

Flora and vegetation of Lewa Wildlife Conservancy

An introduction to the plants and vegetation types found at Lewa Wildlife Conservancy, Kenya

by

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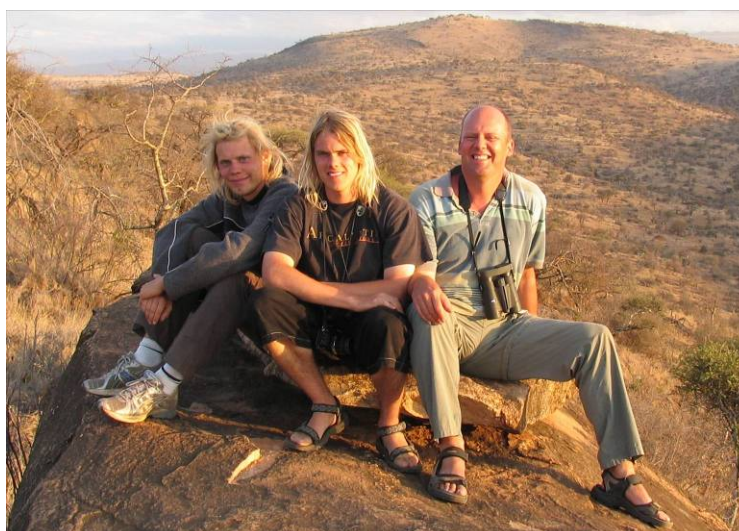
Acknowledgements

In July-August 2006 the authors carried out a vegetation study at Lewa Wildlife Conservancy, which culminated in a report titled "*Habitat Changes at Lewa Wildlife Conservancy, Kenya. From cattle ranch to conservation area: effects of changing management on habitat from 1962-2006*". During the study, the idea emerged to produce this introduction to the flora and vegetation as a companion report to the one on habitat changes.

It has been a great pleasure carrying out this study for Lewa Wildlife Conservancy (LWC), and we find ourselves privileged at having been able to spend this time at LWC. We would particularly like to thank Ian Craig (Executive Director LWC) for his support, and particularly Geoffrey Chege, head of LWC's research department, for making all the practical arrangements. Special thanks also go to other LWC staff, including David Parkinson (Deputy Director), Richard Moller (Head of Security & Wildlife Management), and LWC's rangers, who took good care of us and ensured our safety. Among the latter we would particularly like to mention and thank Francis Kobia Chokera, who accompanied us on a daily basis, keeping us out of harm's way and helping out where he could during field work activities. Thanks also goes to our driver, Michael Githinji Gachura, who apart from being very skilful and knowledgeable, was also a great source of mirth and good cheer. We are also grateful to Anna Wambui Mbugua and Caroline Kanana Nkonge, who were responsible for maintaining the research guesthouse, and provided us with excellent meals throughout. We would like to thank Mrs Delia Craig and Mr David Craig for their kind hospitality and for their insights on how Lewa has fared over the past decades. Lastly, we would like to kindly thank Dr. Jan Wieringa (Scientific Curator) and his colleagues at Wageningen Herbarium, the Netherlands, for assisting with plant identification.

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1 Introduction

1.1 General introduction

Up until the early 1980s, Lewa Downs was a 200 km² farm in Central Kenya run by the Craig family. The main economic activities at Lewa at the time included cattle and sheep herding, but also market gardening, wildlife conservation and game viewing – ‘ecotourism’ before the word was invented. Since then there have been significant changes. Lewa has become a Wildlife Conservancy run by a board of trustees, and conservation of endangered species – especially black rhinos and Grevy’s zebra – are its main focus. Until the early 1980s, Lewa had few fences, as cattle were herded in a traditional way by local herders and were corralled in a boma (or thornbush enclosure) at night for protection against predators. As a result of a lack of fencing and protection against poachers, wildlife sought refuge in the area and their numbers on the property significantly increased.

When Lewa became a refuge for rhinos in the early 1980s, fencing was partly reintroduced to prevent rhinos from leaving Lewa and straying into areas where they could easily be poached. Gradually – especially after the Wildlife Conservancy was established in 1995 – more fencing was reintroduced, and currently the whole conservancy is fenced, with a few ‘rhino-proof’ gates remaining to allow other wildlife to migrate in and out. Other changes since 1979-80 include an increase in the number of tourist camps in the area, and an increase in the road network. There has also been a very significant increase in the human population around Lewa. In the (now distant) past this was a major challenge, but now it has been turned into an opportunity thanks to various cooperative programmes with Lewa that include schooling, job opportunities, controlled dry season grazing by local community cattle and community-based ecotourism. Lastly, uncontrolled fires occurred regularly two decades ago, but nowadays controlled burning is part of Lewa’s management strategy, although irregular accidental fires still occur.

As part of a 1979-1980 study, a “Photo album of the common plants of Lewa Downs” was produced by Lex Linsen and Wim Giesen at special request of David and Delia Craig. This album did good service in satisfying the curiosity of visitors to Lewa and Wilderness Trails Camp for a number of years, until it was eventually lost. The idea for the present booklet came whilst preparing for the recent (2006) study on changes in vegetation and habitats at Lewa from 1962-2006.

The aim of this booklet is to provide a basis for future work on plants and vegetation at Lewa, and encourage interest and study. Also, the idea was that it would be also presented as a digital version, so that updates and new prints could easily be generated. While Lewa Wildlife Conservancy is first and foremost a conservation area for endangered wildlife, it also harbours a highly interesting flora that reflects its transitional location between highland and lowland, and includes a number of rare and unusual species. This booklet is far from exhaustive – which is to be expected as the emphasis of the study was on vegetation change, and not creating a flora. Nevertheless, a full 2/3’s of the 250 plant species listed are covered with a description and photo, although future studies will undoubtedly significantly expand the list, especially if studies are carried out in the Ngare Ndare forest area.

1.2 Field work at Lewa Wildlife Conservancy

In 1979-80, Lex Linsen and the first author of this report (Wim Giesen), carried out the first comprehensive study of the vegetation of (then) Lewa Downs ranch, culminating in the report "An ecological study of Lewa Downs, a seasonally dry, central Kenyan grassland" (Linsen & Giesen, 1983). Since then, two students from South Africa's Pretoria University have carried out studies on the vegetation: J. O. Botha's "A resource management plan for the Lewa Wildlife Conservancy in the Meru District of the Central Kenyan Highlands" (Botha, 1999) and A. Von Holdt's "Ecological separation by browsers on the Lewa Wildlife Conservancy, Kenya" (Von Holdt, 1999).

Field work for the present study was carried out at Lewa Wildlife Conservancy from 29 July to 19 August 2006. Use was made of the research facility and guesthouse that had recently been constructed with support from Marwell Zoological Park in the United Kingdom. A 4-WD vehicle was hired for the entire period, and field assistance was kindly provided by LWC ranger, Francis Kobia Chokera, and the driver, Michael Githinji Gachura.

While most of the work focused on the habitat changes study, plants were identified, photographed and collected in a temporary herbarium for later identification at the LWC research facility. Herbarium specimens were identified, where possible, using floras such as Dale and Greenway (1961), Blundell (1987), Agnew and Agnew (1994), and Dharani (2002).

1.3 Follow-up desk-top activities in the Netherlands

Herbarium specimens were left at Lewa (as was the plant press), as taking them from the country would require special permits. Further identification in the Netherlands was possible, however, using photographs and sketches made in the field, along with several dozen editions of the Flora of Tropical East Africa. In one case (*Trichodesma marsabiticum* a rare member of the Boraginaceae family), special assistance was provided by specialists from Wageningen Herbarium, the Netherlands, in identifying the species from a photograph.

1.4 Structure of this booklet

This booklet is intended to be an introduction to the flora and vegetation, and is not an exhaustive study. Chapter 2 provides an introduction to the vegetation types at Lewa, while Chapter 3 provides an introduction to the flora. The core of the booklet is Chapter 4, which provides descriptions and photographs of individual species – 152 out of 252 species listed to date. These plant species are grouped alphabetically per plant family. The annexes provide two vegetation maps adapted from Linsen and Giesen (1983; Annex 1) and Botha (1999; Annex 2), and a list of species recorded to date (Annex 3).

2 Vegetation types at Lewa

2.1 Main habitat types

Four main habitat types are recognised at Lewa, and form the basis for management of the Lewa Wildlife Conservancy; these four types are: Forest habitat (Ngare Ndare forest), Plain habitat, Hill and rocky outcrop habitat, and Riverine habitat. Each is briefly described below.

Forest habitat

The Ngare Ndare forest – which consists of about 7,300 ha of *Juniperus-Olea* forest (about 30% of Lewa's area¹) – was incorporated into LWC in the early 1980s. It extends in altitude from about 2000 m to the upper limit of LWC at 2400 m – above this level forested areas give way to extensive wheat fields. This forest has recovered spectacularly since its incorporation into LWC, which resulted in better protection against logging, poaching of timber and fires. Tree and shrub cover was about 35% in 1962, but is now more than 80%. This is likely to continue to become even denser as trees mature and fast growing pioneer species such as *Dodonea* and *Rhus* replaced by climax forest species such as *Olea africana* and *Juniperus procera*. Characteristic species are 'Cedar' *Juniperus procera*, Brown Olive² *Olea africana* and a wide range of broadleaf species such as *Dodonea*, *Euclea*, *Lannea*, *Myrsine*, *Rhus* and *Scolopia*. The forest was not part of LWC in 1979-80 and was therefore not studied by Linsen and Giesen (1983); however, it is included in the study by Botha (1999) and is briefly described by Gathaara (1999).



Photo 1.
Ngare Ndare forest with
Juniperus procera emergents

¹ This is excluding the additions since 1990.

² The African Brown Olive is sometimes regarded a subspecies of the European Olive, i.e. *Olea europaea* ssp. *africana*.

Plain habitat

This is the most extensive habitat at LWC, covering about 7000 ha or just under 29 % of the total area. Dominant are *Pennisetum* grasses: *Pennisetum mezianum* or bamboo-grass and *Pennisetum stramineum* or Masai grass. Both species are tough and wiry, and fairly unpalatable to stock and wildlife when mature, but form good grazing when freshly sprouting. A host of herb species may accompany these grasses, especially just after the rains, including *Aerva lanata*, *Helichrysum glumaceum*, *Heliotropium steudneri*, *Indigofera volkensis*, *Ocimum filamentosum* and *Vigna frutescens*, but also succulents such as *Ammocharis tinneana* and *Crinum macowanii* or pyjama lily. Two acacia tree species are common in the plains, namely *Acacia drepanolobium* whistling thorn and *Acacia seyal* white-thorn, and these may dominate along with the two *Pennisetum* grasses. Other common shrubs and shrublets in the plains include *Boscia mossambicus*, *Hibiscus flavifolius* and *Lycium shawii*.

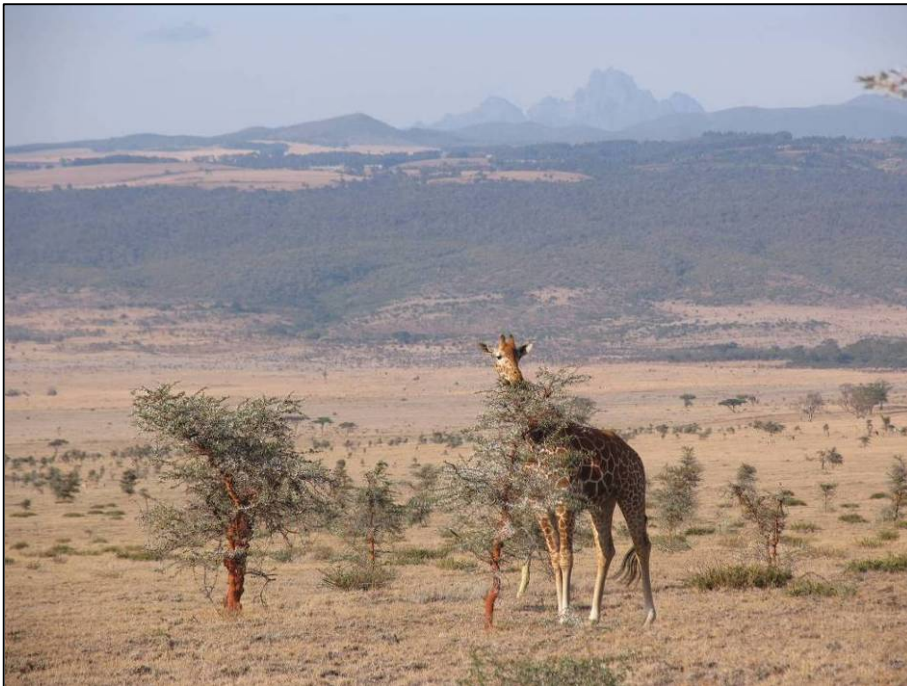


Photo 2.

Acacia seyal - *Pennisetum stramineum* plain habitat, with Ngare Ndare forest & Mt. Kenya in background.

Hill & rocky outcrop habitat

Hill and rocky outcrop habitat is the most varied habitat at Lewa, occurring on a range of soils (clays derived from basalts or volcanic ash, and sandy soils formed from Basement Complex gneiss) and with a wide range of species. In some areas, the 'hill' aspect may not be apparent, but where rocks are at the surface, characteristic species are usually found. This habitat type extends over about 9200 ha or almost 38 % of the total area of LWC. A range of tree and shrub species dominate this habitat, including various acacias (*Acacia brevispica*, *A. mellifera*, *A. nilotica*, *A. senegal*, *A. tortilis*), *Commiphora* and *Grewia* species (*Grewia holstii*, *G. similis*, *G. tembensis*), and a wide range of herbs (*Commelina africana*, *C. latifolia*, *Justicia*, *Kalanchoe*, *Pellaea*), grasses (*Aristida*, *Chrysopogon*, *Heteropogon*, *Hyparrhenia*, *Microchloa*, *Rhynchelytrum repens*, *Themeda triandra*, *Tragus berteronianus*) and climbers (*Cissus rotundifolia*, *Gloriosa simplex*, *Sarcostemma viminalis*).



Photo 3.

Acacia tortilis, *Acacia nilotica*,
Boscia coriacea & *Pennisetum*
stramineum Hill & rocky
outcrop habitat



Photo 4.

Acacia mellifera, *Acacia*
senegal & *Pennisetum*
stramineum Hill & rocky
outcrop habitat

Riverine habitat

Riverine habitat – also including swamps – extends over only a small area (<1000 ha or almost 4% of LWC). Nevertheless it is highly important as it provides drinking water and green vegetation for wildlife during periods of drought, and for certain species such as waterfowl, amphibians and swamp deer (*sitatunga*) it forms the only available habitat. Several streams at Lewa are perennial because they are fed by perennial springs: Ngare Ndare (into the Ngare Ndare River), Matoni (into the Eastern Marania River) and Lewa spring (into Lewa swamp, which in turn feeds into the Western Marania River). These perennial streams are characterised by the presence of yellow fever tree *Acacia xanthophloea*, along with a host of sedges (mainly *Cyperus* species), grasses (*Digitaria* species, *Leersia hexandra*), cattail *Typha domingensis* and (semi-) aquatic herbs such as *Berula erecta*, *Lythrum rotundifolium*, *Mentha longifolia*, *Polygonum strigosum* and *Ranunculus multifidus*. In deeper valleys the wild date palm *Phoenix reclinata* is also characteristic, along with the

sycamore fig *Ficus sycamorus*, although the latter is less widespread. Other streams are ephemeral, and fever trees may be absent if groundwater levels are drawn down too much in the dry months. Lewa swamp – which extends over about 60 ha – is dominated by *Cyperus dives*, along with *Cyperus assimilis*, *C. esculentus*, *C. involucata*, *C. sphacelata* and *Scirpus brachyceras* and a range of herbs and grasses, including *Eragrostis paniciformis*, *Eriochloa meyerana*, *Leersia hexandra*, *Sporobolus pyramidalis* (grasses), *Alisma plantago-aquatica*, the uncommon *Berula erecta*, *Lythrum rotundifolium*, *Mentha longifolia*, *Ranunculus multifidus*., *Sphaeranthus gomphrenoides* and *Veronica anagallis-aquatica* (herbs).



Photo 5.

Acacia xanthophloea – *Pavonia patens* riverine woodland, with sedges, grasses & elephant stripping bark off a fever tree.



Photo 6.

Cyperus dives dominated Lewa Swamp, with Sitatunga, black duck & Nile geese in foreground.

2.2 Main vegetation types

Linsen and Giesen (1983) produced a preliminary vegetation map based on interpretation of 1962 black-and-white aerial photographs, and subsequently carried out 138 relevés at random stratified sites. These relevés were analysed using Principal Component Analysis (PCA), resulting in the recognition of 12 vegetation types and 2 sub-types (the latter being mosaics). An updated, digitised version of their 1979-80 map is included in Appendix 1. As the Ngare Ndare forest was not yet a part of Lewa, this was not included in their vegetation study. The following main vegetation types emerged for the plain, hill (& rocky outcrops) and riverine vegetations types, and a fourth 'disturbed habitat type':

Plain

- 1.a *Acacia seyal*-*Pennisetum stramineum* wooded grassland.
- 1.b *Acacia seyal*-*Acacia drepanolobium*-*Pennisetum stramineum* mixed wooded grassland
2. *Acacia drepanolobium*-*Pennisetum stramineum* wooded grassland

Hill & rocky outcrops

3. *Acacia mellifera*-*Pennisetum stramineum* wooded grassland³
4. *Acacia mellifera*-*Acacia tortilis*-*Pennisetum stramineum* wooded grassland
5. *Acacia nilotica*-*Pennisetum stramineum* wooded grassland
- 6.a *Grewia holstii*-*Harpachne schimperi* wooded grassland
- 6.b mosaic of 5 & 6a

Riverine

7. *Acacia xanthophloea*-*Chenopodium opulifolium* riverine woodland
8. *Sesbania keniensis*-*Cyperaceae* swamp
9. *Acacia xanthophloea*-*Pavonia patens* riverine woodland
10. *Acacia xanthophloea*-*Euphorbia bussei* (formerly *E. kibwezensis*) riverine woodland
11. *Euphorbia candelabrum*-*Aspilia pluriseta* riverine woodland

Disturbed habitats

12. *Solanum incanum*-*Priva curtisae* scrub

³ Linsen & Giesen (1983) included this in the plain vegetation, but in retrospect this type is typically associated with rocky outcrops, often in not noticeably hilly areas.

Botha's (1999) assessment of the vegetation at Lewa resulted in the production of a new map that included the Ngare Ndare forest (see Appendix 2), and the recognition of the following 11 vegetation communities and 26 sub-communities:

Forest

1. *Stipa dregeana*-*Juniperus procera* tall forest
 - 1.1. *Stipa dregeana*-*Podocarpus falcatus* tall forest
 - 1.2. *Stipa dregeana*-*Cyperus rupestris* tall forest
 - 1.3. *Juniperus procera*-*Justicia diclipterooides* low forest
 - 1.4. *Stipa dregeana*-*Myrsine africana* low forest
2. *Acacia drepanolobium*-*Themeda triandra* low thicket
 - 2.1. *Acacia drepanolobium*-*Melinis repens* low thicket
 - 2.2. *Acacia drepanolobium*-*Lippia javanica* low bushland

Plains

3. *Acacia nilotica*-*Pennisetum stramineum* low open woodland
4. *Acacia drepanolobium*-*Acacia seyal* low open woodland
 - 4.1. *Acacia drepanolobium*-*Digitaria macroblephara* low open woodland
 - 4.2. *Acacia drepanolobium*-*Tribulus terrestris* low open woodland
 - 4.3. *Acacia drepanolobium*-*Boscia coriacea* low sparse woodland
 - 4.4. *Acacia drepanolobium*-*Maytenus senegalensis* low open woodland
 - 4.5. *Acacia drepanolobium*-*Acacia mellifera* low closed woodland
5. *Acacia mellifera*-*Sorghum versicolor* tall sparse shrub land
 - 5.1. *Acacia mellifera*-*Chrysochloa orientalis* tall sparse shrub land
 - 5.2. *Acacia mellifera*-*Lycium europaeum* tall sparse shrub land
6. *Pennisetum stramineum*-*Becium hildebrandtii* short closed grassland
7. *Pennisetum stramineum*-*Themeda triandra* short closed grassland

Hills and rocky outcrops

8. *Commiphora africana*-*Lannea rivae* low thicket
 - 8.1. *Commiphora africana*-*Chrysochloa orientalis* low thicket
 - 8.2. *Commiphora africana*-*Euphorbia kibwezensis* low thicket
9. *Acacia tortilis*-*Chrysopogon plumulosus* low thicket
 - 9.1. *Acacia tortilis*-*Sporobolus pellucidus* low thicket
 - 9.2. *Acacia tortilis*-*Enteropogon macrostachyus* low thicket
 - 9.3. *Acacia tortilis*-*Grewia villosa* low thicket
 - 9.4. *Acacia tortilis*-*Oxygonum sinuatum* low thicket
 - 9.5. *Acacia tortilis*-*Balanites aegytiaca* low thicket
 - 9.6. *Acacia tortilis*-*Barleria spinisepala* low thicket
 - 9.7. *Acacia tortilis*-*Pennisetum stramineum* low thicket

Rivers

10. *Acacia xanthophloea*-*Achyranthes aspera* tall closed woodland
 - 10.1. *Acacia xanthophloea*-*Syzygium guineense* short closed woodland
 - 10.2. *Acacia xanthophloea*-*Digitaria scalarum* tall closed woodland
 - 10.3. *Acacia xanthophloea*-*Datura stramonium* tall closed woodland
 - 10.4. *Acacia xanthophloea*-*Ficus sycomorus* tall closed woodland
11. *Typha domingensis*-*Echinochloa colona* swamp

While Botha's (1999) vegetation assessment is more detailed than that of Linsen and Giesen (1983), there are a few aspects of his study that require modification or updating:

- § Communities 3 and 5, with *Acacia nilotica* and *Acacia mellifera* are usually associated with rocky outcrops, and should therefore be classified under "Hills and rocky outcrops" rather than under plain vegetation.
- § Community 11, the *Typha domingensis*-*Echinochloa colona* swamp (Lewa Swamp) is incorrectly classified. During the present study we found – after a long search – that *Typha* occurs in only several small patches at Lewa Swamp (one in the northeast and another in the southwest), and that *Echinochloa colona* is uncommon. Rather than being dominated by *Typha* and grasses, Lewa Swamp is largely dominated by *Cyperus* species, i.e. sedges, and mainly by one species: *Cyperus dives*. Also, *Cyperus papyrus* L. does not occur at Lewa Swamp at all, and it appears that Von Holdt may have been confused with *Cyperus involucrata* (synonym: *C. flabellifer*), a species that is commonly called 'papyrus', but is quite unlike the much more robust *C. papyrus*. *C. involucrata* occurs in low numbers along flowing waters, for example, at the north-eastern outflow of Lewa Swamp.
- § Also, several dominant species appear to have been incorrectly identified: '*Maytenus senegalensis*' was identified by Kenya Herbarium for Linsen and Giesen (1983) as *Maytenus putterlickioides*; similarly, *Lycium europaeum* should be *Lycium shawii*.
- § Lastly, some species have been revised over the past decades, but these revisions have not found their way into common guidebooks: *Euphorbia kibwezensis* should be *Euphorbia bussei* var. *kibwezensis*.

3 Plant species at Lewa

3.1 Flora & list of species

A list of plant species was compiled on the basis of species identified for Linsen and Giesen (1983) by Kenya Herbarium, and on identification by the present authors. This resulted in a total of 249 plant species in all (Annex 3). Additional plant species listed by Botha and Von Holdt were not included, as a significant number of identifications were found to be incorrect, making their list unreliable. As Linsen and Giesen's (1983) study and the habitat changes study (Giesen et al., 2007) focused on lowland habitats, this means that Ngare Ndare forest species are under-represented and should be subject to future study.

In all, 252 plants have been identified from 65 different families. Most of these are higher plants, but they also include three fern species (*Actiniopteridaceae* & *Adiantaceae*). The main families are the grasses (*Poaceae*: 38 species), daisies (*Asteraceae*: 17 species), sedges (*Cyperaceae*: 13 species), lilies (*Liliaceae*: 12 species), bean family (*Papilionaceae*: 10 species), acacia family (*Mimosoidae*: 9 species), and *Acanthus* family (*Acanthaceae*: 9 species); see Figure 1 below.

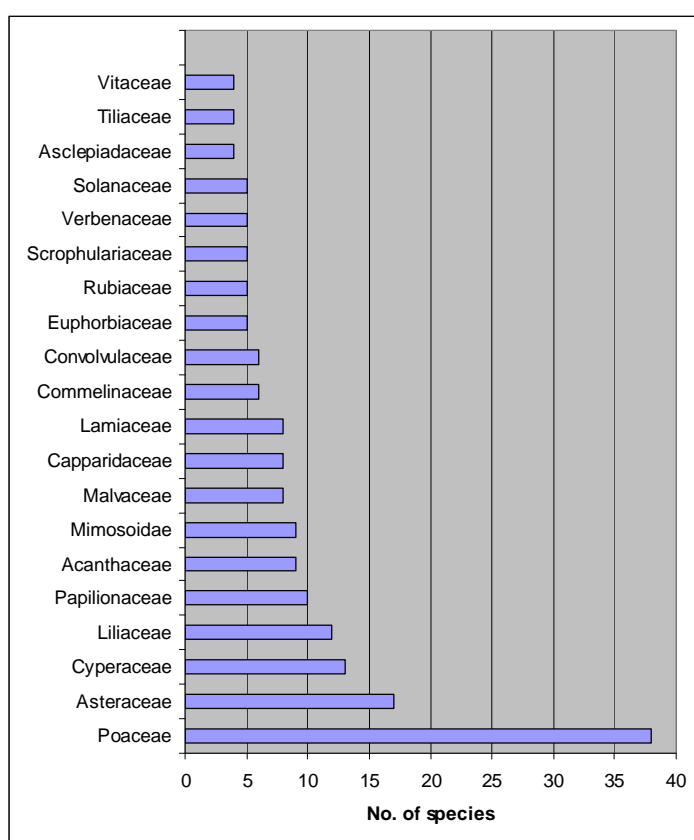


Figure 1 Main plant families at Lewa

The most species-rich plant genera at Lewa are *Acacia* (8 species), *Cyperus* (8 species), *Eragrostis* (5 species) and *Ipomoea* (5 species); see Table 1 below. Many of the large families such as grasses and daisies are characterised by the occurrence of many genera.

Table 1 Most common plant genera at Lewa

Genus	No. of species	Family
<i>Acacia</i>	8	Mimosoidae
<i>Cyperus</i>	8	Cyperaceae
<i>Eragrostis</i>	5	Poaceae
<i>Ipomoea</i>	5	Convolvulaceae
<i>Barleria</i>	4	Acanthaceae
<i>Commelina</i>	4	Commelinaceae
<i>Digitaria</i>	4	Poaceae
<i>Euphorbia</i>	4	Euphorbiaceae
<i>Grewia</i>	4	Tiliaceae
<i>Hibiscus</i>	4	Malvaceae
<i>Justicia</i>	4	Acanthaceae
<i>Boscia</i>	3	Capparidaceae
<i>Indigofera</i>	3	Papilionaceae
<i>Leucas</i>	3	Lamiaceae
<i>Sporobolus</i>	3	Poaceae

3.2 Unusual and noteworthy species

At least 17 rare or uncommon plant species are found at Lewa (Table 2), some of which are rare in Kenya, but common elsewhere, such as *Berula erecta*, *Cyperus sphacelata* and *Polygonum strigosum*. Some species are wide ranging, but are uncommon or rare throughout, such as *Conostomium quadrangulare*, *Dracaena ellenbeckiana*, *Juncus oxycarpus*, *Sansevieria dawei*, *Spilanthes mauritiana*, *Turraea parvifolia* and *Verbascum sinaiticum*. Two species are locally common at Lewa, but are on the whole rare and with a restricted range: *Euphorbia bussei* var. *kibwezensis*, which is found only near Samburu, and *Trichodesma marsabiticus*, which is known only from Mt. Marsabit and at Lewa.

Several species which are common elsewhere appear to have disappeared from Lewa over the past decades. One of these is papyrus *Cyperus papyrus* L., which was observed along the Ngare Ndare and Ngare Sergoi rivers in 1979-1980 by Linsen and Giesen (1983), but not observed during the present study in spite of specifically searching for it along the Ngare Sergoi River at sites where it was previously found. Similarly, the raffia palm *Raphia farinifera* has also disappeared, although in 1979-1980 it occurred at Matoni Spring.

Table 2 Rare and uncommon species at Lewa

Species	Family	Notes
<i>Aloe amundatensis</i>	Liliaceae	Uncommon.
<i>Berula erecta</i>	Apiaceae	Uncommon in Kenya (common elsewhere in its range)
<i>Chlorophytum zavattarii</i> (formerly <i>Anthericum zavattarii</i>)	Liliaceae	Rare.
<i>Conostomium quadrangulare</i>	Rubiaceae	Rare, but locally common at Lewa
<i>Cyperus sphacelata</i>	Cyperaceae	Rare in East Africa; common elsewhere
<i>Dracaena ellenbeckiana</i>	Agavaceae	On the whole uncommon
<i>Euphorbia bussei</i> var. <i>kibwezensis</i>	Euphorbiaceae	Common at Lewa, but with a very restricted range (only 'near Samburu')
<i>Juncus oxycarpus</i>	Juncaceae	Uncommon to rare
<i>Orthosiphon pallidus</i> (formerly <i>Orthosiphon somalensis</i>)	Lamiaceae	Uncommon.
<i>Polygonum strigosum</i>	Polygonaceae	Rare in Kenya, common elsewhere
<i>Raphia farinifera</i>	Areaceae	Already noted by Dale & Greenway (1961) as becoming uncommon due to overexploitation. Perhaps extirpated at Lewa.
<i>Sansevieria dawei</i>	Liliaceae	Uncommon
<i>Solanum</i> spec. A (of Agnew & Agnew, 1994)	Solanaceae	Uncommon.
<i>Spilanthes mauritiana</i>	Asteraceae	Rare; reportedly endangered
<i>Trichodesma marsabiticus</i>	Boraginaceae	Rare plant with a very restricted range
<i>Turraea parvifolia</i>	Meliaceae	Uncommon
<i>Verbascum sinaiticum</i>	Scrophulariaceae	Uncommon to rare in its range



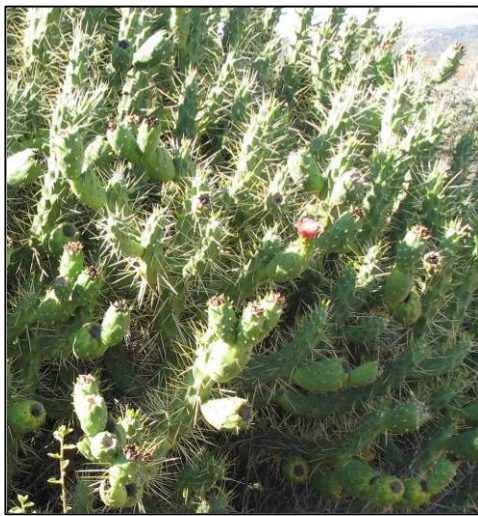
Trichodesma marsabiticum flowers and fruit



Euphorbia bussei var. *kibwezensis* typically grows on ridges

3.3 Exotic plant species

Exotic plant species are relatively common at Lewa, but on the whole there are few problems with invasive exotics and most introduced species are confined to disturbed areas. The most commonly observed exotics are two species of cactus (*Opuntia exaltata* and *Opuntia vulgaris*), *Datura stramonium*, *Lantana camara* and *Tagetes minuta*. The cacti have been introduced for their fruit and for creating impregnable fencing round shambas; however, some of these have escaped into neighbouring parts of Lewa. Elsewhere (e.g. northern Australia) *Opuntia* (prickly pear) has become a major invasive species that had to be eradicated using species programmes; this does not appear to be a threat at Lewa, although it is wise to closely monitor populations of exotics.



