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VEGETATION MAP AND PLANT CHECKLIST OF OL ARI NYIRO RANCH AND THE MUKUTAN GORGE, LAIKIPIA, KENYA

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ABSTRACT

Ol Ari Nyiro is a 360 km² ranch on the Laikipia Plateau, in a semi-arid part of Kenya. The vegetation of the ranch and of nearby Mukutan Gorge was mapped, and a preliminary check-list of fungi and vascular plants compiled. The vegetation was classified in 16 different types. A total of 708 species and subspecies were identified. This represents 10% of the estimated Kenyan flora, making Ol Ari Nyiro one of the most diverse non-forest areas in East Africa.

INTRODUCTION

The Ol Ari Nyiro/Mukutan Gorge area is one of the most diverse non-forest areas in East Africa. It is home to the Gallmann Memorial Foundation, which has strived to keep it in as natural a state as possible, and which sponsors ecological research on the semi-arid ecosystems of north-central Kenya (Young & Francombe, 1991; Oloo *et al.*, 1994).

Ol Ari Nyiro is a 360 km² (approximately 90,000 acres) ranch located on the Laikipia plateau in the Republic of Kenya. It lies between longitudes 36° 17' and 36° 29' E and between latitudes 0° 29' and 0° 42' N. Elevations range from 1,260 m at the base of the gorge to 2,200 m in the hills to the south-west. The diverse topography supports a variety of vegetation types from dry marginal forest to semi-arid bushland. Mean annual rainfall (fig. 5) has ranged from 340 mm in the driest year (1983) to 1,322 mm in the wettest year (1963), and generally decreases from the southwest to the northeast (see 'Rainfall', below). Mean yearly maximum and minimum temperatures are estimated to be 30° and 14°C, respectively (Odinga, 1971). The Mukutan River flows through the centre of the property, with the upper reaches partially seasonal. Several springs provide permanent water to the ranch. There are also 33 dams throughout the ranch.

Ol Ari Nyiro is a valuable remnant of the diverse flora and fauna that once covered vast areas of the Laikipia Plateau and the eastern Rift Valley escarpment. Our goal was to produce a preliminary plant checklist and a description of the vegetation of Ol Ari

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Nyiro/Mukutan Gorge to assist in future conservation, management, and development plans for the area.

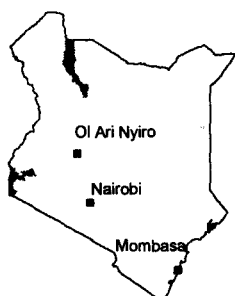


Figure 1: location of the study area

This survey comprised the entire Ol Ari Nyiro Ranch, including the upper Mukutan Gorge, and those parts of the lower Mukutan Gorge that lie outside the boundaries of the ranch. Ol Ari Nyiro is a 360 km² privately-owned ranch located on the Laikipia Plateau in the Republic of Kenya (36° 25' E, 0° 35' N). The Laikipia plateau was the result of uplift 20–25 million years ago, producing a broad high plain between the future sites of Mount Kenya and the Aberdare Mountains. The highest point on the ranch is 2,200 m above sea level, and most of the ranch lies between 1,800 and 2,000 m.

Faulting and folding of rocks during the formation of the Rift Valley is thought to have produced faultlines in the Mukutan area, leading to weaknesses and sinking. The Mukutan River was possibly redirected along such lines of weakness, further deepening and widening them by erosion. There are a number of side gorges running perpendicular to the main gorge, and parallel to exposed fault lines. The Mukutan River flows through the gorge from east to west, ultimately reaching Lake Baringo 20 km to the west. The mouth of the gorge is 1,260 m above sea level, rising to 1,780 m at the eastern end. At the deepest point, the gorge walls are approximately 600 m high.

History of land use

The Laikipia Plateau was probably been used by pastoralists for at least several hundred years. Ol Ari Nyiro has been a private ranch for approximately forty years. During most of this time, it has been an active cattle ranch. At the time of this survey, there were 2,600 cattle on the property. These numbers have recently been reduced substantially in the interest of increasing biodiversity.

Fire from humans and natural sources has probably always occurred on this land. As recently as 1990, fire was used as a management tool in controlling woody species, with some areas burnt yearly and others at longer intervals. This practice has been discontinued. Several hundred hectares in the wetter southwestern part of the property are under cultivation.

The Gallmann Memorial Foundation, which manages the land, is dedicated to reconciling the needs of both humans and biodiversity. As such, its current management is aimed at integrated land management that minimizes negative effects on indigenous plants and animals.

Vegetation map

The drawing of a vegetation map presupposes demonstrable variation in plant community structure. More importantly, it assumes that this variation can somehow be compartmentalised into vegetation 'types'. The existence of a line on a vegetation map implies clear differences between the areas on either side of the line, and relative uniformity within a particular 'type'. This is rarely the case (Barbour *et al.*, 1987).

Each plant species has distributional limits that are more or less distinct. If entire plant communities were also distinct, the distributional limits of most important species would co-occur. For example, on reaching the end of 'Acacia woodland' and entering 'mixed bushland', one might expect several common species associated with the woodland to disappear, and for most of the fundamental elements of the bushland to appear. Such a pattern would be indicative of the 'unit concept' of community structure.

When they do occur, there are several causes for these abrupt and clear-cut community boundaries in nature. A) There is sometimes a sudden change in soil type. B) In habitats that are burned, the limits of burns may be consistent because the fires reach a barrier, such as a river, a road, or a forest edge. Then plant community boundaries can be sharp and dramatic. C) Sometimes, the presence of several species is dependent on the presence of a single 'keystone' species. At the distributional limit of the keystone species, all of the dependent species also disappear. In such cases, the lines on a vegetation map represent very real community boundaries. This situation is less common.

More commonly, plants species enter or drop out of the community along a gradient more or less independently of each other. This represents the 'individualistic concept' of community structure. In such cases, there are no clear cut boundaries for communities, and vegetation maps serve not to delineate distinct types, but to indicate overall change. One must not expect the lines on a vegetation map always to be obvious in the field; often it is merely the judgement of the mapper as to the characteristics that are important (usually the limits of important species).

We carried out this mapping through ground surveys, mostly by TPY. Using existing roads and trails, he was able to directly survey virtually the entire property.

OL ARI NYIRO VEGETATION

On Ol Ari Nyiro Ranch, there are both distinct community boundaries, and areas of gradual community change, the latter being more common. Each of the most important woody shrub species has a distribution that is mostly independent of the others. In fact, the 'types' delineated on the vegetation maps are mostly determined by the limits of individual species, with each type being characterized by a particular combination of the few dominant species. Therefore it is appropriate to begin a description of Ol Ari Nyiro vegetation with a description of dominant plant species. First, however, we will describe the environmental factors that determine these distributions.

Environmental Factors (Gradients)

1. Topography/Soils (fig. 2)

The most striking environmental factor on the ranch is topography. The Mukutan Gorge and its associated valleys dominate the landscape. The eastern part of the ranch is more or less

flat, dropping gently from east to west. In the northeastern corner there are some low hills. The western part of the ranch is cut in half by the Mukutan Gorge running east-west, into which numerous subsidiary valleys run perpendicularly. The result is a parallel series of narrow flat-topped ridges separated by steep slopes. The southwestern corner of the ranch contains the last moist hills coming down from the Aberdare Mountains 50 km to the south.

The soils of the area show a distribution determined mostly by topography. The Kenya Soils Survey has made a preliminary survey of the area (Ahn & Geiger, 1987), and describes four soil types:

- A. *Eutric cambisols* in the gorges. 'Excessively drained, shallow, brown to greyish brown, gravely, loam to clay'.

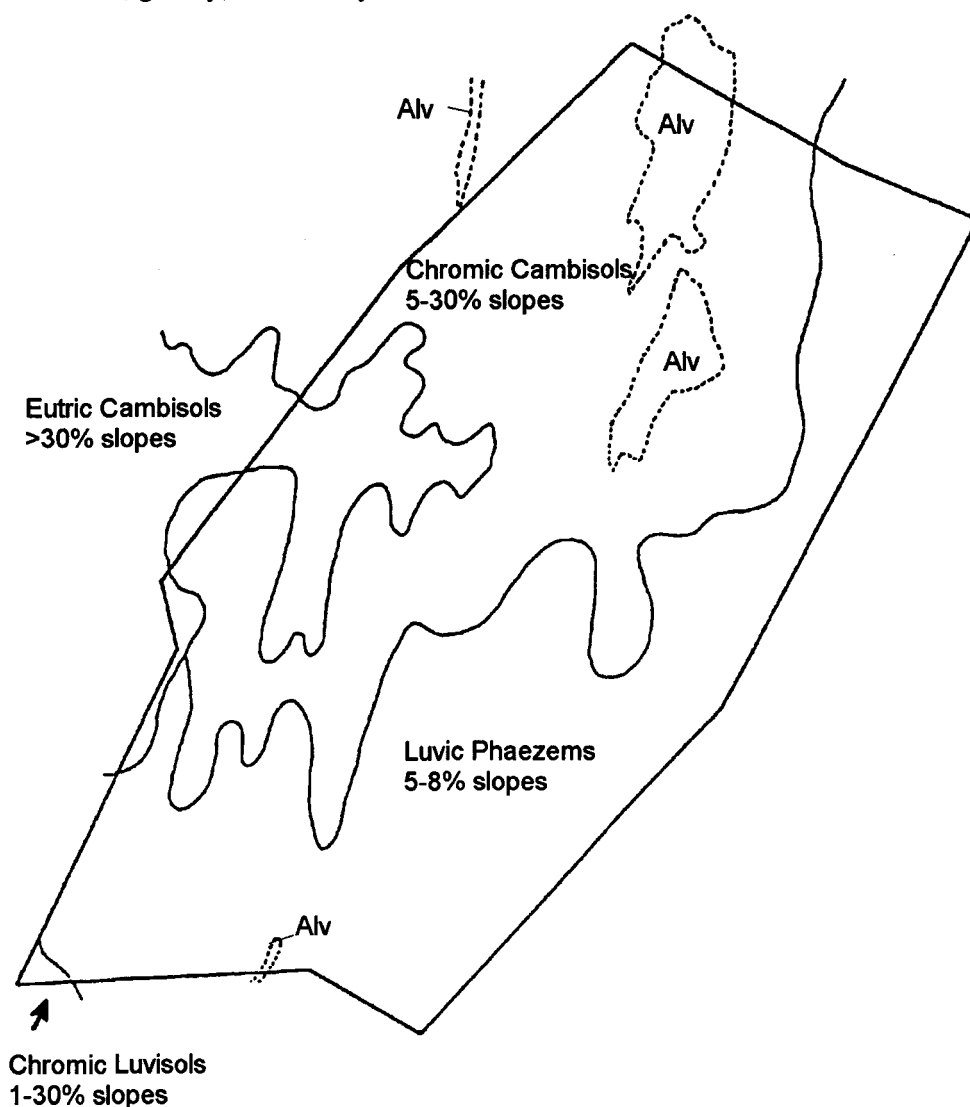


Figure 2: Soils of Ol Ari Nyiro; Alv = alluvial deposits (redrawn from the map of Ahn & Geiger, 1987)

- B. *Chromic cambisols* throughout the remainder of the western two-thirds of the ranch. 'Excessively drained, shallow, dark brown, gravelly, clay loam to clay'.
- C. *Luvic phaeozems* on the eastern third and south of the ranch. 'Well drained, very deep, dark reddish brown to brown, firm clay, with 20 cm humic topsoil'.
- D. *Chromic luvisols* on the hills of the extreme southeastern corner of the ranch. 'Well drained, very deep, dark reddish brown, firm, clay loam to clay'.

In addition, there are alluvial deposits in the north-central part of the ranch.

2. Geology—Seeps (figures 3 & 4)

The underlying geology effects the kind of soils found on the ranch, as in the case above of alluvial deposits (Anonymous, 1977; 1987). But geology also has another striking effect on vegetation. Throughout the ranch there are seeps and springs where water emerges from

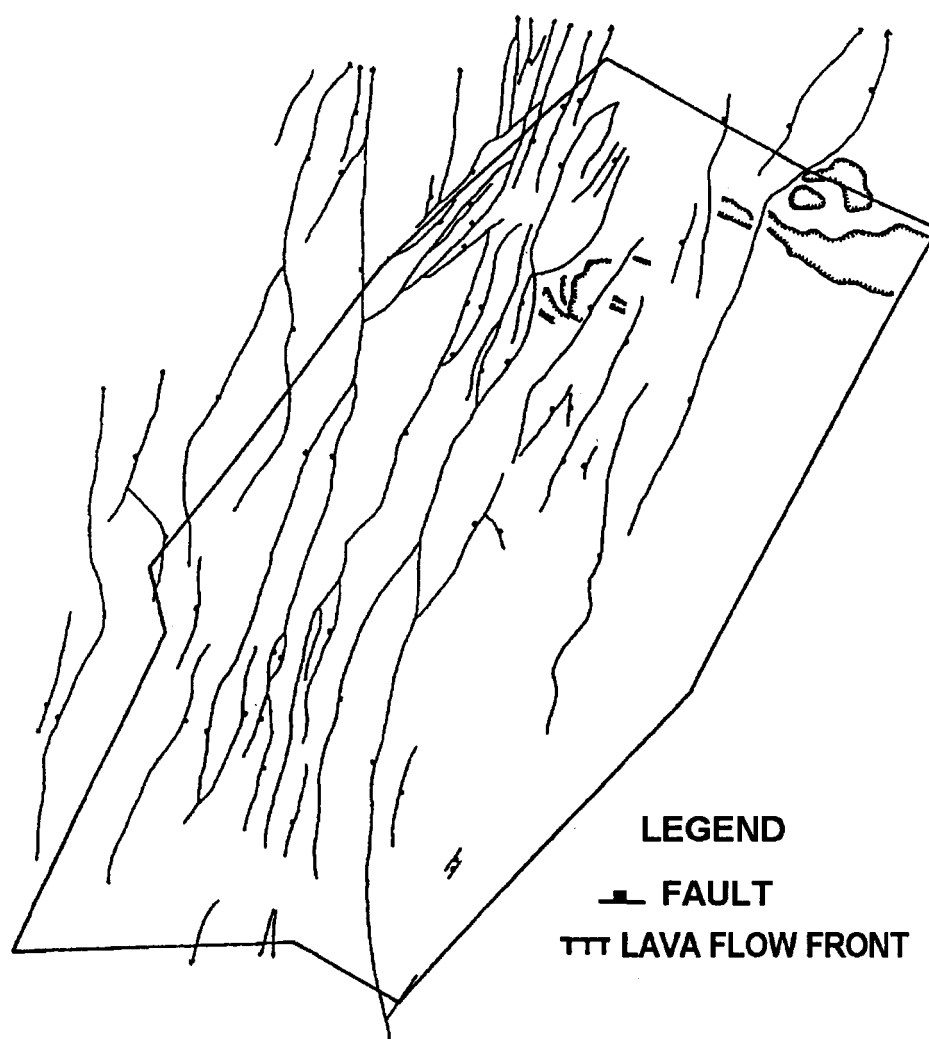


Figure 3: Geologic faults and lava flow fronts on Ol Ari Nyiro (Redrawn from Anonymous, 1977)

subsurface flow. Vegetation on these seeps is very different from drier sites nearby. These seeps seem to coincide with two different geological phenomena. First, several seeps appear to be associated with fault lines. Second, seeps can occur where erosion has exposed a boundary between two basic geological formations, such as on the slope above and south of Maji ya Nyoka. Both of these types of seeps can be seen when the geology maps are overlaid with the vegetation map.

