea aethiopica Kotschy ex Hook.f.
LAMIACEAE	Ajuga integrifolia Buch.-Ham.
LOGANIACEAE	Strychnos henningsii Gilg
Loranthaceae	Englerina inaequilatera (Engl.) Balle ex Polhill & Wiens
Loranthaceae	Phragmanthera usuiensis (Oliv.) M.Gilbert
Lythraceae	Lythrum rotundifolium A.Rich.
MALVACEAE	Abutilon grandiflorum G.Don
MALVACEAE	Abutilon mauritanum (Jacq.) Sweet
MALVACEAE	Abutilon sp.
MALVACEAE	Hibiscus aethiopicus L.
MALVACEAE	Hibiscus aponeurus Sprague & Hutch.
MALVACEAE	Hibiscus berberidifolius A.Rich.
MALVACEAE	Hibiscus calyphyllus Cav.
MALVACEAE	Hibiscus cannabinus L.
MALVACEAE	Hibiscus fuscus Garcke
MALVACEAE	Hibiscus macranthus A.Rich.
MALVACEAE	Hibiscus vitifolius L.
MALVACEAE	Pavonia patens (Andrews) Chiov.
MALVACEAE	Pavonia urens Cav.
MALVACEAE	Sida acuta Burm.f.
MALVACEAE	Sida ovata Forssk.
MALVACEAE	Sida rhombifolia L.
MALVACEAE	Sida tenuicarpa Vollesen
Malvaceae	Azanza garckeana (F.Hoffm.) Exell & Hillc.
Marsileaceae	Marsilea sp.
Meliaceae	Turraea mombassana C.DC.
Meliaceae	Ekebergia capensis Sparrm.
Menispermaceae	Cissampelos pareira L.
Menispermaceae	Cissampelos mucronata A.Rich.
MIMOSACEAE	Acacia abyssinica Hochst. ex Benth.
MIMOSACEAE	Acacia brevispica Harms

MIMOSACEAE	<i>Acacia gerrardii</i> Benth.
MIMOSACEAE	<i>Acacia hockii</i> De Wild.
MIMOSACEAE	<i>Acacia xanthophloea</i> Benth.
MIMOSACEAE	<i>Albizia gummifera</i> (J.F.Gmel.) C.A.Sm.
MIMOSACEAE	<i>Dichrostachys cinerea</i> (L.) Wight & Arn.
MORACEAE	<i>Dorstenia hildebrandtii</i> Engl. var. <i>schlechteri</i> (Engl.) Hijman
MORACEAE	<i>Ficus ingens</i> (Miq.) Miq.
MORACEAE	<i>Ficus sycomorus</i> L.
MORACEAE	<i>Ficus thonningii</i> Blume
MORACEAE	<i>Ficus wakefieldii</i> Hutch.
MYRTACEAE	<i>Syzygium cordatum</i> Hochst.
MYRTACEAE	<i>Syzygium guineense</i> (Willd.) DC.
Nymphaeaceae	<i>Nymphaea nouchali</i> Burm.f.
OCHNACEAE	<i>Ochna holstii</i> Engl.
OCHNACEAE	<i>Ochna insculpta</i> Sleumer
OLEACEAE	<i>Chionanthus battiscombei</i> (Hutch.) Stearn
OLEACEAE	<i>Jasminum floribundum</i> Fres.
OLEACEAE	<i>Jasminum fluminense</i> Vell.
OLEACEAE	<i>Olea europaea</i> L. ssp. <i>africana</i>
OLEACEAE	<i>Schrebera alata</i> (Hochst.) Welw.
Oliniaceae	<i>Olinia rochetiana</i> A.Juss.
Onagraceae	<i>Ludwigia abyssinica</i> A. Rich.
ORCHIDACEAE	<i>Aerangis confusa</i> J.Stewart
ORCHIDACEAE	<i>Angraecum erectum</i> Summerh.