Opuntia exaltata



Opuntia vulgaris

Datura stramonium used to be more common than at present, as it was a major feature in vegetation of former *boma* sites, when Lewa used to be a cattle ranch. It still occurs, but is only occasionally seen. The two remaining introduced species are both from America: *Lantana camara* is from Central America, while *Tagetes minuta* is from South America. *Lantana* is a major invasive species in Australia and Southeast Asia, but again, as with the cacti, it does not (yet) appear to be problematic at Lewa.



Datura stramonium



Lantana camara



Tagetes minuta

To date, 9 exotic species have been recorded at Lewa to date (Table 3), but this list is probably far from exhaustive. While it was concluded that exotic plant species have not contributed significantly to changes in vegetation at Lewa over the past decades (Giesen *et al.*, 2007), it is prudent to continue monitoring these exotics as they remain potentially invasive.

Table 3 Exotic plant species found at Lewa

Species	Family	Notes
<i>Achyranthes aspera</i>	Amaranthaceae	Originally from China & Australia; common at Lewa in riverine vegetation
<i>Ageratum conyzoides</i>	Asteraceae	Originates from America; in disturbed areas
<i>Chenopodium alba</i>	Chenopodiaceae	Originally from Northern Hemisphere.
<i>Datura stramonium</i>	Solanaceae	Originates from America; in disturbed areas
<i>Galinsoga parviflora</i>	Asteraceae	Originates from South America; in riverine areas
<i>Lantana camara</i>	Verbenaceae	Originates from South America; disturbed hill and outcrop areas
<i>Opuntia exaltata</i>	Cactaceae	Originates from South America; disturbed places near Lewa boundary, esp. along roads
<i>Opuntia vulgaris</i>	Cactaceae	Originates from South America; disturbed places near Lewa boundary, esp. along roads
<i>Tagetes minuta</i>	Asteraceae	Originates from South America; widespread in many habitats

4 Plant descriptions & photographs

Descriptions and photographs of 152 plant species found at Lewa are provided on the following 76 pages. These are listed alphabetically per plant family, starting with the Acanthaceae and ending with the Vitaceae. The vegetation types at Lewa (LG) refer to the Linsen and Giesen (1983) vegetation types (see page 7).

Family: Acanthaceae

Scientific name: *Barleria spinisepala* E.A. Bruce

Synonyms: Unknown

Common names: Unknown

Brief description: A low-growing, much branched woody perennial herb with pinnately cut spines between leaf bases. Leaves small, up to 30mm long, almost stalkless, elliptic. Flowers solitary, to 15 mm long, 20mm across.

Ecology: Night flowering, flowers drop during the day. In dry grassland and *Acacia* savannas, 500-2100m.

Vegetation type at Lewa: Hill and Plain. LG2, LG3, LG4, LG5

Distribution: Tanzania, Uganda, Kenya.

Abundance: Locally common.

Uses: Ornamental.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Acanthaceae

Scientific name: *Crossandra massaica* Mildbr.

Synonyms: *Crossandra nilotica* Oliv. subsp. *massaica* (Mildbr.) Napper

Common names: Unknown

Brief description: A short, erect or straggling branched herb with elliptic-lanceolate leaves that are abruptly narrowed below to a gradually tapering wing, or unwinged stalk, up to 10cm overall length. Spikes stalked. Orange-red to red flowers, up to 4cm long, 3.5cm across. <Note spines on left-hand, non-flowering branch in top photo, right.>

Ecology: Partially shaded places in wooded grassland and dry bushland; occasionally in *Euclea-Olea* forest; 1200-2700m.

Vegetation type at Lewa: Hill vegetation on Basement Complex gneisses (LG6) and Ngare Ndare forest.

Distribution: Known from Ethiopia, D.R. Congo, Ghana, Tanzania, Kenya, Uganda and Zambia.

Abundance: Locally common.

Uses: Ornamental

References: Agnew & Agnew (1994)



Family: Acanthaceae

Scientific name: *Justicia calyculata* (Deflers) T. Anders.

Synonyms: *Adhatoda leptostachya* Nees, *Bentia fruticulosa*, *Dianthera leptostachya* (Nees) Blatt., *Justicia areysiana*, *Justicia beguinotii* Fiori, *Justicia exigua* S. Moore, *Justicia leptostachya* (Nees) Schwartz, *Justicia matammensis* Oliv. <latter = of edition 1 Agnew & Agnew & Blundell, 1987>

Common names: Unknown.

Brief description: Annual or short-lived perennial with soft hairs over 1mm long at young nodes and often between lines of stem hairs. Stems erect or trailing, sometimes rooting. Leaves narrowly to broad elliptic or obovate, stalked, often loosely hairy at base, not more than 4 cm long. Flowers in spikes of 3-6 (usually 4), under 5 mm long, white, with some purplish-pink markings in centre. Fruit a capsule, hairy.

Ecology: Sandy soils, roadsides, disturbed places, disturbed bushland, (5-)100-1500(-2200) m.

Vegetation type at Lewa: Hill. LG6 (sandy ridges).

Distribution: Sudan, Ethiopia, eastern D.R. Congo, through East Africa southwards to Mozambique and Zimbabwe. .

Abundance: Locally common.

Uses: Medicinal, treating of snakebite.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Acanthaceae

Scientific name: *Justicia diclipteroides* Lindau

Synonyms: *Justicia* sp. E (of edition 1 Agnew & Agnew)

Common names: Unknown.

Brief description: A sparsely hairy trailing to semi-erect herb with a fibrous rootstock, rooting at the nodes. Leaves ovate, stalked, narrowed above but often rounded below, blade under 8 cm long. Flowers scattered, purple to pink, 8 mm across, in upper axils.

Ecology: Evergreen forest edges, 1220-2130 m.

Vegetation type at Lewa: Hill and lower Ngare Ndare forest. LG3-LG6.

Distribution: Kenya and Tanzania.

Abundance: Common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Acanthaceae

Scientific name: *Justicia odora* (Forsk.) Lam.

Synonyms: *Justicia lycioides* Schinz, *Justicia polymorpha* Schinz

Common names: Unknown

Brief description: An erect, white-stemmed shrub, hairy or not. Leaves almost stalkless, from almost circular to oblong or ovate, under 30 mm long, usually hairless except the edges. Flowers yellow, stalkless, in groups of 1-3 in upper axils, about 10 mm long. Fruit a capsule, about 13 mm long. Highly variable.

Ecology: Dry, stony bushland, 0-1650 m.

Vegetation type at Lewa: Hill. LG3-LG5.

Distribution: Sudan, Ethiopia, Somalia, Kenya and Tanzania.

Abundance: Common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Acanthaceae

Scientific name: *Justicia unyorensis* S. Moore

Synonyms: *Justicia keniensis* Rendle

Common names: Unknown

Brief description: A trailing herb, with ascending stems and a sparse covering of spreading hairs. Leaves ovate-elliptic to 3 cm long, rounded at tip, often almost stalkless, and scattered coarse hairs above. Flowers rather regularly arranged in upper axils and apparently in spikes, pink or mauve, rarely white or deep purple. <*J. keniensis* in Blundell, 1987>

Ecology: Within and at the edges of montane rain forest, 1800-2800 m.

Vegetation type at Lewa: Matoni spring.

Distribution: Kenya, Uganda and Tanzania.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Actiniopteridaceae (Adiantaceae)

Scientific name: *Actiniopteris semiflabellata* Pic.Serm.

Synonyms: Unknown

Common names: Unknown

Brief description: Fertile fronds up to 30 cm long.

Ecology: From 600-2100m, in dry, moist, shaded or exposed rock crevices. Found in rock crevices and crags, in various habitats.

Vegetation type at Lewa: Hill (occasionally among rocks in Riverine habitat). LG4, LG5, LG6.

Distribution: Africa, Yemen, Arabia

Abundance: Common in Kenya, and at Lewa.

Uses: Ornamental.

References: Agnew & Agnew (1994)



Family: Adiantaceae

Scientific name: *Pellaea adiantoides* (Bory ex Willd.) J.Sm.

Synonyms: *Pteris adiantoides* Bory ex Willdenow, *Pellaea viridis* var. *glauca* (Sim) Sim, *Allosorus adiantoides* (Bory ex Willd.) C. Presl, *Pellaea hastata* var. *glauca* Sim, *Platyloma adiantoides* (Bory ex Willd.) Lowe

Common names: Unknown

Brief description: Fronds up to 50 cm long, 2-3 pinnate, with segments usually 1-2 cm long. Rachis without scales, with light brown papery ridges on the upper side, segments mostly rounded at the top, fronds lanceolate to ovate.

Ecology: Dry bushland and dry rocky places, frequently in full sunlight; never in forests or in coastal areas. 650-2250 m.

Vegetation type at Lewa: Hill vegetation LG3-LG6.

Distribution: Burundi, Uganda, Kenya, Tanzania, South Africa, Malawi, Mozambique, Zimbabwe and Madagascar.

Abundance: Locally common.

Uses: Unknown

References: Agnew & Agnew (1994), Flora Zambesiaca



Family: Adiantaceae

Scientific name: *Pellaea calomelanos* (Sw.) Link.

Synonyms: *Pellaea hastata* (Thunb.) Prantl., *Pteris calomelanos* Sw., *Pteris hastata* Thunb.

Common names: Cliff brake, Hard fern (E)

Brief description: Lamina (leaflets) are ovate to deltoid, arrow-shaped at the base, twice divided and up to 30 cm long, with barely visible venation, grey-green colour. Stem hairless, smooth, almost black. Sori (with spores) are borne in a continuous ridge along the margins of fertile leaflets.

Ecology: Dry or moist rock crevices or on roadside banks in full sun. 1350-2700m.

Vegetation type at Lewa: Rocky crevices in Hill vegetation. LG5, LG6

Distribution: Zimbabwe, South Africa, Kenya, Tanzania, Uganda, Malawi, Mozambique, Namibia, Madagascar, Burundi, Botswana, Spain

Abundance: Common.

Uses: Ornamental.

References: Agnew & Agnew (1994)



Family: Agavaceae

Scientific name: *Dracaena ellenbeckiana* Engl.

Synonyms: Unknown.

Common names: Kedong Dracaena (E), Kedong (Masai)

Brief description: Spindly, upright shrub or tree, 3-5(-12) m tall, upper part of the stem usually shiny and brown; the few branches rise steeply from the woody stem. Leaves are bunched at the end of the branches in terminal rosettes; individual leaves 45-50 cm long, blue-green, smooth, stiff and leathery. Flowers are pale green, about 6-7 mm diameter, many in a flowering head, 75 cm long. Fruit small, 5-6 mm diameter, round, green turning bright orange when ripe. <*Dracaena* sp. nov. in Dale & Greenway>

Ecology: Well drained soil in full sunlight. Flowers open at night, are sweetly scented, and fade the next day. Often gregarious.

Vegetation type at Lewa: Northern slopes – Hill vegetation, on sandy soils. LG6

Distribution: Ethiopia, Somalia, northern Kenya.

Abundance: Locally common, but on the whole uncommon.

Uses: Fodder. Grown as an ornamental.

References: Dale & Greenway (1961), Oginosako *et al.* (2006), http://www.rareplants.de/shop/product.asp?P_ID=7887&numLanguageID=1



Family: Alismataceae

Scientific name: *Alisma plantago-aquatica* L.

Synonyms: *Alisma subcaudatum*, *A. triviale*

Common names: Water plantain, Mad dog weed, Marsh drain (E)

Brief description: Erect aquatic herb, 0.5-1.2m tall, with long-stalked leaves in rosette, blade ovate, 8 by 20 cm. Flowers with white to pinkish-mauve petals. Leaves and flowers held above water.

Ecology: Found in wet places, along streams, swamps and rivers.

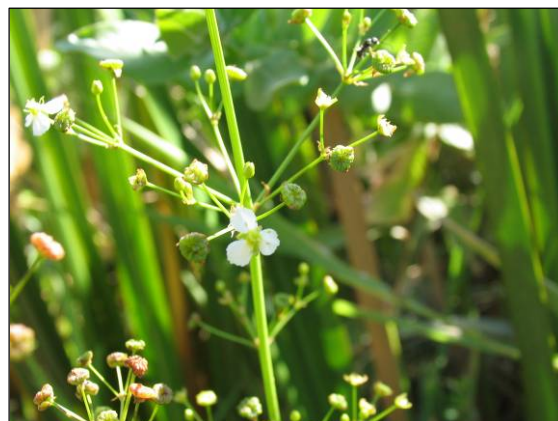
Vegetation type at Lewa: Riverine and swamp edge. LG7, LG8, LG9

Distribution: Throughout Europe, Asia, North and Northeast Africa. Introduced elsewhere (e.g. North America).

Abundance: Locally common.

Uses: Medicinal purposes (e.g. diuretic, and used to treat rabies, hence the common name).

References: Agnew & Agnew (1994).



Family: Amaranthaceae

Scientific name: *Achyranthes aspera* L.

Synonyms: *Achyranthes argentea*, *A. indica*, *A. robusta*, *Centrostachys aspera*

Common names: Devil's Horsewhip (E),

Brief description: A coarse (annual or) perennial herb or weak shrub, up to 1.3-1.6m tall. Stems tough, becoming woody at base. Leaves opposite. Individual flowers are small, pink (see photo) or greenish. As flowers age they bend downwards and become pressed against the stem. Fruits are prickly to touch, and stick to clothing, skin and coats of wildlife.

Ecology: Arable weed of disturbed places, also found in hedges, thickets and shaded habitats. At Lewa, commonly found in wetter, shaded areas, e.g. among Fever trees. Sea level to 3000m.

Vegetation type at Lewa: Riverine. LG7, LG8, LG9.

Distribution: Originally from China to Australia, now pantropical. Widespread in East Africa.

Abundance: Common.

Uses: Common weed, but elsewhere eaten as vegetable (leaves) or used as a medicine.

References: Ivens (1982), Blundell (1987), Agnew & Agnew (1994)



Family: Amaranthaceae

Scientific name: *Aerva lanata* (L.) Juss. Ex Schult.

Synonyms: *Achyranthes lanata*

Common names: Unknown.

Brief description: A woolly erect woody herb or small shrub, with few branches. Leaves often spoon-shaped or round to elliptic, opposite below, alternate above. Flowers in small spikes, less than 8 mm long, usually 1-3 together; consisting of crowded white-woolly flowers.

Ecology: Common as a weed of many open habitats in dry country, and common at the coast, 0-2200m.

Vegetation type at Lewa: Plain. LG1, LG2.

Distribution: Throughout tropical and subtropical Africa, Middle East (Arabia) and South Asia to northern Australia (Queensland).

Abundance: Common.

Uses: Common weed, but elsewhere eaten as vegetable (leaves) or used as a medicine.

References: Agnew & Agnew (1994)



Family: Amaranthaceae

Scientific name: *Sericocomopsis hildebrandtii* Schinz

Synonyms: Unknown

Common names: Unknown

Brief description: A much branched, grey-hairy bushy shrub. Leaves obovate to spoon-shaped. Flowers 5 mm across, in cymes about 12 mm diameter, stalkless, in terminal white, cylindrical racemes.

Ecology: Dry thorn bush, especially on fine soils. 150-1800 m.

Vegetation type at Lewa: Sandy ridges, LG6.

Distribution: Southern Ethiopia, Tanzania, Kenya and Uganda.

Abundance: Locally common.

Uses: Various medicinal uses including treatment of malaria, stomach aches and weight loss.

References: Blundell (1987), Agnew & Agnew (1994), Kiringe (2006)



Family: Amaryllidaceae

Scientific name: *Ammocharis tinneana* (Kotschy & Peyr.)
Milne-Redh. & Schweickerdt

Synonyms: *Crinum tenneanum*

Common names: Northern Ammocharis

Brief description: A bulbous herb with opposite/spreading fans of thick, perennial leaves, up to 5cm broad. Bulbs may be up to 13cm diameter. Flowers scented, over 20 in a short-stalked umbel, pink and red. Height 30-50cm.

Ecology: Dry bushland or wooded grassland, 650-1800m, on well-drained soil in full sun. Flowers emerging 1-2 weeks after first rains.

Vegetation type at Lewa: Hill and (to a lesser extent) Plain, especially on sandy soils of basement complex origin. LG1-LG6.

Distribution: Kenya, Tanzania, Uganda, Sudan, Ethiopia, Somalia, Rwanda and south to Botswana, Zambia and Namibia.

Abundance: Locally common.

Uses: Ornamental.

References: Blundell (1987), Agnew & Agnew (1994);
www.bihrmann.com/caudiciforms/subs/amm-tin-sub.asp



Family: Amaryllidaceae

Scientific name: *Crinum macowanii* Baker

Synonyms: *Crinum kirkii*

Common names: Pyjama Lily, Sabie crinum, Cape coast lily (E)

Brief description: A large, bulbous herb with a rosette of thick, heavy, rough-edged, strap-like leaves that are dull-green and up to 15cm wide. Flowers an umbel of up to 20 nodding pink-and-white striped flowers – hence the common name. Individual flowers up to 25cm long on short or long stalks. <Note: in the past, several closely related *Crinum* species have been called *C. kirkii*; leaves in photo have been partially eaten.>

Ecology: Upland open grassland and roadside verges, 500-2700m. Emerging and flowering 1-2 weeks after the first rains.

Vegetation type at Lewa: Plain and Hill. LG1-LG6

Distribution: Sudan, Ethiopia, Somalia, D.R. Congo, throughout East Africa southwards to Malawi, Zambia and Zimbabwe.

Abundance: Fairly common.

Uses: Ornamental.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Amaryllidaceae

Scientific name: *Scadoxus multiflorus* (Martyn) Raf.

Synonyms: *Haemanthus multiflorus* Martyn

Common names: Fire ball lily (E)

Brief description: Bulb well buried, leaves appearing after the plant has flowered. Leaves are elliptic, with purple spotted sheaths. Flowers bright red to pink in a large spherical mass, 14-19 cm across, numbering about 150, borne on leafless stalks appearing from a lateral bud. Fruit 1 cm in diameter.

Ecology: Rocky places on forest edges, riverine forest, grassland or open bushland. Flowers appear after the first rains. 5-2700 m.

Vegetation type at Lewa: Hill vegetation, LG3-LG6, especially on sandy soils (LG6).

Distribution: Throughout tropical Africa, except in driest regions.

Abundance: Locally common.

Uses: Ornamental.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Anacardiaceae

Scientific name: *Rhus natalensis* Bernh.

Synonyms: *Rhus glaucescens* A. Rich., *Rhus glaucescens* A. Rich var. *natalensis* (Krauss) Engl., *Rhus glaucescens* A. Rich var. *subintegra* Engl., *Rhus natalensis* Krauss var. *stuhlmannii* Engl., *Rhus natalensis* var. *comorensis*

Common names: Mkono-chuma, Mti shangwe, Mvunja kondo (Swahili), Musigio (Samburu), Ol-mesigie (Masai)

Brief description: Bush or occasionally a small tree up to 6-8 m tall. Branchlets grey-brown, dotted with lenticels, branches angular. Leaves leathery, pale green, trifoliate, with a 12-36 mm long stalk; leaflets without a clear stalk, obovate to oblong-lanceolate, central leaflet 36-65 (-100) mm long. Flowers in a 15 cm long panicle, greenish yellow, very small, petals 1-1.5 mm long. Fruit globose to kidney-shaped, smooth, red, drying dull and papery, about 5-6 mm diameter.

Ecology: Savanna, scrub, stream banks and forest edges; in all but the driest parts of Kenya. Sea level to 3000 m.

Vegetation type at Lewa: Ngare Ndare forest, hill vegetation LG3-LG6.

Distribution: D.R. Congo, Ethiopia, Guinea, Kenya, Saudi Arabia, Somalia, South Africa, Sudan, Tanzania and Uganda.

Abundance: Common.

Uses: Edible fruit, wood used for timber. Traditional medicine.

References: Dale & Greenway (1961), Blundell (1987), Dharani (2002)



Family: Apiaceae

Scientific name: ***Berula erecta*** (Huds.) Coville

Synonyms: *Berula angustifolia*, *B. erecta*, *B. incisa*, *B. pusilla*, *Siella erecta*, *Sium angustifolia*, *Sium erectum*, *Sium thunbergii*

Common names: Cutleaf waterparsnip (E)

Brief description: A hairless herb, freely-branched, soft, fibrous-rooted perennial, 2-8 dm. tall, often stoloniferous from the base. Leaves: submerged, filiform-dissected leaves often present; the lower aerial leaves with 7-21 lance-ovate leaflets with rounded teeth, up to 5 cm. long and 3 cm. wide; the upper aerial leaves with smaller and narrower leaflets with sharper teeth. Flowers consist of several compound umbels, the 6-15 rays 1-2 cm. long; petals 5, white. Fruit 2-5mm long.

Ecology: Marshes and at water's edge, 1000-1900m. In full sunlight or light shade.

Vegetation type at Lewa: Riverine, and swamp edge.

Distribution: Widespread in Africa (North, Northeast, Southeast and South), Europe, Asia (temperate & South) and North America.

Abundance: Uncommon in Kenya.

Uses: Leaves and flowers used as food. Medicinal uses (rheumatism, fungal infections).

References: Agnew & Agnew (1994)



Family: Apocynaceae

Scientific name: ***Carissa edulis*** (Forssk.) Vahl

Synonyms: *Antura edulis*, *Arduina edulis*, *Carandas edulis*, *Carissa abyssinica*, *C. africana*, *C. candoleana*, *C. pilosa*, *C. tormentosa*, *Jasminonerieum edule* <36 synonyms are known>

Common names: Mtanda-Mboo (Swahili), Limuria (Samburu)

Brief description: Much branched scrambling shrub up to 3-5m., with simple or double spines. Leaves round to elliptic, pointed, about 5cm long. Flowers are 12-20 mm across, fragrant are white inside, red outside, borne in clusters at the end of branches. Berries are 6-10mm across, red to very dark purple. Most parts have white latex.

Ecology: Bushland and forest edges, from coast to 2000m.

Vegetation type at Lewa: Sandy ridges. Hill. LG6.

Distribution: Widespread in tropical Africa: Ethiopia and Somalia through East Africa southwards to Mozambique and Zimbabwe. Also in Asia from Yemen to India and Thailand & Madagascar.

Abundance: Very common.

Uses: Edible berries; hedges; medicinal (malaria, dysentery).

References: Dale & Greenway (1961), Blundell (1987), Dharani (2002), http://mobot.mobot.org/cgi-bin/search_vast



Family: Apocynaceae

Scientific name: *Tabernaemontana stapfiana* Britten

Synonyms: *Tabernaemontana johnstonii*

Common names: Wild magnolia (E), Mwerere (Kikuyu)

Brief description: An evergreen tree, growing to a height of about 10 m, all parts producing a white latex. Bark greyish-brown, rough. Leaves large, glossy-green above, up to 30 cm long. Flowers creamy white with a yellowish centre, fragrant, up to 6 cm across. Fruit in large, rounded pairs, each up to 10 cm across, dark green and mottled with white, ripe fruits splitting open to release a sticky orange pulp; rotten fruit has an unpleasant smell.

Ecology: Wet, upland forests.

Vegetation type at Lewa: Matoni spring.

Distribution: Kenya, Tanzania and Malawi

Abundance: Locally common.

Uses: Wood used as fuel; ornamental when in flower.

References: Dharani (2002)



Family: Arecaceae

Scientific name: *Phoenix reclinata* Jacq.

Synonyms: *Phoenix comorensis* Becc., *P. senegalensis*, *P. reclinata* var. *comorensis*, *P. reclinata* var. *madagascarensis*, *P. leonensis* Lodd. ex Kunth, nom. nud. *P. spinosa* Schum.&Thonn.

Common names: Wild date, Senegal date (E), Mkindu (Swahili)

Brief description: Palm with creeping stock. Stem cylindrical, straight or curved, encircled by leaf scars, 5-8 m long, 20-25 cm diameter. Often multiple-stemmed; sometimes bent over (hence 'reclinata'). Leaves up to 3m long, tufted at the top of the stem; leaf stem flat above, convex beneath, expanded at the base into a fibrous sheath. Leaflets very pointed, central leaflets about 30 cm long and 2.5-3 cm wide; lower leaflets spiny. Flowers arranged in a close panicle of wavy spikes. Fruit a yellow-brown drupe, oval, about 25 mm long, resembling small dry dates; seed about 12 mm long with a groove down one side.

Ecology: Forming clumps on edges of swamps and along lines of seepage. 0-3000 m.

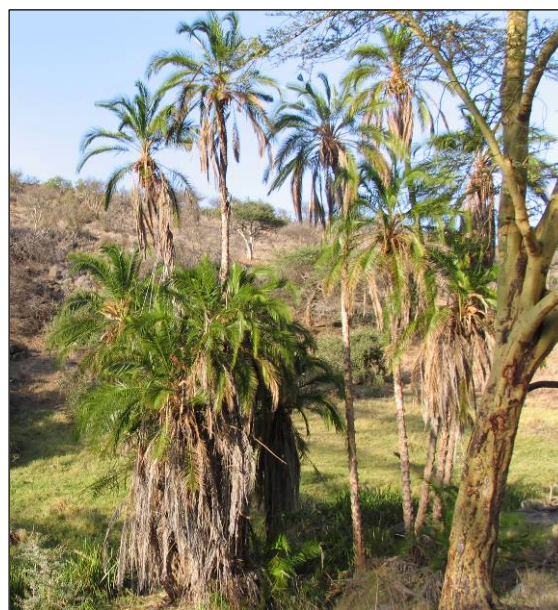
Vegetation type at Lewa: Along water courses, especially in rocky areas (LG7-LG9).

Distribution: Throughout tropical Africa, extending southwards to Zambia and South Africa, and northwards to Egypt.

Abundance: Locally common.

Uses: Edible fruit. Toddy. Leaves used for weaving of baskets and mats. Ornamental, grown in gardens.

References: Dale & Greenway (1961), Dharani (2002).



Family: Asclepiadaceae

Scientific name: *Ceropegia racemosa* N.E.Br.

Synonyms: Unknown. 2 subspecies are known: ssp. *glabra* and ssp. *setifera*

Common names: Unknown.

Brief description: A hairless climber with swollen sausage-shaped roots and wiry stems. Leaves fleshy, ovate to elliptic, often mottled, mostly under 5cm long. Flowers to 25mm long, 3-6 in a stalked elongated cluster; deep purple tube with yellow, 6-7mm lobes.

Ecology: Open, evergreen bushland, (0-)1000-2000m.

Vegetation type at Lewa: Hill. LG3, LG4, LG5

Distribution: Kenya, Uganda.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Asclepiadaceae

Scientific name: *Gomphrocarpus integer* (N.E. Br.) Bullock

Synonyms: *Asclepias integra* N.E. Br.

Common names: Milkweed (E)

Brief description: An erect, delicate, sparsely branched perennial with white-woolly hairs on young parts and needle-shaped leaves. Petals green, bent back, corona (centre of flower) yellow, 4-7 mm high with a straight outer edge; flowers 18 mm across. Fruit egg-shaped in outline, narrowing to a point, smooth or with a few hairless bristles along one side, up to 6 cm long. White latex in most parts. Fruit splitting open to reveal seeds with long hairs (see lower photo); these are easily transported by wind.

Ecology: Grassland at medium altitudes, 950-2250 m.

Vegetation type at Lewa: Hill. LG3-LG5.

Distribution: Ethiopia, Somalia, Uganda, Tanzania and Kenya.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Asclepiadaceae

Scientific name: *Pentarrhinum insipidum* E. Mey.

Synonyms: Unknown

Common names: African heartvine (E)

Brief description: Sparsely hairy climber with almost hairless, rounded to heart-shaped leaves. Stalks of flower clusters are usually longer than the stalks of individual flowers or leaf stalks. Petals are green with hairy edges; centre of flower yellowish or orange, ending in a sharp-edged disc with the central apical appendages bent inwards. Fruit up to 7 cm long, pointed, covered with soft spines. All parts with milky latex.

Ecology: Dry country and edges of dry evergreen forest, 0-1850m.

Vegetation type at Lewa: Edges of riparian forest, LG7-LG9.

Distribution: Cameroon, Burundi, Tanzania, Uganda, Kenya, Namibia and Zambia.

Abundance: Locally common.

Uses: Potentially edible parts.

References: Agnew & Agnew (1994),

<http://www.prota.org/uk/Publications/PROTA+2.htm>



Family: Asclepiadaceae

Scientific name: *Sarcostemma viminalis* (L.) R. Br.

Synonyms: *Euphorbia viminalis* L., *Asclepias aphylla* Thunb., *Cynanchium aphyllum* (Thunb.) Schltr., *Cynanchium tetrapterum* (Turcz.) R.A. Dyer ex Bullock, *Sarcostemma aphylla* (Thunb.) R.Br. ex Schltr., *Sarcostemma tetrapterum* Turcz.

Common names: Caustic creeper, Caustic bush (E)

Brief description: A twining succulent shrub with thin, green stems, >3 mm wide, virtually leafless. Flowers on main stems in stalkless lateral clusters or at the ends of branches; flowers greenish, petals 3-7 mm long. Fruits in pairs, horn-like in shape (see photo). <The name 'tetraptera' means 4-winged, which is actually an artefact that occurs when drying & pressing the stems>

Ecology: Dry country, in rocky or disturbed areas. 100-2200 m.

Vegetation type at Lewa: Hill vegetation, on rocky, volcanic soils, LG3-LG5.

Distribution: Ethiopia, Kenya, Tanzania, Burundi, Malawi, South Africa, Ghana, Madagascar, Mauritius, Comoros, Seychelles, Oman, Saudi Arabia, Yemen, India, the Philippines, Australia and New Caledonia.

Abundance: Common.

Uses: Toxic & medicinal properties.

References: Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: ***Anthemis tigreensis*** J. Gay ex A.Rich.

Synonyms: *Anthemis abyssinica*, *A. cotula*, *A. pygmaea*, *A. semiensis*, *A. tigreensis*

Common names: Camomile

Brief description: Short-lived perennial or annual with spreading branches and hairy, 2x pinnately cut leaves; leaves oblong in outline, downy, the ultimate segments very small and whitish. Rays ('petals') number about 20, white, around the yellow central florets.

Ecology: Roadsides and other disturbed places; upper forest limits and lower alpine zone; (1750-)2500-4300m

Vegetation type at Lewa: Disturbed places in upper part of Ngare Ndare forest.

Distribution: Ethiopia, Kenya, Uganda and Tanzania.

Abundance: Locally common.

Uses: Traditional medicine.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: ***Aspilia mossambicensis*** (Oliv.) Wild.

Synonyms: *Aspilia wedeliiformis*, *A. chrysops*, *A. holstii*, *A. natalensis*, *A. ritellii*, *A. vernayi*, *Menotriche strigosa*, *Wedelia abyssinica*, *W. diversipapposa*, *W. mossambicensis*

Common names: Aspilia

Brief description: A shrubby perennial with rather stiff branches, single or multi-stemmed, growing up to 1.5(-2.5)m tall. It may scramble over surrounding vegetation. Leaves almost without a stalk, 3-veined from the base, rough.