3. Rainfall

Mean annual rainfall over the past 41 years has been 773 mm at the ranch headquarters, which is located at the center of the property. During this period, rainfall ranged from 340

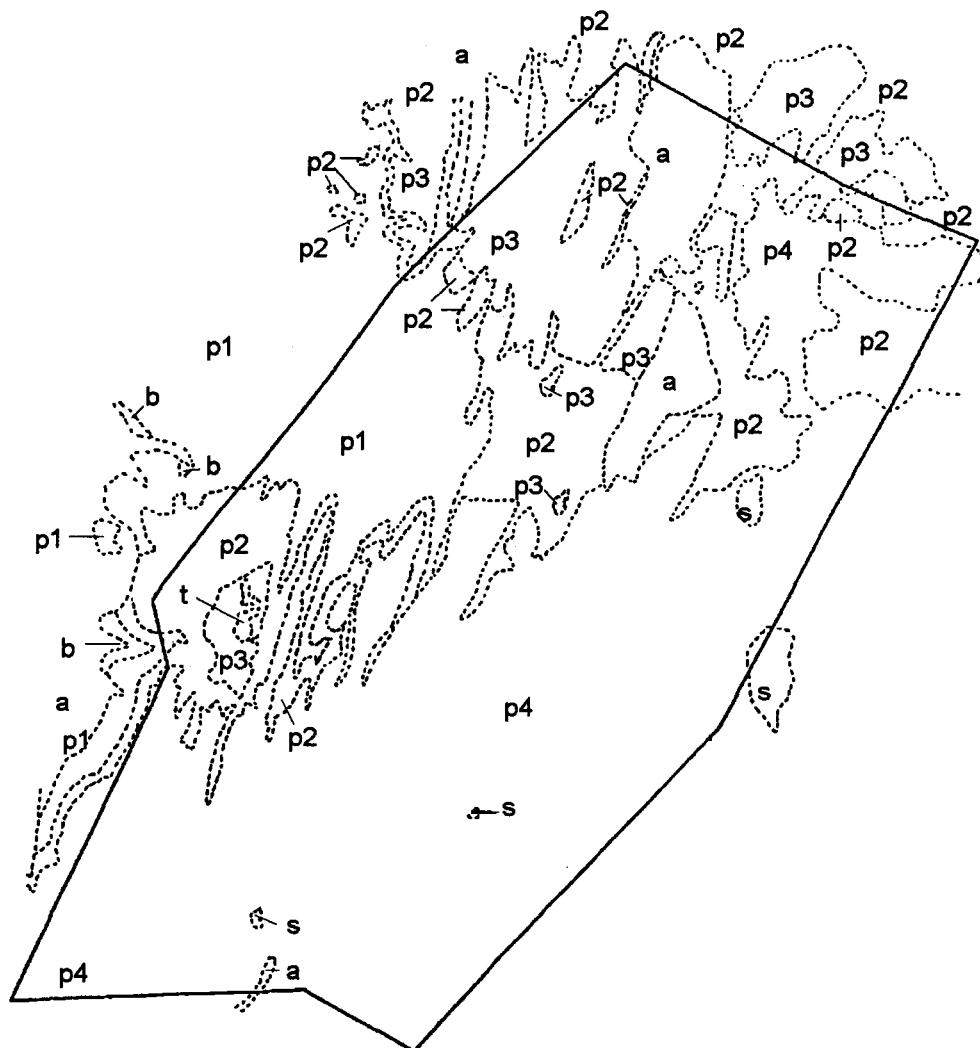


Figure 4: Surface geology of Ol Ari Nyiro (redrawn from Anonymus, 1977). *b*: Samburu basalts; *p1*: Ngelesha Phonolites; *p2*, *p3*: Uaso Nyiro Phonolites; *p4*: Mammanet Phonolites; *s*: Sapili Trachyte; *t*: tuff; *a*: alluvium

mm in the driest year (1983) to 1,322 mm in the wettest year (1963)(fig. 5). Rainfall is somewhat bimodal, peaking in April–May and July–August (fig.6).

There are currently seven active rain gauges on the property. These suggest there is a rainfall gradient on the ranch decreasing from south to north, or as maps of the Laikipia Research Project suggest, from southwest (900 mm) to northeast (700 mm). However, the hills in the northwest corner of the ranch appear to get more rain than lower areas adjacent to them.

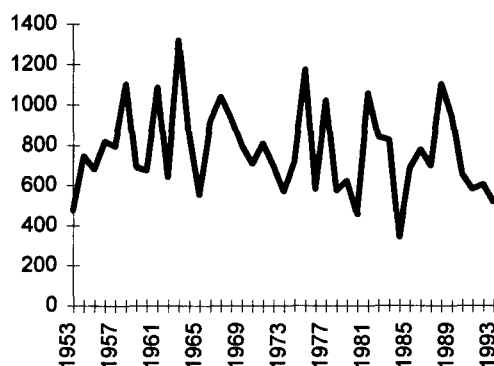


Figure 5: Annual rainfall in mm

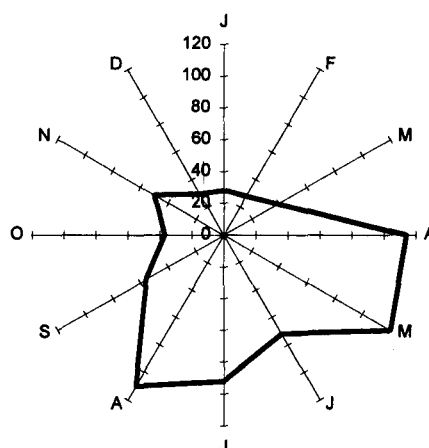


Figure 6: Mean monthly rainfall in mm

4. Burning

Burning has had a pronounced effect on the vegetation of the northern and western parts of ranch, opening up areas that would otherwise be thick bush.

5. Herbivory

The recent fencing of grass leys and bush bomas is likely to result in vegetation differences in the future, but it is too soon for these differences to be obvious. However, it is already possible to see differences in the Ngelesha forest between areas with and without elephants.

Together, these environmental factors determine the distribution of most of the dominant woody plants on the ranch. However, each species' distributional response to these factors is unique. Below, we describe the distributions of key plant species.

Key Species

1. *Tarconanthus camphoratus* (Leleshwa)

Leleshwa is the dominant shrub on the southern part of the ranch, in some areas forming virtually pure stands, excluding all other woody species. Its northern limit is probably related to decreasing rainfall. Its western limit neatly follows the boundary between the gorge and upland soils. Leleshwa prefers more or less level ground with rich, deep soil (Young & Francombe, 1991).

2. *Euclea divinorum* & *E. racemosa* ssp *schimperi* (Mukinyei)

Euclea is the dominant shrub in the northern and eastern, drier parts of the ranch. At its southern limit, it overlaps considerably with *Leleshwa*. It can be found in a wide variety of topographic situations and plant associations.

3. *Carissa edulis* (Mukawa)

Carissa has a distribution similar to that of *Euclea*, but more restricted. It seems to particularly thrive on rockier soils, such as those along the eastern boundary, and in these situation it can be more common than *Euclea*.

4. *Acacia gerrardii*

Acacia gerrardii occurs mostly north of the ranch centre on flat, deep soils clearly associated with alluvial deposits. Twenty years ago, the acacia woodland had many tall trees, but most of these are now gone. Their disappearance has been mainly attributed to elephants. Elephants have undoubtedly knocked down older trees, but it may be that these older trees were past their prime. Elsewhere in East Africa, *Acacia* species form single age stands, and the individuals within a stand appear to senesce around the same time (Young & Lindsay, 1988).

There are abundant smaller *A. gerrardii* trees of various ages (representing several cohorts?). These trees are heavily fed upon by elephants, but usually survive this herbivory, unlike older trees. Whether these younger tree will eventually grow to replace their predecessors is not clear. The recent increase in the density of elephants threatens to perpetually keep them from attaining full height. It is possible a series of wet years would provide elephants with enough alternate food, and allow fast enough acacia growth that substantial numbers of acacias could grow out of the shrub layer.

5. *Acacia brevispica* (Wait-a-bit)

Acacia brevispica has a disjunct distribution, representing two distinct plant associations. First, it is common along the steep slopes of the gorges. Second, on the eastern part of the ranch, *A. brevispica* occurs in relatively narrow bands that tend to be associated with gentle rocky slopes. In these sites it is almost always found with *Croton dichogamus*.

6. *Combretum molle* and other *Combretum* species

Combretum occurs in the hilly terrain in the north, particularly on ridge tops in the west, and hill slopes in the north and east. It often predominates in the wooded grasslands maintained by fire. Elephants appear to enjoy knocking down adult *Combretum* trees for unknown reasons, although we suspect that they are eating something in the roots (R. Brett, pers. comm.).

7. *Olea europea* (Olive)

Olive is the dominant tree in the forests and thickets throughout the ranch, except the riverine forests. Its distribution is scattered, and of three types: A) The Ngelesha forests in the south west. B) Along seeps, particularly in the central part of the ranch. C) In the north-eastern part of the ranch. The first two sites are seasonally moist, but the latter should be relatively dry. It is possible that the north-eastern hills catch more rain than adjacent lower land. Olive may once have covered much more of ranch than it does now (C. Francombe, pers. comm.).

8. *Acacia xanthophloea* (Fever Tree)

Fever trees are restricted to the bottom of the Mukutan Gorge, in areas where the gorge is not too narrow, where there is permanent water and good soil. These sites are mainly at the upper and lower ends of the Gorge.

9. *Croton megalocarpus* & *C. machrostachys*

Croton trees occur in situations similar to Fever Trees, but somewhat drier, placing them further upstream. Its distribution overlaps with Fever Trees at the wetter end, and Olive at the drier end. Often found in association with *Euphorbia candelabrum*.

10. *Acacia abyssinica*

Acacia abyssinica is restricted to the southern part of the ranch, where it forms forest-edge woodlands in the vicinity of Olive forest. Although the adults of this species are apparently healthy, there are relatively few young individuals. This unstable age distribution may be of importance later, when the older individuals begin to die.

The distributions of these ten species largely determine the limits of the vegetation types of Ol Ari Nyiro ranch.

Vegetation Types

Taiti (1992) has produced a valuable vegetation map of Laikipia District, at a scale of 1:500,000 (also available at 1:125,000). At this scale, he recognizes six broad vegetation communities on Ol Ari Nyiro and their dominant plant species: grassland (*Themeda triandra*, *Pennisetum mezianum*), leafy bushland and thicket (*Carissa edulis*, *Rhus natalensis*, *Euclea divinorum*), leafy bushland (*Tarconanthus camphoratus*, *Rhus natalensis*), bare rock (actually rocky areas with less vegetation cover), and small areas of upland/riverine forest (*Juniperus procera*, *Podocarpus*, *Olea europea*, *Acacia xanthophloea*) and cropland.

Mapping onto original topographic maps at a scale of 1:50,000, we were able to delineate finer plant community distinctions. The accompanying vegetation map (fig. 7) delineates 16 key plant associations that may be considered 'types', with the qualifications mentioned at the beginning of this report. These are arranged generally from wetter to drier, and to a lesser degree from south to north.

1. Fever Tree riverine woodland

Open woodland along \pm permanent streams, found at the eastern and western ends of the gorge, where the valley bottoms are wider and the soil deeper. Characterized by *Acacia xanthophloea* trees, usually grassy beneath. Canopy cover 25–75%. Canopy height 10–25 m.

2. Deep gorge riverine vegetation

A tall rich vegetation type in the bottom of the gorge, in the central, very narrow section. It is composed mostly of riparian trees such as *Phoenix reclinata*, *Bridelia micrantha*, *Strychnos* spp, *Trichocladus ellipticus*, *Garcinia livingstonei*, *Oncoba spinosa*, *Ficus glumosa* and *Albizia grandbracteata*. Smaller woody species include *Grewia trichocarpa*, *Combretum apiculatum*, and *Teclea nobilis*. Disturbances in the lower part of the gorge have left relic forest patches with grassy glades in between. In less disturbed areas especially in the upper and middle parts of the gorge, the forest is relatively dense, with minimal herbaceous growth. Canopy cover 50–100%. Canopy height 10–25 m.

3. Croton drainage woodland

A tall woodland/forest found along drainages higher and drier than Fever Tree woodland. Characterized by *Croton megalocarpus* and *C. machrostachys*, sometimes with *Olea europea* and *Euphorbia candelabrum*. Canopy cover 75–100%. Canopy height 15–25 m.

4. Olive forest

A dry upland forest dominated by *Olea europea*, *Acacia abyssinica*, and *Croton* spp (*Juniperus procera* in Ngelesha) in the canopy, with *Trichocladus ellipticus* and *Rhus* spp in the understorey. Canopy cover 100% or nearly so. Canopy height 10–20 m.

5. Olive thicket

A dense vegetation shorter and drier than Olive forest. Found on hills and along seeps and dry drainages. Characterized by *Olea europea*, *Rhus* spp, *Apodytes dimidiata*, and *Jasminum* spp. Often penetrated by *Leleshwa*, *Euclea*, and *Carissa* (Type 12). Canopy cover 50–100%. Canopy height 3–10 m.