ORCHIDACEAE	<i>Microcoelia globulosa</i> (Ridl.) L. Jonss.
ORCHIDACEAE	<i>Rangaeria amaniensis</i> (Kraenzl.) Summerh.
OXALIDACEAE	<i>Oxalis corniculata</i> L.
OXALIDACEAE	<i>Oxalis latifolia</i> Kunth
OXALIDACEAE	<i>Oxalis obliquifolia</i> Steud. ex A.Rich.
Oxalidaceae	<i>Biophytum abyssinicum</i> A.Rich.
Palmae	<i>Phoenix reclinata</i> Jacq.
PAPILIONACEAE	<i>Aeschynomene schimperii</i> A.Rich.
PAPILIONACEAE	<i>Antopetitia abyssinica</i> A.Rich.
PAPILIONACEAE	<i>Crotalaria agatiflora</i> Schweinf.
PAPILIONACEAE	<i>Crotalaria brevidens</i> Benth.
PAPILIONACEAE	<i>Crotalaria fascicularis</i> Polhill
PAPILIONACEAE	<i>Crotalaria incana</i> L.
PAPILIONACEAE	<i>Crotalaria lachnocarpoides</i> Engl.
PAPILIONACEAE	<i>Crotalaria</i> sp.
PAPILIONACEAE	<i>Crotalaria vallicola</i> Baker f.
PAPILIONACEAE	<i>Dolichos oliveri</i> Schweinf.
PAPILIONACEAE	<i>Eriosema juronianum</i> Staner & De Craene

PAPILIONACEAE	<i>Eriosema nutans</i> Schinz
PAPILIONACEAE	<i>Eriosema rhodesicum</i> R.E.Fr.
PAPILIONACEAE	<i>Eriosema shirensense</i> Baker f.
PAPILIONACEAE	<i>Erythrina abyssinica</i> Lam. ex DC.
PAPILIONACEAE	<i>Indigofera arrecta</i> A. Rich
PAPILIONACEAE	<i>Indigofera atriceps</i> Hook.f.
PAPILIONACEAE	<i>Indigofera circinella</i> Baker f.
PAPILIONACEAE	<i>Indigofera secundiflora</i> Poir.
PAPILIONACEAE	<i>Indigofera spicata</i> Forssk.
PAPILIONACEAE	<i>Indigofera swaziensis</i> Bolus
PAPILIONACEAE	<i>Indigofera trita</i> L.f.
PAPILIONACEAE	<i>Indigofera volkensii</i> Taub.
PAPILIONACEAE	<i>Macrotyloma axillare</i> (E.Mey.) Verdc.
PAPILIONACEAE	<i>Neonotonia wightii</i> (Wight & Arn.) J.A.Lackey
PAPILIONACEAE	<i>Ormocarpum trachycarpum</i> (Taub.) Harms
PAPILIONACEAE	<i>Pseudarthria hookeri</i> Wight & Arn.
PAPILIONACEAE	<i>Rhynchosia elegans</i> A.Rich.
PAPILIONACEAE	<i>Rhynchosia</i> sp.
PAPILIONACEAE	<i>Rhynchosia totta</i> (Thunb.) DC. var. <i>venulosa</i>
PAPILIONACEAE	<i>Rhynchosia usambarensis</i> Taub. ssp. <i>usambarensis</i> var. <i>usambarensis</i>
PAPILIONACEAE	<i>Sesbania</i> sp.
PAPILIONACEAE	<i>Stylosanthes fruticosa</i> (Retz.) Alston
PAPILIONACEAE	<i>Tephrosia emeroides</i> A. Rich
PAPILIONACEAE	<i>Tephrosia holstii</i> Taub.
PAPILIONACEAE	<i>Tephrosia linearis</i> (Willd.) Pers.
PAPILIONACEAE	<i>Tephrosia villosa</i> (L.) Pers.
PAPILIONACEAE	<i>Trifolium semipilosum</i> Fressen var. <i>seunipolsum</i>
PAPILIONACEAE	<i>Trifolium</i> sp.