Ecology: Various types of woodland, wooded grassland, disturbed sites, forest margins, seasonal swamps, along rivers and streams. 5-2130(-2400)m.

Vegetation type at Lewa: Riverine. LG7, LG8

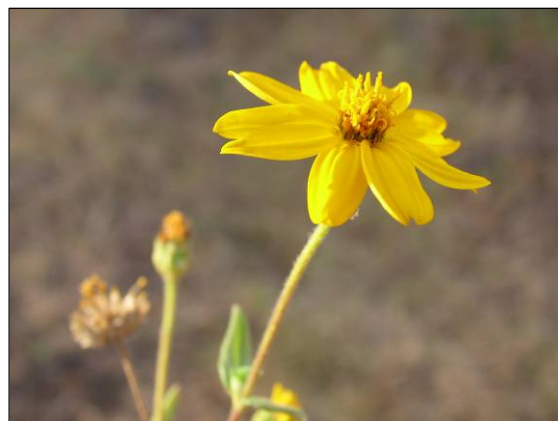
Distribution: From Ethiopia through East Africa to South Africa.

Abundance: Locally common.

Uses: Used in traditional medicine to treat conjunctivitis, roots are boiled, vapour eyes bath. Used by chimpanzees for self-medication.

References: Blundell (187), Agnew & Agnew (1994)

www.zimbabweflora.co.zw/speciesdata/species.php?species_id=160430



Family: Asteraceae

Scientific name: *Aspilia pluriseta* Schweinf.

Synonyms: *Aspilia asperifolia*, *A. brachyphylla*, *A. vulgaris*

Common names: Dwarf aspilia

Brief description: Prostrate or suberect, perennial herb, with branches 30-60 cm. Leaves more-or-less without a stalk, leaf blade up to 4 x 2.5 cm, toothed margin. Flower head up to 1.8 cm in diameter, solitary or up to 3 together.

Ecology: Woodland and grassland; pioneer of disturbed areas and cultivated sites. Variable plant that can reach large size as scrambler. Abundant on black cotton soil. 1050-2250(-2400)m.

Vegetation type at Lewa: Disturbed areas, especially in black cotton soil areas (LG1 & LG2). Plain.

Distribution: Kenya, Uganda, southwards via Tanzania and Zimbabwe to South Africa.

Abundance: Locally common.

Uses: Traditional medicine.

References: Blundell (187), Agnew & Agnew (1994)

www.zimbabweflora.co.zw/speciesdata/species.php?species_id=160450



Family: Asteraceae

Scientific name: *Crassocephalum pycnidifolium* (DC.) S. Moore

Synonyms: *Crassocephalum paludum*

Common names: Unknown

Brief description: A trailing annual or perennial, sometimes almost hairless. Leaves linear-lanceolate, with a narrow base but no distinct stalk. Flower heads 5-7 mm diameter at base, about 8mm long. <according to Blundell, this species is a hybrid between *C. paludum* and *C. vitellinum*>

Ecology: Always in swamps, often at lake edges and along rivers or streams, 1300-2500m.

Vegetation type at Lewa: Riverine. LG7, LG8, LG9

Distribution: East Africa, Rwanda, Burundi, D.R. Congo, southwards to Zambia.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: *Galinsoga parviflora* Cav.

Synonyms: *Adventina parviflora*, *Galinsoga quinqueradiata*, *Stemmatella sodiroi*, *Wiborgia acmella*, *W. parviflora*

Common names: Small flowered galinsoga, quickwee, Gallant soldier (E)

Brief description: A soft erect annual, up to 60 cm tall, much branched, almost hairless or with spreading-hairy stems and leaves. Leaves opposite, slightly hairy, with a short stalk, blade 35-40 by 50 mm, with a slightly toothed edge. Flower heads in small terminal groups. Five white to creamy rays (=like petals), each bluntly 3-toothed.

Ecology: Moist highlands, 300-2300 m.

Vegetation type at Lewa: Disturbed areas, roadsides, especially in moister riverine areas. LG7-LG9.

Distribution: Originally from South America, now pantropical and subtropical; introduced to Kenya.

Abundance: Common.

Uses: Eaten as a vegetable in Southeast Asia. Also cultivated along with corn in the Andes of South America and used as a vegetable crop.

References: Ivens (1982), Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: *Gutenbergia cordifolia* Oliv.

Synonyms: *Cyanthillium cordifolium*, *Erlangea cordifolia* (Oliv.) S. Moore, *Erlangea marginata*, *Vernonia marginata*

Common names: Pope's button (E)

Brief description: A small to medium-sized erect annual herb with almost stalkless, opposite to alternate, obovate to ovate and oblong leaves, white-felted underneath. Flower heads to 10 mm diameter, purple.

Ecology: Disturbed places in dry grassland, rocky, eroded areas, poor soils, 1350-2500 m.

Vegetation type at Lewa: Hill. LG6. On sandy soils.

Distribution: Southern Sudan, Ethiopia, Uganda, Tanzania, Kenya, eastern D.R. Congo, Rwanda, Burundi, Malawi, Zimbabwe, Mozambique.

Abundance: Common.

Uses: Unknown. Flower reportedly poisonous.

References: Blundell (1987), Agnew & Agnew (1994).



Family: Asteraceae

Scientific name: *Helichrysum glumaceum* DC.

Synonyms: *Achyrocline glumacea* (DC.) Oliv. & Hiern.,
Gnaphalium glumaceum (DC) Schi.-Bip.

Common names: Everlasters (E)

Brief description: A weakly shrubby, low perennial, grey-hairy with linear, pointed leaves. Flower heads 2 mm across, 5 mm long, white or pink in tight clusters, the clusters in racemes on leaflet stalks.

Ecology: Dry grassland and wooded grassland, 200-2500 m.

Vegetation type at Lewa: Plain and Hill. LG1-LG5. Especially on Black Cotton soils.

Distribution: Sudan, Ethiopia, Somalia, Uganda, Tanzania, Kenya, southwards to Mozambique, and Arabia.

Abundance: Common.

Uses: Medicinal

References: Blundell (1987), Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: *Lactuca inermis* Forsk.

Synonyms: *Lactuca capensis* Thunb.

Common names: Wild lettuce

Brief description: An erect herb or small shrub with few high branches. Leaves very sparsely hairy, pinnately lobed, the upper leaves often linear. Flower heads blue purple, up to 13 mm long, 16 mm across, in a diffuse terminal cluster.

Ecology: Disturbed ground at medium altitudes, especially along roadsides. *Lactuca* species are used as food plants by the larvae of a number of Lepidoptera species. 500-3300 m.

Vegetation type at Lewa: Roadsides on clayey soils.

Distribution: Arabian Peninsula, Sudan, Ethiopia, throughout East Africa southwards to Zimbabwe and Mozambique.

Abundance: Common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: *Launaea hafunensis* Chiov.

Synonyms: *Launaea cufodontii* Lanza

Common names: Unknown

Brief description: An erect, many-stemmed, bushy herb with forked branches, no single stem dominant, from a woody rootstock. Leaves linear-lanceolate in outline, pinnately lobed. Flower heads 17 mm long, terminal on each branchlet, 'petals' 15 mm long.

Ecology: Dry alluvial soils, 600-1700 m.

Vegetation type at Lewa:

Distribution: Ethiopia, Somalia, Djibouti, Kenya and northern Tanzania.

Abundance: Common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: *Melanthera scandens* (Schumach. & Thonn.) Roberty

Synonyms: *Bupthalmum scandens* Schumach. & Thonn., *Lipotriche brownii* D.C., *Melanthera brownii* (DC) Sch. Bip.

Common names: Unknown

Brief description: A trailing shrub, often to 3m with ovate-lanceolate to triangular leaves that are sometimes lobed. Flowers on the ends of branchlets, bright yellow, with petals (2-)4-8 mm long.

Ecology: Dry, upland forest areas, not always flowering. 1300-2200m.

Vegetation type at Lewa: Ngare Ndare forest.

Distribution: Ethiopia, Kenya, Tanzania, Uganda, Cameroon, Equatorial Guinea, DR Congo, West tropical Africa, Mozambique; Zambia; Zimbabwe, Botswana; Namibia, Madagascar Zimbabwe, Zambia.

Abundance: Locally common

Uses: Unknown

References: Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: *Sphaeranthus gomphrenoides* O. Hoffm.

Synonyms: Unknown

Common names: Unknown

Brief description: A weak, ascending hairless scented herb with lanceolate leaves and interrupted stem wings. Inflorescences usually smaller than 10-12 mm diameter, pale purple-pink, rounded at the top.

Ecology: Along water courses and ephemeral pools in hotter country. 400-2225 m.

Vegetation type at Lewa: Riverine. LG7-LG9.

Distribution: Southern Ethiopia, D.R. Congo, Rwanda, Tanzania, Uganda, Kenya and Zambia.

Abundance: Common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Asteraceae

Scientific name: *Spilanthes mauritiana* (Rich.) D.C

Synonyms: *Spilanthes mauritiana* (Rich.) D.C., *Spilanthes africana* D.C., *Spilanthes acmella* (L.) Murray, *Acmella calirhiza* Del.

Common names: Unknown

Brief description: A trailing herb, with ovate, toothed leaves and small head of rather bright, orange-yellow flowers, 8 mm across with noticeable ray florets ('petals').

Ecology: Riverside grassland and lawns. 610-2500 m.

Vegetation type at Lewa: Riverine. LG7-LG9.

Distribution: Southern Sudan, Ethiopia, D.R. Congo, Rwanda, through East Africa southwards to Zimbabwe and Mozambique.

Abundance: Uncommon; endangered according to some (Bais *et al.*, 2002)

Uses: Many promising medicinal uses.

References: Blundell (1987), Agnew & Agnew (1994), Bais *et al.* (2002)



Family: Asteraceae

Scientific name: *Tagetes minuta* L.

Synonyms: *Tagetes bonariensis* Pers., *Tagetes glandulifera* Schrank, *Tagetes glandulosa* Link, *Tagetes porophylla* Vell.

Common names: Khaki weed, Marigold, Stinkweed, Wild Marigold, Mexican Marigold (E)

Brief description: Erect herb with pinnate or pinnately cut opposite leaves with elliptic toothed leaflets. Has a very strong-smelling, clinging scent when crushed. Annual, often robust and very variable in habit and very plastic in its response to crowding. Flowers in small creamy yellow terminal heads, to 5 mm across.

Ecology: In upland arable land, 850-2740.

Vegetation type at Lewa: Roadsides and in Plain, LG1-LG2 and riverine LG7-LG9.

Distribution: Introduced from America, first recorded in East Africa in 1925. Native to temperate grasslands and montane regions of southern South America, including Argentina, Chile, Bolivia, Peru and Paraguay. Now has a world-wide distribution.

Abundance: Common to very common.

Uses: Troublesome weed, but cultivars used as garden ornamental. Many medicinal uses.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Boraginaceae

Scientific name: *Cordia ovalis* R.Br. ex DC.

Synonyms: *Cordia monoica* Roxb.

Common names: Sandpaper tree (E), Msasa (Swahili), Ol-seki (Masai), Mukuo (Meru & Kikuyu)

Brief description: A spreading, much-branched shrub or tree, up to 6 m tall, bark scaling in strips. Leaves are rough and sandpapery, ovate, obovate or suborbicular, and usually opposite, 5-7.5 cm long and 3.5-6 cm wide, hairy underneath, with a 12 mm stalk. Flowers pale yellow, fragrant, 6 mm long, tubular, irregularly toothed, hairy outside, flower tube 5 mm long with 4-5 lobes; stamens inserted in the throat. Fruit yellow to orange, ovoid, up to 20 mm. <similar to *Cordia africana*, with leaves >10-12 cm long>

Ecology: Dry country, along valley bottoms and watercourses on rocky areas and red clay soils. From sea level to 1600 (-2200) m.

Vegetation type at Lewa: Hill vegetation. LG3-LG5

Distribution: India, Sri Lanka and in Africa from Sudan, Ethiopia, Somalia, Kenya southwards to South Africa.

Abundance: Locally common

Uses: Fruit is edible and sweet; fencing, fuel, timber and fodder.

References: Dale & Greenway



Family: Boraginaceae

Scientific name: *Heliotropium steudneri* Vatke

Synonyms: *Heliotropium dissimile* N.E. Br., *H. eduardii* Martelli, *H. nelsonii* C.H.Wright, *H. rogersii* Kaplan

Common names: Unknown

Brief description: An erect, rough-hairy herb from a perennial rootstock, with ovate to lanceolate stalked leaves, to 9 cm long, and elongating spikes of white or cream-coloured flowers, 6.5-12.5 cm long. Subspecies *bullatum* has spreading, woolly hairs and bumpy leaves with impressed venation. Has extensive underground rhizomes.

Ecology: Medium altitudes in dry grassland, especially disturbed areas, abandoned fields, cut-off drains, (750-)-1100-2070 m. Common, sometimes troublesome weed.

Vegetation type at Lewa: Hill and Plain, LG1-LG5.

Distribution: Sudan, Ethiopia, Somalia, Uganda, Tanzania and Kenya, southwards to South Africa.

Abundance: Common.

Uses: Medicinal; treating fever and stomach ache.

References: Ivens (1982), Blundell (1987), Agnew & Agnew (1994).



Family: Boraginaceae

Scientific name: *Trichodesma marsabiticum* Brummitt

Synonyms: *Trichodesma schimperi*

Common names: Unknown

Brief description: A small, bristly shrub, 1 m tall, with peeling bark and elliptic-linear stalked leaves. Flowers small, cream-coloured, with heart-shaped sepals enlarging to 2 cm in fruit. Fruit reddish-green, inflated.

Ecology: Rocky lava slopes. 1000-1700 m.

Vegetation type at Lewa: Hill vegetation, on volcanic rocky soils, LG3-LG5.

Distribution: Known only from northern Kenya.

Abundance: Rare plant with a very restricted range.

Uses: Unknown.

References: Agnew & Agnew (1994)



Family: Burseraceae

Scientific name: *Commiphora africana* (A.Rich.) Engl.

Synonyms: *Commiphora calcicola* Engl., *Commiphora pilosa* Engl., *Heudelotia africana* A. Rich.

Common names: African myrrh, poison-grub commiphora (E), mbambara, mponda, mturituri, mtwitwi (Swahili)

Brief description: Shrub or small tree, 5-10m tall, with bark peeling in papery scrolls, revealing a green underbark. Branches spiny. Exudes pale milky sap, slightly scented. Leaves trifoliate, leaflets hairy underneath, up to 8cm long. Flowers red, 5mm across, in axillary clusters. Fruit ellipsoid, pointed, 8mm long, 1-seeded

Ecology: *Acacia-Commiphora* woodland, drier coastal regions, 50-1800m.

Vegetation type at Lewa: LG3, LG4, LG5, LG6

Distribution: Angola, Botswana, Burkina Faso, Chad, Eritrea, Ethiopia, Kenya, Mali, Mauritania, Mozambique, Namibia, Niger, Senegal, Somalia, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe

Abundance: Common.

Uses: Planted as a fence. Young shoots used as fodder. Tea made from bark. Many medicinal uses.

References: Dale & Greenway (1961), Dharani (2002), <http://www.worldagroforestrycentre.org/SEA/Products/AFDbases/AF/asp/SpeciesInfo.asp?SpID=573>



Family: Cactaceae

Scientific name: *Opuntia exaltata* A. Berger

Synonyms: *Austrocylindropuntia exultata*

Common names: Prickly pear

Brief description: A shrub or tree up to 5m tall, with main stem up to 10(-30)cm in diameter. Ultimate joints cylindrical, often curved, 3-4 cm diameter. Spines 1-3(-5) per areole (up to 12 on old wood), yellow or brownish, up to 3-7 cm long (-13 cm on old wood). Leaves fleshy, rounded, 1-5(-7) cm long. Flowers 8 cm long, 4 cm diameter, perianth dark red to orange. Fruit pear-shaped, green.

Ecology: Cut or broken fragments that fall to the ground readily take root, making it difficult to eradicate.

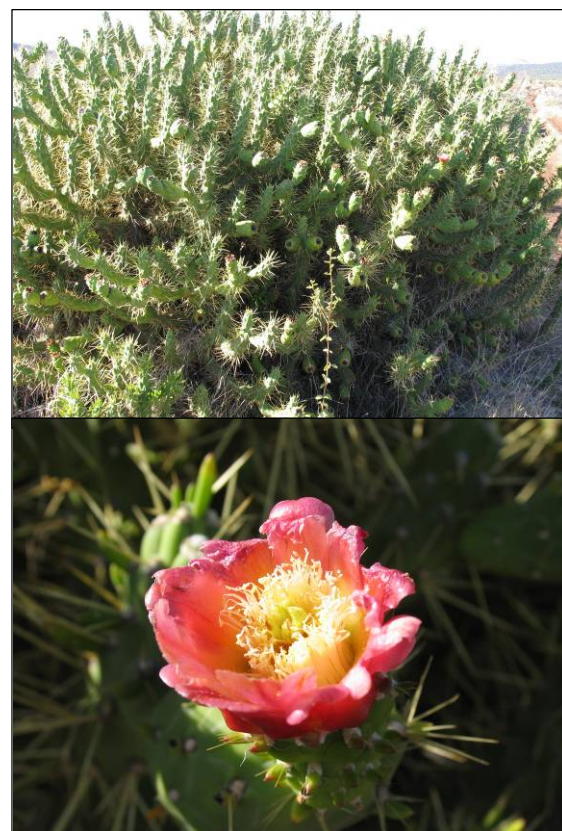
Vegetation type at Lewa: Disturbed areas, roadsides.

Distribution: Native to South America, introduced to Kenya around Nairobi, from where it has escaped into the wild.

Abundance: Locally common

Uses: Hedges, edible fruit.

References: Hunt (1968), Ivens (1982)



Family: Cactaceae

Scientific name: *Opuntia vulgaris* Mill.

Synonyms: *Cactus opuntia* L., *Opuntia dillenii* sensu R.O. Williams.

Common names: Prickly pear

Brief description: A medium-sized stem succulent, erect or sprawling, shrubby to tree-like, 2-4 m in height. Stem consist of round, flattened green fleshy joints, 10-30 cm long, 5-12 cm broad. Tufts of spines or bristly hairs, 1-2 per areole, up to 7(-10) cm long; virtually without leaves. Flowers yellow or orange, 5-7.5 cm across, often tipped with red, petals and stamens numerous. Fruit the size of a large egg, soft, green, covered with spiny bristles, fleshy.

Ecology: Open or bushy grasslands, coastal bluffs, roadsides; at altitudes below 1700m.

Vegetation type at Lewa: Disturbed areas, roadsides.

Distribution: Native to Bolivia and Argentina, introduced to Kenya around Nairobi, from where it has escaped into the wild.

Abundance: Locally common

Uses: Hedges, edible fruit.

References: Hunt (1968), Ivens (1982), Dharani (2002)



Family: Caesalpiniaceae

Scientific name: *Senna didymobotrya* (Fresen.) H.S. Irwin & Barneby

Synonyms: *Cassia didymobotrya*, *C. nairobiensis*, *C. verdickii*

Common names: Candle bush (E), Olsenetoi (Masai)

Brief description: Bushy shrub, up to 4m tall, occasionally a tree to 7m. Leaves up to 45cm long, with 10-20 leaflet pairs; each leaflet 25-65mm by 18-20mm. Flowers bright yellow, crowded. Pods hairy and flat, green to dark brown, up to 12cm by 2.5 cm.

Ecology: Often along roadsides, in ditches and depressions, 600-2100m.

Vegetation type at Lewa: Riverine. LG7, LG8, LG9

Distribution: Ethiopia, Sudan, East Africa southwards to Zambia, Mozambique and Zimbabwe.

Abundance: Common.

Uses: Bark contains tannin, leaves contain mild purge and fish poison; roots contain powerful purge. Poisonous.

References: Dale & Greenway (1961), Blundell (1987).



Family: Capparaceae

Scientific name: *Boscia coriacea* Pax

Synonyms: *Boscia teitensis*, *B. paoli*, *B. pungens*, *B. somalensis*, *B. xylophylla*

Common names: Mnafisi (Swahili)

Brief description: Small tree, to 5m tall, with smooth silvery grey bark; evergreen, very twiggy. Leaves rigidly leathery, lanceolate to near-lanceolate, up to 7.5cm long and 1.3-2.5cm wide; blade pale green with paler edges and nerves, slightly raised on leaf top, very pronounced beneath; leaf stalk 4-5mm. Flowers small, yellow, green-yellow, 4-5(-6)mm wide, sweetly scented (or unpleasant). Fruits rounded, 10-14mm across.

Ecology: In very dry country, deciduous bushland, semi-desert scrub, grassland with scattered trees, 150-1500m.

Vegetation type at Lewa: Hill. LG3, LG4, LG5, LG6

Distribution: Kenya, Uganda, Tanzania, Ethiopia, Sudan, Somalia.

Abundance: Locally common.

Uses: Unknown.

References: Dale & Greenway (1961), Elffers *et al.* (1964), Blundell (1987).

Family: Capparaceae

Scientific name: *Cadaba farinosa* Forssk.

Synonyms: *Cadaba mombassana* Gilg et Benedict

Common names: herd's boy fruit (E), mvunja-vumo (Swahili)

Brief description: A bushy shrub, 1-5 m tall, rarely a tree to 8m, with many tangled branches bearing numerous small greyish green leaves. Leaves are opposite and rounded at their tips and bases, pale in colour and smell unpleasant when crushed. Fruits are small, elliptically shaped (spear-shaped in both ends, base and apex, with widest part in the middle) and orange in colour.

Ecology: Grows in semi-arid and arid areas in the desert grass-bush zone. Occurs in depressions, sandy silts of valleys, around temporary ponds and on stabilized dunes. Commonly associated with *Maerua* species or on termite mounds. 0-1700m.

Vegetation type at Lewa: Riverine and Plain, on sandy soils.

Distribution: Angola, Cameroon, Democratic Republic of Congo, Djibouti, Egypt, Ethiopia, India, Kenya, Niger, Saudi Arabia, Senegal, Somalia, Sudan.

Abundance: Common.

Uses: Roots have medicinal value. Fruits and leaves are edible.

References: Dale & Greenway (1961), Elffers *et al.* (1964), Blundell (1987), Dharani (2002)



Family: Capparaceae

Scientific name: *Capparis cartilaginea* Decne.

Synonyms: *Capparis galeata* Fresen.

Common names: Wild caper (E), Mbaruti, Mtunguru (Swahili)

Brief description: Spreading or scrambling shrub, 0.5-4m tall, twigs covered with white hairs. Leaves somewhat fleshy, broadly elliptic, ovate or round, 2-5.5 cm long, 1.8-5(-6)mm wide, midrib ending in a small recurved spine. Flowers solitary in leaf axils; petals unequal; stamens many, 3cm long, turning reddish. Fruits round, up to 5(-10)x3(-5) cm.

Ecology: Deciduous bushland, often on exposed rock or coral outcrops, 0-1800m.

Vegetation type at Lewa: Volcanic ash cliffs.

Distribution: Yemen, Jordan, Kenya, Ethiopia, Somalia, Socotra, Middle East and Pakistan.

Abundance: Locally common.

Uses: Closely related to *Capparis spinosa* of the Mediterranean, which is cultivated for edible capers.

References: Dale & Greenway (1961), Eloffs *et al.* (1964), Blundell (1987),

<http://www.smgrowers.com/info/Capparis.asp>



Family: Capparaceae

Scientific name: *Capparis tormentosa* Lam.

Synonyms: *Capparis alexandrae*, *C. biloba*, *C. persicifolia*, *C. polymorpha*, *C. volkensii*

Common names: Caper (E)

Brief description: Scrambling shrub or small tree, up to 10m tall or long. Leaf blade 1.5-9cm long, 1-5.5 wide. Flowers generally in clusters, at the ends of main branches, or on short, leafy lateral branches. Stamens 2-3.5cm long, whitish or pinkish, with a crimson base. Fruits round, up to 5cm diameter, shiny, turning black or orange-red.

Ecology: Deciduous bushland and thickets, grassland with scattered trees, riverine vegetation, or on termite mounds, 0-2500m.

Vegetation type at Lewa: Plain and riverine clays, often with some rocks. LG1, LG2, LG7.

Distribution: Throughout tropical Africa from Senegal and Eritrea southward to South Africa.

Abundance: Locally common.

Uses: Unknown.

References: Dale & Greenway (1961), Eloffs *et al.* (1964).



Family: Capparaceae

Scientific name: *Cleome monophylla* L.

Synonyms: *Cleome cordata*, *C. epilobioides*

Common names: Unknown

Brief description: An erect annual herb, usually branched, up to 1m tall. Leaves simply, very variable, mostly oblong or lanceolate, and hairy. Petals usually pink or mauve, sometimes yellow. Fruit a capsule with glandular and simple hairs.

Ecology: Grassland, deciduous woodland and bushland, lake shores, and especially in disturbed areas. Weed of cultivated and disturbed ground, 30-2100m.

Vegetation type at Lewa: Disturbed places, roadsides.

Distribution: Somalia, through East Africa southwards to Mozambique and Zimbabwe; west to Senegal; also in India.

Abundance: Very common.

Uses: Unknown.

References: Elffers *et al.* (1964), Blundell (1987), Agnew & Agnew (1994)



Family: Commelinaceae

Scientific name: *Commelina africana* L.

Synonyms: Unknown. <14 varieties have been recorded>

Common names: Wandering Jew (E), Mkongwa, Kolyani (Swahili)

Brief description: A very variable small herb with prostrate to ascending branches and thickened, fibrous roots. Flower spathes single, with yellowish (rarely white) flowers. Sometimes densely hairy.

Ecology: Grasslands, disturbed places, and as a weed, 10-2400m.

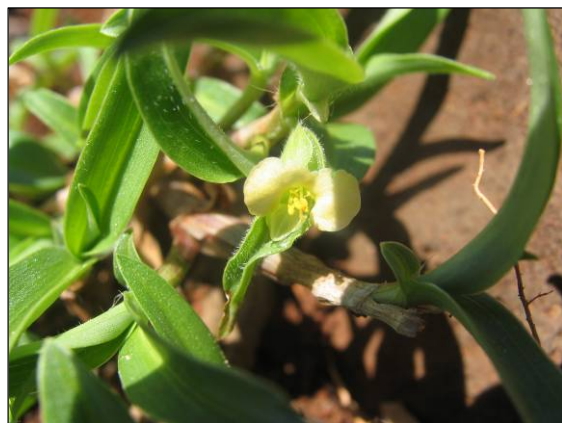
Vegetation type at Lewa: Hill and disturbed places.

Distribution: Throughout tropical Africa and southward to South Africa, widespread in East Africa.

Abundance: Very common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Commelinaceae

Scientific name: *Commelina benghalensis* L.

Synonyms: *Commelina canescens*, *C. cavaleriei*, *C. cucullata*, *C. delicatula*, *C. kilimandscharica*, *C. mollis*, *C. nervosa*, *C. procurrens*, *C. prostrata*, *C. turbinata*

Common names: Benghal Dayflower, Tropical spiderwort, Wandering Jew (E) Engaiteteya (Masai)

Brief description: Herb with ascending or erect branches; leaves usually shortly stalked and obliquely-based. Broad with purple or white hairs, or narrow with white hairs on the sheath margins. Usually some flowers present that are half-buried; other flowers bright blue, 15mm across. Fruit a 5-seeded capsule.

Ecology: Bushland, areas of cultivation and disturbed habitats, usually damper areas; 10-2200m.

Vegetation type at Lewa: Disturbed areas; riverine. LG7-LG9

Distribution: Throughout Africa. Pantropical and subtropical weed, found on all continents except Antarctica.

Abundance: Very common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994), <http://www.nappo.org/PRA-sheets/Commelinabenghalensis.pdf>



Family: Commelinaceae

Scientific name: *Commelina latifolia* A. Rich.

Synonyms: Unknown.

Common names: Dayflower.

Brief description: Herb with ascending, erect or scrambling stems; stems up to 2m long. Flowers a darker shade of blue than *Commelina benghalensis*.

Ecology: Weed of cultivation and disturbed places, sometimes in bushland and forest edges; 1-2400m.

Vegetation type at Lewa:

Distribution: Sudan, Ethiopia, D.R. Congo, Rwanda, Uganda, Kenya and Tanzania (Zanzibar).

Abundance: Common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Convolvulaceae

Scientific name: *Evolvulus alsinoides* (L.) L.

Synonyms: *Convolvulus alsinoides*, *C. linifolius*, *Evolvulus linifolius*, *E. azureus*, *E. fugacissimus*

Common names: Slender dwarf morning-glory (E)

Brief description: An exceptionally variable annual or perennial herb, usually covered with rather long silky hairs. Stems trailing or prostrate, but flowering shoots ascending up to 60 cm. Leaves almost stalkless, blade elliptic to linear-oblong, 8-26 mm long, 2-10 mm wide. 1-5 flowers on a 6-40 mm long stalk. Flowers blue, rarely white, about 6 mm long and wide. Fruit a round capsule, 3-4 mm, 4-valved.

Ecology: Grasslands, woodlands, roadsides and as a weed of cultivated ground on sandy and black cotton soils, 60-1950 m.

Vegetation type at Lewa: Hill and Plain. LG1-LG6.

Distribution: Pantropical and subtropical; throughout East Africa.

Abundance: Common.

Uses: Well known for its memory enhancement, antiepileptic and immunomodulatory properties in the traditional Indian system of medicine, Ayurveda.

References: Verdcourt (1963), Agnew & Agnew (1994), Siripurapu *et al.* (2005)



Family: Convolvulaceae

Scientific name: *Ipomoea blepharophylla* Hall. F.

Synonyms: *Ipomoea blepharophylla* var. *cordata*, *I. glossophylla*

Common names: Unknown

Brief description: Perennial, with several prostrate, hairy stems from a single woody rootstock. Leaf blade lanceolate or narrowly oblong, up to 8(-12) cm long and 1.3 cm wide, glabrous or with odd hairs on the midrib above and on margins and veins beneath. Flowers usually solitary, mauve, with a darker centre, tubular-funnel-shaped, 2 cm wide and 5.5-6 cm long. Fruit a round capsule, 9 mm diameter.

Ecology: Burnt *Combretum* woodland, grasslands (often seasonally flooded), wooded grassland after burning, rocky hills, 1080-1860 m.

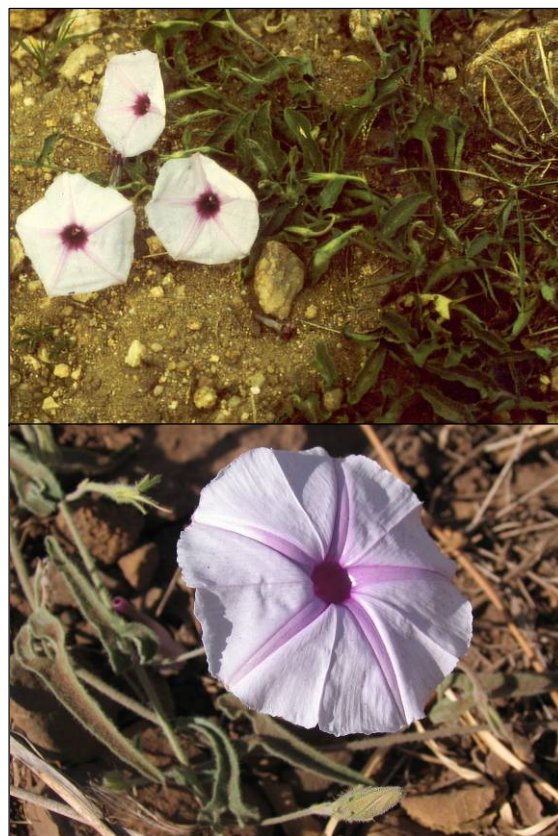
Vegetation type at Lewa: Hill, occasionally Plain. LG1-LG5

Distribution: Sudan, Ethiopia, D. R. Congo, Gabon, West Africa, though East Africa southwards to Zimbabwe and South Africa, and southwest to Angola.