6. Acacia abyssinica woodland

A tall but often sparse woodland characterized by *Acacia abyssinica* trees. *Rhus*, *Lippia*, *Lantana*, and *Vernonia* occur in the understorey. Canopy cover 25–50(–100)%. Canopy height 10–20 m.

7. Mixed bushland (Euclea-Rhus-Acacia-Olea-Carissa-Croton)

A rich bushland composed of a variable mixture of *Euclea divinorum*, *Rhus vulgaris*, *Acacia gerrardii*, *Olea europea*, *Carissa edulis*, and *Croton dichogamous*. Canopy cover variable. Canopy height 2–4 m.

8. Acacia gerrardii woodland

A changing woodland characterized by *Acacia gerrardii*, usually with considerable *Euclea divinorum*, occurring on the deep, level, alluvial soils of the central ranch. Canopy cover highly variable, ranging from sites of wooded grassland to almost complete cover. Canopy height also variable. At one time mostly 4–10 m, now mostly 2–4 m.

9. Grassy glades

There are a number of grassy glades scattered throughout the ranch, some of them old bomas (see Young *et al.*, 1995). They are characterized by an almost complete lack of woody cover. When they occur in *leleshwa* bushland, they are often ringed by a more mixed bushland (type 12).

9a. Cultivated land and grass leys

These areas are kept open through cultivation and a rotation that includes a grass ley stage. When in this stage, Rhodes grass (*Chloris guyana*) is encouraged.

10. Wait-a-bit scrub

A scrubland of gentle rocky slopes, and sometimes level ground. Appearing in relatively narrow bands throughout the central part of the ranch. Characterized by the presence of *Acacia brevispica*, often in close association with *Croton dichogamous*. Canopy cover 50–75%. Canopy height 1–3 m.

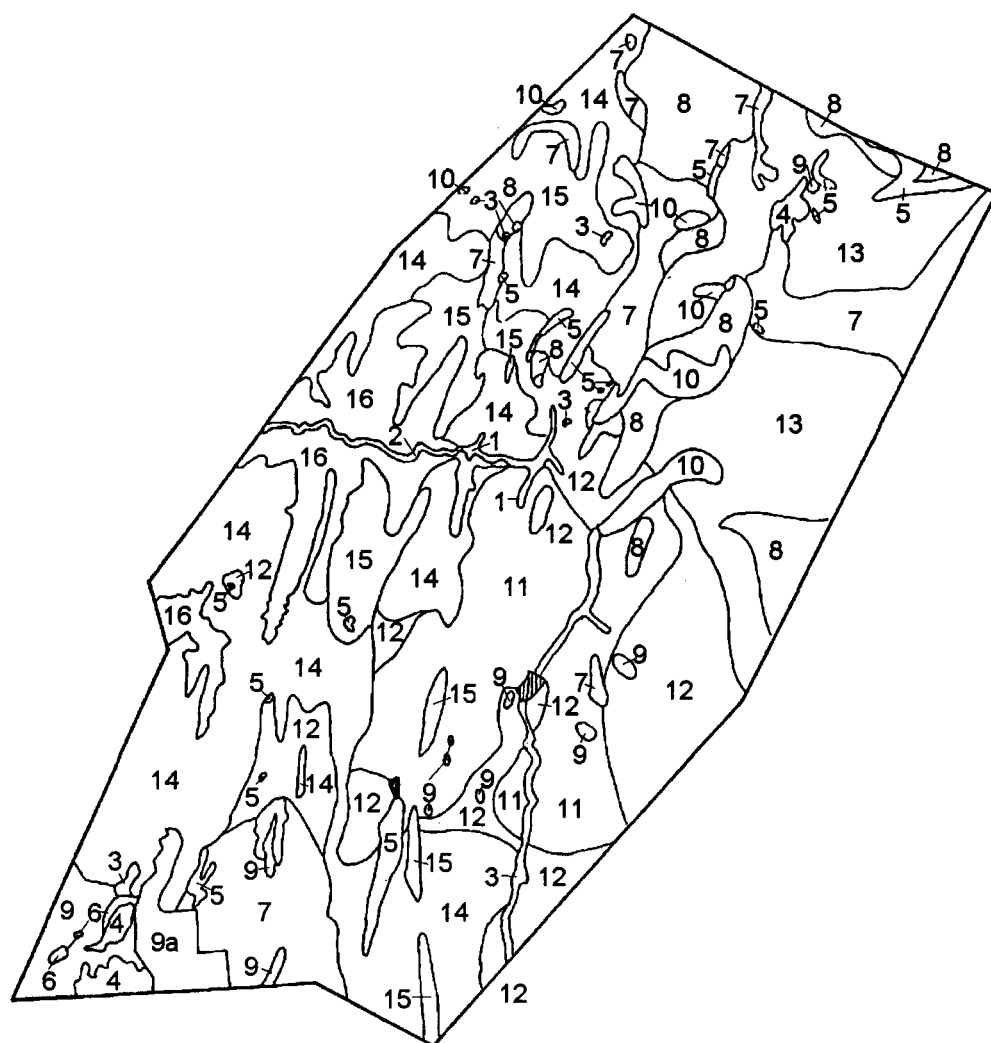


Figure 7: Vegetation map; numbers refer to the plant communities as defined in the text

11. Leleshwa bushland

A dense bushland composed of nearly pure stands of *Tarconanthus camphoratus*, other components (usually *Euclea* and *Carissa*) accounting for less than 25% of the cover. Canopy cover high (> 75%). Canopy height 2–4 m.

12. Leleshwa-Euclea-Carissa bushland

A bushland intermediate between types 11 and 13, and forming a broad band between them. At some sites, *Carissa* is rare or nearly absent.

13. *Euclea*-*Carissa* bushland

A bushland dominated by a mixture of *Euclea divinorum* and *Carissa edulis*, usually in that order. Canopy cover is highly variable, lower in areas of past burning. Canopy height usually 1–2 m.

14. *Combretum*-(*Leleshwa*)-*Euclea*-*Carissa* wooded bushland

A bushland with emergent *Combretum* trees. The composition of this bushland varies in two ways. First, *leleshwa* is common south of the Mukutan, but only penetrates a few kilometres north of the main gorge, whereas *Euclea* and *Carissa* occur throughout. Second, the openness of the vegetation varies from none to very open, where it abuts type 15. This openness is probably related to burning. Canopy cover 25–100%. Canopy height 3–6 m.

15. *Combretum* wooded grassland

A grassland with scattered *Combretum* trees. there are occasional shrub species (particularly *Euclea* and *Carissa*), but these account for less than 25% of the cover. Canopy cover 1–25%. Canopy height 3–6 m.

16. Gorge slope scrub

This vegetation is restricted to the steep slopes of the Mukutan and Kutwa gorges, and their subsidiary gorges, and is comprised of closed thickets of thorny trees and shrubs with some areas of open bushland. *Acacia brevispica* is common. Typical plants include *Euphorbia heterochroma*, *E. magnicapsula*, *Cussonia holstii*, *Boscia angustifolia*, *Sterculia stenocarpa*, *Commiphora habessinica*, *C. samharensis*, *Acalypha fruticosa*, and *Plectranthus* spp. Because of its relative inaccessibility, this habitat has been little collected. A favourite rhino habitat. Canopy cover 50–100%. Canopy height 2–6(–8) m.

Summary and suggestions for future work

On Ol Ari Nyiro ranch, there are both distinct community boundaries, and areas of gradual community change. The most striking community boundaries are these:

- *Combretum* wooded grassland on top of the western ridges is usually very distinct from the Wait-a-bit scrub on the adjacent steep slopes. This is probably due to a sudden change in soil and drainage from the flat tops to the steep slopes, and also to associated differences in herbivory and fire.
- The edge of different riverine woodlands is often very sudden. This is due to the very restricted distribution of rich, well-watered riverine soil.
- Past burning has resulted in some dramatic community boundaries, visible as distinct mosaics of vegetation types on the northern slopes. Examples of such boundaries can sometimes be seen when driving along a road that has served as a fire break, with very different vegetation on opposite sides of the road.

Several topics suggest themselves for future vegetation research in the Ol Ari Nyiro/Mukutan Gorge area.

1. Vegetation change

Detailed quantitative descriptions of community structure through time will allow accurate assessments of perceived change. Photographic records of vegetation would also be useful. What species are increasing or decreasing? How are the boundaries of vegetation types changing?

2. Experimental studies

Experiments should be set up to examine two major modifiers of vegetation—fire and elephants. Baseline data collected before the experimental plots are established would be compared with vegetation change inside and outside of fire breaks of elephant exclosures over a period of several years.

3. Population biology of key species

Vegetation change is a result of changes in the distributions of individual species. Several key species are currently undergoing major changes in their population structure and distribution—*Acacia gerrardii* and *Olea europea* are mentioned above. *Acacia abyssinica* shows an unbalanced age structure. Other species, such as *Rhus*, are undoubtedly undergoing changes that are less obvious. Detailed population studies of as many key species as possible would be of great value. What factors are affecting population structure? What projections are possible, both into the past and into the future?

The rich flora and great vegetation diversity of Ol Ari Nyiro provide unique opportunities for the study of vegetation ecology. This initial vegetation survey and map, and the plant list, can serve as useful references for such studies.

PLANT CHECKLIST

This plant list is a compilation based on collections made between 1986 and 1991 by several individuals:

Ann Robinson	AR	15 specimens
Collin Leakey	CL	20 specimens
David Okebiro	DO	214 specimens
Joshua Muasya	JM	1223 specimens
Timothy Oloo	TO	100 specimens
Truman P. Young	TPY	268 specimens

The plant check-list presented here include 708 species and subspecies: four fungi, 11 pteridophytes, one gymnosperm, 565 dicotyledons, and 127 monocotyledons. No attempt was made to collect non-vascular plants. The species on this list represent ten percent of the estimated flora of the Republic of Kenya (Beentje, pers. comm.), making Ol Ari Nyiro one of the most diverse non-forest areas in East Africa.

This list is not exhaustive, it records probably not more than 80% of plant species occurring study area. Areas like the Mukutan Gorge and much of the western aspect of the ranch are inaccessible due to their steep slopes, though further collecting trips by Museum personnel are planned. An estimated total flora of over 800 species is not unreasonable. One new species was found: *Aloe francombei* Newton (Newton, 1994), and several specimens remained unmatched.

Identifications were confirmed at the Herbarium of National Museums of Kenya, with the help of Flora of Tropical Africa (Polhill *et al.*, 1957–continuing), Agnew and Agnew (1995), Dale and Greenway (1961), and Beentje (1994). The sequence and numbering of families is that of Hutchinson (1934). This is the sequence used in The Flora of West Tropical Africa, and in the East African Herbarium.

For each species entry, one collector's number (except for sight records—SR) is given for reference to a collection in the East African Herbarium, although more than one collection may have been made. In the list below, most of the collections by DO were made at the base of the Mukutan gorge.

FUNGI

- Clavaria cristata* Pers. JM 1667
Saprophyte; sporophore 2–5 cm; much branched from ground; stem low, branches divided in branchlets, colour white at first, then smoky grey; deciduous woodland.
- Termitomyces robustus* (Beeli) Heim TPY SR
Cap 25 cm across, fleshy brownish towards the centre; gills white; termite mounds in bushland; common after rains.
- Termitomyces schimperi* (Pat.) Heim (= *T. magoyensis*) JM SR
Cap 22 cm across, fleshy, centre raised, brownish; gills white; termite mounds in bushland, common after rains.
- Termitomyces* sp. TPY 2106
No data.

PTERIDOPHYTA

Adiantaceae

- Actinopteris semiflabellata* Pic.Ser. TPY SR
Terrestrial herb, riverine
- Adiantum poiiretii* Wikstr. (= *A. thalictroides* Schlechtend) JM 1827
Terrestrial herb; common.
- Cheilanthes multifida* (Swartz) Swartz JM 1828
Terrestrial herb; dry forest river banks; common.
- Pellaea adiantoides* (Willd.) J. Sm. JM 1626
Terrestrial herb; fronds up to 50 cm long; segments 1–2 cm; dry rocky places; common.
- Pellaea longipilosa* Bonap. DO 518
Terrestrial herb; fronds up to 30 cm; rocky crevices; common.

Aspleniaceae

- Asplenium aethiopicum* (Burm. f.) Burcherer JM 1833
Terrestrial herb; rhizome erect; fronds tufted, very variable; dry moist forest; common.
- Asplenium ?stuhlmannii* Hieron
Terrestrial herb; fronds shortly spaced on long creeping rhizome, erect; rock crevices in grassland; common.
- Doryopteris kirkii* (Hook.) Alston (= *D. concolor* (Langsd. & Fisch) Kuhn) TPY 2303
Terrestrial attractive herb; fronds tufted to 30 cm long; dry forest; common.
- Pyrrosia schimperiana* (Mett.) Alston TPY 2306
Terrestrial herb; fronds pendent, flaccid, whitish brown beneath; riverine forest; common.

Marsiliaceae

- Marsilea gibba* A. Br. TPY 2125
Aquatic or terrestrial herb; pinna of terrestrial plants clover-loke, usually with crenate margins; seasonal pools and roadside ditches; common.

Thelypteridaceae

- Arthropteris orientalis* (Gmel.) Posth. JM 1831
Terrestrial herb; fronds 25–40 cm; shady forest; common

GYMNOSPERMAE**Cupressaceae**

- Juniperus procera* Hochst ex Engl. JM 1935
Evergreen tree to 40 m; occasional.

ANGIOSPERMAE
DICOTYLEDONS**8 Annonaceae**

- Uvaria scheffleri* Diels DO 579
Shrub or small tree; leaves glabrous, dark green; forest edges and rocky slopes; occasional.

15 Ranunculaceae

- Clematis brachiata* Thunb. (*C. hirsuta*) JM 1555
Climber; leaves with 5–7 suborbicular to ovate leaflets; bushed grassland; occasional.
Delphinium macrocentron Oliv. TPY 2334
Erect herb; leaves deeply dissected, orbicular; flowers blue to metallic green; rocky grassland; occasional.

23 Menispermaceae

- Chasmanthera dependens* Hochst. DO 595
Woody tomentose climber; stems almost succulent; *Combretum* woodland; occasional.

28 Piperaceae

- Peperomia abyssinica* Miq. DO 561
Herb; trailing at base; stems ascending; fruit asymmetric; forest; common.
Peperomia rotundifolia (L.) H.B.K. (= *P. blanda*) DO 546
Succulent herb; leaves orbicular; epiphyte on tree trunks; forest; occasional.