PAPILIONACEAE	<i>Vigna macrorhyncha</i> (Harms) Milne-Redh.
PAPILIONACEAE	<i>Vigna membranacea</i> A.Rich. ssp. <i>caesia</i> (Chiov.) Verdc.
PAPILIONACEAE	<i>Vigna</i> sp.
PAPILIONACEAE	<i>Vigna vexillata</i> (L.) A.Rich.
PAPILIONACEAE	<i>Zornia setosa</i> Baker f.
Pedaliaceae	<i>Sesamum angustifolium</i> (Oliv.) Engl.
Piperaceae	<i>Peperomia abyssinica</i> Miq.
Piperaceae	<i>Peperomia tetraphylla</i> (G.Forst.) Hook. & Arn.
POACEAE	<i>Aristida adoensis</i> Hochst.
POACEAE	<i>Bothriochloa insculpta</i> (Hochst. ex A.Rich.) A.Camus
POACEAE	<i>Brachiaria brizantha</i> (Hochst. ex A.Rich.) Stapf
POACEAE	<i>Brachiaria scalaris</i> Pilg.
POACEAE	<i>Brachiaria semiundulata</i> (A.Rich.) Stapf
POACEAE	<i>Brachiaria serrata</i> (Thunb.) Stapf

POACEAE	<i>Chloris gayana</i> Kunth
POACEAE	<i>Cymbopogon caesius</i> (Hook. & Arn.) Stapf
POACEAE	<i>Digitaria velutina</i> (Forssk.) P.Beauv.
POACEAE	<i>Echinochloa colona</i> (L.) Link
POACEAE	<i>Ehrharta erecta</i> Lam.
POACEAE	<i>Eleusine indica</i> (L.) Gaertn.
POACEAE	<i>Eragrostis braunii</i> Schweinf.
POACEAE	<i>Eragrostis exasperata</i> Peter
POACEAE	<i>Eragrostis kiwuensis</i> Jedwabn.
POACEAE	<i>Eragrostis paniciformis</i> (A.Br.) Steud.
POACEAE	<i>Eragrostis pseudosclerantha</i> Chiov.
POACEAE	<i>Eragrostis pycnostachys</i> Clayton
POACEAE	<i>Eragrostis racemosa</i> (Thunb.) Steud.
POACEAE	<i>Eragrostis superba</i> Peyr.
POACEAE	<i>Eragrostis tenuifolia</i> (A.Rich.) Steud.
POACEAE	<i>Harpachne schimperi</i> Hochst. ex A.Rich.
POACEAE	<i>Heteropogon contortus</i> (L.) Roem. & Schult.
POACEAE	<i>Hyparrhenia anamesa</i> Clayton
POACEAE	<i>Hyperthelia dissoluta</i> (Steud.) Clayton
POACEAE	<i>Leptochloa rupestris</i> C.E.Hubb.
POACEAE	<i>Loudetia kagerensis</i> (K.Schum.) Hutch.
POACEAE	<i>Melinis repens</i> (Willd.) Zizka
POACEAE	<i>Oplismenus hirtellus</i> (L.) P.Beauv.
POACEAE	<i>Panicum maximum</i> Jacq.
POACEAE	<i>Paspalum scrobiculatum</i> L.
POACEAE	<i>Pennisetum mezianum</i> Leeke
POACEAE	<i>Setaria kagerensis</i> Mez
POACEAE	<i>Setaria plicatilis</i> (Hochst.) Hack. ex Engl.
POACEAE	<i>Setaria pumila</i> (Poir.) Roem. & Schult.
POACEAE	<i>Setaria sphacelata</i> (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss
POACEAE	<i>Sporobolus africanus</i> (Poir.) Robyns & Tournay
POACEAE	<i>Sporobolus agrostoides</i> Chiov.
POACEAE	<i>Sporobolus fimbriatus</i> (Trin.) Nees
POACEAE	<i>Sporobolus pyramidalis</i> P.Beauv.