Abundance: Locally common.

Uses: Medicinal uses (pounded tuber).

References: Verdcourt (1963), Agnew & Agnew (1994)



Family: Convolvulaceae

Scientific name: *Ipomoea spathulata* Hall. F.

Synonyms: Unknown

Common names: Moonflower (E)

Brief description: Shrub with suberect or partly twining or scrambling branches, up to 2.5 m long, densely covered with grey or yellowish spreading felt-like hairs. Leaf blade round, thick, 8.5-13(-23) cm long, 8.5-11(-25) cm wide, blunt tip, palmately 7 nerved at the base. Flowers several to many, white, cream or yellow with a darker mauve or purple centre, funnel-shaped, 5-7.5 cm long, mid-petal line is hairy. Fruit a round capsule, 1.3 cm long, 1.1 cm wide, smooth. Seeds rounded, 13 mm long, 6 mm wide, densely covered with pale golden hairs..

Ecology: *Acacia-Commiphora* deciduous bushland, 610-2100 m.

Vegetation type at Lewa: Hill. LG3-LG5. In northern part of Lewa.

Distribution: Ethiopia, northern Kenya and northern Uganda.

Abundance: Locally common.

Uses: Ornamental, easily grown from cuttings. Roots tied to cows udder to make calf suckle; stems used to tie cows up (Pokot). Treating eye sores (Samburu).

References: Verdcourt (1963), Blundell (1987), Timberlake (1987), Agnew & Agnew (1994), Bussmann (2006)



Family: Crassulaceae

Scientific name: *Kalanchoe lanceolata* (Forsk.) Pers.

Synonyms: *Cotyledon lanceolata* Forsk., *Kalanchoe glandulosa* Hochst. Ex A. Rich., *Kalanchoe heterophylla* Wight ex C.B. Clarke, *Kalanchoe pilosa* Baker

Common names: lance leaf air plant

Brief description: A glandular-hairy, down-covered annual, with erect stems to nearly 1m tall, with almost hairless, obovate to oblong succulent leaves that sometimes have a toothed edge. Flowers yellow to orange-red, about 10-11 mm long, in a dense terminal cluster.

Ecology: Dry country. Can cause acute poisoning in cattle (glycoside poisoning). 200-2100 m.

Vegetation type at Lewa: Seasonally flooded areas, clayey soils; LG1, LG2, LG7-LG9.

Distribution: Sudan, Ethiopia, Somalia, throughout East Africa southwards to Zimbabwe and Mozambique.

Abundance: Locally common.

Uses: Unknown

References: Blundell (1987), Agnew & Agnew (1994)



Family: Crassulaceae

Scientific name: *Kalanchoe prittwitzii* (Forsk.) Pers.

Synonyms: *Kalanchoe lugardi* Bullock

Common names: Unknown

Brief description: A tall, succulent herb to 1.5 m tall, trailing at the base. Middle leaves narrowed into the stalk or distinct from it, ovate to wedge-shaped, with coarse, blunt teeth. Flowers whitish-yellow, petal tube to 25 mm long.

Ecology: Forest edges, open bush or rocky ground, 1650-2300 m.

Vegetation type at Lewa: Hill. LG3-LG5.

Distribution: Ethiopia, Somalia, Sudan, Kenya, Tanzania, Uganda, D.R. Congo

Abundance: Locally common.

Uses: Unknown.

References: Agnew & Agnew (1994)



Family: Cucurbitaceae

Scientific name: *Cucumis ficifolius* A. Rich

Synonyms: *Cucumis abyssinicus*, *C. figarei*

Common names: Figleaf cucumis (E)

Brief description: Perennial, usually prostrate herb, stems up to 1m long, hairy, with coarse pointed, spiny hairs. Leaf blade ovate in outline, very roughly hairy above and beneath, 20-71mm long, 20-74mm broad, palmately 3-5-lobed. Male flowers solitary, yellow, about 8mm long. Fruit on 7-25mm long stalk, green-yellow, globose, 23-50(-88)mm long and 12-30(-63) mm across, covered with closely scattered conical pustules ending in a bristle.

Ecology: Upland grassland, along paths and roads, 1070-2800m.

Vegetation type at Lewa: Roadsides, in Plain. LG1, LG2.

Distribution: Ethiopia, Kenya, Tanzania, Uganda, Rwanda and D.R. Congo.

Abundance: Locally common.

Uses: Edible fruit.

References: Jeffrey (1967), Agnew & Agnew (1994)

<http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?12554>



Family: Cucurbitaceae

Scientific name: *Cucumis prophetarum* L. subsp. *dissectus* (Naud.) C. Jeffrey

Synonyms: *Cucumis figareii*, *C. ficifolius*, *C. halabarda*, *C. lyratus*

Common names: Globe cucumber, Wild cucumber (E)

Brief description: Climber or trailer up to 1.4(-2)m length. Stems green, with rather slender, usually straight hairs, not spiny. Leaf blade green, with short hairs beneath, 32-94mm long, 29-82 mm across, broadly ovate or rounded in outline, often deeply 3-5 lobed. Male flowers a few together. Fruit uniformly dull yellow when ripe, on 9-40mm long stalk, globose, 2-7cm long, 15-30 mm wide, covered with soft bristles.

Ecology: Deciduous bushland and grassland, *Combretum* and *Commiphora* woodlands, 0-2000m.

Vegetation type at Lewa: Hill. Sandy ridges in LG5, LG6

Distribution: D.R. Congo, Egypt, Northeast tropical Africa, Socotra and Arabia, southwards to South Africa.

Abundance: Common.

Uses: Medicinal & culinary.

References: Jeffrey (1967), Blundell (1987), Agnew & Agnew (1994)



Family: Cupressaceae

Scientific name: *Juniperus procera* Endl.

Synonyms: Unknown

Common names: (East) African Juniper, African Pencil Cedar, Cedar (E), Oltarakwa (Masai),

Brief description: A tree to 40 m tall, outer bark thin, grey brown, with shallow longitudinal fissures, loosening in thin papery strips. Crown pyramidal in youth, spreading in age. Adult branchlets 0.5-1 mm diameter with opposite scale leaves, pointed and hooded. Male cones rounded, yellowish, 2-3 mm long. Female cones of 3-4 pairs of scales, mature reddish brown to purplish black, rounded to irregular, 4-8 mm diameter. <Note: red cedar *Cupressus lusitanica* referred to in various documents about LWC and the Ngare Ndare forest originates from Mexico and was introduced as a plantation tree to Kenya in 1927. It is also planted on the northern and north-western slopes of Mt. Kenya.>

Ecology: Upland dry evergreen forest, often dominant 1350-3100 m.

Vegetation type at Lewa: Dominant in mature Ngare Ndare *Juniperus procera*-*Olea africana* forest.

Distribution: Ethiopia, Eritrea, Somalia, Sudan, D.R. Congo, through East Africa southwards to Malawi.

Abundance: Locally common.

Uses: Excellent durable timber.

References: Melville (1958), Dale & Greenway (1961)



Family: Cyperaceae

Scientific name: *Cyperus assimilis* Steudel

Synonyms: *Courtoisia assimilis*, *Indocourtoisia assimilis*,
Mariscus assimilis

Common names: Unknown.

Brief description: A slender to fairly robust annual, with a minute root system. Stems 1-50 cm long, 0.7-3mm thick, triangular in cross-section, almost smooth. Leaves yellowish-green, 5-40 cm long, 2-5 mm wide, rough along edge and midrib. Flowering head up to 12 cm long and 10 cm across. Spikelets 3-6 mm long and 1-2.5 mm across.

Ecology: Seasonally wet places, along temporary pools, roadsides and heavily trodden places, 1190-2100m.

Vegetation type at Lewa: Swamps and river banks. Riverine. LG7-LG9.

Distribution: Kenya, Tanzania, Uganda.

Abundance: Locally common.

Uses: Unknown.

References: Haines & Lye (1983)



Family: Cyperaceae

Scientific name: *Cyperus dives* Del.

Synonyms: *Cyperus immensus*, *C. exultatus* Retz. var. *dives*,
Cyperus alopecuroides var. *dives* Boeck., *Cyperus fastigiatus* Forssk.

Common names: Mat sedge (E)

Brief description: A robust perennial with a few stalks emerging from a short, woody rhizome that is often reddish. Stems 50-150 cm long, 5-15 mm thick, triangular, and smooth, the basal part covered with thick leaf sheaths. Basal leaves up to 80 cm long by 1.5-3.5 cm wide, flat, and rough along edges and midrib. Flowering head 10-30 cm long and 15-30 cm wide. <note: like *C. exultatus*, but spikelets more numerous and crowded; top photo = Lewa Swamp with old spikes; middle = fresh spikes; bottom = close-up of spikes>

Ecology: In swamps, on river banks and in open water, sea level - 1500(-1800)m

Vegetation type at Lewa: Dominant species at Lewa swamp.

Distribution: Kenya, Tanzania, Uganda, Egypt, Middle East, Pakistan.

Abundance: Locally common.

Uses: Mat making, thatch, papyrus paper (in Egypt)

References: Haines & Lye (1983)



Family: Cyperaceae

Scientific name: *Cyperus dubius* Rottb. subsp. *coloratus* (Vahl.) Lye

Synonyms: *Cyperus coloratus* Vahl., *Mariscus coloratus* Nees.

Common names: Unknown.

Brief description: A small, tussocky perennial sedge, with a few stems together. Stems 10-60cm long, 1.5-3 mm thick, triangular and smooth. Leaves 10-30 cm long and 4-8 mm wide, flat, rough along edges and midrib. Flower heads solitary, whitish green, 13-20 mm diameter.

Ecology: Rock crevices or in dry grassland, 600-1800m.

Vegetation type at Lewa: .

Distribution: Throughout tropical and southern Africa, Middle East, Central Asia, Maldives, Aldabra, naturalised in Australia.

Abundance: Common.

Uses: Unknown.

References: Haines & Lye (1983)

http://www.sabonet.org.za/downloads/31_nyika/list/j_nyikalist_p300-327.pdf



Family: Cyperaceae

Scientific name: *Cyperus esculentus* L.

Synonyms: at least five varieties are known, including *esculentus*, *hermanii*, *leptostachyus*, *macrostachyus* and *sativa*.

Common names: Chufa Sedge, Yellow Nutsedge, Tigernut Sedge, Earthalmond (E)

Brief description: A fairly robust stoloniferous perennial. Stolons about 15 cm long, 0.5-1.5 mm thick, covered with brown to blackish scales, and ending in a black tuber, 3-8 mm diameter. Stems 15-70 cm long, 1-5 mm thick, triangular, smooth, with 3 to many leaves near the base. Leaf blades 10-30 cm long, 3-9 mm wide, flat, and rough along edges and main ribs. Flower head 3-20 cm long and 3-15 cm wide. Spikelets 5-20 mm long and 1.5-2 mm wide.

Ecology: A weed of gardens and shambas, but also in seasonally wet grasslands and swamps, sea level to 2100m.

Vegetation type at Lewa: Riverine and around swamps. LG7-LG9.

Distribution: Throughout tropical and subtropical Africa, the Mediterranean region, parts of Asia (Middle East, India) and the USA (introduced).

Abundance: Fairly common.

Uses: The tubers are edible, with a slightly sweet, nutty flavour.

References: Haines & Lye (1983)



Family: Cyperaceae

Scientific name: *Cyperus involucratus* Rottb.

Synonyms: *Cyperus flabelliformis* Rottb., *Cyperus alternifolius* subsp. *flabelliformis* (Rottb.) Kük.

Common names: Umbrella plant (E)

Brief description: Robust perennial, rhizome thick, woody and creeping. Stems rounded, with longitudinal ridges. Leaf blade very reduced, so appearing leafless. Flower head surrounded by 'involucral bracts' that appear like a whorl of leaves around the flowering head. Spikelets 2-10 mm long, flattened.

Ecology: Swamps, wet grasslands, river and stream banks.

Vegetation type at Lewa: Riverine and around swamps. LG7-LG9.

Distribution: In tropical Africa (including Kenya, Tanzania, Uganda), South Africa and Madagascar.

Abundance: Locally common.

Uses: Cultivated as an ornamental.

References: Haines & Lye (1983),

http://www.sabonet.org.za/downloads/31_nyika/list/j_nyikalist_p300-327.pdf



Family: Cyperaceae

Scientific name: *Cyperus sphacelata* Rottb.

Synonyms: Unknown

Common names: Unknown.

Brief description: Slender to medium-sized annual, with a slightly swollen stem base and numerous slender roots. Stems 15-50 cm long, 0.8-2 mm thick, triangular, smooth. Largest leaf blades 6-15 cm long, 1.5-3 mm wide, flat or W-shaped in cross-section, rough along edges and main ribs. Leaf sheaths green to reddish-brown. Flower head 2.5-10 cm long and 3-10 cm wide. Spikelets 6-25 mm long and 1.3-2.5 mm wide.

Ecology: Open grassland, 300-1180m.

Vegetation type at Lewa: Riverine and around swamps. LG7-LG9.

Distribution: Widely distributed in tropical Africa and tropical America, introduced elsewhere (e.g. Australia, Malaysia, Indonesia, Sri Lanka)

Abundance: Rare in East Africa, locally common elsewhere.

Uses: Unknown.

References: Kern (1974), Haines & Lye (1983)



Family: Cyperaceae

Scientific name: *Scirpus brachyceras* Hochst. Ex A. Rich.

Synonyms: *Schoenoplectus corymbosus* var. *brachyceras*,
Scirpus corymbosus (Roth ex Roem. & Schult.) B. Heyne ex Roth,
Scirpus inclinatus (Delile ex Barbey) Asch. & Schweinf. ex Boiss.

Common names: Unknown

Brief description: A stout, tough, leafless perennial, with a short, thick and woody rhizome. Stems densely set and often numerous, 50-200 cm long and 2-8 mm thick, rounded, with numerous, indistinct longitudinal ridges, pith-filled. Main leaflet at the base of an inflorescence 1-3 cm long, boat-shaped. Inflorescence (2-)3-12 cm long. Spikelets 3-8 mm long. Nutlet 1.2-1.5 mm long and 0.9-1.3 mm wide. Often forming dense clumps.

Ecology: In bogs, lake-edges, and along streams, mainly in upland areas, 1135-2400 m.

Vegetation type at Lewa: Riparian, LG7-LG9.

Distribution: Tropical and Sub-tropical Africa, including Botswana, Namibia, South Africa, Zambia, Kenya, Tanzania, Uganda, Zimbabwe and Cameroon & Middle East (including Iraq).

Abundance: Not uncommon at higher altitudes, rare at lower altitudes.

Uses: Medicinal purposes.

References: Haines & Lye (1983)



Family: Euphorbiaceae

Scientific name: *Euphorbia bussei* Pax var. *kibwezensis* (N.E. Br.) S. Carter

Synonyms: *Euphorbia kibwezensis* N.E. Br., *E. nyikae* Pax

Common names: Unknown.

Brief description: Tree to 10(-15) m tall, with a trunk to about 30 cm diameter, with thick and grey fissured bark marked with usually 6 vertical rows of persistent spines and pit-scars resulting from fallen branches. Branches spreading 3(-5) m, rebranching several times to form a rounded crown, terminal branches fleshy, 3-4 angled, to 15 cm wide; deeply winged and deeply constricted. <*E. kibwezensis* in Blundell, and *E. nyikae* as in Dale & Greenway)

Ecology: Rocky slopes and sandy soils with open, deciduous woodland, 400-2000 m.

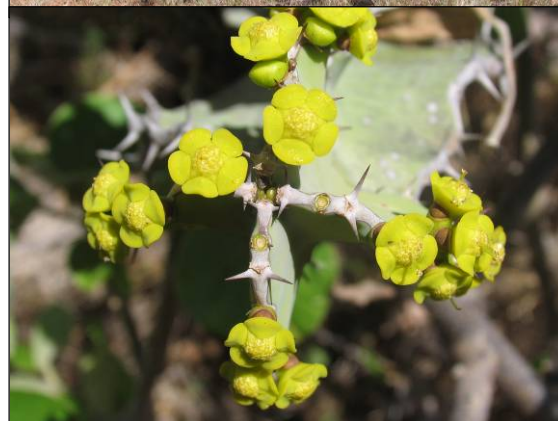
Vegetation type at Lewa: Hill. LG12.

Distribution: This variety is known only from 'near Isiolo'. <The other variety (var. *bussei*) is known from 1 location in Tanzania>

Abundance: Locally common (at Lewa), but rare overall.

Uses: Unknown.

References: Dale & Greenway (1961), Blundell (1987), Carter & Smith (1988)



Family: Euphorbiaceae

Scientific name: *Euphorbia candelabrum* Kotschy

Synonyms: *Euphorbia bilocularis*, *E. calycina*, *E. confertiflora*, *E. murielii*, *E. reinhardtii*

Common names: Tree euphorbia, Candelabra euphorbia (E), Mtungutungii, Mtupa (Swahili), Olbobongo (Masai)

Brief description: Tree to 12(-20) m tall, with a simple trunk that is up to 90 cm diameter, with rough fissured grey bark. Branches persist from about 3m upwards, densely rebranching to form eventually a large, broadly rounded, massive crown. Terminal branches fleshy, (3-)4(-5) angled, 5-10cm wide, in cross-section distinctly winged, with wings up to 2.5cm; constricted at regular intervals. Flowers yellow-green, in small groups of 3-6 above the pairs of 4 mm long spines. Fruit green, 2-3 lobed, pea-sized.

Ecology: Steep, rocky slopes and outcrops, well-drained flat-land, sometimes termite mounds, with open woodland, (15-)900-2000m.

Vegetation type at Lewa: Along rivers, and LG9, LG10

Distribution: Sudan, Ethiopia, Somalia, east D.R. Congo through East Africa southwards to Malawi and Zambia.

Abundance: Common.

Uses: Latex is very poisonous, can blind and cause blisters.

References: Dale & Greenway (1961), Carter & Smith (1988), Dharani (2002)

Family: Euphorbiaceae

Scientific name: *Euphorbia gossypina* Pax

Synonyms: *Euphorbia implexa* Stapf, *Euphorbia merkeri* N.E. Br.

Common names: Unknown

Brief description: Smooth, spineless, much branched perennial shrub, sprawling to 1.5 m high or scrambling in trees and shrubs to a height of 4m. Branches spreading, succulent, (yellow-) green, about 1 cm thick, with dark brown leaf scars, becoming prominent on older branches. All parts with white latex. Flowers yellowish-green, 7 mm across, in 4-8 branched umbels surrounding a central sessile cyathium, with simple rays to 3 cm long, leaflets green or reddish. Fruit a capsule, obtusely 3-lobed, 5.5 by 7 mm on an 8 mm long stalk.

Ecology: *Acacia-Commiphora* bushland on rocky, shallow soils, often in disturbed areas. 15-2100 m.

Vegetation type at Lewa: Hill vegetation, on volcanic soils. LG3-LG5

Distribution: Southern Somalia, Uganda, Tanzania, Kenya & Zimbabwe.

Abundance: Locally common.

Uses: Medicinal.

References: Dale & Greenway (1961), Blundell (1987), Carter & Smith (1988), Agnew & Agnew (1994).



Family: Euphorbiaceae

Scientific name: *Euphorbia graciliramea* Pax

Synonyms: Unknown.

Common names: Unknown.

Brief description: Tufted, succulent perennial, to 15 cm tall and 30(-60) cm diameter, branching densely from the base from a thick fleshy root. Branches prostrate, to 25 cm long and 5-10 mm thick, cylindrical, seldom rebranched except at the base. Spines: 3 on a shield, 2 short, 1 long, main spines 1-2 cm long. Leaves triangular, 1 by 1 mm. 'Flowers' are actually a group of reduced flowers, about 7 mm across. Fruit a 3-lobed erect capsule, 2.5-3 mm long.

Ecology: Stony soils in grassland and dry open deciduous bushland, 700-2025 m.

Vegetation type at Lewa: Both Plain and Hill, but mainly the latter. LG2, LG3, LG4, LG5.

Distribution: Kenya, Uganda and Tanzania.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Carter & Smith (1988), Agnew & Agnew (1994)



Family: Euphorbiaceae

Scientific name: *Euphorbia scarlatina* S. Carter

Synonyms: Unknown.

Common names: Unknown.

Brief description: Much branched succulent shrub, erect to 3 m. Branches (4-)5-6 angled, 1.5-2.5 cm thick, constricted at intervals of 10-30 cm, uniformly green. Spines to 1 cm long, reduced to 2-3 mm on the uppermost branches. Leaves deltoid, 2 by 1.5 mm. Fruit a deeply 3-lobed capsule, 3.5-5.5 mm, dark red.

Ecology: Rocky slopes and lava ridges with open, deciduous bushland, 600-2000m.

Vegetation type at Lewa: Hill. LG3-LG6.

Distribution: Kenya.

Abundance: Locally common in Kenya.

Uses: Unknown.

References: Blundell (1987), Carter & Smith (1988)



Family: Geraniaceae

Scientific name: *Monsonia longipes* R. Knuth

Synonyms: Unknown

Common names: Unknown

Brief description: A profusely branching, hairy, trailing perennial herb with mostly opposite leaves that are lobed and have a wavy outline, often deeply notched at the base; blade 15-55 mm long, 7-27 mm wide. Branches up to 60 cm long, sometimes forming a dense mat. Long hairs sometimes glandular, filled with honey-like juice. Flowering stalks are long, with up to five bright yellow or lemon yellow flowers (occasionally white); petals 15-25 mm long, 7-11 mm wide. Fruit 6-9 cm long.

Ecology: Grassland, bushland or semi-seasonal swamps and river banks, especially on sandy loam or laterite. 750-2500m.

Vegetation type at Lewa: Sandy ridge, LG6.

Distribution: Ethiopia, Kenya, Tanzania.

Abundance: Locally common.

Uses: Ornamental

References: Kokwaro (1971), Blundell (1987), Agnew & Agnew (1994)



Family: Geraniaceae

Scientific name: *Pelargonium alchemillioides* (L) Ait.f. ssp. multibrachiatum

Synonyms: *Geranium alchemillioides* L., *Pelargonium multibrachiatum* A. Rich., *Pelargonium usambarense* Engl.

Common names: Unknown

Brief description: A hairy perennial herb covered with short, soft hairs and with a slightly swollen rootstock. Leaves alternate below, opposite above, circular, toothed, 5-7 lobed. Flowers (5-)7-16 to each umbel (flowering cluster), sepals 8 mm long, petals 5, white, rarely pink or red, 2 cm across, fertile anthers 5-7. <a similar species – *Pelargonium quinquelobatum* – also occurs at Lewa, but this has greenish-yellow petals>

Ecology: Wooded and open grassland, bushland and thicket, extending to edges of and rarely into upland rain forest; often in rocky places. 700-2800 m.

Vegetation type at Lewa: Rocky volcanic soils, hill vegetation; LG3-LG5

Distribution: Sudan, Ethiopia, Eritrea, through East Africa southwards to Mozambique and South Africa.

Abundance: Locally common.

Uses: Ornamental.

References: Kokwaro (1971), Agnew & Agnew (1994)



Family: Juncaceae

Scientific name: *Juncus oxycarpus* Kunth

Synonyms: *Juncus fontanesii*, *J. quartinianus*, *J. suboxycarpus*

Common names: Spiny fruit rush (E)

Brief description: Perennial tufted herb, usually 30-60 cm (up to 70 cm) tall. Stems rounded, usually erect, 1-3.5 mm thick, sometimes trailing, then rooting and branching at the nodes. Leaves 2-5 to a stem, cylindrical, septate, up to 25 cm long; sheaths open up to 7.5 cm. Flower heads taller than the leaves, branched, consisting of up to 20 rounded heads (usually 3-5), each with more than 20 flowers.

Ecology: In swamps and marshes and the edges of streams in upland rain forest, riverine forest and upland grassland, 1400-2750 m.

Vegetation type at Lewa: Riverine. LG7-LG9.

Distribution: Ethiopia, Eritrea, Somalia, eastern D.R. Congo, through East Africa southwards to South Africa.

Abundance: Uncommon (Kenya) to very rare (Uganda).

Uses: Unknown

References: Carter (1966), Haines & Lye (1983)



Family: Lamiaceae

Scientific name: *Leucas grandis* Vatke

Synonyms: *Leucas mollis* Bak.

Common names: Unknown

Brief description: An erect, long-hairy, woody herb or short-lived shrub, with ovate-elliptic leaves and rather large globose clusters of white flowers, supported by upwardly curved leaflets. Sepal (flower) tube laterally symmetrical, becoming up to 19 mm long, 3 mm across, with bluntish teeth; petals up to 20 mm long. More densely covered with hairs than *L. urticifolia*.

Ecology: Disturbed ground, wetter and colder conditions; 500-2780m.

Vegetation type at Lewa: Disturbed places >1800m.

Distribution: Kenya and Tanzania.

Abundance: Common.

Uses: Medicinal.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Lamiaceae

Scientific name: *Leucas urticifolia* (Vahl) R.Br.

Synonyms: *Leucas urticaefolia* R.Br, *Phlomis urticifolia* Vahl.

Common names: Unknown

Brief description: An erect, short-hairy, often powdery annual woody herb or small shrub, with ovate-elliptic leaves. Globose clusters of white flowers, each cluster about 25 mm across; individual flowers about 3 mm across; upper side of sepal tube is greenish, lower side is white-papery, with pointed teeth.

Ecology: Abandoned cultivated ground, disturbed ground in general, dry country. 150-2100m.

Vegetation type at Lewa: Disturbed places.

Distribution: Saudi Arabia, Sudan, Ethiopia, Kenya and Tanzania.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994), Al-Turki (2004)



Family: Lamiaceae

Scientific name: *Mentha longifolia* (L.) L.

Synonyms: *Mentha lavandulacea* Willd., *Mentha spicata* var. *longifolia* L., *Mentha sylvestris* L.

Common names: Horsemint (E)

Brief description: A erect herb, up to 1.5m tall, with lanceolate leaves about 17 by 60 mm, without a visible stalk, hairless above and white-woolly below. Flowers pale pink, lilac or white, 5 mm long, in long, terminal racemes. All parts have a strong mint odour. <*Mentha aquatica* is very similar, but leaves are hairy above, and flowers racemes are globose>

Ecology: Marshes in upland forest. 1600-2500 m.

Vegetation type at Lewa: Around Lewa Swamp, and along streams, LG7-LG9.

Distribution: Throughout Europe eastwards into Asia, Siberia, the Middle East, Mediterranean and throughout Africa including Southern Africa.

Abundance: Locally common.

Uses: Peppermint flavoured; many medicinal uses, herbal tea, flavouring in salads, cooked foods and chutneys.

References: Heukels & van Ooststroom (1973), Agnew & Agnew (1994)



Family: Lamiaceae

Scientific name: *Ocimum filamentosum* Forssk.

Synonyms: *Becium filamentosum*, *Ocimum adscendens*, *Ocimum cristatum*, *Ocimum exsul*, *Ocimum indicum*, *Plectranthus indicus*

Common names: African Basil (E)

Brief description: Perennial erect, often woody herb, usually more than 30 cm tall. Stems simple, quadrangular or round-quadrangular, hairy with scattered glands, usually with young shoots in the axil of leaves forming a false whorl. Leaves hairy, narrowly obovate-lanceolate or elliptic-ovate, 20-45 x 7-15 mm. Flowers in long, interrupted racemes of white to pale pink flowers.

Ecology: Sandy soils in open places; dry, rocky country and *Acacia-Commiphora* bushland, 650-2015m.

Vegetation type at Lewa: Hill. LG3, LG4, LG5, LG6

Distribution: Throughout Africa, Arabia, Yemen, India, Sri Lanka and Burma.

Abundance: Locally common.

Uses: Unknown

References: Agnew & Agnew (1994),

http://www.dnp.go.th/Botany/publication%20online/SS_thesis/Chapter5/Ocimum.htm



Family: Lamiaceae

Scientific name: *Plectranthus comosus* Sims

Synonyms: *Plectranthus barbatus* Andr., *Plectranthus grandis* (Cramer) Willemsse, *Coleus grandis*

Common names: Unknown

Brief description: An erect softly hairy shrub, sometimes tree-like, with ovate or ovate-elliptic leaves. Flowers in terminal racemes, solitary or branched, with bracts of flower whorls ovate, narrowing to a thin point, over 10 mm wide. Sepal tube usually hairy within; lower lip of flower 10-15 (-20) mm long, bright blue.

Ecology: Mid-altitude bushland, lake areas, and rocky grassland. 880-2950 m.

Vegetation type at Lewa: Hill, LG3-LG6.

Distribution: D.R. Congo, southern tropical Africa, Kenya, Tanzania, Uganda, Sri Lanka.

Abundance: Locally common.

Uses: Used as a quick-growing hedge plant

References: Blundell (1987), Agnew & Agnew (1994),

<http://www.botgard.ucla.edu/html/membgnewsletter/Volume4number1/Plectranthuscomosus.html>



Family: Lamiaceae

Scientific name: *Tinnea aethiopica* Kotschy ex Hook. f.

Synonyms: Various subspecies, including *litoralis* and *stolzii*.

Common names: Mfiyofiyo-dume (Swahili), Mugandu (Kikuyu)

Brief description: Much-branched hairy shrub, erect or straggling, up to about 4 m tall. Leaves variable, ovate to lanceolate, up to 5 cm long, but usually 1 by 2 cm, coarsely toothed or without teeth along margins. Flowers up to 2 cm long, scented like violets, dark brownish-purple petals, red calyx, usually paired or 1-3 in the axils of upper leaves. Nutlets club-shaped with a membranous wing.

Ecology: In dry bushland and woodland edges, from coast to upland areas, 30-2300 m.

Vegetation type at Lewa: Hill, LG3-LG6, especially in basement complex areas with sandy soils (LG6).

Distribution: Sudan, Ethiopia, Somalia, D.R. Congo, Zambia, Zimbabwe, South Africa, Tanzania, Kenya and Uganda. Also introduced to Hawaii, and Trinidad and Tobago.

Abundance: Locally common.

Uses: Weapons (hard wood) and fuel.

References: Dale & Greenway (1961), Blundell (1987), Agnew & Agnew (1994)



Family: Liliaceae

Scientific name: *Aloe secundiflora* Engl.

Synonyms: *Aloe engleri*, *A. floramaculata*, *A. marsabitensis*

Common names: Unknown

Brief description: A large, stemless rosette, usually solitary, of green, unspotted, more or less glossy, fleshy leaves, about 50 by 12-14cm. Flower stems to 1.5m tall, with up to 12 branches. Flowers red, with small, translucent spots.