36 Capparaceae

- Boscia angustifolia* A. Rich. DO 497
Small spreading tree to 10 m; leaves coriaceous; fruits globose; stream banks; occasional.
Boscia salicifolia Oliv. JM 1619
Tree to 14 m; twigs drooping; leaves very acute at apex; river banks, woodlands; occasional.
Capparis tomentosa Lam. DO 507
Armed shrub or woody vine to 10 m; leaves elliptic; flowers white; bushland; occasional.
Cleome monophylla L. JM 1443
Annual herb to 1 m; stems with glandular hairs; flowers pink or mauve; grassland; weed of cultivation and wasteland; common.

- Cleome usambarica* Pax JM 1841
Annual herb to 1 m; leaves 3–5 foliolate; flowers pink; stream sides; occasional.
- Crateva adansonii* DC. DO 455
Small deciduous tree or shrub; 6–15 m; unarmed; flowers white or yellow; scattered tree grassland; occasional.
- Gynandropsis gynandra* (L.) Briq. JM 1738
Annual herb to 1 m; stems glandular; leaves 3–7 foliolate; disturbed ground; common.
- Maerua angolensis* DC. DO 490
Shrub or small tree to 10 m; fruits cylindrical; bushland; occasional.
- Maerua decumbens* (Bornn.) De Wolf (= *M. edulis* (Gilg. & Bened.) De Wolf) JM 1968
Spreading shrub or bushy woody herb; leaves prominently 3–5 nerved; bushland; occasional.
- Maerua triphylla* A. Rich. JM 1352
Shrub or small tree, 5–7.5 m; leaves 1–3 foliolate; flowers white or greenish; bushland, common.
- 39 Cruciferae**
- Erucastrum arabicum* Fisch. & Mey. JM 1739
Pubescent annual; leaves pinnatifid, oblanceolate; flowers yellow; common weed.
- 41 Resedaceae**
- Caylusea abyssinica* (Fresen.) Fisch. & Mey. JM 1505
Erect or ascending herb; 15–100 cm; bushland; occasional.
- 42 Polygalaceae**
- Polygala sadebeckiana* Guerke JM 1797
Perennial herb or shrub; leaves elliptic to oblong; wooded grassland; occasional.
- Polygala spheoptera* Fresen. JM 1442
Perennial or annual shrubby herb; leaves linear, oblong or elliptic; flowers purple or pinkish white; dry bushland, common.
- 45 Crassulaceae**
- Crassula alsinoides* (Hook. f.) Engl. JM 2060
Creeping mat-forming perennial herb; stem 4-angled; wet rocky slopes; common.
- Crassula* sp A of Agnew & Agnew TPY 2130
Trailing herb; leaves linear; flowers pink to white; pools; occasional.
- Crassula nodulosa* Schoenl. JM 1638
Perennial herb with ovate–lanceolate rosette leaves; stony grassland; rare.
- Crassula schimperi* Fisch. & Mey. (*Crassula pentandra* (Edgeworth) Schoenl.) TPY 2180
Perennial softly woody herb, trailing at base; flowers pinkish white; stony grassland; occasional.
- Crassula volkensii* Engl. JM 1741
Perennial soft shrub or herb; leaves spatulate to elliptic, often marked; flowers white; stony bushland; common.
- Kalanchoe citrina* Schweinf. DO 531
Erect pubescent weak perennial; leaves deeply dentate; stony slopes; occasional.
- Kalanchoe glaucescens* Britten DO 559
Glabrous perennial; flowers orange yellow to yellow; stony bushland; common.

Kalanchoe lanceolata (Forsk.) Pers. DO 613
Erect glandular-pubescent annual; flowers yellow to orange-red in a dense corymb; dry bushland; occasional.

Kalanchoe prittwitzii Engl. (= *K. lugardii*) JM 2059
Erect glabrous herb; leaves peltate or auriculate; rocky bushland; uncommon.

53 Caryophyllaceae

Pollichia campestris Ait. JM 1469
Straggling shrub or woody perennial; leaves whorled, elliptic to lanceolate; disturbed grassland; common.

Silene burchellii D.C. JM 1889
Perennial herb; leaves linear acute; flowers pink, cream or purple; grassland; common.

54 Aizoaceae

Glinus lotoides L. JM 1893
Prostrate stellate pubescent annual; leaves spatulate or elliptic; sandy grassland; occasional.

Mollugo nudicaulis Lam. TPY 2243
Glabrous annual; leaves a rosette, spatulate; flowers pink or red; grassland; uncommon.

Tetragonia acanthocarpus Adamson JM 1780
Semi-succulent papillose annual herb; flowers greenish to pink; common weed.

Zaleya pentandra (L.) Jeffrey JM 1470
Sub-succulent annual; flowers subsessile at the nodes, crowded, pinkish; sandy soil; occasional.

56 Portulacaceae

Portulaca foliosa Ker-Gawl. JM 1582
Annual or robust perennial herb or low shrub; leaves subterete; flowers yellow or orange; stony dry grassland; common.

Portulaca quadrifida L.
Prostrate annual herb; stems rooting at nodes; disturbed ground; occasional.

57 Polygonaceae

Oxygonum sinuatum (Meisn.) Dammer DO 594
Glabrous annual herb; fruits nasty prickly; flowers pink; disturbed ground; common weed.

Oxygonum stuhlmannii Dammer JM 2140
Perennial creeper; flowers white; leaves sheathing at base; grassland on stony soils; occasional.

Polygonum senegalense Meisn. JM 1944
Softly perennial shrub; stems with stipular sheaths; riversides; common.

59 Phytolaccaceae

Phytolacca dodecandra L'Herit JM 1773
Climbing scrambling or erect shrub; leaves ovate-elliptic; flowers yellowish; bushland; occasional.

Phytolacca octandra L. JM 1999
Shrub with lanceolate-elliptic leaves; flowers yellowish; waste places; uncommon.

61 Chenopodiaceae (all species introduced)

- Chenopodium album* L. JM 1396
Annual herb; leaves rhombic to lanceolate; weed of cultivation.
- Chenopodium ambrosioides* L. JM 1726
Strongly aromatic annual herb; flowers small, sessile; weed of cultivation and disturbed ground; common.
- Chenopodium murale* L. JM 1507
Annual herb; leaves variable, usually rhombi-ovate, toothed; weed of cultivation; disturbed ground; common.
- Chenopodium opulifolium* Koch & Ziz. JM 1730
Annual or perennial herb; often woody below; weed of cultivation.
- Chenopodium schraderianum* Schult. JM 1415
Erect glandular pubescent annual herb; leaves elliptic to oblong, pinnatifid; waste places and settlements; common.

63 Amaranthaceae

- Achyranthes aspera* L. var. *sicula* L. JM 1447
Annual or perennial herb or low shrub; flowers less than 5 mm long, spicate; forest edges; common.
- Achyranthes aspera* L. var. *pubescens* (Maq.) Townsend JM 1758
Similar to *A. aspera* var. *sicula* but flowers more than 5 mm long.
- Aerva lanata* (L.) Schultes JM 1659
Erect or trailing herb; flowers crowded, axillary, woolly; common weed.
- Alternanthera pungens* Kunth DO 461
Annual herb; stems prostrate, hairy; fruits spiny; bushland; common.
- Alternanthera sessilis* (L.) DC. JM 1398
Low herb rooting at the nodes; stems ascending; riversides; occasional.
- Amaranthus graecizans* L. ssp. *silvestris* (Vill.) Brenan JM 1778
Erect sparsely pubescent annual; inflorescence axillary; disturbed places; common.
- Amaranthus hybridus* L. ssp. *hybridus* JM 1721
Erect glabrous annual herb; inflorescence with a 'spiny' look; leaves rhombic, cuneate; disturbed places; common.
- Amaranthus hybridus* L. ssp. *cruentus* (L.) Thell. JM 1512
Similar to *A. hybridus* ssp. *hybrides* but inflorescence without a spiny look.
- Cyathula orthacantha* (Asch.) Schinz DO 453
Annual herb; inflorescence pendunculate; cymes sessile; leaves ovate-elliptic or orbicular; disturbed ground; uncommon.
- Digera muricata* (L.) Mart. var. *macroptera* C.C. Townsend DO 504
Erect annual, often very tall, unbranched below; leaves linear to lanceolate; grassland; common.
- Psilotrichum elliotii* Baker JM 1392
Perennial shrub or scrambler; leaves ovate to orbicular; flowers green; open bushland; common.

64 Basellaceae

- Basella alba* L. JM 1862
Glabrous herb; leaves ovate, slightly fleshy; flowers white; riverine forest; common.

65 Linaceae*Linum volkensii* Engl.

Erect annual herb; leaves alternate, linear-lanceolate; flowers yellow; marshes; occasional.

66 Zygophyllaceae*Tribulus terrestris* L.

TPY SR

Prostrate herb; fruits spiny; sandy soils and roadsides; common.

67 Geraniaceae*Geranium ocellatum* Cambess

JM 1662

Diffusely branched annual herb with spreading hairs; leaves palmatisect; shade; forest edges; common.

Monsonia angustifolia A. Rich.

JM 1781

Annual erect herb; flowers 2–3 per penduncle; leaves narrowly oblong; grassland; occasional.

Monsonia longipes R. Kunth.

JM 1691

Perennial herb; leaves mostly opposite and hastate; grassland; occasional.

Pelargonium alchemilloides (L.) Ait.

JM 1580

Perennial herb; rootstock slightly tuberous; leaves orbicular, 5–7-lobed; hill slopes; common.

69 Oxalidaceae*Biophytum abyssinicum* A. Rich.

TPY 2155

Annual herb; leaves in a rosette, sensitive, pinnate; disturbed sandy grassland; occasional.

Biophytum petersianum Klotsch

JM 1606

Similar to *B. abyssinicum* except for the stiffer leaflets; grassland; occasional.*Oxalis corniculata* L. (= *Oxalis radicata* A. Rich.)

JM 1538

Annual or perennial much branched herb; leaves trifoliate; flowers yellow; forest clearings and disturbed ground; common.

Oxalis obliquifolia A. Rich.

JM 1811

Bulbous herb, rhizome vertical bearing a basal bulb and apical rosette of leaves, flowers pink or purple; shallow soils and grassland; occasional.

72 Lythraceae*Nesaea erecta* G. & P.

TPY 2360

Glabrous annual herb; leaves narrowly elliptic to oblanceolate; flowers lilac or magenta; wet shallow soils; common.

Nesaea kilimandscharica Koehne

JM 1882

Perennial herb; leaves lanceolate; flowers terminal; grassland; uncommon.

76 Oliniaceae*Olinia rochetiana* A. Juss. (*O. usambarensis*)

JM 1956

Shrub, small or large forest tree to 30 m; bark flakes yellowish; leaves opposite, reddish when young; dry forest; occasional.

81 Thymelaceae*Gnidia subcordata* Meisn. (= *Englerodaphne subcordata* (Meisn.) Engl.)

JM 1390

Much branched shrub to 3.5 m; leaves opposite; flowers white; bushland; occasional.

83 Nyctaginaceae

- Commicarpus plumbagineus* (Cav.) Stand DO 506
 Shortly pubescent trailing herb; flowers white; glands stalked on the fruit; bushed grassland; common.

84 Proteaceae

- Faurea rochetiana* (A. Rich.) Pic. Ser. (= *F. speciosa*) JM 1904
 Tree to 11 m; bark deep grey and fissured; wet scattered tree grassland; common.
- Protea gaguedi* J.F. Gmel. JM 1984
 Shrub or tree to 5 m; branchlets pilose when young; flower heads up to 10 cm diameter, infertile; stony soil; occasional.

88 Pittosporaceae

- Pittosporum vividiflorum* Sims JM 1552
 Tree to 20 m; leaves glabrous, oblanceolate or elliptic to 10 x 2.5 cm; flowers creamy, white; forest; occasional.

93 Flacourtiaceae

- Oncoba spinosa* Forssk. DO 521
 Small tree to 7 m; spines straight, axillary to 7.5 cm; forest; occasional.
- Rawsonia lucida* Harv. & Sond. JM 1843
 Small tree to 13 m; leaf margin serrate and spinulose; forest; common.
- Trimeria grandifolia* (Hochst.) Warb. ssp. *tropica* (Burkill) Sleumer JM 1496
 Shrub; leaves ovate, elliptic or obovate to 7.5 x 6 cm; fruit 3-valved capsule; bushland; common.

95 Canellaceae

- Warburgia ugandensis* Sprague JM 1914
 Forest tree to 50 m; leaves simple, entire, pellucid-punctate, ovate to oblanceolate; flowers green; dry evergreen forest; occasional at Ngelesha forest.

101 Passifloraceae

- Adenia* sp. TPY SR
 Climber with tendrils; bushland; uncommon.

103 Cucurbitaceae

- Coccoloba grandis* (L.) Voigt DO 595
 Perennial; rootstock tuberous; stem corky; leaves reniform; bushland; uncommon.
- Corallocarpus epigaeus* (Rottl.) C.B.Cl. JM 2200
 Climber; leaves palmatifid; bushland; uncommon.
- Cucumis aculeatus* Cogn. JM 1347
 Perennial herb; stem with spiny yellow hooked hairs; fruits green, yellow when ripe, tuberculate; grassland; common.
- Cucumis ficifolius* A. Rich. JM 1727
 Perennial usually prostrate herb; leaves very rough, hairy above and below, palmately 3–5-lobed; grassland; occasional

- Gerrardanthus lobatus* (Cogn.) C. Jeffrey DO 612
Perennial climber; rootstock swollen and succulent; rocky places; occasional.
- Kedrostis leloja* (Forsk.) C. Jeffrey (*K. hirtella* (Naud.) Cogn.) JM 1599
Perennial climber, tendrils bifid; leaves palmatifid; bushland; occasional.
- Lagenaria siceraria* (Molina) Standley JM 2006
Climbing herb; tendrils bifid; leaves with glands at the base of lamina; bushland; occasional.
- Oreosyce africana* Hook.f. JM1607
Perennial climber; leaves pentagonal or shallowly lobed; forest; common.
- Trochomeria macrocarpa* (Sond.) Hook.f. JM 2220
Climber or trailing herb from a woody rootstock; leaves \pm orbicular, palmatifid; grassland; common.