POACEAE	<i>Sporobolus stapfianus</i> Gand.
POACEAE	<i>Themeda triandra</i> Forssk.
POACEAE	<i>Tragus berteronianus</i> Schult.
POLYGALACEAE	<i>Polygala erioptera</i> DC.
POLYGALACEAE	<i>Polygala petitiana</i> A.Rich.
POLYGALACEAE	<i>Polygala sadebeckiana</i> Gürke
POLYGALACEAE	<i>Polygala</i> sp.
POLYGONACEAE	<i>Oxygonum sinuatum</i> (Meisn.) Dammer

POLYGONACEAE	<i>Persicaria setosula</i> (A.Rich.) K.L.Wilson
Polygonaceae	<i>Polygonum setosulum</i> A. Rich
Polygonaceae	<i>Rumex steudelii</i> A.Rich.
Polygonaceae	<i>Rumex steudelii</i> Hochst
POLYPODIACEAE	<i>Pleopeltis macrocarpa</i> (Bory ex Willd.) Kaulf.
Portulacaceae	<i>Portulaca massaica</i> S.M.Phillips
Potamogetonaceae	<i>Potamogeton schweinfurthii</i> A.Benn.
Proteaceae	<i>Faurea rochetiana</i> (A.Rich.) Pic.Serm.
Proteaceae	<i>Protea gagedi</i> J.F.Gmel.
PTERIDACEAE	<i>Doryopteris kirkii</i> (Hook.) Alston
Ranunculaceae	<i>Clematis brachiata</i> Thunb.
Ranunculaceae	<i>Clematis simensis</i> Fresen.
Ranunculaceae	<i>Ranunculus multifidus</i> Forssk.
Resedaceae	<i>Caylusea abyssinica</i> (Fresen.) Fisch. & C.A.Mey.
RHAMNACEAE	<i>Helinus mystacinus</i> (Aiton) Steud.
RHAMNACEAE	<i>Rhamnus staddo</i> A.Rich.
RHAMNACEAE	<i>Scutia myrtina</i> (Burm.f.) Kurz
RUBIACEAE	<i>Canthium lactescens</i> Hiern
RUBIACEAE	<i>Coptosperma graveolens</i> (S.Moore) Degreef
RUBIACEAE	<i>Galium spurium</i> L. ssp. <i>africanum</i> Verdc.
Rubiaceae	<i>Gardenia ternifolia</i> Schumach. & Thonn.
RUBIACEAE	<i>Pentania ouranogyne</i> S.Moore
RUBIACEAE	<i>Pentas parvifolia</i> Hiern
RUBIACEAE	<i>Psychotria kirkii</i> Hiern
RUBIACEAE	<i>Psydrax schimperiana</i> (A.Rich.) Bridson
RUBIACEAE	<i>Pyrostria phyllanthoidea</i> (Baill.) Bridson
RUBIACEAE	<i>Rubia cordifolia</i> L.
RUBIACEAE	<i>Vangueria infausta</i> Burch.
RUBIACEAE	<i>Vangueria madagascariensis</i> J.F.Gmel.
RUBIACEAE	<i>Vangueria volkensii</i> K.Schum.
Rubiaceae	<i>Richardia brasiliensis</i> Gomes
Rubiaceae	<i>Kohautia</i> sp.
RUTACEAE	<i>Calodendrum capense</i> Thunb.
RUTACEAE	<i>Clausena anisata</i> (Willd.) Hook.f. ex Benth.
RUTACEAE	<i>Toddalia asiatica</i> (L.) Lam.
RUTACEAE	<i>Vepris nobilis</i> (Delile) Mziray
RUTACEAE	<i>Vepris simplicifolia</i> (Engl.) Mziray
RUTACEAE	<i>Zanthoxylum usambarense</i> (Engl.) Kokwaro
SALICACEAE	<i>Trimeria grandifolia</i> (Hochst.) Warb.