Ecology: Alluvial, sandy soils in dry areas. Often confined to rocky areas where elephant pressure is (or was) high. 700-1800m.

Vegetation type at Lewa: Hill. LG6

Distribution: Kenya, Tanzania, southern Sudan, southern Ethiopia.

Abundance: Locally common.

Uses: Ornamental (exported from Kenya to Saudi Arabia), medicinal and cosmetic.

References: Blundell (1987), Agnew & Agnew (1994); www.cites.org/eng/com/PC/14/E-PC14-09-02-02-A4.pdf



Family: Liliaceae

Scientific name: *Asparagus racemosus* Willd.

Synonyms: *Asparagus buchananii*, *Protasparagus racemosus*.

Common names: Wild asparagus

Brief description: Tall, woody climber or tangled shrub, with shiny, yellowish-brown to grey stem with zigzag branches and soft, feathery branches. Spines pungent, (3-)6-(20)mm long. Usually leafless when flowering. Flowers white, with a reddish streak; fruit a red berry, 2-seeded.

Ecology: Forest margins, drier bushland, in thickets or scrub; frost-free areas; (240-)1160-2800m.

Vegetation type at Lewa: Plain or Hill. LG1–LG6.

Distribution: Northeast, East and Southern Africa, Madagascar, South Asia (India), East Asia (China, Japan), Southeast Asia and Australia .

Abundance: Locally common.

Uses: Root, stem and young shoots are eaten. Squeezed root used as a soap substitute. Rhizome used in traditional medicine. Cultivated.

References: Blundell (1987), Agnew & Agnew (1994)

www.pfaf.org/database/plants.php?Asparagus+racemosus



Family: Liliaceae

Scientific name: *Sansevieria dawei* Stapf

Synonyms: Unknown

Common names: Snake Plant, Mother-in-law's tongue (E)

Brief description: A rhizomatous herb with 2-3 erect, dull green flattened, fleshy leaves, 35-50 cm tall; leaf undersurface very faintly variegated; leaf edges (dark) reddish brown. Flowering stalk less than 1 m tall, bearing a large number of orange berries; flower stalk 5-8 mm long.

Ecology: Under woody vegetation. Readily eaten by elephant. 100-1600 m.

Vegetation type at Lewa: Hill. LG3-LG5

Distribution: Kenya, Uganda, D.R. Congo, Rwanda, Burundi

Abundance: Uncommon

Uses: Ornamental

References: Agnew & Agnew (1994)



Family: Liliaceae

Scientific name: *Sansevieria suffruticosa* N.E. Br.

Synonyms: *Sansevieria intermedia*

Common names: Snake Plant, Mother-in-law's tongue (E)

Brief description: An erect stoloniferous herb up to 1m tall. Leaves stiff, usually straight, cylindrical, ribbed, usually light (greyish-)green and slightly variegated; leaf sheath slit to ½ way or less. Flowers in terminal racemes, with clusters of white or dirty red flowers on persistent short stalks jointed in the middle; flower tube 15-20 mm, lobes 5-7 mm long. <*Sansevieria robusta* is similar, but is not variegated, and without split leaf>

Ecology: Rocky *Acacia-Commiphora* bushland. 75-2010 m.

Vegetation type at Lewa: Hill. LG3-LG5

Distribution: East Africa.

Abundance: Common.

Uses: Ornamental

References: Agnew & Agnew (1994)



Family: Loranthaceae

Scientific name: *Agelanthus zizyphifolius* (Engl.) Polhill & Wiens

Synonyms: *Loranthus vittatus*, *L. zizyphifolius*, *Tapinanthus zizyphifolius*

Common names: Unknown

Brief description: Epiphytic, parasitic shrub, 0.4-1m, with rather thick, closely set leaves, 3-5 veined. Flowers clustered at the nodes. Seeds pink or yellow. The nominal species is hairy, but the subspecies *vittatus* has smooth branches and leaves.

Ecology: Bushland and riverine associations, 1000-2590m. Parasitic on *Acacia*, *Combretum*, *Grewia* and especially on *Rhus*.

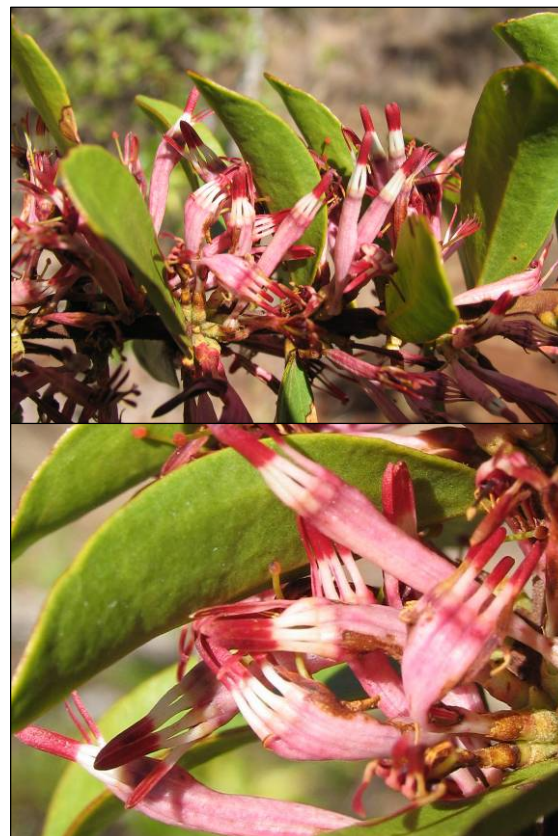
Vegetation type at Lewa: Hill, Ngare Ndare forest.

Distribution: Kenya, Tanzania, Malawi, Zambia, Zimbabwe, Burundi and D.R.Congo.

Abundance: Locally common.

Uses: Unknown.

References: Agnew & Agnew (1994), Polhill & Wiens (1999)



Family: Loranthaceae

Scientific name: *Phragmanthera dschallensis* (Engl.) M.G. Gilbert

Synonyms: *Loranthus dschallensis* Engl., *Tapinanthus dschallensis* (Engl.) Danser

Common names: Mistletoe (E)

Brief description: Parasitic mistletoe. Shrub with small, short-lived hairs and grey-green strap-shaped leaves, 3-15 cm long, 0.5-2.5 cm wide with a 2-10 mm long stalk; leaves clustered on pendant branches 0.7 to 2m long. Flowers 5 cm long, petals orange-red, covered with short grey and reddish star-shaped hairs. Fruit a blue-green berry, with blue-black seeds, 1.5 cm long, 1 cm wide.

Ecology: Woodland, *Combretum* country, bushland and wooded grassland, generally parasitic on *Acacia* species. 750-1950 m.

Vegetation type at Lewa: Plain LG1-Lg2; Hill, LG3-LG6.

Distribution: Somalia, Uganda, Kenya, Tanzania, Zambia.

Abundance: Locally common.

Uses: Unknown.

References: Agnew & Agnew (1994), Polhill & Wiens (1999)



Family: Loranthaceae

Scientific name: *Plicosepalus sagittifolius* (Engl.) Danser

Synonyms: *Loranthus undulatus* Harv. var. *sagittifolius* Engl., *Loranthus sagittifolius* (Engl.) Sprague, *Plicosepalus curviflorus*

Common names: Mistletoe (E)

Brief description: Parasitic mistletoe. Leaves variable in shape, those on the long shoots without stalks, those on short shoots with 1-3 mm long stalk; leaf blade lanceolate to obovate or circular, 8-45(-60) mm long, 5-30 mm wide, 3-7 nerved. Petals separate, 3-3.5 cm long, ageing from yellowish-green through yellow and orange to red. Berry red, rounded-oblong, 9-10 mm long, 7 mm diameter, smooth.

Ecology: Deciduous bushland and *Acacia* woodland, almost invariably parasitic on *Acacia*, rarely on *Albizia* or *Commiphora*, 30-2300 m.

Vegetation type at Lewa: Plain and Hill. LG1-LG5.

Distribution: From southern Somalia and Ethiopia, throughout East Africa southwards to northern Mozambique.

Abundance: Locally common.

Uses: Unknown.

References: Agnew & Agnew (1994), Polhill & Wiens (1999)



Family: Lythraceae

Scientific name: *Lythrum rotundifolium* A. Rich.

Synonyms: Unknown

Common names: Unknown

Brief description: A juicy, trailing herb, stems often tinged red with short, ascending branches, often rooting at the nodes. Leaves opposite, 5-20 mm long, 4-11 mm across, almost stalkless, oblong to circular, often clasping the stem at the base. Flowers solitary, shortly stalked, in leaf axils, purplish mauve, about 6-10 mm across, 8 stamens. Fruit reddish.

Ecology: Open places along streams, generally on volcanic soils, in wet places. 1700-3300m

Vegetation type at Lewa: Along streams and Lewa Swamp, LG7-LG9.

Distribution: Eastern D.R. Congo, Sudan, Ethiopia, Rwanda, Uganda, Tanzania, Kenya.

Abundance: Locally common

Uses: Unknown

References: Blundell (1987), Agnew & Agnew (1994)



Family: Malvaceae

Scientific name: *Abutilon grandiflorum* G. Don

Synonyms: *Sida grandiflorum*

Common names: Unknown

Brief description: A soft woody shrub, densely covered with short hairs. Flowers yellow-gold, 35 mm across, solitary, opening in mid-afternoon.

Ecology: From (200-) 700-1600m, in dry areas.

Vegetation type at Lewa: Hill. LG4, LG5, LG6.

Distribution: East Africa, Congo, Southern Africa and Madagascar. New World, now widespread in the tropics.

Abundance: Common.

Uses: Sometimes cultivated as an ornamental or for fibre.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Malvaceae

Scientific name: *Hibiscus flavifolius* Ulbr.

Synonyms: Unknown.

Common names: Unknown.

Brief description: An erect, densely hairy perennial, 1.3-1.5 m tall, woody stems. Leaves broad-ovate to elliptic. Flowers solitary, axillary, cream or white, about 22-25 mm diameter, petals lanceolate, to 13 mm long, about twice as long as the sepals. Fruit a capsule, about as long as the sepals.

Ecology: Dry, rocky grassland, 1250-2100.

Vegetation type at Lewa: Hill and Plain. LG1-LG5.

Distribution: Ethiopia, Uganda, Tanzania and Kenya.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Malvaceae

Scientific name: *Hibiscus* sect. *calyphyllus*

Synonyms: *Hibiscus calycinus* Willd., *Hibiscus rockii*

Common names: Rock's hibiscus, lemon yellow rose mallow (E)

Brief description: A long-hairy shrub with large ovate, simple or shallowly 3-lobed leaves with a notched base. Flowers solitary on short stalks, about 9 cm diameter; flowers with yellow petals that are maroon coloured at the base. Fruit a capsule, up to 25 mm long.

Ecology: Lowland dry woodland and evergreen woodland, 700-2000 m.

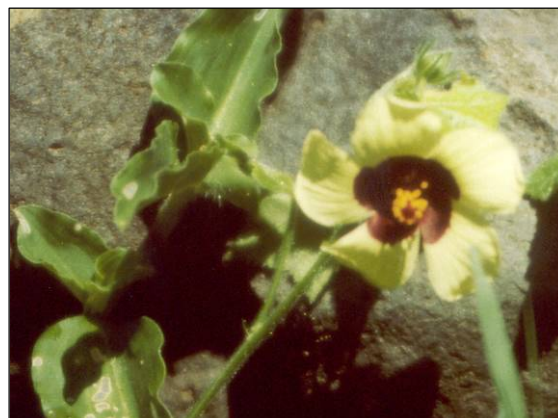
Vegetation type at Lewa: Hill. LG3-LG5. Rocky, volcanic slopes.

Distribution: Throughout tropical Africa and in most of East Africa.

Abundance: Locally common.

Uses: Ornamental, medicinal.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Malvaceae

Scientific name: *Pavonia gallaensis* Ulbr.

Synonyms: *Pavonia patens*

Common names: Unknown

Brief description: A shrubby plant, 50-100 cm tall. Leaves heart-shaped, covered with short hairs (underneath). Flower is about 3 cm across, pale orange. Fruit densely hairy. <formerly part of a group of species called "*Pavonia patens*" now recognised to be at least 4-5 separate species>

Ecology: Bushed grassland and open *Acacia-Commiphora* bushland. 1500-1800m.

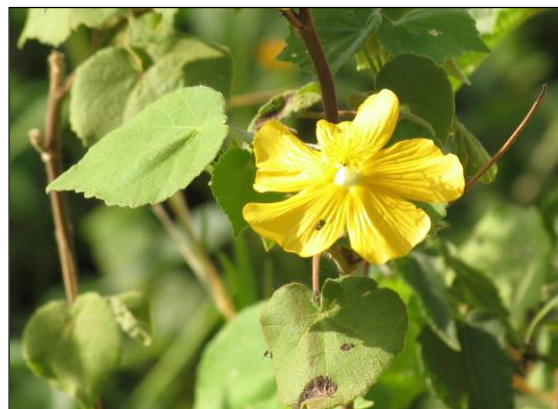
Vegetation type at Lewa: Rocky, volcanic soils, LG1-LG5.

Distribution: Ethiopia, Eritrea, Tanzania, Uganda and Kenya.

Abundance: Locally common.

Uses: Unknown; of ornamental value.

References: Blundell (1987).



Family: Malvaceae

Scientific name: *Pavonia patens* (Andr.) Chiov.

Synonyms: *Sida patens*

Common names: Unknown

Brief description: A trailing or erect shrub with star-shaped hairs. Leaves are broadly ovate to circular, notched at the base, often irregularly lobed or with deep, broad teeth. Flowers are solitary, yellow(-orange), sometimes with a darker centre, about 35 mm across. Fruits with a network of veins. <formerly part of a group of species called "*Pavonia patens*" now recognised to be at least 4-5 separate species>

Ecology: Highly variable species. From *Commiphora* woodland to upland forest edges. 100-2300m.

Vegetation type at Lewa: Rocky, volcanic soils, LG1-LG5.

Distribution: Ethiopia, Tanzania, Kenya and Uganda.

Abundance: Common.

Uses: Unknown; of ornamental value.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Malvaceae

Scientific name: *Sida tenuicarpa* Vollesen

Synonyms: *Sida cuneifolia* Cuf. *sensu non* Roxb.

Common names: Unknown

Brief description: An erect or spreading shrub to 1 m tall with sparse star-shaped hairs. Leaves green because hairless above, oblanceolate to linear-oblong with teeth at the leaf tip, 4-18 mm by 1.5-9 mm. Flowers solitary or in up to 8-flowered heads, yellow, sepals 3-4.5 mm long; 8 mm across.

Ecology: Dry upland grassland, now widely distributed in secondary vegetation such as degraded pastures. 930-2460 m.

Vegetation type at Lewa: Along water course, LG7-LG9.

Distribution: Eastern D.R. Congo, Ethiopia, Tanzania, Kenya and Uganda.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Meliaceae

Scientific name: *Turraea parvifolia* Deflers

Synonyms: Unknown

Common names: Unknown

Brief description: A small-stemmed shrub, 2-4 m tall, stems smooth, cylindrical and dark grey; branches slender, whipped and drooping. Leaves up to 2 by 4 cm. Flowers creamy-white, fading to yellow.

Ecology: Open *Acacia-Commiphora* bushland and especially around rocky outcrops. 260-1250 m.

Vegetation type at Lewa: Rocky outcrops in hill vegetation, LG3-LG6.

Distribution: Somalia, Tanzania and Kenya.

Abundance: Uncommon.

Uses: Used in local medicine.

References: Blundell (1987)



Family: Mimosoidae (Leguminosae)

Scientific name: *Acacia brevispica* Harms

Synonyms: *Acacia pinnata*

Common names: Olgirrigirri (Masai)

Brief description: Shrub, 1-5(-7)m tall, often semi-scandent, with long, thin branches covered with numerous small, scattered thorns. Flowers white or yellowish-white, with thin, flat pods, 6-15cm long, 1.5-3.3 cm wide.

Ecology: Bushland, thickets, scrub. From sea-level to 1830m, forming dense thickets. Occurs in all but very dry areas, on well-drained soils of high fertility. Regenerates well after fires.

Vegetation type at Lewa: Hill. LG3, LG4, LG5, LG6.

Distribution: Northeast, East, Southeast and Central Africa (Congo).

Abundance: Common, locally very common.

Uses: Favoured as browse, with leaves, pods and flowers taken. Young pods and leaves may contain 17-19% crude protein.

References: Brenan (1959), Bogdan & Pratt (1974)



Family: Mimosoidae (Leguminosae)

Scientific name: *Acacia drepanolobium* Sjost.

Synonyms: *Acacia formicarum*, *Acacia lathouwersii*

Common names: Whistling thorn (E), Eluwai (Masai)

Brief description: Small tree, 1-5(7.5)m tall, short-branched, densely covered with long, straight thorns located on swollen, inflated bases. Stem dark and fissured. Flowers white, pods sickle-shaped, 4-7cm long.

Ecology: Characteristic of seasonally wet black clay soils (black cotton soils), from 650-2300m. Swollen thorn bases are occupied by specialised ant species. In Kenya four ant species of genus *Crematogaster* are reported. Most trees are ant infested, and these offer some protection by increasing browsing efforts. Trees often sculptured by browsers.

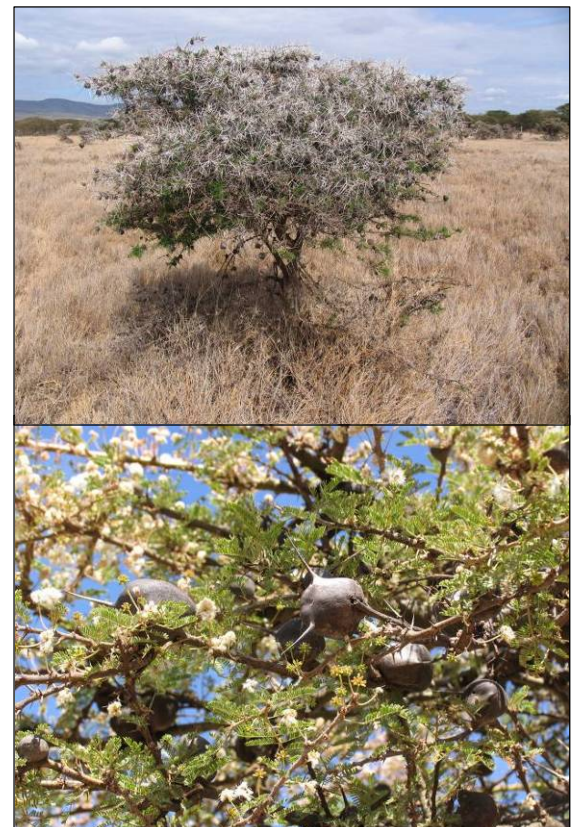
Vegetation type at Lewa: Plain; LG1, LG2

Distribution: Eastern-central Africa: Ethiopia, Kenya, Somalia, Sudan, Tanzania, Uganda, Zaire.

Abundance: Common to very common in its range. Very common at Lewa.

Uses: Used for charcoal production; favoured as browse by giraffe and other large mammals.

References: Brenan (1959), Bogdan & Pratt (1974)



Family: Mimosoidae (Leguminosae)

Scientific name: *Acacia mellifera* (M.Vahl) Benth.

Synonyms: *Mimosa mellifera* Vahl.

Common names: Wait-a-bit thorn (E), Oete (Masai)

Brief description: Shrub or small tree with a dense, ball-shaped crown, often leafless in dry season. 1-6m (up to 9m) tall. Bark smooth, grey, thorns short, in pairs and claw-like (recurved), leaves small. Flowers white and sweet-scented, pods thin and papery, 3.5-8(-9)cm long.

Ecology: Common in dry scrub 350-1680m. Young leaves highly palatable and liked as browse.

Vegetation type at Lewa: Hill; LG3, LG4

Distribution: From South Africa through East Africa, NE Africa, Middle East and Central Asia, up to Pakistan. Introduced to Australia and Mauritius.

Abundance: Common to very common, both in range and at Lewa, at lower altitudes.

Uses: Favoured as browse by giraffe and other large mammals; liked by bees.

References: Brenan (1959), Bogdan & Pratt (1974)



Family: Mimosoidae(Leguminosae)

Scientific name: *Acacia nilotica* (L.) Willd. ex Delile

Synonyms: *Acacia subalata*, *A. arabica*, *A. adansonii*, *A. scorpioides*, *Mimosa nilotica*

Common names: Egyptian thorn, Gum Arabic tree (E), Olkiloriti (Masai)

Brief description: Small tree, 2.5-14m, with thick trunk and dense, mushroom-shaped crown; bark is dark, thick and rough. Longer thorns point backwards, while terminal branchlets are zig-zagged. Flowers yellow; pods large, thick-walled and straight or slightly arching, black when ripe, 8-17(-22)cm long.

Ecology: Found from 1000-2000m, also near the coast. Highly variable throughout its range, with at least 7 recognised subspecies.

Vegetation type at Lewa: Hill; LG4, LG5, LG6

Distribution: Throughout Africa, Middle East and Central Asia to Pakistan and India; introduced to Australia and Americas.

Abundance: Very common.

Uses: Pods are eaten by cattle and wildlife. Gum used as Gum Arabic.

References: Brenan (1959), Bogdan & Pratt (1974), Dharani (2002)



Family: Mimosoidae (Leguminosae)

Scientific name: *Acacia senegal* (L.)Willd.

Synonyms: *Acacia circummarginata*, *A. cufodontii*, *A. oxyopspriion*, *A. spinosa*, *A. verek*, *A. volkii*

Common names: Gum Arabic, Senegal gum, Sudan Gum (E), Lergesse (Samburu)

Brief description: Shrub or tree, up to 12(-20) m tall, over 1.3 m in girth; bark grey, brown or blackish, peeling, rough. Crown dense, spines located just below nodes, either in threes up to 7 mm long, with middle one hooked downwards and lateral ones curved upwards, or solitary with laterals absent. Flowers white to yellowish, pod thin, straight or slightly curved, 7.5-18cm long.

Ecology: Dry rocky hills, in low-lying dry savannas, and areas where annual rainfall is 250–360mm. Survives many adverse conditions, and is favoured by low rainfall and absence of frost.

Vegetation type at Lewa: Hill; LG4, LG5, LG6

Distribution: Throughout Africa; cultivated in Middle East (Oman) and South Asia (India and Pakistan).

Abundance: Common.

Uses: Gum used as Gum Arabic, in pharmaceutical preparations, foods, inks, pigments, polishes, dressing fabrics, confections and sweetmeats. Seeds fit for human consumption.

References: Brenan (1959), Bogdan & Pratt (1974)



Family: Mimosoidae (Leguminosae)

Scientific name: *Acacia seyal* Del.

Synonyms: *Acacia fistula*, *A. flava*, *A. stenocarpa*

Common names: White-thorn (E), Olerai (Masai)

Brief description: Slender tree, 3-9(-12)m tall ; bark smooth and yellowish-green or orange. Thorns straight and long, often inflated at the base and ant-infested. Yellow flowers; pods sickle-shaped, splitting easily, 7-20(-22)cm long.

Ecology: Semi-arid areas, 700-2200m, often on seasonally waterlogged ground. Swollen thorn pairs occupied by the ant *Crematogaster sjostedti*. Specimens with inflated thorn bases (such as common at Lewa) are termed sub-species *fistula*.

Vegetation type at Lewa: Plain. LG1.

Distribution: Throughout the Sahelian Zone from Senegal to Sudan; it also occurs in Egypt and eastern and southern Africa, from Somalia to Mozambique and Namibia.

Abundance: Common, locally very common.

Uses: Gum Arabic of low quality. Good browse. Wood used for poles and fencing; bark for tanning.

References: Brenan (1959), Bogdan & Pratt (1974), Dharani (2002)



Family: Mimosoidae (Leguminosae)

Scientific name: *Acacia tortilis* (Forsk.) Hayne

Synonyms: *Acacia spirocarpa*

Common names: Umbrella thorn (E), Oltepesi (Masai)

Brief description: Medium-sized or large flat-topped tree, with moderately open crown, 4-21m tall. Bark grey to black, fissured. Small hooked thorns and long straight thorns on same branch. Flowers cream or whitish; pods spiralled.

Ecology: Alluvial soils, deciduous woodland, wooded grassland, deciduous bushland, semi-desert, 600-1500m. Can form very large individual trees: the characteristic umbrella-shaped trees of safari snap-shots.

Vegetation type at Lewa: Hill. LG4, LG5.

Distribution: Throughout Africa and Middle East.

Abundance: Common, locally very common; locally common at Lewa.

Uses: Ripe pods contain up to 17% crude protein, good browse; good timber for furniture.

References: Brenan (1959), Bogdan & Pratt (1974), Dharani (2002)



Family: Mimosoidae (Leguminosae)

Scientific name: *Acacia xanthophloea* Benth.

Synonyms: *Acacia songwensis*

Common names: Fever tree (E), Olerai (Masai)

Brief description: Large tree, 10-25m, with broad crown, often flat-topped, with greenish-yellow bark. Thorns straight, either long or short. Flowers white, yellow or purplish; pods straight or slightly curved, flat and thin, 4-13.5cm long.

Ecology: Around swamps or along rivers and streams, 600-2000m. Much smaller in Somalia (max. 5m). Cannot stand permanent waterlogging.

Vegetation type at Lewa: Riverine. LG7, LG8, LG9.

Distribution: East and Southeast Africa.

Abundance: Common along water courses. Widely planted as an ornamental.

Uses: Indicator of ground water; shade along water courses.

References: Brenan (1959), Bogdan & Pratt (1974), Dharani (2002)



Family: Mimosoidae

Scientific name: *Dichrostachys cinerea* (L.) Wight & Arn.

Synonyms: *Mimosa cinerea*, *M. glomerata*, *Dichrostachys glomerata*, *D. nutans*, *D. platycarpa*

Common names: Chinese-lantern tree (E)

Brief description: Shrub or small tree, 1-8(-12)m tall, sometimes suckering and thicket-forming, or even scandent. Bark rough, and armed with woody spines – single spines, not paired like *Acacia*. Young branches are (slightly) hairy. Leaves *Acacia*-like, with (2-)5-19(-21) pairs of leaflets. Flower heads are yellow with pink or mauve (sometimes white). Pods 2-10 cm long, 0.5-2(-2.5) cm wide, spirally coiled, often in clusters. Seeds 4-6 mm long 3-4.5 mm wide, deep brown, glossy.

Ecology: Deciduous bushland, scrub, wooded grassland, deciduous woodland, even near forest and open parts of swamp-forest. Indicator of overgrazing in low rainfall areas. Pioneer on sites previously occupied by cattle and abandoned cultivation. Near sea level to 1710m.

Vegetation type at Lewa: Hill vegetation, LG3-LG6

Distribution: Widespread in tropical and subtropical Africa, Arabia, tropical Asia and Australia.

Abundance: Common.

Uses: Unknown.

References: Brenan (1959), Ivens (1982), Blundell (1987)



Family: Moraceae

Scientific name: *Ficus sycomorus* L.

Synonyms: *Ficus gnaphalocarpa*, *F. mucoso*

Common names: Olnagboli, Suguno (Masai), Mkuyu (Swahili), sycamore fig, fig-mulberry (E)

Brief description: Spreading, sometimes buttressed tree, up to 21 (-25) m tall. Bark powdery and yellow-green, yellow, creamy-brown or grey. Young branches smooth, except for a ring of long slender hairs just below each node. Leaves drying pale, ovate-orbicular, 5-12.5 cm long, 3-9 cm wide, hairless on both sides; sometimes with few minute hairs underneath. Figs in clusters in leaf axils or along main branches (e.g. top photo) and trunk, round, up to 4 cm diameter, finely hairy, yellow-red when ripe.

Ecology: Savannas, usually near streams; sea level to 1850 m. Requires the presence of the symbiotic wasp *Ceratosolen arabicus* to reproduce sexually.

Vegetation type at Lewa: Riverine. LG7-LG9. <including Matoni spring>

Distribution: Africa south of the Sahel and north of the Tropic of Capricorn, excluding central-west rainforest areas; also in Arabia and Madagascar. Naturalised in Israel and Egypt.

Abundance: Locally common.

Uses: Edible fruit; wood used for carvings, doors; inner part of root yields strong fibre; traditional medicine. Extremely important in ancient Egypt.

References: Dale & Greenway (1961), Dharani (2002),

http://en.wikipedia.org/wiki/Ficus_sycomorus



Family: Myrtaceae

Scientific name: *Syzygium guineense* (Willd.) DC.

Synonyms: *Calyptanthes guineense* Willd., *Syzygium intermedium* Engl. & Brehm., *Syzygium fleuryi* A. Chev., *Syzygium owariense* (P. Beauv.) Benth., *Syzygium staudtii* (Engl.) Mildbr.

Common names: Mzuari (Swahili), Ol-eragai, Ol-lameli (Masai), Lamulii (Samburu), Waterberry (E)

Brief description: Tree, usually 6-11 m tall, occasionally 30 m tall, bark dark brown to almost black, fairly smooth, scaling in rectangular flakes. Branchlets sometimes drooping. Leaves opposite, tough, smooth. Waxy grey-green, fragrant when crushed, lanceolate to ovate-elliptic, 7.5-17.5 cm long, 3.7-6.3 cm wide. Flowers white, fragrant, almost stalkless, usually borne in terminal panicles of great profusion, usually a mass of flowers in a tree. Fruit round, 1-3 cm long, 2-3 celled, purple-black, juicy when ripe, in bunches of 20-30.

Ecology: Profuse flowering attracts many insects. Fruit eaten by birds. Highly variable species. High, fringing and riparian forests. Sea level to 2100 m.

Vegetation type at Lewa: Riverine – along Ngare Ndare river.

Distribution: Tropical West and Central Africa (Cameroon, D.R. Congo, Ghana, Gabon) and East and Southern Africa (Tanzania, Kenya, Uganda, Malawi, Zambia).

Abundance: Common.

Uses: Edible fruit, good timber, wood red, traditional medicine.

References: Dale & Greenway (1961), Dharani (2002)



Family: Nyctaginaceae

Scientific name: *Commicarpus pedunculatus* (A.Rich.)

Cufod.

Synonyms: Unknown

Common names: Unknown

Brief description: A short-hairy trailing herb in grassland, sometimes scrambling over rocks or branches to 0.5m, Leaves ovate to almost circular, weakly lobed, with pointed tip. Flowers bright purple-magenta, about 5mm diameter, in showy, simple umbels.

Ecology: Grassland, thickets, riverine areas and roadsides. Up to 2100m.

Vegetation type at Lewa: Roadsides, Hill and riverine. LG1, LG2, LG7-LG9.

Distribution: Sudan, Ethiopia, Uganda, Kenya, Tanzania and Rwanda.

Abundance: Very common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994).



Family: Onagraceae

Scientific name: *Epilobium hirsutum* L.

Synonyms: *Chamaenerion hirsutum*, *Epilobium tormentosum*, *E. velutinum*, *E. villosum*

Common names: Great willow-herb, hairy willow-herb, Codlins and cream (E)

Brief description: An erect, rhizomatous herb up to 1.5(-2) m tall with ascending brownish branches, covered throughout with dense white hairs. Leaves opposite, lanceolate to elliptic, slightly toothed. Flowers about 25 mm diameter, bright purplish pink, more or less solitary. Fruit a 5-8 cm long, 4-valved capsule.

Ecology: In rich swamps and fens, 1800-2450m. Possibly invasive.