107 Cactaceae

- Opuntia cochenillifera* (L.) Mill. (= *O. vulgaris* L.?) (exotic) JM 1718
Spiny succulent shrub to 4 m; trunks cylindrical, jointed, to 20 cm broad; fruits red; bushland; occasional.
- Opuntia exaltata* A. Berger (exotic) JM SR
Shrub, very spiny; used as a living fence.

114 Ochnaceae

- Ochna holstii* Engl. JM 1939
Tree to 30 m; trunk to 30 cm diameter; flowers yellow; leaves with closely serrulate margin and acute apices; forest; common.
- Ochna inermis* (Forssk.) Schweinf. DO 486
Shrub; leaves small, broadly elliptic to rotund to 2.5 cm; forest; common.
- Ochna insculpta* Sleumer JM 1404
Shrub or small tree to 10 m; leaves acuminate to acute; forest; common.
- Ochna ovata* F. Hoffm. TO
Glabrous shrub or small tree; leaf venation closely reticulate and prominent above in age; dry forest edges/bushland; occasional.

118 Myrtaceae

- Syzygium cordatum* Krauss JM 1980
Shrub or tree, 4–10 m; sometimes to 17m; leaves leathery; flowers white; fruit reddish purple; near water; occasional.
- Syzygium guineense* (Willd.) D.C. JM 1483
Tree 6–12 m, sometimes to 30 m; leaves glandular punctate; flowers white, sessile; riparian forest; common.
- Syzygium cordatum* x *S. guineense* (hybrid) TPY SR
Characters intermediate between the two species.

121 Combretaceae

- Combretum apiculatum* Sond. JM 1964
Shrub to 3 m; leaves opposite, shortly petiolate, apex reflexed, apiculate; stony hill slopes; common.
- Combretum molle* G. Don JM 1431
Tree to 14 m; young twigs rusty tomentose; leaves velvety tomentose; flowers yellow; stony soil; common.

- Terminalia brownii* Fresen. JM 1553
Tree often growing on stony outcrops; fruits winged, purplish red; occasional.

123 Hypericaceae

- Hypericum annulatum* Moris JM 1661
Perennial herb; bracts glandular hairy; stony grassland; occasional.
Hypericum sp. nr. *annulatum* Moris JM 1634
Perennial herb; leaves opposite; grassland; uncommon.

126 Guttiferae

- Garcinia livingstonei* T. Anders. JM 1867
Shrub or tree to 30 m; leaves and branchlets usually in whorls of three; riparian forest; uncommon.

128 Tiliaceae

- Corchorus trilocularis* L. DO 189
Herbaceous or woody annual; wet areas; occasional.
Grewia bicolor A. Juss. JM 1622
Much branched shrub or tree to 10 m; leaves asymmetrical, margin serrulate; flowers yellow; bushed grassland; common.
Grewia sp. nr. *mollis* A. Juss. TO
Shrub to 3 m; bark black, fissured; bushland; uncommon.
Grewia similis K. Schum. JM 1395
Shrub to 2 m; young shoots and inflorescence bristly pubescent; dry scrub; occasional.
Grewia tembensis Fresen. var. *kakothamnus* (K. Schum.) Burret DO 628
Shrub; leaf margin dentate serrulate; flowers white with a purplish tinge; dry bushland; common.
Grewia trichocarpa A. Rich. DO 21
Shrub or tree to 7 m; leaves thin, papery; bushed grassland; occasional.
Triumfetta flavescens A. Rich. DO 496
Shrub; branches covered by black dots; bushland; common.
Triumfetta rhomboidea Jacq.
Herb or undershrub; leaves ovate to ovate-lanceolate, often 3-lobed; grassland; common.
Triumfetta sp. TPY 2153
Herb; grassland.

130 Sterculiaceae

- Dombeya burgessiae* Gerrard JM 1506
Forest undershrub or small tree; leaves denticulate, cordate; flowers white or pink; dry upland forest; common.
Dombeya rotundifolia (Hochst.) Planch. TPY SR
Shrub or tree usually 2–5 m, sometimes 7 m; leaves coriaceous; grassland; occasional.
Dombeya torrida (J.F. Gmel.) P. Bamps ssp. *torrida* (= *D. faucicola* K. Schum.)
Shrub to 4 m; leaves shortly acuminate; bushed grassland; occasional.
Melhanianthus sp. nov.? JM SR
Woody herb; leaves hairy; woodlands; rare.
Melhanianthus ovata (Cav.) Spreng JM 1474
Woody herb or low shrub; flowers axillary, 1–3, sulphur yellow; grassland; common.

- Melhanian velutina* Forssk. JM 1438
Rusty tomentose erect woody annual or loose perennial herb; flowers axillary, 1–4, yellow; grassland; common.
- Sterculia stenocarpa* H. Winkler DO 495
Tree to 7 m; mature follicles subcylindric–fusiform, curved, tomentose inside; bushland; occasional.
- Waltheria indica* L. JM 1394
Woody annual herb; stellate pubescent; flowers yellow; disturbed ground; occasional.
- 132 Malvaceae**
- Abutilon holstii* JM 1681
Shrub; leaves velvety tomentose, broadly elliptic, acuminate; flowers yellow to orange; open woodland; occasional.
- Abutilon mauritianum* (Jacq.) Medic. JM 2177
Woody shrub; flowers solitary, yellow gold; woodland edges; common.
- Azanza garckeana* (F. Hoffm.) Excell & Hillcoat JM 1524
Shrub or small tree; leaves shallowly lobed; bushland; occasional.
- Hibiscus aethiopicus* L. JM 1560
Low herb; flowers bright yellow; hard clay grassland; occasional.
- Hibiscus aponeurus* Sprague & Hutch. JM 1383
Perennial woody herb; flowers crimson; grassland; occasional.
- Hibiscus articulatus* Hochst. DO 558
Perennial herb; flowers axillary, yellow; burnt grassland; rare.
- Hibiscus calyphyllus* Cav. JM 1545
Shrub; flowers yellow with maroon centre; woodland; common.
- Hibiscus cannabinus* L. JM 1887
Annual with small spines on stems; grassland; occasional.
- Hibiscus diversifolius* Jacq. TPY 2311
Shrub; flowers yellow; grassland; occasional.
- Hibiscus fuscus* Garcke JM 1894
Woody herb or shrub with black-brown stellate hairs; disturbed ground; common.
- Hibiscus lobatus* (Murr.) Kuntze DO 588
Annual; 45 cm; flowers white; leaves variable, serrate, entire to deeply 3 lobed; *Combretum* bushland; occasional.
- Hibiscus lunariifolius* Willd. TO
Perennial shrub; flowers white, becoming pink; grassland; occasional.
- Hibiscus trionum* L. JM 1666
Annual herb; flowers yellow; disturbed grassland; occasional.
- Hibiscus vitifolius* L. JM 1432
Shrub with spreading branches, glandular; edges of forest; common.
- Malva verticillata* L. JM 1465
Annual; leaves circular; weed of wastelands; common.
- Pavonia elegans* Boiss. JM 1543
Shrub; flowers yellow turning pink; *Combretum* woodland; common.
- Pavonia patens* (Andr.) Chiov. JM 1400
Shrub; stellate pubescent; flowers yellow; forest margin; common.
- Sida ovata* Forssk. JM 2184
Shrubby perennial, densely pubescent; grassland; common.

- Sida rhombifolia* L. JM 1945
Perennial; flowers yellow; disturbed ground; occasional.
- Sida schimperiana* Hochst. ex A. Rich. (= *S. cuneifolia*) JM 1413
Spreading low shrub; flowers yellow; grassland; common.
- Sida tenuicarpa* Vollesen (= *S. cuneifolia*) JM 1735
Much branched low woody shrub to 30 cm; flowers yellow; leaves cuneate; bushed grassland; common.
- 133 Malpighiaceae**
- Caucanthus auriculatus* (Radlk.) Nied. DO 568
Climbing and twining shrub; bushland, evergreen forest, woodland; common.
- 136 Euphorbiaceae**
- Acalypha fruticosa* Forssk. var. *fruticosa* DO 516
Much branched shrub or small tree; stems brown; rocky riverbanks; occasional.
- Acalypha racemosa* Baill. JM 1826
Perennial herb or subshrub, 0.5–3 m; riverine; occasional.
- Acalypha volkensii* Pax JM 1672
Prostrate or ascending woody herb or subshrub; forest; occasional.
- Bridelia micrantha* (Hochst.) Baill. JM 1823
Shrub or much branched tree; branches pendulous; riverine forest; common.
- Clutia abyssinica* Jaub. & Sprach JM 1527
Woody herb shrub or small tree; leaves turn orange with age; forest edges; common.
- Croton dichogamus* Pax JM 1445
Shrub or small tree; young twigs densely silvery or brown lepidote; bushland; occasional.
- Croton macrostachyus* Del. JM 1925
Shrub or spreading tree to 25 m; secondary forest and rivers; occasional.
- Croton megalocarpus* Hutch. JM 1368
Tree to 35 m; leaves pale beneath; evergreen forest; occasional.
- Drypetes gerrardii* Hutch. var. *gerrardii* DO SR
Shrub or tree to 20 m; bark grey, granulated; flowers yellow; forest, riverine; occasional.
- Erythrococca bongensis* Pax JM 1819
Shrub or small tree to 6 m; forest edges; riverine; common.
- Erythrococca fischeri* Pax TPY 2161
Much branched shrub or small tree 2–3 m tall; forest edges; common.
- Euphorbia brevicornu* Pax (= *E. repetita* A. Rich.) TPY SR
Perennial or annual herb to 2 m; leaves densely crowded and leaving prominent scars; sessile; open forest in shade; occasional.
- Euphorbia candelabrum* Kotschy JM SR
Tree to 17 m with crowded mass of candelabra-like branches; woodland, rocky hill slopes; occasional.
- Euphorbia crotonoides* Boiss. JM 1618
Succulent herb to 5–100 cm; stems woody below, upper part of stem longitudinally ridged; latex producing; disturbed soils; occasional.
- Euphorbia cyparissoides* Pax JM 1936
Perennial herb; rootstock woody, 1–2 cm thick; leaves sessile, linear–lanceolate; grassland/open woodland; occasional.

- Euphorbia gossypina* Pax JM 1719
Succulent spineless bush; stems slender, yellow-green, in masses; flowers yellow-green; dry bushland; occasional.
- Euphorbia heterochroma* Pax ssp. *tsavoensis* S. Carter JM 1637
Succulent shrub 2 m; stems root where they touch the ground; branches 4-angled; spiny; stony soils; occasional.
- Euphorbia heterospina* S. Carter ssp. *baringoensis* S. Carter DO 487
Succulent shrub to 3.5 m; branches 4–5-angled, 1–2 cm thick; sandy stony soils; occasional.
- Euphorbia inaequilatera* Sond. var. *inaequilatera* JM 1466
Much branched prostrate herb; leaf bases obliquely rounded, margin serrate; open patches amongst grasses; common.
- Euphorbia magnicapsula* S. Carter var. *lacertosa* S. Carter DO 662
Tree 3–6 m tall; rarely branched; bark marked with pit scars; rocky slopes; occasional.
- Euphorbia nyikae* Pax TPY SR
Tree to 7 m; trunk marked by 4–6 vertical rows of spines; branches 2–5 angled; woodland; rare.
- Euphorbia schimperiana* Scheele JM 1652
Herb to 2 m; stem or whole plant sometimes tinged reddish purple; leaves sessile; forest edges; occasional.
- Margaritaria discoidea* (Baill.) Webster JM 1528
Tree to 25 m; bark thickly covered with lenticels; flowers greenish; fruits lobed; forest edges; occasional.
- Micrococca mercurialis* (L.) Benth. DO 637
Annual herb to 60 cm; leaves crenate, membranaceous; lateral nerves 4–7 pairs; open places in woodland; occasional.
- Monadenium schubei* (Pax) N.E. Br. JM SR
Succulent perennial herb to 90 cm with cylindric–conical tubercles bearing leaves; rocky grassland; occasional.
- Phyllanthus fischeri* Pax TO
Annual or perennial herb or many stemmed subshrub to 3m when supported; stems reddish brown tinged; forest, riverine; occasional.
- Phyllanthus maderaspatensis* L. JM 1508
Woody perennial herb; stems reddish; wooded grassland; occasional.
- Phyllanthus nummulariifolius* Poir. JM 2161
Semi-prostrate, decumbent or erect woody herb or shrub to 4.5 m, commonly much less; leave suborbicular–obovate; flowers cream or whitish, fruits depressed, trilobate–subglobose; wooded grassland; common.
- Phyllanthus reticulatus* Poir. JM 2125
Shrub or small tree; leaves alternate; branchlets usually from short stem extensions; flowers green; fruits axillary, green to brown, bluish when ripe; river banks; occasional.
- Phyllanthus rotundifolius* Willd. JM 1641
Annual or perennial herb, 10–45 cm; stems angular; fruits 1mm long, 2mm diameter; bushy rocky grassland; common.
- Phyllanthus sepialis* Muell. Arg. JM 1408
Open branched shrub to 3 m; branches somewhat angular when young; riverine; occasional.
- Ricinus communis* L. (escape) JM SR
Perennial, bushy tree-like; leaves long petiolated, palmately lobed; fruits with stout spine-like projections; disturbed ground, cultivated.

- Synadenium pereskiaefolium* (Ball.) Guill. (= *S. glaucescens* Pax) JM 1717
 Bush or shrubby tree to 9 m; leaf base tapering to a winged petiole; sand stony soils; rare.
Tragiella natalensis (Sond.) Pax and K. DO 522
 Creeping urticating perennial herb; forest edges, forest undergrowth; occasional.