SANTALACEAE	<i>Osyridicarpos schimperianus</i> A.DC.
SANTALACEAE	<i>Osyris lanceolata</i> Hochst. & Steud.
SAPINDACEAE	<i>Dodonaea angustifolia</i> L.f.

SAPINDACEAE	<i>Dodonaea viscosa</i> Jacq. var. <i>angustifolia</i> (L.f.) Benth.
SCROPHULARIACEAE	<i>Craterostigma plantagineum</i> Hochst.
SCROPHULARIACEAE	<i>Cycnium herzfeldianum</i> (Vatke) Engl.
SCROPHULARIACEAE	<i>Cycnium tubulosum</i> subsp. <i>montanum</i> (N.E.Br.) O.J.Hansen
Scrophulariaceae	<i>Striga asiatica</i> (L.) Kuntze
Scrophulariaceae	<i>Veronica abyssinica</i> Fresen.
Selaginellaceae	<i>Selaginella kraussiana</i> (Kunze) A.Braun
SINOPTERIDACEAE	<i>Pellaea calomelanos</i> (Sw.) Link
SINOPTERIDACEAE	<i>Pellaea viridis</i> (Forssk.) Prantl
Solanaceae	<i>Physalis peruviana</i> L.
SOLANACEAE	<i>Solanum aculeastrum</i> Dunal
SOLANACEAE	<i>Solanum campylacanthum</i> A. Rich.
SOLANACEAE	<i>Solanum nigrum</i> L.
SOLANACEAE	<i>Withania somnifera</i> (L.) Dunal
Solanaceae	<i>Datura stramonium</i> L.
Solanaceae	<i>Lycopersicon esculentum</i> Mi
Solanaceae	<i>Nicandra physaloides</i> Gaertn.
STERCULIACEAE	<i>Dombeya burgessiae</i> Gerrard ex Harv.
STERCULIACEAE	<i>Dombeya rotundifolia</i> (Hochst.) Planch.
STERCULIACEAE	<i>Dombeya</i> sp.
Sterculiaceae	<i>Melhania velutina</i> Forssk.
Sterculiaceae	<i>Waltheria indica</i> L.
THYMELAEACEAE	<i>Gnidia subcordata</i> Meisn.
TILIACEAE	<i>Grewia similis</i> K.Schum.
TILIACEAE	<i>Grewia tembensis</i> Fresen.
Umbelliferae	<i>Agrocharis melanantha</i> Hochst.
Umbelliferae	<i>Apium leptophyllum</i> (Pers.) Benth.
Umbelliferae	<i>Sanicula elata</i> D.Don
URTICACEAE	<i>Droguetia iners</i> (Forssk.) Schweinf.
URTICACEAE	<i>Girardinia diversifolia</i> (Link) Friis
URTICACEAE	<i>Obetia radula</i> (Baker) B.D.Jacks.
URTICACEAE	<i>Pouzolzia parasitica</i> (Forssk.) Schweinf.
VERBENACEAE	<i>Lantana trifolia</i> L.
VERBENACEAE	<i>Lippia javanica</i> (Burm.f.) Spreng.
VERBENACEAE	<i>Priva adhaerens</i> (Forssk.) Chiov.
VISCACEAE	<i>Viscum schimperii</i> Engl.
VISCACEAE	<i>Viscum tuberculatum</i> A.Rich.
VITACEAE	<i>Cissus petiolata</i> Hook.f.
VITACEAE	<i>Cissus quadrangularis</i> L.
VITACEAE	<i>Cyphostemma adenocaula</i> (A.Rich.) Wild & R.B.Drumm. ssp. <i>adenocaula</i>
VITACEAE	<i>Cyphostemma cyphopetalum</i> (Fresen.) Wild & R.B.Drumm.

VITACEAE	Cyphostemma serpens (A.Rich.) Desc.
VITACEAE	Rhoicissus tridentata (L.f.) Wild & R.B.Drumm.