Vegetation type at Lewa: Disturbed wetter places.

Distribution: Native to Eurasia, where it is found in moist waste ground of the Mediterranean region, Europe, Asia, and Africa. Introduced to America (USA) and Australia.

Abundance: Locally common.

Uses: Tea (in Russia); ornamental species (Australia); medicinal purposes; perhaps poisonous.

References: Agnew & Agnew (1994)



Family: Papilionaceae (Leguminosae)

Scientific name: *Aeschynomene schimperi* Hoscht. ex A.Rich.

Synonyms: *Aeschynomene paludicola*, *A. mearnsii*, *A. telekii*

Common names: Unknown

Brief description: A soft, bristly, sometimes shrubby, aromatic herb or small shrub, 0.6-3m tall, stems with sticky hairs, soft at the base. Leaflets 36-68, each leaflet 2-12mm by 1-2.5mm, sometimes sensitive. Flowers orange-yellow with hairy greenish keel, sometimes streaked with crimson, 1-3 together, to 33mm long. Pods almost straight, often over 20 segments, 3-10cm long, smooth to densely hairy; seeds brown or purplish-brown.

Ecology: Common in marshes, swamps, riversides and rock pools in the upland area; often actually in water; 60-2340m.

Vegetation type at Lewa: Riverine. LG7, LG8, LG9.

Distribution: Tropical Africa and Madagascar.

Abundance: Locally common.

Uses: Unknown

References: Gillett *et al.* (1971), Blundell (1987), Agnew & Agnew (1994)



Family: Papilionaceae

Scientific name: *Crotalaria agatiflora* Schweinf. subsp. *engleri* (Bak. f.) Polhill

Synonyms: *Crotalaria engleri*, *C. grandibracteata*, *C. imperialis*, *C. dawei* Baker f. , *C. erlangeri* (Baker f.) Hutch. & Bruce, *C. megistantha*

Common names: Canary bird bush (E)

Brief description: Woody, bushy shrub or small tree 3-10m tall, much branched. Twigs hairy. Leaves 3-foliolate, leaflets 3.8-6.7cm long and 2-3.5cm wide. Flowering branchlets up to 40cm long, many-flowered. Individual flowers up to 30 by 45(-55)mm, lemon-greenish. Pods almost cylindrical, gradually narrowed, 7.5-10cm long and 12-20mm wide, smooth, many seeded. Seeds 6-7(-9)mm long, pale brown. <Note: 5 subspecies occur that differ in pubescence and leaflet (bract) size and form>

Ecology: Margins and clearings of upland rain forest and riverine forest, grassland, bushland and disturbed ground; occasional plants growing in open places outside; (1140-)1650-3150m. Often visited by sunbirds.

Vegetation type at Lewa: Riverine: along Ngare Ndare river. LG7-LG9.

Distribution: Throughout tropical Africa: Ethiopia, eastern D.R. Congo, Uganda, Kenya and Tanzania; Asia (India); naturalised in Australia, New Zealand and Colombia

Abundance: Relatively common.

Uses: Ornamental, grown in Nairobi gardens.

References: Gillett *et al.* (1971), Blundell (1987), Agnew & Agnew (1994)



Family: Papilionaceae

Scientific name: *Crotalaria laburnifolia* L. subsp. *laburnifolia*

Synonyms: *Crotalaria helenae*, *Crotalaria australis* Bak. f.

Common names: Rattlepod, Rattlebox (E)

Brief description: Erect perennial, robust, bushy shrub, scarcely woody, 0.6-2m tall, branches smooth, occasionally sparsely hairy. Leaves 3-foliolate, 10-105mm by 4-55mm. Flowering branchlets lax, drooping, 12-33(-50)cm long with few to generally numerous flowers. Flowers yellow, often marked with reddish-brown, smooth outside, up to 30mm long. Pods almost cylindrical, 5-7.5cm long, 1-1.3cm across, inflated, often mottled with purplish markings, 16-42 seeded. <note: 3 subspecies are found, that differ in pod size and length of flower stalk>

Ecology: Deciduous woodland and bushland, grassland and secondary scrub; often on rocky ground; also persisting on roadsides and cultivated ground, (0-)400-2450m. Visited by sunbirds.

Vegetation type at Lewa: Hill. Especially LG6, on Basement Complex gneisses.

Distribution: Sudan, Somalia, eastern D.R. Congo, through East Africa southwards to South Africa, southern Asia.

Abundance: Common.

Uses: Ornamental.

References: Gillett *et al.* (1971), Blundell (1987), Agnew & Agnew (1994)



Family: Papilionaceae

Scientific name: *Indigofera volkensii* Taub.

Synonyms: *Indigofera phillipsiae* Baker, *I. subhirtella* Chiov., *I. boranensis* Chiov., *I. sesquijuga* Chiov., *I. Indigofera viridiflora* Chiov.

Common names: Unknown

Brief description: Branching herb, up to 40 cm tall from a perennial rootstock. Stems, flowers, leaflets all densely white-hairy. Leaflets 3-7 on one leaf, lanceolate-oblong, the terminal leaflet much larger than the lateral ones, up to 45 mm long and 15 mm wide. Flower racemes up to 7 cm long, including a 1-2.5 cm long stalk; flowers deep pink to red, calyx 4-6 mm long, stamens 4-5 mm long. Pod straight, rather 4-angled, up to 15 mm long, 2 mm wide, and with 5-8 seeds.

Ecology: *Acacia-Commiphora* bushland, scattered tree grassland, as well as in cultivated areas; 400-2200 m.

Vegetation type at Lewa: Hill. LG3-LG6.

Distribution: Sudan, southern Ethiopia, Somalia, Tanzania, northern Uganda, Kenya, Arabia, Yemen and Oman.

Abundance: Locally common.

Uses: Unknown.

References: Gillett *et al.* (1971), Blundell (1987), Agnew & Agnew (1994), <http://www.ildis.org/LegumeWeb/6.00/taxa/2807.shtml>



Family: Papilionaceae

Scientific name: *Sesbania keniensis* Gillett

Synonyms: *Sesbania aegyptiaca* Phil. & Hutch, *Sesbania goetzei* Harms var. *glabra* Chiov.

Common names: Unknown.

Brief description: Softly woody shrub or small tree, the stem up to 10 cm diameter, 2-7 m tall. Leaves smooth except for a few hairs at the base of the stalks; leaflets 4-9, rarely up to 13 pairs, usually 3-4 mm wide and 8-9 mm long. Flowers 21-25 mm long and 22-24 mm wide. Pod about 4 mm wide; seeds brown, 4 by 2 mm.

Ecology: Short-lived tree, occurring along streams and in marshy areas, and in regions of higher rainfall, at the edge of upland evergreen forest. 1200-2400m.

Vegetation type at Lewa: Riverine, LG7-LG9.

Distribution: Kenya and Tanzania.

Abundance: Locally common.

Uses: Wood used.

References: Gillett *et al.* (1971), Agnew & Agnew (1994)



Family: Papilionaceae

Scientific name: *Trifolium usambarense* Taub.

Synonyms: Unknown

Common names: Clover (E)

Brief description: An annual or short-lived perennial with fibrous roots and ascending stems, often rooting at the lower nodes. Leaflets wedge-shaped-oblongate, usually straight or rounded at the tip. Flowers numerous, in oblong inflorescence, purple or rarely white, erect in fruit, sepal tube 11-veined; pod 1-2 seeded, 2-3 mm long.

Ecology: Marshy places and forest openings, by streams at lower altitudes. 1500-2750 m.

Vegetation type at Lewa: Riverine and swamp edge, LG7-LG9.

Distribution: Ethiopia, Kenya, Tanzania, Uganda, Burundi, Cameroon, Equatorial Guinea, Rwanda, D.R. Congo, Nigeria, Malawi and Zambia.

Abundance: Common.

Uses: Good forage and fodder.

References: Agnew & Agnew (1994)

<http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?40395>



Family: Papilionaceae

Scientific name: *Vigna frutescens* A. Rich.

Synonyms: *Liebrechtsia esculenta*, *Liebrechtsia katangensis*, *Vigna fragrans*, *Vigna esculenta*, *Vigna keniensis*, *Vigna taubertii*, *Vigna incana*, *Vigna spartioides*, *Vigna buchneri*

Common names: Unknown

Brief description: Perennial with a woody tuber (tuber 5 cm wide) and stems trailing or after fires, erect and leafless, 0.5-1.5 m long. Leaflets ovate to rhombic, often 3-lobed, hairy. Flowering when small; inflorescence long stalked, almost umbellate, flowers scented, hairless, lilac-mauve, to 26 mm long, the standard petal with a large yellow basal spot; beak of keel petals slightly incurved. Pods erect, with short appressed hairs, up to 11 cm long, 12-16 seeded, seeds red-brown with dense black speckling, seeds 3-5 mm long.

Ecology: Grassland and bushland, especially in rocky places and areas subject to seasonal burning. Appearing 7-20 cm long when emerging after fires. May flower before leaves appear. 0-2400 m.

Vegetation type at Lewa: Hill vegetation, volcanic soils. LG3-LG5.

Distribution: Sudan, Ethiopia, Mozambique, East Africa and throughout tropical Africa.

Abundance: Locally common, but rare in parts of its range.

Uses: Heavily grazed and sought after forage plant.

References: Blundell (1987), Agnew & Agnew (1994),

<http://www.fao.org/AG/AGP/agpc/doc/GBASE/data/pf000408.htm>



Family: Plumbaginaceae

Scientific name: *Plumbago zeylanica* L.

Synonyms: *Plumbago scandens* L.

Common names: White leadwort, Ceylon leadroot (E)

Brief description: A trailing, hairless shrub(-let) with ovate leaves that have a wedge-shaped base, and a winged leaf stalk that clasps the stem at the base, up to 10 cm long overall. Flowering stalk is covered with many prominent, stalkless, sticky glands. Flowers white and conspicuous, about 16 mm across, grouped in terminal spikes; tubular calyx and a corolla with an up to 20 mm long tube.

Ecology: Dry bushland (rainfall generally <400mm). 700-2000 m.

Vegetation type at Lewa:

Distribution: Ethiopia, Sudan, through East Africa southward to Zimbabwe. Widespread in tropical and subtropical America and in the Caribbean, South and Southeast Asia.

Abundance: Common.

Uses: Many medicinal purposes.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Poaceae

Scientific name: *Eragrostis superba* Peyr.

Synonyms: *Eragrostis elata*, *E. platystachys*, *Uniola jardinii*

Common names: Masai love-grass, Saw-tooth love grass, Flat-seed love grass (E)

Brief description: Perennial grass, stems 20-120 cm tall, erect, or lower stems bent. Leaf blades flat, up to 40 cm long and 10 mm wide, firm. Flower bunches 10-30 cm long. Individual spikelets 6-16(23)mm long, 3-10 mm wide. The common names are very descriptive of the spikelets, which are large, flat, have jagged edges, green, often flushed purple and when mature, break off as a complete unit.

Ecology: Sandy, gravely or rocky soils, occasionally on clay, in deciduous bushland or wooded grassland, often in disturbed places; dry areas. 0-1500 m.

Vegetation type at Lewa: LG4, LG5 and (especially) LG6

Distribution: Sudan southwards to South Africa. Introduced to USA, Australia and India.

Abundance: Locally common.

Uses: Palatable grass (good grazing).

References: Bogdan (1958), Clayton *et al.* (1974)



Family: Poaceae

Scientific name: *Hyparrhenia hirta* (L.) Stapf.

Synonyms: *Andropogon hirtus* L. (in all there are 110 known synonyms for this species)

Common names: Hairy hood grass, South African bluestem, Common thatching grass (E)

Brief description: Erect, tufted perennial grass, 60-150 cm tall. Awns under 5 cm long, 5-7 per pairs of racemes; racemes not deflexed. Silver hairy, sometimes reddish. < There are ten to 14 awns per raceme pair compared with two to six for *H. filipendula* >

Ecology: Grasslands, savanna areas; has a wide soil tolerance, including dry, hard, rocky soils and deep dry sands. Extremely drought tolerant and persistent. Good recovery after fires.

Vegetation type at Lewa: Hill vegetation, often on sandy soils, LG6.

Distribution: Mediterranean region, Near East, Iran, Iraq to north-west India, tropical eastern and southern Africa.

Abundance: Common.

Uses: Medium to good grazing value.

References: Bogdan (1958).

<http://www.fao.org/AG/Aqp/aqpc/doc/Gbase/DATA/PF000258.HTM>



Family: Poaceae

Scientific name: *Pennisetum mezianum* Leeke

Synonyms: *Pennisetum brachystachyum* Hack.

Common names: Bamboo grass (E)

Brief description: Tufted perennial, 30-120 cm tall, with hard, wiry stems much branched in the upper part. Leaves flat, stems hairless below the spike. Leaves hairless. Ligule a ciliate (hair-like) rim. Spikes dense, white or yellowish, only a few bristles longer than the spikelet; spikelet less than 6 mm long; spikes usually less than 25 mm long.

Ecology: Grasslands on plains of black, heavy clay (black cotton) soils, especially seasonally waterlogged ones. Also on Serengeti plains, where it outcompetes *Themeda triandra* in the absence of fires. *Pennisetum mezianum* and *Pennisetum stramineum* were typically found in vegetation encroached by woody vegetation.

Vegetation type at Lewa: Especially in Plain vegetation: LG1, LG2.

Distribution: Northeast tropical Africa, East Africa and South Africa. Introduced to Texas and India.

Abundance: Common.

Uses: Young growth is grazed by cattle and wildlife, older grass is almost unpalatable because of the hard, wiry stems.

References: Angassa (2005), Bogdan (1958), Keyser (2002)



Family: Poaceae

Scientific name: *Pennisetum stramineum* Peter

Synonyms: Unknown

Common names: Masai grass (E)

Brief description: Loosely tufted, rhizomatous perennial grass 30-90 cm tall, forming slowly spreading colonies. Leaves flat, stem hairless below the spike. Ligule membranous, up to 1.5 mm long. Spikes terminal, loose, white, many bristles longer than the spikelet; spikelets less than 6 mm long.

Ecology: Dry scattered-tree grassland with annual rainfall of 500-600 mm on tropical black-earth (black cotton) soils. Glade edge species in Laikipia. *Pennisetum mezianum* and *Pennisetum stramineum* were typically found in vegetation encroached by woody vegetation.

Vegetation type at Lewa: Mainly LG1-LG5; less common but also present in LG6-LG9.

Distribution: Yemen, Ethiopia, Somalia, Kenya (esp. Laikipia plateau) and Tanzania.

Abundance: Common in range.

Uses: Valuable as pasture when young, low palatability when mature.

References: Angassa (2005), Bogdan (1958), Young *et al.* (1995), <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?27220>; <http://www.fao.org/AG/AGA/AGAP/FRG/AFRIS/Data/139.htm>



Family: Poaceae

Scientific name: *Themeda triandra* Forsk.

Synonyms: *Anthistiria ciliata*, *A. glauca*, *A. imberbis*, *A. japonica*, *A. paleacea*, *A. punctata*, *Calamina imberbis*, *Stipa arguens*, *Themeda barbinosa*, *T. forskali*, *T. imberbis*, *T. japonica*

Common names: Red oat grass (E)

Brief description: Tufted perennial grass, 45-135 cm tall. Often with a reddish tinge to stem, leaves and spikes. Spikelets with a long awn, 2-4 cm.

Ecology: From sea level to 3000 m. May dominate at altitudes of 1500-3000m, especially where its growth is encouraged by frequent fires.

Vegetation type at Lewa: Hill vegetation, LG3-LG6.

Distribution: Saudi Arabia, Ethiopia, through East Africa (Tanzania, Uganda, Kenya) to Zambia, Zimbabwe and South Africa. Introduced to Sri Lanka, the Philippines and Australia.

Abundance: Common.

Uses: Valuable grazing grass.

References: Bogdan (1958)



Family: Polygonaceae

Scientific name: *Polygonum salicifolium* Willd.

Synonyms: *Polygonum erythropus* Dammer, *Polygonum serrulatum* Lag., *Persicaria decipiens* (R.Br.) K.L.Wilson, *Persicaria salicifolia* (Brouss. ex Willd.) Assenov.

Common names: Knotweed (E)

Brief description: An erect or drooping slender annual herb, up to 1 m tall, stems green becoming brown below, simple or branched; thinly covered with bristly hairs. Leaves without stalks or nearly stalkless, narrowly lanceolate-elliptic, 8-15 cm long by 1-2 cm wide, with a pointed tip. Flowers in a raceme, 2-9 cm long, often 2-5 racemes together. Flowers white or pink, 2-2.5 (-3) mm long. Fruit a three-angled nut, smooth and shining.

Ecology: Along water courses, damp places in grasslands, often growing near water. (0-)1000-3170 m.

Vegetation type at Lewa: Riverine, LG7-LG9.

Distribution: Throughout tropical Africa, Asia, Australia and America; occasionally also in Europe.

Abundance: Common.

Uses: Edible.

References: Graham (1958), Heukels & van Ooststroom (1973), Blundell (1987), Agnew & Agnew (1994)



Family: Polygonaceae

Scientific name: *Polygonum strigosum* R. Br.

Synonyms: *Polygonum pedunculare* Wall. Ex Meisn., *Polygonum strigosum* R.Br. var. *sanguineum* Peter

Common names: Spotted knotweed (E)

Brief description: A rather slender, sparsely hairy erect annual herb, up to 1.5 m tall, sometimes trailing. Stems simple or branched, yellowish to greenish-brown, usually with spiny bristles down the angles. Leaves with a stalk, narrowly linear-lanceolate, 8-10 cm long by 8-16 mm wide. Flowering cluster very lax and slender, interrupted, more-or-less dichotomously branched. Flowers rose pink or white. Fruit a nut, smooth, shining.

Ecology: Along water courses, wet places, often growing in water. 1600-3000 m.

Vegetation type at Lewa: Along Ngare Ndare River.

Distribution: Widespread in tropical Africa, Madagascar, South Africa, Asia and Australia.

Abundance: Rare (in Kenya).

Uses: Unknown.

References: Graham (1958), Agnew & Agnew (1994)



Family: Ranunculaceae

Scientific name: *Ranunculus multifidus* Forsk.

Synonyms: *Ranunculus pinnatus* Poir., *Ranunculus pubescens* Thunb.

Common names: Buttercup (E)

Brief description: A perennial, hairy herb, sometimes with growing along the ground with stolons; up to 60 cm tall. Leaves completely or incompletely 3-times divided into deeply toothed, nearly oblong segments. Flowers numerous, cymose, yellow, up to 10 mm diameter.

Ecology: Along streams, tracks, roads and openings in upland forest. 1200-3450 m.

Vegetation type at Lewa: Along streams. LG7-LG9.

Distribution: East Africa (Kenya, Tanzania, Uganda, Burundi) south to Malawi, Lesotho and South Africa. Also in Madagascar.

Abundance: Common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Rubiaceae

Scientific name: *Conostomium quadrangulare* (Rendle) Cuf.

Synonyms: *Pentas quadrangularis* Rendle

Common names: Unknown

Brief description: An erect, sparsely long-hairy, perennial woody herb, 30-60cm tall, with smooth, 4-ribbed stems. Leaves linear-lanceolate to lanceolate, pointed tip and stalkless. Flowers are located in axils, white or cream coloured, to pinkish, with a petal tube that can be up to 12cm long.

Ecology: Dry, rocky bushland, grassland with scattered trees, always dry places and mostly sandy areas by dry rivers, rocky ledges, stony overgrazed land; 60-1950m.

Vegetation type at Lewa: Hill. LG4, LG5, LG6.

Distribution: Sudan, Ethiopia, Tanzania, Kenya, Uganda.

Abundance: Rare

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Rubiaceae

Scientific name: *Otomeria oculata* S. Moore

Synonyms: Unknown

Common names: Unknown

Brief description: A herb with many erect, unbranched stems and ovate to lanceolate leaves. The flower is pink or sometimes white, with a darker centre, 18-32 mm across; the flower tube is narrow and cylindrical, with spreading lobes 5-10 mm long.

Ecology: Dry, rocky grasslands, *Acacia-Commiphora* bushland. 530-1650 m.

Vegetation type at Lewa:

Distribution: Ethiopia, Kenya and Tanzania.

Abundance: Locally common.

Uses: Unknown

References: Blundell (1987), Agnew & Agnew (1994)



Family: Rubiaceae

Scientific name: *Pentanisia ouranogyne* S. Moore

Synonyms: *Pentanisia ouranogyne* var. *glabrifolia*

Common names: Unknown

Brief description: A rhizomatous, low, long-hairy herb with linear to lanceolate grey-green leaves. Terminal corymbs of bright blue flowers; petal tube to 7-20 mm long with a dark blue hairy throat; stigmas mostly 3-4.

Ecology: Disturbed places in dry grassland, especially along tracks. 300-2400m.

Vegetation type at Lewa: LG3-LG6, especially on sandy ridges, but also along roads.

Distribution: Sudan, Ethiopia, Uganda, Kenya and Tanzania.

Abundance: Common.

Uses: Unknown. Ornamental value.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Santalaceae

Scientific name: *Osyris abyssinica* Hochst. ex A. Rich.

Synonyms: *Osyris compressa* (Berg.) A. DC.

Common names: Sandalwood (E), Ol-essesse (Masai), Sigteti (Samburu), Muzizi (Kikuyu)

Brief description: Shrub or small tree, seldom growing to more than 5 m tall; branchlets somewhat flattened. Leaves grey-glaucous, simple, undivided, obovate, elliptic or oblong, up to 7.5 cm long but usually 2.5 cm or less, with a very short stalk. Flowers small, yellowish-green, the male flowers in axillary cymes about 12 mm long, the female flowers usually solitary. Fruit a green to bright red (when ripe) round drupe, about 6 mm diameter (see photo).

Ecology: Dry grassland or forest edges, 1500-2500 m.

Vegetation type at Lewa: Volcanic lava hills, LG4-LG5.

Distribution: Ethiopia, Kenya, Tanzania.

Abundance: Locally abundant, on the whole uncommon.

Uses: Used as a substitute for real sandalwood.

References: Dale & Greenway (1961).



Family: Sapindaceae

Scientific name: *Dodonaea angustifolia* L. f.

Synonyms: *Dodonaea viscosa* (L.) Jacq. Subsp. *angustifolia*

Common names: Sand olive (E), Mkengata (Swahili), Olgerturao (Masai)

Brief description: A shrub or small tree, 2-4(-8) m tall, with a light crown. Red-brown, viscous and hairless branches, and smooth, almost stalkless broadly lanceolate thin leaves, 5-10cm long, 12-24mm wide; young leaves light green. Flowers yellow-green or deep creamy white, 5 mm across; sepals, no petals. Fruit pale reddish brown and flat, 15 mm across, with two or more broad membranous wings, sometimes inflated. <*D. viscosa* is a coastal species, found up to 30 m a.s.l.>

Ecology: Fruits are borne by the wind, and *Dodonaea* is a pioneer species, invading grassland. In evergreen bushland, on rocky, stony, or lava sites. From sea level up to 2740 m. Can withstand fires very well.

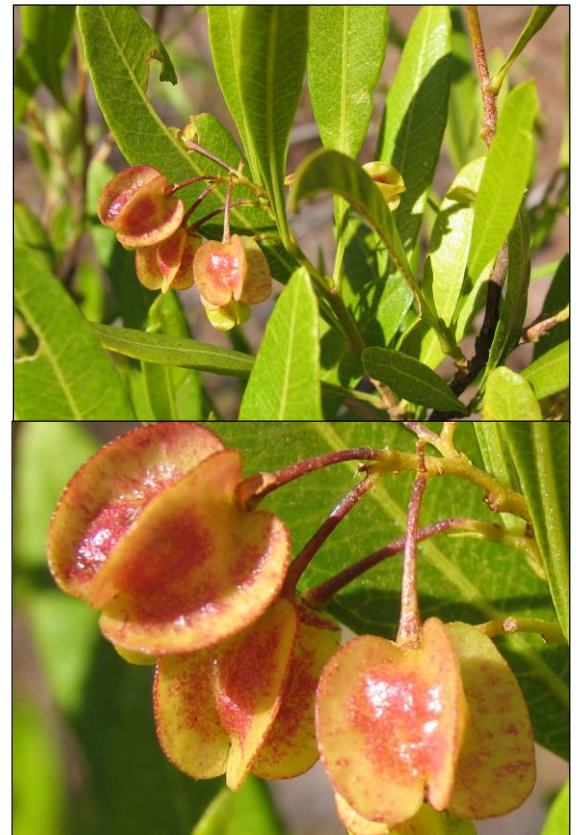
Vegetation type at Lewa: Ngare Ndare forest.

Distribution: From Ethiopia through East Africa southwards to Mozambique and Zimbabwe.

Abundance: Common.

Uses: Wood makes good walking sticks. Hedges. Traditional medicines.

References: Dale & Greenway (1961), Blundell (1987), Dharani (2002)



Family: Scrophulariaceae

Scientific name: *Craterostigma plantagineum* Hochst.

Synonyms: Unknown

Common names: Unknown

Brief description: A small, rosette herb with rhombic, toothed leaves, hairless above and 6-9 veined. Roots red. Flowers crowded on short stalks in a stalked raceme. Flowers white to mauve-blue, 7mm across, borne at the ends of single stems, resembling violets. Fruit spindle-shaped.

Ecology: Found on shallow soil over rocks, open sunny places, dry grasslands, except the driest places. Remaining underground in dry season until 1-2 weeks after first rains, when they suddenly emerge in full flower. 1160-2300m.

Vegetation type at Lewa: Hill. LG3, LG4, LG5, LG6

Distribution: Sudan, Ethiopia, Somalia, throughout East Africa southwards to Malawi and Zimbabwe.

Abundance: Locally common.

Uses: Unknown.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Scrophulariaceae

Scientific name: *Verbascum sinaiticum* Benth.

Synonyms: Unknown

Common names: Sinai Mullein (E)

Brief description: A stout, erect, woolly herb, with dense, star-shaped hairs on leaves, stems and sepals, up to 1.5 m tall from a rosette of large ovate to oblong leaves. Showy species; flowers yellow, 15 mm across, on 1-4 mm long stalks, in clusters forming simple or branched terminal spike-like racemes; 5 stamens, lower leaves not stalked. <other *Verbascum* species in Kenya have 4 stamens>

Ecology: Disturbed upland country, commonest in wheat growing areas. 1550-2635 m.

Vegetation type at Lewa: Disturbed Plain vegetation LG1-LG2.

Distribution: Egypt (Sinai Peninsula), Sudan, Ethiopia and Kenya.

Abundance: Uncommon; rare in parts of its range.

Uses: Medicinal.

References: Blundell (1987), Agnew & Agnew (1994).



Family: Scrophulariaceae

Scientific name: *Veronica anagallis-aquatica* L.

Synonyms: *Veronica anagallidiformis* Boreau, *V. brittonii* Porter ex Pennell, *V. catenata* Pennell, *V. comosa* auct. non K.Richt., *V. connata* auct. non Raf., *V. lysimachioides* Boiss., *V. scardica* Gris.

Common names: Water speed-well (E)

Brief description: An erect, hairless annual 15-60 cm tall, with oblong-lanceolate leaves, sometimes very large, to 13 by 3.5 cm. Flowers in lax axillary racemes of small bright (pale) blue flowers, sepals linear, 2 mm long, equalling petals. Fruit a round capsule.

Ecology: Stream sides, 1250-1920 m.

Vegetation type at Lewa: Riverine and swamp edge, LG7-LG9.

Distribution: Europe, from Norway south and east to northern and eastern Africa, and temperate Asia to Japan.

Abundance: Locally common; uncommon to rare in parts of range.

Uses: The root and the leaves are used as appetizer and diuretic. Leaves used to treat scurvy, impurity of the blood. Plant is bruised and applied externally as a poultice on burns, ulcers.

References: Heukels & van Ooststroom (1971), Agnew & Agnew (1994), <http://www.pfaf.org/database/plants.php?Veronica+anagallis-aquatica>



Family: Simaroubaceae

Scientific name: *Balanites aegyptiaca* (L.) Del.

Synonyms: *Balanites aegyptiaca* (L.) Del, *Ximenia aegyptiaca* L.

Common names: Desert date, Thorn tree (E), Ol-ngosma (Masai), Mjunju (Swahili)

Brief description: Savanna tree, usually 5-8 metres tall, sometimes 11 metres. Crown spherical, with a tangled mass of long thorny twigs whose leafless ends droop or protrude here and there from the main thicket. Bark grey to dark brown, with thick ragged scales and long vertical fissures in which the yellow of the new bark can be seen. Branchlets green, smooth, armed with straight, forward-directed spines, each up to 8 cm long. Leaves grey green, leaf stalk 8-16 mm long, leaflets obovate to orbicular-rhomboid, 2.5-5 cm long by 1.2-3.2 cm wide. Flowers yellowish-green, fragrant, about 12 mm diameter, in clusters; sepals 5, petals 5, stamens 10. Fruit green at first, turning yellow, containing one large, hard-pointed stone.

Ecology: Dry savanna, wooded grassland; often on sandy or black cotton soil. Often sculptured by heavy browsing (see photo). Sea level up to 2800 m.

Vegetation type at Lewa: Plain LG1, LG2

Distribution: Sudano-Sahelian zone, Israel, and Jordan.

Abundance: Common

Uses: Pulp in fruit is edible (desert date); kernel yields 40% oil, sometimes called Zachun oil, an ingredient in spikenard. Pulp contains saponin, used to kill Bilharzia snails, and in higher concentrations, to stupefy fish. Durable timber.

References: Dale & Greenway (1961), Dharani (2002)



Family: Solanaceae

Scientific name: *Datura stramonium* L.

Synonyms: *Datura leavis*, *D. stramonium* var. *tatula*, *D. tatula*

Common names: Thorn apple, Devil's apple, Jimsonweed (E)

Brief description: An erect hairless annual, up to 1-1.3 (-2)m tall with ovate, coarsely toothed, alternate leaves on a stalk up to 10cm long, and a dichotomously branched stem. Flowers white, trumpet-shaped, usually under 10cm long. At each fork of the stem. Fruit with prickles, sepal base becoming cup-shaped under the fruit.

Ecology: Disturbed places and roadsides, 550-2300 m. Highly poisonous in all parts.

Vegetation type at Lewa: Roadsides.

Distribution: World-wide distribution in warmer countries, originally from America; introduced to Kenya.

Abundance: Locally common.

Uses: Poison, hallucinogenic.

References: Ivens (1982), Blundell (1987), Agnew & Agnew (1994)



Family: Solanaceae

Scientific name: *Lycium shawii* Roem. & Schult.

Synonyms: *Lycium albiflorum* Phil., *Lycium europaeum* L.

Common names: Fursha (Boran), Surrur (Somali)

Brief description: A spiny shrub with narrow, broadly spatula-shaped, smooth leaves, about 2 cm long. Flowers are solitary on 8 mm long stalks, flower tubes brownish, 15 mm long, 5 petals white, sometimes with purplish tinge. Fruits are orange or reddish berries.

Ecology: Dry bush country, 0-1500m.

Vegetation type at Lewa: Plain and hill, LG1-LG5.

Distribution: Middle East, Sudan, Ethiopia, Somalia, through East Africa southwards to Zimbabwe, Mozambique and Zambia.

Abundance: Locally common.

Uses: Medicinal

References: Dale & Greenway (1961), Blundell (1987)



Family: Solanaceae

Scientific name: *Solanum incanum* L.