146 Caesalpinaceae

- Chamaecrista fallacina* (Chiov.) Lock (*Cassia fallacina*) TPY 2349
 Perennial herb or subshrub; stems prostrate; leaflets sessile; flowers yellow; grassland; rare.
Chamaecrista hildebrandtii (Vatke) Lock (*Cassia hildebrandtii*) JM 1379
 Perennial herb; stems prostrate or erect, densely pubescent; wooded grassland; occasional.
Chamaecrista mimosoides (L.) Greene (*Cassia mimosoides*) JM 1689
 Herb, prostrate to erect; leaves linear to linear-oblong; flowers yellow; forest margin; occasional.
Chamaecrista nigricans (Vahl) Greene (*Cassia nigricans*) DO 605
 Annual herb; petiole with sessile gland at the top; flowers yellow; grassland; occasional.
Chamaecrista usambarensis (Taubert) Standley (*Cassia usambarensis*)
 Perennial herb forming a carpet; petals yellow, orange; grassland; occasional.
Pterolobium stellatum (Forssk.) Brenan JM 2039
 Scrambling or climbing shrub or vine 2–15 m; stems armed with reflexed prickles, paired at nodes; flowers scented; fruits scarlet samaras; riverine; occasional.
Senna didymobotrya (Fresen.) Irwin & Barneby (*Cassia didymobotrya*) JM 1960
 Shrub 0.5–4.5 m; leaves compound 10–30 cm; flowers bright yellow; grassland; occasional.
Senna occidentalis (L.) Link (*Cassia occidentalis*) JM 1771
 Erect herb, 15–200 cm; flowers yellow; weed of cultivation; grassland; occasional.
Senna singueana (Del.) Lock (*Cassia singueana*) JM 1370
 Shrub or small tree 1–15 m; each pair of leaflets with a gland; flowers yellow; woodland; common.
Tamarindus indica L. DO 505
 Tree 3–24 m; crown rounded; leaflets asymmetric at base; flower buds red; pods sausage-like; wooded grassland; occasional.

147 Mimosaceae

- Acacia abyssinica* [Hochst ex] Benth. ssp. *calophylla* Brenan JM 1978
 Tree, flat topped, 6–15 m; bark rough, fissured; corolla reddish; wooded grassland; common.
Acacia sp. nr. *binerva* (Wendl.) Macbr. (exotic) JM 2019
 Unarmed tree to 7 m; leaves bipinnate, often modified to phyllodes; cultivated at Ngelesha.
Acacia brevispica Harms JM 1362
 Shrub or small tree, 1–7 m; bark grey; prickles scattered, recurved; flowers white; bushland; common.
Acacia gerrardii Benth. var. *gerrardii* JM 1888
 Shrub or tree, 3–15 m; crown flat, umbrella shaped; flowers white or cream; wooded grassland; common.
Acacia hockii De Wild. TO SR
 Shrub or tree 2–6 m; bark red brown to greenish peeling in papery layers; flowers bright yellow; bushland; occasional.
Acacia melanoxylon R. Br. (exotic) JM 1963
 Evergreen unarmed tree to 10 m; flowers yellow; cultivated.

- Acacia mellifera* (Vahl) Benth. ssp. *mellifera* DO 494
Shrub or small tree, 1–6 m; petiole usually glandular; flowers cream to white; dry scrub with trees; occasional.
- Acacia nilotica* (L.) [Wild. ex.] Del. ssp. *subalata* (Vatke) Brenan DO 447
Tree, 2.5–14 m; bark on trunk rough, fissured, blackish, grey-brown; flowers bright yellow; pod margins crenate; wooded grassland.
- Acacia persiciflora* Pax JM 1883
Tree, 4.5–9 m; bark brownish yellow scaling off in vertical strips; wooded grassland; occasional.
- Acacia seyal* Del. var. *seyal* JM 1724
Tree 3–9 m; bark or trunk powdery, white to greenish yellow or orange red; wooded grassland; occasional.
- Acacia xanthophloea* Benth. JM SR
Tree 10–25 m; bark or trunk lemon-coloured to greenish yellow; riverine; common.
- Albizia grandibracteata* Taub. DO SR
Tree, 6–30 m; crown rounded or flat; bark smooth or pock-marked at base; corolla pink to white; forest, riverine; occasional.
- Dichrostachys cinerea* (L.) Wight & Arn. TO
Shrub or small tree 1–8 m; spines terminating short lateral spreading twigs often with leaves and flowers; bushland; occasional.

148 Papilionaceae

- Aeschynomene abyssinica* (A. Rich.) Vatke JM 1920
Herb; leaflets 6–14 pairs; asymmetric; flowers yellow, small; bushland; occasional.
- Antopetitia abyssinica* A. Rich. TPY 2245
Spreading annual; pods segmented, 2–5 seeded; grassland; occasional.
- Colutea abyssinica* Kunth & Bouche JM 1916
Shrub, 4m; stipules triangular; pods papery; forest margin; occasional.
- Crotalaria agatiflora* Schweinf. ssp. *agatiflora* JM 1970
Woody bushy herb, 1 m; glabrous; flowers “bird” shaped, bright yellow; grassland; occasional.
- Crotalaria agatiflora* Schweinf. ssp. *imperialis* (Taub.) Polhill JM 1902
Woody bush herb, 2 m; pubescent; flowers “bird” shaped, yellow; grassland; occasional.
- Crotalaria anthyllopsis* Bak. JM 1749
Annual; stem short, erect to 60 cm; leaves unifoliolate; bushland; occasional.
- Crotalaria brevidens* Benth. var. *intermedia* (Kotschy) Polhill JM 1407
Annual or short-lived perennial, 1.5 m; leaflets 3, linear to lanceolate; grassland; occasional.
- Crotalaria fascicularis* Polhill
Shrub or bushy perennial herb, 1.5 m; leaves crowded on short shoots; forest margin; occasional.
- Crotalaria incana* L. JM 1405
Woody herb to 1.5 m; stem with long yellowish hairs; grassland; occasional.
- Crotalaria keniensis* Bak. f. JM 1932
Herb, 1.5 m; racemes terminal, leaf opposed; bushland; occasional.
- Crotalaria laburnifolia* L.
Perennial bushy herb to 2 m; bushland; occasional.
- Crotalaria lachnocarpoides* Engl. JM 1492
Perennial woody herb to 2 m; silk tomentose; grassland; occasional.

- Crotalaria lachnophora* A. Rich. TPY 2342
Perennial bushy herb to 3 m; branches ribbed; bushland; occasional.
- Crotalaria natalitia* Meissn. var. *natalitia* JM 1962
Woody herb to 2.5 m; branches ribbed; leaves crowded on short shoots; bushland; occasional.
- Crotalaria spinosa* Benth. JM 1809
Spreading annual to 30 cm; spiny; grassland; occasional.
- Crotalaria vallicola* Bak. f. JM 1635
Bushy annual to 60 cm; racemes subsessile; bushland; occasional.
- Dolichos oliveri* Schweinf. DO 627
Perennial shrub or woody herb; stems angular; leaflets 3, pale beneath; grassland; occasional.
- Eriosema juronianum* Stanner & DeCraene JM 1961
Woody herb; leaves trifoliate, nerves prominent below; flowers yellow with dark veins; grassland with scattered trees; occasional.
- Eriosema nutans* Schinz JM 1761
Perennial herb, 0.2–1.5 m; branches densely covered by spreading white to ferruginous hairs; grassland; occasional.
- Eriosema shireense* Bak. f. JM 1629
Herb; rootstock tuberous; leaflets 1–3(–4); grasslands; occasional.
- Erythrina abyssinica* Lam. JM 1772
Tree, 2–15 m; bark yellowish brown, corky deeply fissured; spines woody; flowers when leafless; woodland; occasional.
- Indigofera ambelacensis* Schweinf. JM 1675
Annual, erect or spreading; stipules linear; leaflets 5–11; grassland; occasional.
- Indigofera arrecta* A. Rich. JM 1974
Woody herb, 1–2 m; stems ridged; pods slightly tetragonal; bushland; occasional.
- Indigofera atriceps* Hook.f. ssp. *kaessneri* (Bak. f.) Bak. f. JM 2036
Erect herb to 2 m; biramous hairs brown or black except on leaflets; forest margin; occasional.
- Indigofera brevicalyx* Bak. f.
Perennial; branches prostrate; tap root woody; leaflets 5–13 with dark crimson processes in their axils; bushed grassland; occasional.
- Indigofera circinella* Bak. f. TPY 2167
Herb with stout perennial tap root; fruits spirally coiled; grassland; occasional.
- Indigofera emarginella* A. Rich. JM 1972
Woody shrub; stems ribbed; stipules triangular; racemes densely blackish brown strigulose; forest margins; common.
- Indigofera garkeana* Vatke JM 1534
Woody shrub to 3 m; stems 3–4 angles or winged; woodland; occasional.
- Indigofera hochstetteri* Bak. JM 1788
Annual to 50 cm; stems ridged; stipules subulate; open grassland; common.
- Indigofera schimperii* Jaub. & Spach. var. *barkeana* (Vatke) Gillett TO
Perennial herb; rootstock woody; stems with silvery indumentum; grassland; occasional.
- Indigofera secundiflora* Poir. TPY 2343
Stout erect annual to 130 cm; flowers all turned to one side; wet sites; occasional.

- Indigofera spicata* Forssk. JM 1467
Prostrate or ascending herb; stems ridged, somewhat flattened; fruits reflexed; disturbed grassland; common.
- Indigofera swaziensis* Bolus var. *swaziensis* JM 1926
Woody shrub to 3 m; stems ribbed; stipules triangular; forest margin; common.
- Indigofera tanganyikensis* Bak. f. var. *strigosior* Gillett JM 1363
Erect much branched shrublet to 1 m; young branches densely pubescent; stipules brownish, triangular; stony grassland; occasional.
- Indigofera trita* Linn. f. var. *subulata* (Poir.) Ali JM 1950
Erect woody herb, 1–2 m; stems ridged; fruits pointed; secondary growth; occasional.
- Indigofera volkensii* Taub. JM 1445
Herb to 40 cm; leaflets 3–7, alternate; pod rather tetragonal; scattered tree grassland; occasional.
- Indigofera* sp. JM 2185
Woody herb 30 cm high; leaves compound; wooded grassland, occasional.
- Macrotyloma axillare* (E. Mey.) Verdc. var. *glabrum* (E. Mey.) JM 2037
Perennial climbing herb to 3.5 m long; stems with sparse hairs; open forest; common.
- Medicago laciniata* (L.) Mill. JM 1657
Spreading annual; leaflets small, toothed; seasonally waterlogged areas; common.
- Neonotonia* (*Glycine*) *wightii* (Wight & Arn.) Lackey ssp *wightii* var. *longicauda* (Schweinf.) Verdc. DO 615
Perennial climber; wood at the base to 4.5 m long; inflorescence lax; grassland; common.
- Ormocarpum trachycarpum* (Taub.) Harms JM 1491
Shrub or small tree 1–6 m; bark soft, corky; twigs whitish; woodland; occasional.
- Rhynchosia elegans* A. Rich. var. *elegans* JM & TPY 2050
Perennial climbing herb to 2.5 m long from a woody rootstock; bushland; occasional.
- Rhynchosia usambarensis* Taub. var. *usambarensis* JM 2143
Perennial climbing herb to 1.8 m; stems with yellow hairs; forest edges; occasional.
- Stylosanthes fruticosa* (Retz.) Alson JM 1632
Woody herb or subshrub, sometimes prostrate, glandular; grassland; common.
- Tephrosia emeroides* A. Rich. JM 1358
Woody erect perennial 0.5–2.5 m; flowers pink, terminal; bushland; common.
- Tephrosia interrupta* Engl. ssp *interrupta* JM 1951
Woody shrub to 3 m; young stems pubescent; scrub margin; occasional.
- Tephrosia lurida* Sond. TO
Perennial; rootstock woody; stems prostrate or ascending; pods ascending, slightly upcurved, bushland, occasional.
- Tephrosia vogelii* Hook. f. JM 2024
Woody branching herb, 1–4 m; stems tomentose; forest margin; occasional.
- Tephrosia* sp. JM 1763
Climber or twiner; stems brownish; leaves trifoliate, pale beneath; nerves reticulated beneath, prominent; wooded grassland; uncommon.
- Trifolium cryptopodium* A. Rich. JM 1949
Perennial herb; stems creeping in their lower portions, rooting at the nodes, often forming mats, inflorescence hemispherical, corolla purple; grassland and moist forest openings; occasional.
- Trifolium semipilosum* Fresen var. *semipilosum* TPY 2187
Perennial herb with strong tap root; roots at nodes; grassland near forests; common.

- Vigna frutescens* A. Rich. CL 9
Perennial prostrate or climbing herb to 1.5 m long; grassland; common.
- Vigna membranacea* A. Rich. ssp *membranacea*
Annual climbing herb; leaflets acuminate; bushland; common.
- Vigna membranacea* A. Rich. ssp *caesia* (Chiov.) Verdc. JM & TY 2052
Perennial climbing herb; leaflets very obtuse to acute; bushland; occasional.
- Vigna vexillata* (L.) Verdc. JM 1569
Perennial climbing herb to 6m long from narrow woody rootstock; grassland; common.
- Zornia glochidiata* D.C. DO 604
Annual herb, erect to prostrate; leaves 2-foliolate; flowers yellow; grassland; common.
- Zornia setosa* Bak. f. ssp *obovata* (Bak. f.) J. Leon & Milne-Redh. JM 1687
Perennial herb; stems prostrate; leaves 4-foliolate; petals yellow, pink, blood-red or mauve; grassland; common.

151 Hamamelidaceae

- Trichocladus ellipticus* Eckl. & Zeyher ssp *malosanus* (Bak.) Verdc. JM 1842
Shrub or thicket forming tree to 12 m; lower surface of leaves silver-buff; flowers yellow; montane forest; common at Ngelesha forest.

165 Ulmaceae

- Chaetacme aristata* Planch. DO 526
Thorny bush or spreading tree to 10 m; branchlets zig-zag, drooping; forest; occasional.

167 Moraceae

- Dorstenia hildebrandtii* Engl. var. *schlechteri* (Engl.) Hijman JM 1839
Semi-succulent herb, rooting at nodes; produces latex; riverine; common.
- Ficus glumosa* Del. DO 528
Tree to 10 m; leaves stiffly papery or coriaceous; rocky slopes; occasional.
- Ficus ingens* (Miq.) Miq. DO SR
Tree to 10 m; bark grey; leaf base cordate; dry bushed grassland; occasional.
- Ficus natalensis* Hochst. DO 529
Tree or epiphyte to 10 m, frequently with aerial roots; wet rocky slopes; occasional.
- Ficus sycomorus* L. DO 449
Tree to 25 m found near streams; bark powdery, yellow-green or grey; riverine; occasional.
- Ficus thonningii* Blume AR 4112
Tree to 10 m, low branched; aerial roots present; bushed grassland; occasional.
- Ficus ?vasta* Forssk. JM 1849
Tree to 8 m; leaves broadly ovate, pubescent; rocky slopes; rare.

169 Urticaceae

- Girardinia diversifolia* (Link) Friis (= *G. condensata* Wedd.) DO 658
Single stemmed tall herb, 0.5 m; leaves deeply lobed; forest undergrowth; occasional.
- Girardinia bulbosa* Wedd.
Single stemmed tall stinging herb, 2 m; leaves sub-orbicular; marshes; occasional.
- Obetia radula* (Bak.) Jackson (= *O. pinnatifida* Baker) DO SR
Fleshy stemmed shrub or tree to 8 m with the habit of pawpaw; riverine forest; occasional.

173 Celastraceae

Hippocratea sp. DO 569

Woody liane; riverine forest; uncommon.

Maytenus arbutifolia (Hochst. ex A. Rich.) Wilczek JM 1434

Armed shrub, 3 m; much branched; fruits trigonous; near rivers and streams; common.

Maytenus senegalensis (Lam.) Excell JM 1436

Shrub or tree to 8 m; branchlets armed or unarmed; spines bear leaves and flowers; grassland; common.

Mystroxydon (*Cassine*) *aethiopicum* (Thunb.) Loes. JM 1401

Bush or tree to 17 m; slash blood-red; leaves serrate–dentate to entire; riparian; occasional.

179 Icacinaceae

Apodytes dimidiata Arn. var. *acutifolia* A. Rich. JM 1369

Tree to 23 m; bark smooth, grey-white; flowers small, white; forest edges; common.

182 Olacaceae

Ximenia americana L. var. *caffra* JM 1737

Shrub or tree to 7 m; bark dark brown to black; slash crimson; spines straight; bushed grassland; occasional.

183 Opiliaceae

Opilia amentacea Roxb. DO 523

Liana; flower spikes yellow-green; stem corky; riparian; occasional.

185 Loranthaceae

Phragmanthera usuiensis (Oliv.) M. Gilbert (*P. rufescens*) JM 1942

Parasitic stellate tomentose plant; bushland; occasional.

185/A Viscaceae

Viscum tuberculatum A. Rich. JM 1565

Parasitic; leaves yellowish; dry woodland; common.

186 Santalaceae

Osyridicarpos schimperianus (A. Rich.) D.C. JM 1541

Straggling undershrub; stems ridged; leaves elliptic to lanceolate; bushland; occasional.

Osyris lanceolata Hochst. & Steudel (*O. abyssinica*) JM 1488

Shrub or small tree; flowers small, yellow-green or green; fruit a bright red drupe; grassland; occasional.

Thesium sp A of Agnew & Agnew JM 1715

Herb; leaves flat, subulate; flowers pedicellate; upland grassland; occasional.

190 Rhamnaceae

Helinus integrifolius (Lam.) Kuntze DO 478

Perennial climbing shrub; leaf base subcordate; fruit glabrous; bushland; occasional.

Helinus mystacinus (Ait.) Steud. TPY 2252

Similar to *H. integrifolius* except fruits hairy and leaves ovate.

Rhamnus staddo A. Rich. JM 1428
Shrub or tree to 7 m; branches spine tipped; leaves lanceolate to ovate-oblong, base attenuate; forest; common.

Scutia myrtina (Burm. f.) Kurz JM 1477
Spiny shrub or tree to 5 m, sometimes to 10 m; prickles recurved; grassland; common.

Ziziphus mucronata Willd. JM 1353
Spiny tree or shrub to 10 m; branchlets zig-zag, brown or dark brown; bushland and riparian thicket; occasional.

193 Vitaceae

Cayratia gracilis (Guill. & Perr.) Suesseng. DO 510
Climber with tendrils; leaves pedately 5-foliolate; wet forest; uncommon.

Cissus oliveri (Engl.) Gilg. JM 1861
Perennial climber; stem quadrangular with corky wings when old; leaves long-acuminate; upland forest; occasional.

Cissus rotundifolia (Forssk.) Vahl DO 536
Shrub; climber with tendrils; stem 4–5 angled; leaves fleshy, folded, margin toothed; bushland; occasional.

Cyphostemma bambuseti (Gilg. & Brandt) Wild & Drum. JM 1959
Climber with 3–5 foliolate leaves, minutely glandular; forest edge; occasional.

Cyphostemma cychopetalum (Fresen.) Wild (*C. nieriensis*) JM 1513
Climber with tendrils; leaves 5-foliolate; forest; common.

Cyphostemma serpens (A. Rich.) Decne (*C. orondo*) JM 1451
Climber; tap root tuberous; with or without tendrils; leaflets 3–7 densely pubescent below; bushland; occasional

Rhoicissus tridentata (L. f.) Wild & Drum. JM 1479
Small tendrillate shrub or climber; leaflets dentate; *Combretum* woodland; occasional.

194 Rutaceae

Calodendrum capense (L. f.) Thunb. JM 1836
Deciduous tree to 17 m; bark grey; leaves opposite, simple, with a row of translucent glands near the margin; riverine; common.

Clausena anisata (Willd.) Benth. JM 1818
Unarmed shrub or tree 2–3 m, occasionally to 10m; leaves strongly aromatic; forest edges; common.

Teclea nobilis Del. JM 1480
Forest tree; leaves dark green 3, 2 or 1-foliolate; petiole grooved; pellucid glands present; forest; common.

Teclea simplicifolia (Engl.) Verdoorn DO SR
Shrub or forest tree; leaves unifoliolate, trifoliolate on young plants; forest edges; common.

Toddalia asiatica (L.) Lam. JM 1933
Scrambling prickly shrub; leaves 3-foliolate; leaflets gland dotted, sessile; forest; occasional.

Vepris eugeniifolia (Engl.) Verdoorn DO SR
Shrub; leaves unifoliolate; leaflets drooping blade with raised gland dots beneath; dry bushland; occasional.

- Vepris glomerata* (F. Hoffm.) Engl. var. *glabra* Kokwaro DO 491
Small tree to 3 m or more; leaves trifoliolate; petiole slightly winged; flowers scented; bushland; occasional.
- Zanthoxylum (Fagara) chalybeum* (Engl.) Kokwaro var. *chalybeum* DO SR
Tree to 13 m; stem armed with large woody spines; leaflets punctate; bushed grassland; occasional.
- Zanthoxylum (Fagara) usambarense* (Engl.) Kokwaro JM 1931
Tree to 17 m; prickles straight or up-curved; leaflets with main nerves impressed above; forest edges; common.

195/A Balanitaceae

- Balanites aegyptiaca* (L.) Del. DO 458
Tree, 5–7 m, sometimes to 12 m; twigs thorny; branchlets green; dry bushland; occasional.

196 Burseraceae

- Commiphora africana* (A. Rich.) Engl. JM SR
Shrub or small tree to 10 m; bark peels in papery scrolls; leaves trifoliolate; bushland; occasional.
- Commiphora habessinica* (Berg) Engl. ssp. *habessinica* (*C. madagascariensis*) DO 592
Small tree to 7 m; branches grey, spiny; bark peels in papery strips; rocky outcrops; occasional.
- Commiphora myrrha* (Nees) Engl. (*C. coriacea*)
Tree; branchlets thick, spinose, grey; leaves 1- or 3-foliolate, leathery; stony soil; occasional.
- Commiphora samharensis* Scheinf. ssp. *terebinthina* (Vollesen) Gillett DO 485
Small spiny tree, 6 m; trunk yellow; leaves trifoliolate; bushed grassland; occasional.
- Commiphora schimperi* (Berg) Engl. JM SR
Tree to 5 m; bark peeling to green and pale grey; leaves trifoliolate; dry grassland.

197 Meliaceae

- Ekebergia capensis* Sparrm. JM 1957
Forest tree to 27 m; leaves compound, grouped near the ends of branchlets; forest; occasional.
- Trichilia emetica* Vahl (*T. roka*) DO 468
Tree 5–13 m, occasionally to 30m; bark smooth; young parts yellow, pubescent; riparian; occasional.
- Turraea mombassana* C.D.C. JM 1355
Much branched shrub to 3 m; flowers white; bushland; common.

198 Sapindaceae

- Allophylus rubifolius* (A. Rich.) Engl. JM 1636
Shrub; leaves 3-foliolate; lateral leaflets subsessile, margins serrate; bushland; occasional.
- Dodonaea angustifolia* L. f. (*D. viscosa*) JM 1562
Shrub or tree, 2–4 m, occasionally to 8m; branchlets red-brown, angular; flowers yellow-green to creamy white; bushland; common.
- Pappea capensis* Eckl. & Zeyh. JM 1566
Tree to 27 m; leaves crowded at the ends of twigs; base unequal; rocky slopes; occasional.

202 Melianthaceae*Bersama abyssinica* Fres.

TO

Small straggling tree to 7 m; leaves alternate, imparipinnate, to 60 cm long; forest edges; occasional.

205 Anacardiaceae*Lannea edulis* (Sond.) Engl.

JM 1977

Low shrub; leaves 5–7-foliolate; flowers yellow; wooded grassland; occasional.

Lannea schimperi (A. Rich.) Engl.

JM 1876

Tree, 5–12 m, rarely to 17 m; slash bright crimson; leaflets 5–9, subsessile; wet grassland; occasional.

Ozoroa (Heeria) insignis Del. ssp. *reticulata* (Bak. f.) A. & A. Fernandes

JM 1908

Small tree; slash pale crimson; leaves simple, midrib and laterals prominent beneath; grassland; occasional.

Pistacia aethiopica Kokwaro

JM 1476

Tree to 17 m or more; twigs and leaves turpentine scented; leaves compound; leaf rachis winged; riparian; occasional.

Rhus longipes Engl.

JM 1762

Tree to 7 m; leaves trifoliolate; leaflets sessile, glabrous, margin entire; edge of Ngelesha forest; common.

Rhus natalensis Krauss

JM 1351

Bush or small tree to 7 m; branchlets grey brown; leaves pale green, trifoliolate, bushed grassland; common.

Rhus vulgaris Meikle

JM 1437

Bush or small tree to 7 m; leaves trifoliolate, softly tomentose beneath; bushland; common.

Schinus molle L. (Cultivated)

JM 2017

Tree; leaves compound; leaflets linear–lanceolate, flowers white; forest edge; occasional.

212 Araliaceae*Cussonia holstii* Engl. var. *holstii*

JM 1495

Tree to 7 m with pawpaw-like habit; leaves compound, digitate; leaflets 5; highland forest, rocky slopes; common.

213 Umbelliferae*Centella asiatica* (L.) Urb.

JM 1791

Creeping herb; leaves reniform or suborbicular, cordate, crenate; grassland or lawns; occasional.

Diplolophium africanum Turcz.

JM 1940

Perennial 1 m; leaf segments capillary; wooded grassland; occasional.

Ferula communis L.

JM 1427

Herb, 1.5 m; leaves large and finely divided at base; flower umbels yellow; woodland; common.

Heteromorpha trifoliata (Wendl.) Eckl. & Zeyh.

JM 1490

Shrub to 7 m; leaves variable, simple, trilobed, trifoliolate or pinnate; flowers yellow-green; forest edge; common.

Oenanthe palustris (Chiov.) Norman

JM 2038

Herb; leaves compound; petiole clasping stem; flowers green/white; swamps; common.

Steganotaenia araliacea Hochst. JM 1556
Tree 3–5 m, sometimes to 8m; leaves pinnate, crowded near the ends of branches; petiole sheathing at base; wet grassland; occasional.

Torilis arvensis (Huds.) Link JM 1699
Annual; leaves lanceolate–linear, toothed; forest paths; occasional.

221 Ebenaceae

Diospyros abyssinica (Hiern) F. White DO 537
Tree to 30 m; bark very dark; slash yellow; leaves lanceolate to oblong–lanceolate; midrib impressed above; flowers white; forest; common.

Euclea divinorum Hiern TO
Small tree; leaves elliptic, coriaceous; flowers cream; rocky highlands; common.

Euclea racemosa Murr. ssp *schimperi* (A.D.C.) F. White (= *E. schimperi*) JM 1372
Similar to *E. divinorum* but twigs scaly and leaf lamina with reddish scales beneath, margin wavy; highland; common.

222 Sapotaceae

Mimusops cf. *bagshawei* S. Moore DO SR
Tree to 43 m; bark dark brown; slash pale crimson-red; leaves oblong to obovate oblong, 7.5–17.5 cm long; forest; occasional.

223 Myrsinaceae

Myrsine africana L. JM 1993
Evergreen shrub; leaves small, glabrous, subsessile, serrulate, gland dotted; open land at high altitude; occasional.

228 Loganiaceae

Strychnos henningsii Gilg. JM 1486
Tree to 10 m, sometime shrubby; leaves glabrous, ovate, oblong or lanceolate to 5 cm long and 2.5 cm broad, 3–5 nerved; dry bushland; occasional.

Strychnos mitis S. Moore JM 2053
Small tree; slash very thin, orange-brown; leaves 3-nerved from base; riverine forest; common.

229 Oleaceae

Chionanthus mildbraedii (Gilg. & Schell) Stearn JM & TPY 2056
Shrub or small tree to 18 m; bark smooth; slash yellow; leaves coriaceous, apex acute or acuminate; forest; occasional.

Jasminum floribundum Fresen. JM 1361
Shrub, climbing or suberect; leaves 5-foliolate; bushland; common.

Jasminum fluminense Vell. JM 1683
Shrub, climber; leaves 3-foliolate; riverine forest; occasional.

Olea europaea L. ssp *africana* (Mill.) P.G. Green JM 1359
Tree 7–10 m, sometimes to 27 m; leaves opposite, linear–lanceolate to elliptic–lanceolate; flowers small, white; woodland; very common.

Schrebera alata (Hochst.) Welw. JM 1489
Tree to 30 m; leaves imparipinnate; petiole narrowly winged at base; bushland; common.

230 Apocynaceae

- Acokanthera schimperi* (A.D.C.) Benth. JM 1377
Tree or shrub; leaves coriaceous, shiny, opposite, elliptic or broadly elliptic; dry bushland; common.
- Carissa edulis* (Forssk.) Vahl JM 1366
Scrambling shrub to 3 m; much branched; spines simple or bifurcate; flowers white inside, red outside; bushland; very common.
- Rauvolfia caffra* Sond. JM 1865
Tree to 27 m; leaves in whorls of 3 or 4, to 30 cm; flowers white; wet forest; occasional.
- Saba comorensis* (DC.) Pichon (*Landolphia comorensis*) DO 517
Liana on forest trees; leaves opposite, tinged pink when young; flowers white with long corolla tube, scented; forest; uncommon.