Synonyms: *Solanum bojeri* Dunal, *Solanum richardii*, *Solanum sanctum* L.

Common names: Bitter Apple, Thorn Apple, Sodom Apple, Wild Garden Egg (E)

Brief description: A erect, felty-haired, woody herb or shrub, occasionally trailing or scrambling with or without prickles. Leaves ovate to lanceolate, entire or wavy edged. Flowers blue to mauve, 2(-4) cm diameter, few, in racemes; petals webbed with triangular lobes. Fruit yellow, to 4 cm diameter.

Ecology: Disturbed ground; variable in degree of armament. 15-2300 m.

Vegetation type at Lewa: Disturbed areas, roadsides.

Distribution: Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkey, Saudi Arabia, Egypt, Ethiopia, Somalia and throughout East Africa

Abundance: Common.

Uses: Medicinal (also toxic).

References: Blundell (1987), Agnew & Agnew (1994)



Family: Solanaceae

Scientific name: *Withania somnifera* (L.) Dunal

Synonyms: *Physalis somnifera* L., *Withania kansuensis* Kuang & A.M. Lu, *Withania microphysalis* Suess.

Common names: Hidigaga, Idigaga (Boran), Kabarra (Kamasia)

Brief description: An erect, hairy, woody herb or soft shrub, up to 2.5 m tall. Stalked, alternate ovate leaves to 15 by 8 cm. Shortly stalked small, greenish or yellowish 5-lobed flowers, in axillary bunches of 2-6; petals bell-shaped with 3-6 valves, sepals inflated, papery in fruit, enclosing a globose red-orange berry, 10-13 mm diameter.

Ecology: Disturbed places in dry country. 45-2780 m.

Vegetation type at Lewa: Plain or Hill, LG1-LG6.

Distribution: Australia, East Asia, India, Saudi Arabia, Yemen, through much of Africa including Somalia, Kenya, Tanzania and Madagascar.

Abundance: Locally common.

Uses: Medicinal uses. Toxic.

References: Dale & Greenway (1961), Agnew & Agnew (1994)



Family: Sterculiaceae

Scientific name: *Dombeya burgesiae* Gerrard ex Harv.

Synonyms: *Dombeya mastersii*, *D. nairobiensis*

Common names: Wild pear, Apple blossom (E), Mukeo, Mukao (Kikuyu)

Brief description: Forest undershrub or small tree, usually less than 4m tall. Leaves toothed, 15 cm long, 10 cm wide, hairy on top and underneath, sometimes almost smooth, stalk 4-11cm long. Flowers white or pink, usually in simple umbels with a stalk almost 10 cm long; petals up to 12-13 mm long.

Ecology: Drier upland forests, 1000-3000 m.

Vegetation type at Lewa: Along Ngare Ndare river banks.

Distribution: East D.R. Congo, Rwanda and Ethiopia, through East Africa southwards to Mozambique, Zimbabwe and South Africa.

Abundance: Locally common

Uses: Ornamental; dried flower arrangements; baskets woven from bark; good rhino browse.

References: Dale & Greenway (1961), Blundell (1987), <http://www.plantzafrica.com/plantcd/dombeyburg.htm>



Family: Tiliaceae

Scientific name: *Grewia holstii* Burret

Synonyms: Unknown

Common names: Msokote (Swahili)

Brief description: Tree or scandent shrub, up to 9m tall with a fluted grey stem. Leaves elliptic or obovate-elliptic, up to 4 by 7,5 cm, with a toothed edge and a 3 mm long stalk. Flowers yellow, usually in groups of three in axils, on a 6 mm long stalk. Fruit round, 6-7 mm diameter, shiny and mottled.

Ecology: In bush and savanna. Shrub in open woodland or grassland, sometimes forming thickets but also growing as a liana under forest conditions.

Vegetation type at Lewa: Hill. LG3-LG6 (especially LG6, on sandy soils derived from Basement Complex gneisses).

Distribution: Tanzania, Kenya

Abundance: Locally common.

Uses: Unknown.

References: Dale & Greenway (1961), <http://www.kew.org/efloras/namedetail.do?flora=fz&taxon=1004&nameid=2472>



Family: Tiliaceae

Scientific name: *Grewia similis* K. Schum.

Synonyms: Unknown

Common names: Olneligwe (Masai), Ng'aligoi (Samburu), Mkole (Swahili)

Brief description: Shrub, up to 3(-4) m tall, somewhat scandent; as a scrambling shrub up to 9m. Bark smooth, later rougher, grey to greyish-brown. Young shoots and flowering stems with bristly hairs. Leaves elliptic to 5 cm long and 8 mm wide, edges finely toothed, leaf stalk up to 4-5 mm long; 3 main veins along length. Flowers 2 cm across, brightly mauve, pink or magenta, rarely white in cluster of 3-6 or more flowers together. Fruit fleshy, edible, bright red or orange, very deeply (2-)4 lobed, lobes about 5 mm diameter.

Ecology: Scrub and grassland, 600-2200 m. Not in very dry areas, usually in areas with >750 mm rainfall.

Vegetation type at Lewa: Hill. LG6.

Distribution: Ethiopia, Uganda, Kenya and Tanzania.

Abundance: Common.

Uses: Edible fruit, much favoured by birds. Wood used for poles and bows; traditional medicine. Preferred fodder for rhino.

References: Dale & Greenway (1961), Blundell (1987), Dharani (2002)



Family: Tiliaceae

Scientific name: *Grewia tembensis* Fresen. var. *kakothamnos* (K.Schum.) Burret

Synonyms: *Grewia kakothamnos* K. Schum.

Common names: Unknown

Brief description: Much-branched shrub with obovate or almost round leaves, up to 4 cm long. Leaf edge toothed; 3 basal nerves. Flowers solitary or a few in axils, white with a purplish tinge. Fruit round, occasionally lobed, fleshy, orange-red, not shiny, 10-12 mm diameter.

Ecology: Dry bush country from 300-1800 m.

Vegetation type at Lewa: Hill. LG3-LG5. Volcanic rocky slopes.

Distribution: Sudan, Ethiopia, Somalia, Uganda, Kenya and Tanzania.

Abundance: Common.

Uses: Unknown.

References: Dale & Greenway (1961), Blundell (1987)



Family: Typhaceae

Scientific name: *Typha domingensis* Pers.

Synonyms: *Typha angustifolia* var. *domingensis* (Pers.) Hemsl.,
Typha tenuifolia Kunth., *Typha truxillensis* Kunth.

Common names: Southern cat-tail (E)

Brief description: A large, reed-like plant up to 4 m tall. Leaf sheaths with sloping, papery margins, purple spotted within and on narrowing base of blade; leaf blade to 15 mm wide, pale bordered. Male and female spikes 10-30 mm apart; bracteoles of male spikes red-brown, forked, female spike 25-40 cm long, bright chestnut or reddish-brown with lighter patches where sterile flowers show through in clusters.

Ecology: Swamps, brackish to fresh, still, permanent water, usually mixed with *Typha latifolia* at higher altitudes. 0-1700(-2300) m.

Vegetation type at Lewa: Lewa Swamp (not dominant, but occurring at low densities on eastern side.

Distribution: Throughout the Americas, southern Europe, Middle East Asia, Australia and Africa.

Abundance: Common.

Uses: Roofing material; roots rich in starch, cooked and eaten; medicinal uses.

References: Agnew & Agnew (1994).

<http://www.pfaf.org/database/plants.php?Typha+domingensis>



Family: Urticaceae

Scientific name: *Urtica massaica* Mildbr.

Synonyms: Unknown

Common names: Stinging nettle (E)

Brief description: An erect herb with a rhizome – stinging hairs on leaves and stem. Opposite, doubly toothed leaves 6-8 cm wide. Inflorescence of axillary groups of spike-like, unbranched racemes; male and female flowers on separate plants; male flowers with 4 sepals.

Ecology: Painful stinger, often growing along abandoned tracks in montane forest areas; often associated with the presence of buffalo. 2000-3400 m.

Vegetation type at Lewa: Near Lewa spring, LG7.

Distribution: East African: Kenya, Uganda, Tanzania, Rwanda and Burundi.

Abundance: Locally common.

Uses: Used in traditional medicine.

References: Agnew & Agnew (1994)



Family: Verbenaceae

Scientific name: *Clerodendrum myricoides* (Hochst.) Vatke

Synonyms: *Clerodendrum discolor*, *C. ugandense*

Common names: Butterfly bush (E)

Brief description: Shrub to 2.5m, smooth or with hairy branches. Leaves almost without stalks, ovate-elliptic to oblong, to 12,5cm long, with pointed tip and toothed edge. Flowers irregular, 15mm across, in few-flowered clusters. Fruit very dark and smooth.

Ecology: Dry forest and grazed bushland; in wetter scrub; 1180-2120(-2400)m. In all but the driest parts of Kenya.

Vegetation type at Lewa: Hill and Riverine. LG3-LG9.

Distribution: Sudan, Somalia, D.R. Congo, through East Africa southwards to Zambia and Zimbabwe.

Abundance: Not uncommon.

Uses: Unknown.

References: Dale & Greenway (1961), Blundell (1987), Agnew & Agnew (1994)



Family: Verbenaceae

Scientific name: *Lantana camara* L.

Synonyms: *Camara vulgaris*, *Lantana scabrida*, *Lantana aculeata* L., *L. armata* Schauer, *L. glandulosissima* Hayek, *L. hirsuta*, *L. hirta*, *L. horrida*, *L. mista*, *L. scandens*, *L. tiliifolia*

Common names: Curse of India, Lantana

Brief description: A herbaceous shrub with opposite or alternate, roughish, stalked leaves. It has prickly stems and rather showy, large, pinkish mauve flowers that also bear touches of orange and white, each flower 3 mm across. Fruits very dark, almost black berries, in clusters like blackberries.

Ecology: Areas of moderate rainfall, 5-1800 m, often forming dense thickets. Grows best in open unshaded situations such as wastelands, rainforest edges, beachfronts, and forests recovering from fire or logging.

Vegetation type at Lewa: Disturbed areas.

Distribution: Native to Central and northern South America, now with a world-wide distribution in tropics and sub-tropics.

Abundance: Locally common.

Uses: Ornamental, medicinal, mulch, hedges.

References: Dale & Greenway (1961), Blundell (1987)



Family: Verbenaceae

Scientific name: *Lippia javanica* (Burm.f.) Spreng

Synonyms: *Lantana galpiniana* Pearson, *Lippia asperifolia* A. Rich., *Verbena javanica* Burm.f.

Common names: Sage brush, common lippia, fever tea, fever tree, wild sage, wild tea (E)

Brief description: A erect, down covered shrub with lanceolate to oblong, opposite leaves, usually with four or more flower spikes in each node. The white flowers have a yellowish centre and are about 2 mm across, in heads of about 6 mm across. Underside of leaves is covered with down. Fruits are dry. <The closely related *Lippia kituiensis* (*L. ukambensis*) has rough undersides of leaves and larger flowers (3-4 mm across) and flower heads (12 mm across). Also similar to *Lantana camara*, which has fleshy fruits and coloured flowers.>

Ecology: Disturbed places and rocky soils in dry woodland. 1300-2200m.

Vegetation type at Lewa: Disturbed rocky soils, LG3-LG5

Distribution: Ethiopia, D.R. Congo, Zimbabwe, Botswana, Swaziland, Mozambique, Malawi, Tanzania, Zambia, Tanzania, and Kenya. Also in Indonesia.

Abundance: Abundant.

Uses: Medicinal

References: Ivens (1982), Blundell (1987), Agnew & Agnew (1994)



Family: Viscaceae

Scientific name: *Viscum fischeri* Engl.

Synonyms: Unknown

Common names: East African Mistletoe

Brief description: A hairless, pendulous plant. Leaves well developed, with definite veins; generally elliptic to obovate, blunt, with smooth edges. Flowers dull greenish-yellow, 2-4 mm across, in groups of 1-5, all of the same sex on one plant; clustered in bracteal cup on a distinct stalk. Berries smooth, yellow-orange, with the tepals soon falling and leaving a rim at the top of the fruit.

Ecology: Forests, both moist and dry, often on *Croton*. 1525-2300m.

Vegetation type at Lewa: Hill vegetation, LG3-LG6.

Distribution: Only known from Kenya and Tanzania

Uses: Used in magic rituals

References: Blundell (1987), Agnew & Agnew (1994)



Family: Vitaceae

Scientific name: *Cissus quadrangularis* L.

Synonyms: *Cissus succulenta*, *Cissus tetragona*, *Vitis quadrangularis*, *Vitis succulenta*

Common names: Veldgrape (E)

Brief description: A fleshy climber with tendrils. Stem square in cross section, with reddish-brown wings along the edges, sometimes rough. Leaves shallowly to deeply 3-5 lobed. Ripe fruit yellow to reddish, round, 14 mm long.

Ecology: Rocky habitats, clambering on shrubs and small trees, but also in wetter habitats along forest edges, 150-2000m.

Vegetation type at Lewa: Hill. LG3, LG4, LG5, LG6.

Distribution: Southern and eastern Africa, Arabia to India.

Abundance: Common.

Uses: Unknown.

References: Agnew & Agnew (1994)



Family: Vitaceae

Scientific name: *Cissus rotundifolia* (Forsk.) Vahl

Synonyms: *Cissus crassifolia*, *Saelanthus rotundifolius*, *Vitis crassifolius*

Common names: Peruvian grape ivy, Venezuelan treebine, Arabian wax cissus (E)

Brief description: Climbing shrub with tendrils, stems mostly hairless, smooth in early stages, later 4-5 angled with corky wings. Leaves fleshy, circular, folded upwards along the midrib where they easily split; leaf edges toothed. Flowers in umbels of about 15 cm diameter. Ripe berries red, 15mm long, round.

Ecology: Dry *Acacia-Commiphora* bushland, and on lateritic soil, 0-2100m.

Vegetation type at Lewa: Hill. LG3, LG4, LG5, LG6

Distribution: Extending from Arabia through eastern Africa southwards to Mozambique and the Transvaal; also in D.R. Congo. Introduced to Hawaii, South America, USA,

Abundance: Common.

Uses: Unknown.

References: Agnew & Agnew (1994)



Family: Vitaceae

Scientific name: *Cyphostemma serpens* (Hochst. ex A.Rich.)
Descoigns

Synonyms: *Cyphostemma orondo* (Gilg. & Brandt.) Descoigns,
Cissus lelyi Hutch., *Cissus sesquipetalis* Gilg, *Cyphostemma*
schweinfurthii (Planch.) Desc., *Cyphostemma sesquipedale* (Gilg)
Desc., *Cissus serpens* (Hochst. ex A.Rich.) Desc.

Common names: Unknown

Brief description: Climbing or trailing, rarely erect herb, from a swollen rootstock, with or without tendrils. Leaf stalk absent or shorter than the lower leaflets; leaflets 3-9, linear-elliptic, densely hairy below, glands present on all parts except flowers and fruit. Flowers under 2.5 mm long, pale yellowish-green, flowering clusters 22-28 cm across. Fruit a berry, red or black when ripe, sometimes hairy, up to 10 mm.

Ecology: Bushed grassland. 1200-2550 m.

Vegetation type at Lewa: Hill vegetation on volcanic soils.
LG3-LG5.

Distribution: Ethiopia, Uganda, Kenya and Tanzania.

Abundance: Common.

Uses: Only used by young children, boiled root makes them healthy; however, fruits eaten by everybody.

References: Blundell (1987), Agnew & Agnew (1994)



Family: Vitaceae

Scientific name: *Cyphostemma spec.-B*

Synonyms: Unknown

Common names: Unknown

Brief description: A tendrillate climber with short glands present on all parts. Leaflets 3-4(-5) elliptic, prominently net-veined and hairy beneath, fleshy, glossy above, under 9cm long. Flowers about 3mm long, glandular. Berry spherical, shortly glandular-hairy, about 10mm long. <identified as such by Kenya Herbarium; listed as 'species-B' in Agnew & Agnew>

Ecology: Dry bushland and evergreen woodland, especially on shallow, rocky soils, 1100-2200 m.

Vegetation type at Lewa: Hill. LG3, LG4, LG5, LG6

Distribution: East Africa

Abundance: Locally common.

Uses: Unknown

References: Agnew & Agnew (1994)



5 References

Agnew, A.D.Q. & S. **Agnew** (1994) – Upland Kenya Wild Flowers. A Flora of the Ferns and Herbaceous Flowering Plants of Upland Kenya. East Africa Natural History Society, Nairobi, 374 pp..

Al-Turki, T. A. (2004) – A prelude to the study of the flora of Jabal Fayfa in Saudi Arabia. Kuwait J. Sci. Engineering, 31:77-145.

Angassa, A. (2005) – The ecological impact of bush encroachment on the yield of grasses in Borana rangeland ecosystem. African Journal of Ecology, Volume 43, p:14.

Bais, H.B., J.B. Green, T.S. Walker, P.O. Okemo and J.M. Vivanco (2002) – In vitro propagation of *Spilanthes mauritiana* D.C., and endangered medicinal herb, through axillary bud culture. In Vitro Cell Dev. Biol. – Plant – Nov.-Dec. 2002, p:598-601.

Blundell, M. (1987) - Collins Photoguide to the Wild Flowers of East Africa. Collins, London, 400 pp..

Bogdan, A.V. (1958) – A revised list of Kenya grasses (with keys for identification). Ministry of Agriculture, Animal Husbandry and Water Resources, Grassland Research Station, Kitale. Government Printer, Nairobi, 73 pp. and Figures.

Bogdan, A.V. and D.J. Pratt (1974) – Common Acacias of Kenya. Government Printer, Nairobi, 15 pp.

Botha, J.O. (1999) – A resource management plan for the Lewa Wildlife Conservancy in the Meru District of the Central Kenyan Highlands. MSc. Thesis, University of Pretoria, 282 pp..

Brenan, J.P.M. (1959) – Leguminosae, Subfamily Mimosoidae. Flora of Tropical East Africa. Government Printer, Nairobi, 173 pp.

Bussmann, R.W. (2006) – Ethnobotany of the Samburu of Mt. Nyiru, South Turkana, Kenya. J Ethnobiol Ethnomedicine. 2006; 2: 35. Published online 2006 September 6.

Carter, S. (1966) – Juncaceae. *In: Flora of Tropical East Africa*, eds. E. Milne-Redhead and R.M. Polhill, pp.11.

Carter, S. and A.R. Smith (1988) – Euphorbiaceae (Part 2). *In: Flora of Tropical East Africa*, ed. R.M. Polhill, p.:409-597.

Clayton, W.D., S.M. Phillips and S.A. Renvoize (1974) – Graminae (Part 2). *In: Flora of Tropical East Africa*, ed. R.M. Polhill, p.:177-449.

Dale, I.R. and P.J. **Greenway** (1961) – Kenya Trees and Shrubs. Buchanan's Kenya Estates Ltd., in association with Hatchards, London. Published by authority of the Government of the Colony and Protectorate of Kenya. 654 pp..

- Dharani, N.** (2002) – Field Guide to the Common Trees and Shrubs of East Africa. C Struik, Cape Town, 320 pp..
- Elffers, J., R. A. Graham, and G. P. Dewolf.** 1964. Capparidaceae. In C. E. Hubbard and E. Milne-Rehead [eds.], Flora of Tropical East Africa, Vol. 35. Government Printer, Nairobi.
- Giesen, W., P. Giesen & K. Giesen** (2007) - Habitat Changes at Lewa Wildlife Conservancy, Kenya. From cattle ranch to conservation area: effects of changing management on habitat from 1962-2006. Study conducted for the Lewa Wildlife Conservancy, 62 pp.
- Gillett, J.B., R.M. Polhill and B. Verdcourt** (1971) – Leguminosae (Part 3) - Papilionoidae. Flora of Tropical East Africa – eds E. Milne-Redhead and R.M. Polhill, 2 volumes, 1108 pp.
- Graham, R.A.** (1958) – Polygonaceae. *In*: Flora of Tropical East Africa, eds. W.B. Turrill and E. Milne-Redhead, pp.40.
- Haines, R.W. & K.A. Lye** (1983) – The Sedges and Rushes of East Africa. A Flora of the Families Juncaceae and Cyperaceae in East Africa – with a particular reference to Uganda. East African Natural History Society, Nairobi.
- Heukels, H. and S.J. van Oostroom** (1973) – Flora van Nederland Geïllustreerd. Wolters-Noordhoff NV Groningen, the Netherlands, 911 pp, 17th edition.
- Hunt, D.R.** (19688). Cactaceae. In E. Milne-Redhead and R.M. Polhill [eds.], Flora of Tropical East Africa, Government Printer, Nairobi, 6 pp.
- Ivens, G.W.** (1982) – East African Weeds and their control. Oxford University Press, Nairobi & Dar es Salaam, 250 pp.
- Jeffrey, C.** (1967). Cucurbitaceae. In E. Milne-Redhead and R.M. Polhill [eds.], Flora of Tropical East Africa, Government Printer, Nairobi, 156 pp.
- Kern, J.H.** (1974) – Cyperaceae. *In*: Flora Malesiana – eds C.G.G.J. van Steenis and R.E. Holttum. P:435-753.
- Keyser, E.L** (2002) – An Evaluation of Succession and Inter-specific Competition Between the Grass Species *Themeda triandra* and its Competitors at Different Time Intervals After the Event of Fire. ACM Tanzania Program, Lawrence University Field Projects. <http://www.acm.edu/tanzania/abstracts2002.html>
- Kiringe, J.W.** (2006) – A survey of traditional health remedies used by the Maasai of Southern Kaijiado District, Kenya. Ethnobotany Research & Applications, vol. 4:61-74.
- Kokwaro, J.O.** (1971). Geraniaceae. In E. Milne-Redhead and R.M. Polhill [eds.], Flora of Tropical East Africa, Government Printer, Nairobi, 23 pp.
- Lind, E.M. and M.E.S. Morrison** (1974) – East African Vegetation. Longman, London, 257 pp.

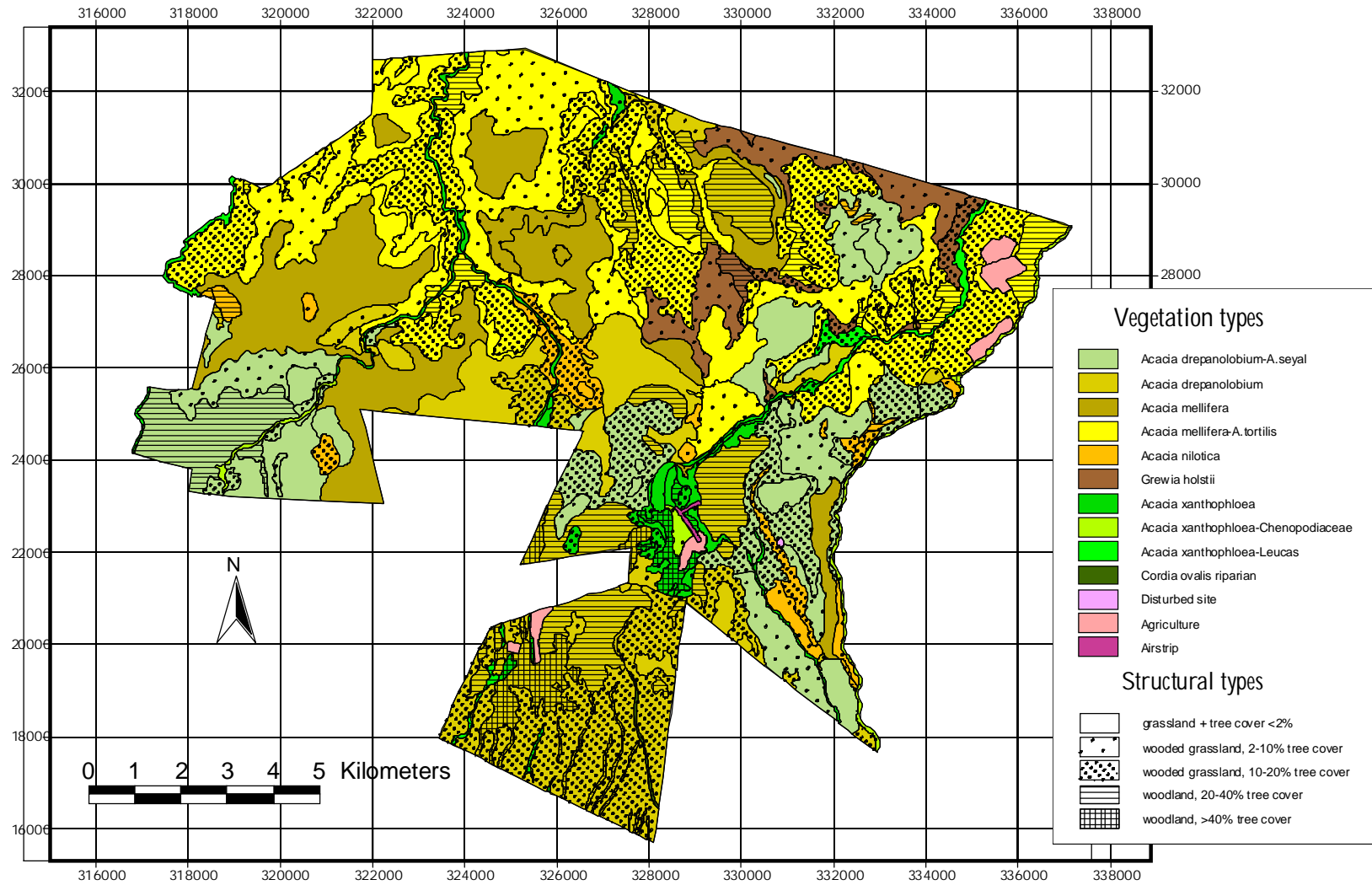
- Linsen, L. & W. Giesen** (1983) – An ecological study of Lewa Downs, a seasonally dry, central Kenyan grassland. Part 1: Section 1. Climate, Section 2 Soils, geology, geomorphology & Section 3 Vegetation. Thesis, University of Nijmegen, the Netherlands, 190 pp.
- Loth, P.E.** (1999) – The Vegetation of Manyara. Scale-dependent stats and transitions in the African Rift Valley. Tropical Resource Management Papers, No. 28. Wageningen University, The Netherlands, 128 pp.
- Ludwig, F.** (2001) – Tree-grass interactions on an East African Savanna: The effects of competition, facilitation and hydraulic lift. Tropical Resource Management Papers, No. 39. Wageningen University, The Netherlands, 139 pp.
- Melville, R.** (1958) – Gymnospermae. *In*: Flora of Tropical East Africa, eds. W.B. Turrill and E. Milne-Redhead, pp.16.
- Oginosako, Z., P. Simita, C. Orwa and S. Mathenge** (2006) – Are they competing or compensating on farm? Status of indigenous and exotic tree species in a wide range of agro-ecological zones of East and Central Kenya surrounding Mt. Kenya. World Agroforestry Center, Nairobi, Working Paper 16.
- Polhill, R.M. and D. Wiens** (1999) – Loranthaceae. Flora of Tropical East Africa – eds H.J. Beentje and C.M. Whitehouse. Published on behalf of the East African Governments by A.A. Balkema, Rotterdam, Brookfield. pp: 121.
- Siripurapu, K.B., P. Gupta P, G. Bhatia, R. Maurya, C. Nath and G. Palit** (2005) – Adaptogenic and anti-amnesic properties of *Evolvulus alsinoides* in rodents. Pharmacol Biochem Behav. 2005 Jul;81(3):424-32.
- Timberlake, J. R.** (1987) – Ethnobotany of the Pokot of Northern Kenya. Unpublished report. East African Herbarium, Nairobi. Multigraphié. Center for Economic Botany, Royal Botanic Gardens. Kew, Richmond, Surrey TW9 3AE, UK, 106 pp.
- Verdcourt, B.** (1963) – Convolvulaceae. Flora of Tropical East Africa – eds C.E. Hubbard and E. Milne-Redhead, 161 pp.
- Von Holdt, A.** (1999) – Ecological separation by browsers on the Lewa Wildlife Conservancy, Kenya. MSc thesis, University of Pretoria, 226 pp..
- Young, T.P., N. Partridge and A. Macrae** (1995) – Long-Term Glades in Acacia Bushland and Their Edge Effects in Laikipia, Kenya. Ecological Applications: Vol. 5, No. 1, pp. 97–108.

Annex 1 Vegetation Map 1979

(Please refer to next page)

Lewa Wildlife Conservancy

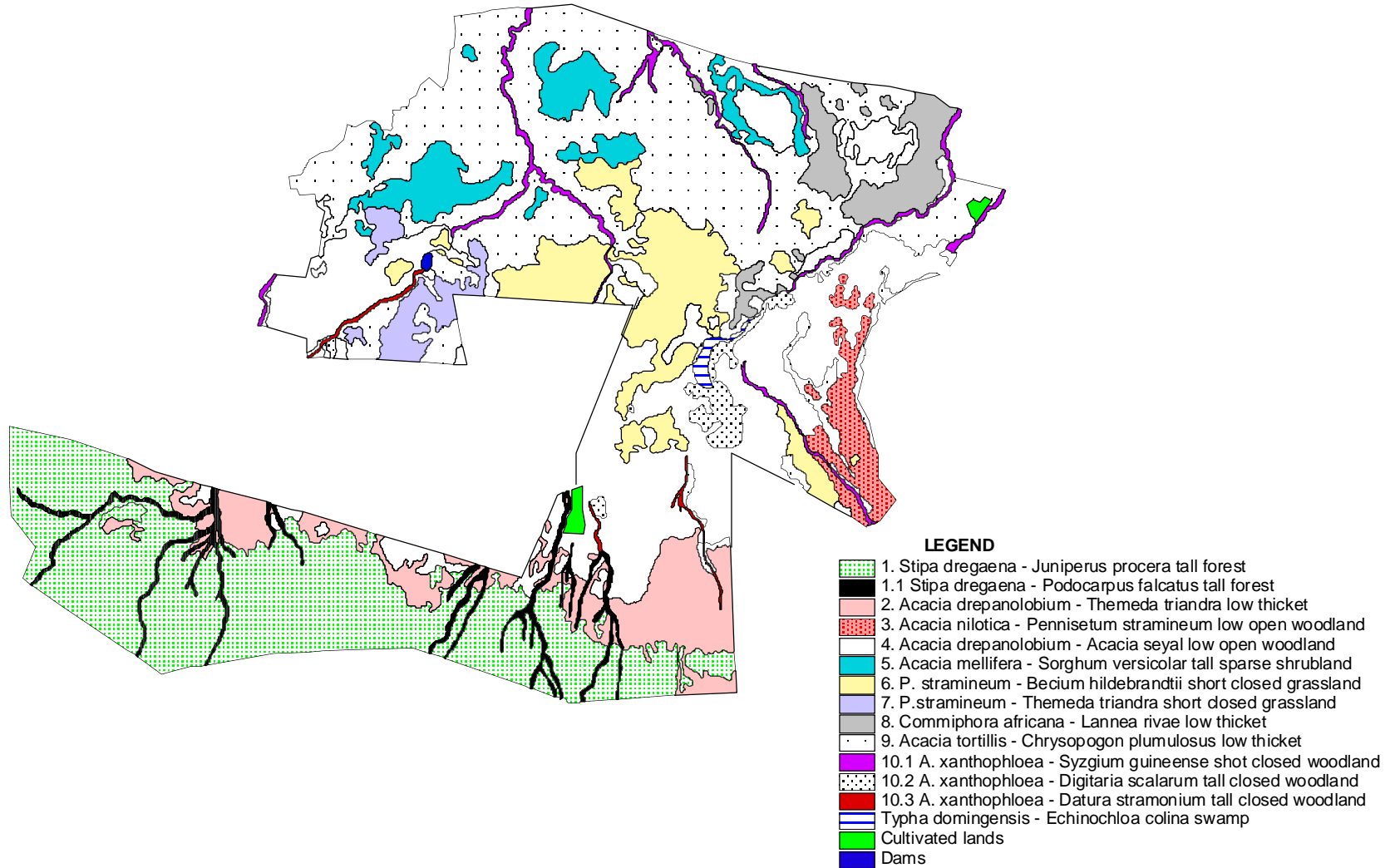
Vegetation map 1979



Annex 2 Vegetation map 1999

Adapted from Botha (1999); please refer to next page.

VEGETATION MAP OF LEWA WILDLIFE CONSERVANCY



Annex 3 Lewa plant species

PLANT SPECIES OF LEWA WILDLIFE CONSERVANCY (emphasis on plains, hills and riparian vegetation)						
No.	Family	Species	Phenotype	Habitat	I.D.	#
1	Acanthaceae	<i>Barleria argentea</i> Balf.f.	H	rocky volcanic slopes	KH	87
2	Acanthaceae	<i>Barleria spinisepala</i> E.A. Bruce	H	rocky volcanic slopes	KH	79
3	Acanthaceae	<i>Barleria volkensii</i> Lind. forma vel spp. aff.	S	sandy ridge	KH	130
4	Acanthaceae	<i>Barleria</i> sect. <i>somalia</i> (not matched)	S	sandy ridge	KH	41
5	Acanthaceae	<i>Crossandra massaica</i> Mildbr.	H	rocky volcanic slopes	KH	60
6	Acanthaceae	<i>Justicia calyculata</i> (Deflers) T. Anders (<i>J. matammensis</i>).	H	sandy ridge	KH	44
7	Acanthaceae	<i>Justicia diclipteroides</i> Lind.	H	sandy ridge	KH	22
8	Acanthaceae	<i>Justicia odora</i> (Forssk.) Vahl.	H	rocky volcanic slopes	KH	71
9	Acanthaceae	<i>Justicia unyorensis</i> S.Moore (ex <i>J. keniensis</i>)	H	Matoni spring	G	2006
10	Actiniopteridaceae	<i>Actiniopteris semiflabellata</i> Pic.-Serm.	Fern	rocky outcrops	KH	2006
11	Adiantaceae	<i>Pellaea adiantoides</i>	Fern	rocky outcrops	G	2006
12	Adiantaceae	<i>Pellaea calomelanos</i> (Sw.) Lk	Fern	sandy ridge	KH	110
13	Agavaceae	<i>Dracaena ellenbeckiana</i>	T	sandy, rocky slopes	G	2006
14	Alismataceae	<i>Alisma plantago-aquatica</i>	H	swamps, pools	G	2006
15	Amaranthaceae	<i>Achyranthes aspera</i> L.	H	ruderal	L&G	1980
16	Amaranthaceae	<i>Sericocomopsis hildebrandtii</i> Schinz	H/S	sandy ridge	KH	24
17	Amaryllidaceae	<i>Ammocharis tinneana</i>	H	sandy ridge	G	2006
18	Amaryllidaceae	<i>Crinum macowanii</i>	H	volcanic soils	G	2006
19	Amaryllidaceae	<i>Scadoxus multiflorus</i>	H	volcanic soils	G	2006
20	Anacardiaceae	<i>Rhus natalensis</i> Krauss	T	rocky soils, forest clearings	KH	10
21	Apiaceae	<i>Berula erecta</i>	H	aquatic herb	G	2006
22	Apocynaceae	<i>Carissa edulis</i> (Forssk.) Vahl	T	sandy ridge	KH	15
23	Apocynaceae	<i>Tabernaemontana stapfiana</i>	T	Matoni spring	G	2006
24	Arecaceae	<i>Phoenix reclinata</i>	Y	riparian	L&G	1980
25	Arecaceae	<i>Raphia farinifera</i>	T	riparian	L&G	1980
26	Asclepiadaceae	<i>Ceropegia racemosa</i>	C	rocky volcanic slopes	L&G	1980
27	Asclepiadaceae	<i>Gomphocarpus integer</i>	H	volcanic outcrops	G	2006
28	Asclepiadaceae	<i>Pentarrhinum insipidum</i>	C	volcanic soils	G	2006
29	Asclepiadaceae	<i>Sarcostemma viminale</i>	C	rocky volcanic slopes	G	2006
30	Asteraceae	<i>Acmella calirhiza</i> (<i>Spilanthes mauritiana</i>)	H	along river bank	KH	188
31	Asteraceae	<i>Ageratum conyzoides</i> L.	H	along river bank	KH	193
32	Asteraceae	<i>Anthemis tigrensensis</i> A. Rich.	H	distrbed places, Ngare Ndare	G	2006

No.	Family	Species	Phenotype	Habitat	I.D.	#
33	Asteraceae	<i>Aspilia mossambicensis</i>	H	along river bank	G	2006
34	Asteraceae	<i>Aspilia pluriseta</i> Schweinf.	H	riparian	L&G	1980
35	Asteraceae	<i>Crassocephalum picridifolium</i>	H	along river bank	G	2006
36	Asteraceae	<i>Emilia discifolia</i> Oliv. C. Jeffrey (<i>Senecio discifolius</i> Oliv.)	H	rocky volcanic slopes	KH	72
37	Asteraceae	<i>Felicia abyssinica</i> A.Rich. ssp. <i>neghellensis</i> (Cufod.) Grau	H	sandy ridge	KH	32
38	Asteraceae	<i>Galinsoga parviflora</i> Cav.	H	along river bank	KH	205
39	Asteraceae	<i>Gutenbergia cordifolia</i> Benth.	H	sandy soils	KH	101
40	Asteraceae	<i>Helichrysum glumaceum</i> DC.	H	rocky volcanic slopes	KH	84
41	Asteraceae	<i>Lactuca inermis</i> Forsk.	H	roadsides, clay soils	G	2006
42	Asteraceae	<i>Launaea hafunensis</i>	H	volcanic clays	G	2006
43	Asteraceae	<i>Melanthera scandens</i> (Schumach. & Thonn.) Roberty	H	riparian	L&G	1980
44	Asteraceae	<i>Osteospermum vaillantii</i> (Decn.) T.Norl.	H	rocky volcanic slopes	KH	70
45	Asteraceae	<i>Sphaeranthus gomphrenoides</i> O.Hoffm.	H	riparian	KH	154
46	Asteraceae	<i>Tagetes minuta</i> L.	H	riparian	L&G	1980
47	Boraginaceae	<i>Cordia ovalis</i> R.Br.	T	along river bank	KH	4
48	Boraginaceae	<i>Heliotropium steudneri</i> Vatke	H	rocky volcanic slopes	KH	80
49	Boraginaceae	<i>Trichodesma marsabiticum</i>	S	rocky volcanic slopes	KH	86
50	Burseraceae	<i>Commiphora africana</i>	T	sandy, rocky outcrops	G	2006
51	Burseraceae	<i>Commiphora madagascariensis</i> Jacq.	T	dry woodland	KH	3
52	Cactaceae	<i>Opuntia exaltata</i>	S	ruderal sites	G	2006
53	Cactaceae	<i>Opuntia vulgaris</i>	S	ruderal sites	G	2006
54	Caesalpiniaceae	<i>Senna (Cassia) didymobotrya</i> Fresen.	S	riparian	L&G	1980
55	Campanulaceae	<i>Cyphia glandulifera</i> A.Rich.	H	rocky volcanic slopes	KH	63
56	Capparaceae	<i>Boscia angustifolia</i>	S	volcanic soils	L&G	1980
57	Capparaceae	<i>Boscia coriacea</i>	T	volcanic soils	G	2006
58	Capparaceae	<i>Boscia mossambicensis</i> Klotzsch.	S	black cotton soil	KH	185
59	Capparaceae	<i>Cadaba farinosa</i> Forssk. var. <i>farinosa</i>	S	sandy soil	KH	200
60	Capparaceae	<i>Capparis cartilaginea</i> Decne.	S	volcanic cliff	KH	28
61	Capparaceae	<i>Capparis tormentosa</i> Lam.	S	rocky clay soils	KH	58/138
62	Capparaceae	<i>Cleome monophylla</i> L.	H	sandy ridge	KH	25
63	Capparaceae	<i>Gynandropis gynandra</i>	H	sandy soils, roadsides	L&G	1980
64	Celastraceae	<i>Maytenus putterlickioides</i>	S	volcanic clays	L&G/KH	1980
65	Chenopodiaceae	<i>Chenopodium alba</i>	H	volcanic clays	G	2006
66	Chenopodiaceae	<i>Chenopodium opulifolium</i>	H	riparian	L&G	1980
67	Commelinaceae	<i>Aneilema hockii</i> De Wild.	H	stream bed (dry)	KH	33

No.	Family	Species	Phenotype	Habitat	I.D.	#
68	Commelinaceae	<i>Aneilema johnstonii</i> K.Schum.	H	sandy ridge	KH	98
69	Commelinaceae	<i>Commelina africana</i> L.	H	sandy ridge	KH	95
70	Commelinaceae	<i>Commelina benghalensis</i> L.s.Lat.	H	riparian	KH	66
71	Commelinaceae	<i>Commelina latifolia</i>	H	rocky volcanic soils	G	2006
72	Commelinaceae	<i>Commelina reptans</i> Brenan	H	sandy ridge	KH	100
73	Convolvulaceae	<i>Evolvulus alsinoides</i> (L.) L.	H	sandy ridge	KH	38
74	Convolvulaceae	<i>Ipomoea blepharophylla</i>	H	volcanic soils	G	2006
75	Convolvulaceae	<i>Ipomoea cairica</i> (L.) Sweet	C	riparian	KH	52
76	Convolvulaceae	<i>Ipomoea obscura</i> (L.) Ker-Gawl.	C	sandy ridge	KH	18
77	Convolvulaceae	<i>Ipomoea oenotherae</i> (Vatke) Hall.f.	H	sandy ridge	KH	46
78	Convolvulaceae	<i>Ipomoea spathulata</i>	C/H	rocky volcanic slopes	G	2006
79	Crassulaceae	<i>Kalanchoe lanceolata</i>	H	volcanic clay soils (flooded)	G	2006
80	Crassulaceae	<i>Kalanchoe prittwitzii</i>	H	rocky volcanic soils	G	2006
81	Cucurbitaceae	<i>Cucumella engleri</i> (Gilg.) C. Jeffr.	C	black cotton soil	KH	56
82	Cucurbitaceae	<i>Cucumis ficifolium</i>	H	volcanic soils	G	2006
83	Cucurbitaceae	<i>Cucumis prophetarum</i> L. ssp. <i>dissectus</i> (Naud.) C. Jeffr.	H	sandy ridge	KH	45
84	Cupressaceae	<i>Juniperus procera</i> Hochst. ex Endlicher	T	Ngare Ndare forest	G	2006
85	Cyperaceae	<i>Cyperus assimilis</i> Steud.	H	swamps, river banks	G	2006
86	Cyperaceae	<i>Cyperus dichroostachyus</i> Hochst.	H	along river bank	KH	161
87	Cyperaceae	<i>Cyperus dives</i> Del.	H	dominant in swamp	G	2006
88	Cyperaceae	<i>Cyperus dubius</i> Rottb. subsp. <i>coloratus</i> (Vahl) Lye	H	rocky outcrops/sandy soils	G	2006
89	Cyperaceae	<i>Cyperus esculentus</i> L.	H	along river bank	G	2006
90	Cyperaceae	<i>Cyperus involucrata</i>	H	along river bank	G	2006
91	Cyperaceae	<i>Cyperus papyrus</i> L.	H	along Ngare Segoi & Ngare Ndare	G	1980
92	Cyperaceae	<i>Cyperus sphacelatus</i> Rottb.	H	along river bank	G	2006
93	Cyperaceae	<i>Fuirena stricta</i> Steud. var. <i>chlorocarpa</i> (Ridl.) Kuk.	H	along river bank	KH	192
94	Cyperaceae	<i>Mariscus assimilis</i> (Steud.) Podl.	H	along river bank	KH	186/208
95	Cyperaceae	<i>Pycreus flavescens</i> (L.) Reichb.	H	along river bank	KH	162
96	Cyperaceae	<i>Pycreus mundtii</i> Nees	H	along river bank	KH	160
97	Cyperaceae	<i>Scirpus brachyceras</i> A. Rich.	H	swamps, river banks	G	2006
98	Euphorbiaceae	<i>Croton dichogamus</i> Pax	S	sandy ridge	KH	91
99	Euphorbiaceae	<i>Euphorbia candelabrum</i>	T	volcanic ridge	L&G	1980
100	Euphorbiaceae	<i>Euphorbia graciliramea</i>	H	volcanic soils & outcrops	G	2006
101	Euphorbiaceae	<i>Euphorbia bussei</i> var. <i>kibweziensis</i>	T	volcanic ridge	G	2006
102	Euphorbiaceae	<i>Euphorbia scarlatina</i>	S	volcanic soils & outcrops	G	2006

No.	Family	Species	Phenotype	Habitat	I.D.	#
103	Geraniaceae	<i>Monsonia longipes</i> Knuth	H	sandy ridge	KH	21
104	Geraniaceae	<i>Pelargonium alchemilloides</i> (L.) Ait. ssp. <i>multibrachiatum</i>	H.	sandy ridge	KH	40
105	Geraniaceae	<i>Pelargonium quinquelobatum</i> A.Rich.	H	sandy ridge	KH	36
106	Iridaceae	<i>Gladiolus ukambensis</i> (Baker) Marais var. <i>ukambensis</i>	H	volcanic lithosol	KH	9
107	Juncaceae	<i>Juncus oxycarpus</i> Kunth.	H	along river bank	KH	164
108	Lamiaceae	<i>Leucas glabrata</i> (Vahl.) R.Br.	H	sandy ridge	KH	20
109	Lamiaceae	<i>Leucas grandis</i> Vatke	H	rocky volcanic slopes	KH	85
110	Lamiaceae	<i>Leucas urticifolia</i>	H	volcanic soils	G	2006
111	Lamiaceae	<i>Mentha longifolia</i> (L.) L.	H	along streams	G	2006
112	Lamiaceae	<i>Ocimum (Becium) filamentosum</i>	H	rocky volcanic slopes	KH	73
113	Lamiaceae	<i>Orthosiphon pallidus</i> Benth. (<i>Orthosiphon somalensis</i> Vatke)	H	riparian	L&G	1980
114	Lamiaceae	<i>Plectranthus comosus</i> Sims	H	rocky volcanic slopes	KH	81
115	Lamiaceae	<i>Tinnea aethiopica</i> Kotschy & Peyr.	S	rocky volcanic slopes	KH	77
116	Liliaceae	<i>Albuca abyssinica</i> Murr. (<i>Albuca wakefieldii</i> Bak.)	H	sandy ridge	KH	37
117	Liliaceae	<i>Aloe amudatensis</i>	H	along river bank	KH	35
118	Liliaceae	<i>Aloe secundiflora</i>	H	rocky outcrops/sandy soils	G	2006
119	Liliaceae	<i>Asparagus africanus</i> Lam.	H	black cotton soil	L&G	1980
120	Liliaceae	<i>Asparagus racemosus</i> Willd.	H	black cotton soil	KH	57
121	Liliaceae	<i>Chlorophytum tuberosum</i> Bak.	H	rocky volcanic slopes	KH	78
122	Liliaceae	<i>Chlorophytum zavattarii</i> (Cufod.) Nordal (<i>Anthericum zavattarii</i> C)	H	volcanic ridge	KH	30
123	Liliaceae	<i>Gloriosa superba</i> L. (<i>Gloriosa simplex</i> L.)	C	sandy ridge	KH	93
124	Liliaceae	<i>Ornithogalum tenuifolium</i> Delaroché (<i>Ornithogalum longibrachiatum</i>)	H	sandy ridge	KH	31
125	Liliaceae	<i>Sansevieria</i> sp.	H	riparian	L&G	1980
126	Liliaceae	<i>Sansevieria dawei</i>	H	rocky volcanic slopes	G	2006
127	Liliaceae	<i>Sansevieria suffruticosa</i> N.E. Br.	H	northern volcanic slopes	G	2006
128	Loranthaceae	<i>Agellanthus zizyphifolius</i>	E	in Ngare Ndare forest	G	2006
129	Loranthaceae	<i>Phragmanthera dschallensis</i> (Engl.) M. Gilbert	E	on <i>Acacia drepanolobium</i>	G	2006
130	Loranthaceae	<i>Plicosepalus sagittifolius</i> (Sprague) Danser forma vel sp. aff.	E	on <i>A. drepanolobium</i>	KH	1
131	Lythraceae	<i>Lythrum rotundifolium</i>	H	aquatic herb	G	2006
132	Malvaceae	<i>Abutilon grandiflorum</i>	S/H	riparian	L&G	1980
133	Malvaceae	<i>Hibiscus aponeurus</i> Spr. & Hutch.	S	rocky volcanic slopes	KH	64
134	Malvaceae	<i>Hibiscus flavifolius</i> Ulbr.	S	black cotton soil	KH	75
135	Malvaceae	<i>Hibiscus micranthus</i> L.f.	H/S	sandy ridge	KH	145
136	Malvaceae	<i>Hibiscus</i> sect. <i>calyphyllus</i> (not matched by Kenya Herbarium)	S	rocky volcanic slopes	KH	65
137	Malvaceae	<i>Pavonia gallaensis</i>	S/H	volcanic soils	G	2006

No.	Family	Species	Phenotype	Habitat	I.D.	#
138	Malvaceae	<i>Pavonia patens</i> (Andr.) Chiov.	S	black cotton soil	KH	51
139	Malvaceae	<i>Sida tenuicarpa</i>	S	along river bank	G	2006
140	Meliaceae	<i>Turraea parvifolia</i>	S	rocky outcrops	L&G	1980
141	Mimosaceae	<i>Acacia brevispica</i>	S	volcanic lithosols	L&G	1980
142	Mimosaceae	<i>Acacia drepanolobium</i> Sjostedt.	T	black cotton soil	KH	8
143	Mimosaceae	<i>Acacia mellifera</i>	T	sandy to clayey	L&G	1980
144	Mimosaceae	<i>Acacia nilotica</i> (L.) Del.ssp. <i>subalata</i> (Vatke) Brenan	T	clayey soils	KH	141
145	Mimosaceae	<i>Acacia senegalensis</i>	T	northern volcanic slopes	G	2006
146	Mimosaceae	<i>Acacia seyal</i> ssp. <i>flatula</i>	T	black cotton soil	L&G	1980
147	Mimosaceae	<i>Acacia tortilis</i>	T	volcanic soils	L&G	1980
148	Mimosaceae	<i>Acacia xanthophloea</i>	T	riparian	L&G	1980
149	Mimosaceae	<i>Dichrostachys cinerea</i> (L.) Wight & Arn. ssp. <i>africana</i>	S	sandy ridge	KH	43
150	Moraceae	<i>Ficus sycomorus</i>	T	springs & riparian	G	2006
151	Moraceae	<i>Ficus</i> sp.302	S	riparian	L&G	1980
152	Myrtaceae	<i>Syzygium guineense</i>	T	along Ngare Ndare river	G	2006
153	Nyctaginaceae	<i>Commicarpus pedunculatus</i> (A.Rich.) Cufod.	H	ruderal	KH	2
154	Oleaceae	<i>Olea africana</i> (or <i>O. europaea</i> subsp. <i>africana</i>)	T	Ngare Ndare forest	von Holdt	1999
155	Onagraceae	<i>Epilobium hirsutum</i>	H	ruderal	G	2006
156	Papilionaceae	<i>Aeschynomene schimperi</i> A.Rich.	S	riparian	KH	62
157	Papilionaceae	<i>Crotalaria agatifolia</i> subsp. <i>engleri</i>	S/T	along Ngare Ndare	G	2006
158	Papilionaceae	<i>Crotalaria laburnifolia</i> L. spp. <i>laburnifolia</i>	S	sandy ridge	KH	90
159	Papilionaceae	<i>Indigofera brevicalyx</i> Bak. f.	H	rocky volcanic slopes	KH	67
160	Papilionaceae	<i>Indigofera vohemarensis</i> Baill.	S	sandy ridge	KH	19
161	Papilionaceae	<i>Indigofera volkensii</i> Taub. forma vel sp. aff.	H	rocky volcanic slopes	KH	74
162	Papilionaceae	<i>Sesbania keniensis</i> Gillett	T	riparian	KH	53
163	Papilionaceae	<i>Tephrosia subtriflora</i> Bak.	H	sandy ridge	KH	11
164	Papilionaceae	<i>Trifolium usambarense</i> Taub.	H	along streams	G	2006
165	Papilionaceae	<i>Vigna frutescens</i>	H	rocky, volcanic soils	G	2006
166	Plumbaginaceae	<i>Plumbago zeylaninca</i>	H	moist places, along rivers	G	2006
167	Poaceae	<i>Aristida adoensis</i> Hochst.	H	sandy soils	Ellis/KH	171
168	Poaceae	<i>Aristida kenyensis</i> Henr.	H	sandy soils	Ellis/KH	170
169	Poaceae	<i>Chloris pycnothrix</i> Trin.	H	?	Ellis	7
170	Poaceae	<i>Chloris roxburghiana</i> Schult	H	sandy ridge	Ellis	14
171	Poaceae	<i>Chrysopogon commutatus</i> (Steud.) Stapf.	H	sandy soils	Ellis/KH	173
172	Poaceae	<i>Chrysopogon plumulosus</i> Hochst.	H	sandy ridge	KH & Ellis	34

No.	Family	Species	Phenotype	Habitat	I.D.	#
173	Poaceae	<i>Cynodon plectostachyus</i> (K.Schum.) Pilg.	H	sandy soils	Ellis/KH	156
174	Poaceae	<i>Dactyloctenium aegyptium</i> (L.) Willd.	H	sandy soils	Ellis/KH	180
175	Poaceae	<i>Digitaria eriantha</i>	H	?	Ellis/KH	213
176	Poaceae	<i>Digitaria macroblephara</i> (Hack.) Stapf.	H	volcanic clays	KH	199
177	Poaceae	<i>Digitaria scalarum</i> (Schweinf.) Chiov.	H	?	KH	5
178	Poaceae	<i>Digitaria swazilandensis</i>	H	?	Ellis	1980
179	Poaceae	<i>Enneapogon desvauxii</i> P.Beauv.	H	?	Ellis	1980
180	Poaceae	<i>Enneapogon schimperanus</i> (A.Rich.) Renv.	H	volcanic clays	KH	198
181	Poaceae	<i>Eragrostis paniciformis</i> (A.Br.) Steud.	H	river lining clays	KH	157
182	Poaceae	<i>Eragrostis papposa</i> (Roem. & Schult) Steud.	H	sandy soil	KH	47/204
183	Poaceae	<i>Eragrostis rigidior</i> Pilg.	H	?	Ellis/KH	214
184	Poaceae	<i>Eragrostis superba</i> Peyr.	H	sandy soils	Ellis/KH	149
185	Poaceae	<i>Eragrostis tenuifolia</i> (A.Rich.) Steud.	H	?	KH & Ellis	6
186	Poaceae	<i>Eriochloa meyerana</i> (Nees) Pilger	H	along river bank	Ellis/KH	165
187	Poaceae	<i>Eustachys paspaloides</i> Vahl.	H	?	Ellis	1980
188	Poaceae	<i>Harpachne schimperii</i> A.Rich.	H	sandy soils	Ellis/KH	152
189	Poaceae	<i>Heteropogon contortus</i> (L.) Roem. & Schult.	H	sandy ridge	Ellis/KH	175/176
190	Poaceae	<i>Hyparrhenia hirta</i> (L.) Stapf	H	sandy ridge	Ellis/KH	29/178
191	Poaceae	<i>Hyparrhenia papillipes</i> (A.Rich.) Stapf.	H	sandy soils	Ellis/KH	179
192	Poaceae	<i>Leersia hexandra</i> Sw.	H	swamps, river banks	Ellis	169
193	Poaceae	<i>Microchloa kunthii</i> Desv.	H	sandy soils	Ellis/KH	1980
194	Poaceae	<i>Panicum maximum</i> Jacq.	H	sandy ridge	Ellis	92
195	Poaceae	<i>Pennisetum mezianum</i> Leeke	H	clayey soils/black cotton	Ellis/KH	189
196	Poaceae	<i>Pennisetum stramineum</i> Peter	H	clayey soils	Ellis	1980
197	Poaceae	<i>Rhynchelytrum repens</i> (Willd.) C.E.Hubb.	H	sandy ridge	Ellis/KH	172
198	Poaceae	<i>Sehima nervosum</i> (Rottl.) Stapf.	H	sandy soils	Ellis/KH	174
199	Poaceae	<i>Setaria pumila</i> (Poir.) Roem.& Schult.	H	?	Ellis/KH	207
200	Poaceae	<i>Sporobolus festivus</i> A.Rich.	H	sandy soils	Ellis/KH	168
201	Poaceae	<i>Sporobolus pellucidus</i> Hochst.	H	sandy soils	KH	150
202	Poaceae	<i>Sporobolus pyramidalis</i> P.Beauv.	H	along river bank	KH	187
203	Poaceae	<i>Themeda triandra</i> Forssk.	H	sandy soils	Ellis/KH	148
204	Poaceae	<i>Tragus berteronianus</i> Schult.	H	sandy soils	Ellis/KH	167
205	Polygalaceae	<i>Polygala liniflora</i> Chod.	H	sandy ridge	KH	39
206	Polygalaceae	<i>Polygala sphenoptera</i> Fres. S. str.	H	sandy ridge	KH	97
207	Polygonaceae	<i>Polygonum salicifolium</i>	H	along Ngare Ndare river	G	2006

No.	Family	Species	Phenotype	Habitat	I.D.	#
208	Polygonaceae	<i>Polygonum strigosum</i>	H	along river bank	G	2006
209	Portulacaceae	<i>Portulaca ?foliosa</i> Ker.	H	sandy ridge	KH	42
210	Portulacaceae	<i>Talinum portulacifolium</i> (Forssk.) Schweinf.	H	sandy soil near river	KH	59/182
211	Ranunculaceae	<i>Ranunculus multifidus</i> Forsk.	H	along streams	G	2006
212	Rhamnaceae	<i>Ziziphus mucronata</i> Willd. ssp. <i>mucronata</i>	T	basalt outcrops along river	KH	183
213	Rubiaceae	<i>Conostomium quadrangulare</i> (Rendle) Cufod.	H	sandy ridge	KH	94
214	Rubiaceae	<i>Otomeria oculata</i> S.Moore	H	clayey soils	KH	96
215	Rubiaceae	<i>Pavetta gardeniifolia</i> A.Rich. var. <i>gardeniifolia</i>	S	sandy ridge	KH	143
216	Rubiaceae	<i>Pentanisia ouranogyne</i> S.Moore	H	sandy ridge	KH	99
217	Rubiaceae	<i>Psychotria kirkii</i> Hiern. cf. var. <i>tarambassica</i> (Bremek.) Verdc.	T	sandy ridge	KH	142
218	Rutaceae	<i>Fagara chalybea</i> (Engl.) Engl.	T	volcanic ridges	L&G	1980
219	Santalaceae	<i>Osyris abyssinica</i> A.Rich.	S	volcanic lithosol	KH	27
220	Sapindaceae	<i>Dodonea angustifolia</i>	S/T	secondary forest	G	2006
221	Scrophulariaceae	<i>Craterostigma plantagineum</i> Hochst.	H	volcanic clays	G	2006
222	Scrophulariaceae	<i>Cycnium volkensii</i> Engl.	H	rocky volcanic slopes	KH	88
223	Scrophulariaceae	<i>Striga asiatica</i> (L.) Ktz.	H	sandy ridge	KH	17
224	Scrophulariaceae	<i>Verbascum brevipedicellatum</i> (Engl.) Huber-Morath (<i>Celsia flocca</i>)	H	volcanic clays	L&G	1980
225	Scrophulariaceae	<i>Verbascum sinaiticum</i>	H	dry river beds, upland	G	2006
226	Scrophulariaceae	<i>Veronica anagallis-aquatica</i>	H	swamps & riverbanks	G	2006
227	Simaroubaceae	<i>Balanites aegyptiaca</i> (L) Delile	T	volcanic clays	L&G	1980
228	Simaroubaceae	<i>Balanites glabrus</i> Mildbr. & Schltr.	T	volcanic clays	L&G	1980
229	Solanaceae	<i>Datura stramonium</i>	H	volcanic clays, disturbed sites	L&G	1980
230	Solanaceae	<i>Lycium shawii</i> Roem. & Schult	S	riparian	KH	54
231	Solanaceae	<i>Solanum incanum</i>	H/S	volcanic soils	L&G	1980
232	Solanaceae	<i>Solanum</i> sp. A (of UKWF)	S	black cotton soil	KH	55
233	Solanaceae	<i>Withania somnifera</i>	S	volcanic clays	G	2006
234	Sterculiaceae	<i>Dombeya burgessiae</i>	T	along Ngare Ndare	G	2006
235	Sterculiaceae	<i>Melhania ovata</i> (Cav.) Spreng.	H	rocky volcanic slopes	KH	82
236	Tiliaceae	<i>Grewia holstii</i> Burret	T	sandy ridge	KH	12
237	Tiliaceae	<i>Grewia similis</i> K. Schum.	S	sandy ridge	G	2006
238	Tiliaceae	<i>Grewia tembensis</i> Fres. var. <i>kakothamnos</i> (K.Schum.) Burr.	S/T	rocky volcanic slopes	KH	61
239	Tiliaceae	<i>Grewia trichocarpa</i> A.Rich.	S	rocky volcanic slopes	KH	76
240	Typhaceae	<i>Typha domingensis</i>	H	riparian	G	2006
241	Urticaceae	<i>Urtica massaica</i>	H	Lewa spring	G	2006
242	Verbenaceae	<i>Chascanum hildebrandtii</i> (Vatke) Gillett	H	sandy ridge	KH	13

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243	Verbenaceae	<i>Clerodendrum myricoides</i> (Hochst.) Vatke	S	volcanic lithosolic shrubland	KH	16/89
244	Verbenaceae	<i>Lantana camara</i>	S	disturbed areas	G	2006
245	Verbenaceae	<i>Lantana viburnoides</i> (Forssk.) Vahl.	S	rocky volcanic slopes	KH	83/139
246	Verbenaceae	<i>Lippia javanica</i>	S	disturbed areas	G	2006
247	Verbenaceae	<i>Priva curtisiae</i> Kubuski	H	ruderal	KH	69
248	Viscaceae	<i>Viscum fisheri</i>	E	on <i>Acacia drepanolobium</i>	G	2006
249	Vitaceae	<i>Cissus quadrangularis</i>	C	rocky volcanic slopes	G	2006
250	Vitaceae	<i>Cissus rotundifolia</i>	C	rocky volcanic slopes	L&G	1980
251	Vitaceae	<i>Cyphostemma serpens</i> (A.Rich.) Willd. & Drum. (<i>C. orondo</i>)	H	rocky volcanic soils	G	2006
252	Vitaceae	<i>Cyphostemma</i> spec. B (of UKWF)	C	rocky outcrops, along along rivers	KH	50