231 Asclepiadaceae

- Ceropegia ballyana* Bullock JM 1628
Succulent climber; flowers greenish to yellow with maroon spots; bushland; occasional.
- Ceropegia powysii* Field
Reported from near the bottom of the Mukutan Gorge (Newton, 1990)
- Cynanchum gerrardii* (Harvey) Liede (*C. tetrapterum*) TO
Climbing leafless shrub; stems fleshy; petals reflexed; *Acacia* bushland; occasional.
- Echidnopsis sharpei* White & Sloane DO SR
Succulent with knob-like projections; flowers maroon; bushed grassland; occasional.
- Ectadiopsis oblongifolia* (Meisn.) Schltr. JM 1880
Erect loose shrub; leaves oblong-elliptic; flowers pale yellow; wooded grassland; common.
- Gomphocarpus fruticosus* (L.) Ait. f. JM 1515
Shrub; leaves acicular to linear oblong; flowers white and maroon; watercourses; common.
- Gomphocarpus physocarpus* E. Mey. JM 2210
Shrub; leaves lanceolate; flowers green and white; grassland; occasional.
- Gomphocarpus stenophyllus* Oliv. TPY 2178
Perennial; young parts white woolly hairy; leaves very narrow; flowers yellow or reddish; rocky bushed grassland; occasional.
- Huernia keniensis* R.E. Fries DO 663
Fleshy herb with 4–6 rows of conical projections; rocky ground; occasional.
- Kanahia laniflora* (Forssk.) R. Br. DO 577
Shrub, leaves linear; flowers large, pure white; water courses; occasional.
- Pachycybbium* (*Caralluma*) *dummeri* (N.E. Br.) M. Gilbert JM 1720
Fleshy perennial; stems variegated; *Combretum* woodland; occasional.
- Sarcostemma andongense* Hiern DO 625
Much branched bush; latex-producing; flowers pale green, short penduncled; rocky grassland thicket; common.
- Sarcostemma viminale* (L.) R. Br. JM 1481
Shrub; trailing, twining or climbing; stems green; flowers white; rocky ground; common.
- Secamone punctulata* Decne DO 620
Woody climber; leaves narrowly elliptic to linear; woodland; occasional.
- Stathmostelma rhacodes* K. Schum.
Herb; leaves linear; umbel single, terminal; flowers red and orange; seasonally waterlogged grassland; occasional.

232 Rubiaceae

- Canthium lactescens* Hiern JM 1365
Tree or shrub to 5 m; leaves drying dark brown or black; flowers white-green; rocky slopes; common.
- Canthium pseudosetiflorum* Bridson ssp. *pseudosetiflorum* DO 493
Shrub, 1–3 m; young branches covered with dark grey bark, lenticellate; leaf blades paired; mixed scrub; occasional.
- Galium aparine* auct. afr. non L. (*G. spurium* L. ssp. *africanum*) JM 1503
“Sticky” climber or scrambler; leaves narrowly oblanceolate, acute; flowers on long pedicels; weed of cultivation.
- Gardenia ternifolia* (Schumach. & Thonn.) (*G. jovis-tonantis*) JM & TY 2054
Shrub or small tree 1–6 m; often stunted in appearance; leaves arranged in threes on short ternate shoots; rocky grassland; common.
- Kohautia coccinea* Royle TPY 2267
Herb, unbranched or sparsely branched, 30 cm; leaves linear; wooded grassland; occasional.
- Meyna tetraphylla* (Hiern) Robyns ssp. *comerensis* (Robyns) Verdc. DO 578
Shrub or small tree, armed with opposite straight prickles; flowers white; river-beds; occasional.
- Oldenlandia corymbosa* L. JM 2131
Prostrate spreading much branched herb; leaves linear–lanceolate; corolla pale blue; open ground; occasional.
- Oldenlandia herbacea* (L.) Roxb. DO 649
Herb to 60 cm; stems 4-ribbed; leaves linear; wooded grassland; occasional.
- Oldenlandia scopulorum* Bullock JM 1861
Herb to 25 cm, much branched; leaves linear; grassland; occasional.
- Pavetta subcana* Hiern ssp. *longiflora* (Vatke) Bridson DO 465
Shrub, 1–3.5 m; bacterial nodules dot-shaped on lateral nerves; corolla tube glabrous outside; young branches glabrous; leaves glabrous; bushland; occasional.
- Pentania ouranogyne* S. Moore JM 1406
Herb, 10 cm; flowers bright blue; grassland; occasional.
- Pentas lanceolata* (Forssk.) Deflers TPY 2331
Herb or subshrub to 1.3m; leaves lanceolate; bushland; occasional.
- Pentas parvifolia* Hiern JM 1844
Subshrub to 2.5 m; flowers scarlet, crowded; grassland; occasional.
- Pentas pubiflora* S. Moore TPY 2332
Herb or subshrub 1.5 m; flowers white, rarely tinged pale blue or pinkish; forest edges; occasional.
- Pentas zanzibarica* ((Klotzsch) Vatke TPY 2333
Herb or shrubby herb to 2.5 m; flowers pink or lilac, bluish mauve or bright crimson red; grassland; occasional.
- Psychotria kirkii* Hiern JM 1766
Shrub, 1.5 m; leaves crowded at the end of branches; fruits bright orange when ripe; forest edges; common.
- Psydrax schimperiana* (A. Rich.) Bridson ssp. *schimperiana* JM 2371
Tree, 5 m; leaves leathery, shiny; wooded grassland; common.
- Pyrostria* (*Canthium*) *phyllanthoidea* Baill. JM 1868
Much branched shrub; branches decussate; flowers greenish; fruits two celled; bushland; common.

- Rubia cordifolia* L. JM 1478
Scrambling or climbing herb, 5 m; stems and leaves brittle; forest edges; common.
- Spermacoce sphaerostigma* (A. Rich.) Vatke
Annual herb to 90 cm; leaves lanceolate; grassland; occasional.
- Spermacoce* sp. TPY 2207
Herb 70 cm high; much branched; grassland; occasional.
- Tarrenna graveolens* (S. Moore) Brem. AR 4106
Shrub or small tree, 1.8–7 m; young branches covered with grey to reddish bark, sometimes flaking when older; bushland; occasional.
- Vangueria apiculata* K. Schum.
Tree or shrub; leaves apiculate; fruits green, coarsely lobed; forest edge; common.
- Vangueria* sp. nr. *madagascariensis* Gmel. (*V. acutiloba*) JM SR
Shrub or small tree; leaves broadly elliptic to oblong-elliptic; riparian; uncommon.
- Vangueria madagascariensis* Gmel. (*V. acutiloba*) JM 1349
Shrub or small tree; leaves broadly elliptic to oblong-elliptic; fruits globose, green (unripe), brown when ripe; bushland; common.
- Vangueria volkensii* K. Schum. var. *volkensii* (*V. linearisepala*) TO
Shrub or small tree; young parts golden velvety hairy; leaf nerves prominent below; forest edges; occasional.

238 Compositae

- Acanthospermum hispidum* DC. JM 1452
Herb; flower heads small, yellow; fruits spiny, weed of cultivation.
- Acmella calirhiza* Del. (*Spilanthes mauritiana*) JM 2139
Trailing herb; leaves ovate, dentate; flower heads orange-yellow; riverine; common.
- Ageratum conyzoides* L. JM 2154
Erect weak annual; leaves ovate, serrate; flower heads terminal, corymbose, blue-purple; common weed of disturbed ground.
- Anisopappus holstii* (O. Hoffm.) Wild DO 641
Herb, annual, glandular; leaves ovate, dentate; rocky grassland; common.
- Aspilium kotschyi* (Sch. Bip.) Oliv. DO 508
Herb, annual or weak perennial, scabrid tomentose; flower heads deep black purple or maroon; grassland; occasional.
- Aspilium mossambicensis* (Oliv.) Wild JM 1410
Herb or shrub; leaves scabrid; flower heads yellow; grassland; common.
- Aspilium pleuriseta* Schweinf. CL 12
Similar to *A. mossambicensis* except flowers and leaves smaller in size, whole plant smaller in size as compared to the latter.
- Athroisma gracile* (Olive.) Mattf. JM 2178
Herb; leaves thread-like; flower heads corymbose; rocky grassland; occasional.
- Berkeya spekeana* Oliv. JM 1559
Herb; leaves pinnatifid, spiny, white woolly below; wooded grassland; common.
- Bidens biternata* (Lour.) Merr.
Annual herb, erect; leaves hairy, pinnate, trifoliolate mostly; common weed, disturbed ground.
- Bidens pilosa* L. JM 1411
Similar to *B. biternata* but glabrous; common weed, disturbed ground.

- Blumea brevipes* Oliv. & Hiern JM 1752
Herb, 1m; stem winged; leaves sessile, yellow green; wooded grassland; occasional.
- Bothriocline fusca* S. Moore JM 1693
Shrub; leaves lanceolate–elliptic, serrate, white hairy below; flower heads purple to violet; disturbed ground; common.
- Cineraria deltoides* Sond. (= *C. grandiflora*) JM 1709
Herb; leaves auriculate; flower heads corymbose, yellow; forest edges; occasional.
- Conyza aegyptiaca* (L.) Ait.
Herb; leaves pinnatifid; flower heads large, terminal; disturbed grassland; common.
- Conyza bonariensis* (L.) Cronq. JM 1746
Herb; basal leaves a rosette, stem leaves distantly serrate; disturbed grassland; uncommon.
- Conyza schimperi* Sch. Bip. JM 1446
Shrub or herb; leaves pinnatifid; flower heads small, pale; grassland; common.
- Conyza sumatrensis* (Retz.) E.H. Walker TPY 2184
Herb; leaves linear–lanceolate, lanceolate or oblong–lanceolate; flower heads numerous, white-cream; common weed.
- Cotula abyssinica* A. Rich. JM 2206
Perennial herb; leaves alternate; flower heads long penduncled, terminal green; high altitude grassland; common.
- Solanecio* (*Crassocephalum*) *mannii* (Hook. f.) C. Jeffrey JM 2157
Semi-succulent tree; leaves elliptic, crowded at the ends of branches; bushland; good living fence.
- Crassocephalum picridifolium* (D.C.) S. Moore JM 2127
Trailing perennial herb; leaves petiolate, ovate, often auriculate; cleared grassland; occasional.
- Dichrocephala integrifolia* O. Kuntze JM 2141
Herb; leaves rhomboid ovate, petiolate; flower heads terminal, reddish; montane forest; occasional.
- Echinops amplexicaulis* Oliv. JM 1911
Erect robust herb; leaves sessile, shallowly lobed, ovate–elliptic; wooded grassland; occasional.
- Emilia* (*Senecio*) *discifolia* (Oliv.) C. Jeffrey JM 1432
Herb, annual or weak perennial; leaves spatulate; flower heads orange; disturbed ground; common weed.
- Emilia integrifolia* Bak. TPY 2281
Herb; leaves linear; flower heads terminal, cream to white; high altitude grassland; common.
- Felicia abyssinica* A. Rich. JM 1586
Herb 20 cm tall; leaves linear; flower heads solitary with spreading blue to mauve rays and a yellow centre; dry grassland; common.
- Galinsoga parviflora* Cav. TPY 2147
Annual herb, erect; flower heads minute, terminal, cream; disturbed ground; common weed.
- Gerbera viridifolia* (DC.) Sch. Bip. ssp. *viridifolia* CL 1A
Herb; leaves a rosette, petiolate, oblong elliptic; flower heads solitary, pinkish; wooded grassland; occasional.
- Gnaphalium rubrifolium* Hilliard (*G. declinatum*) JM 1694
Trailing annual or perennial herb; leaves oblong, spatulate or linear, white woolly; flowers white; bushy grassland; common.

- Guizotia scabra* (Vis.) Chiov. JM 1650
Scabrid herb; leaves oblong, dentate or entire; flower heads yellow; bushed grassland; occasional.
- Gutenbergia (Erlangea) boranensis* S. Moore TO
Perennial herb or weak shrub; lower leaves petiolate, lanceolate, white below; sandy disturbed grassland; common.
- Gutenbergia (Erlangea) cordifolia* Oliv. JM 1364
Annual herb; leaves subsessile, opposite to alternate, white woolly below; disturbed grassland; common weed.
- Gynura scandens* O. Hoffm. JM 1511
Succulent herb, scrambler; leaves auriculate, serrate; wet bushed grassland; occasional.
- Helichrysum gerberifolium* Sch. Bip. JM 2227
Erect herb; leaves a rosette, narrowly elliptic; flower heads brownish; bushed grassland; occasional.
- Helichrysum globosum* Sch. Bip. JM 1475
Perennial herb; basal leaves a rosette, long petioled, 3-nerved; upland bushed grassland; occasional.
- Helichrysum glumaceum* DC. JM 1444
Weak shrub, grey hairy; leaves linear, acute; rocky grassland; common.
- Helichrysum odoratissimum* (L.) Less. JM 1955
Straggling shrub; silvery hairy; leaves linear-lanceolate; grassland; common.
- Helichrysum schimperi* (Sch. Bip.) Moeser JM 1461
Trailing soft shrub, white hairy; leaves broad elliptic; inflorescence yellow or whitish; forest edges; common.
- Hirpicium diffusum* (O. Hoffm.) Roess. JM 1464
Herb; leaves oblong to linear, entire to pinnatilobed; flowers yellow; disturbed grassland; common.
- Inula decipiens* E.A. Bruce JM 1943
Woody herb; leaves large, velvet pubescent below; flower heads in terminal corymbs, yellow; forest edges; occasional.
- Kleinia squarrosa* Cuf. (= *K. kleinoides*) DO 512
Loose shrub or climber; stems fleshy; leaves obovate or oblong; flower heads pink or mauve; bushland; common.
- Notonia petraea* R.E. Fries JM 1578
Trailing glabrous succulent herb; leaves obovate to suborbicular; flower heads orange; bushed grassland; occasional.
- Osteospermum vaillantii* (Decne) Nord. JM 1458
Erect glandular pubescent annual; leaves dentate or pinnately lobed, elliptic-lanceolate; florets yellow; disturbed ground; common weed.
- Piloselloides hirsuta* (Forssk.) C. Jeffr. (*Gerbera piloselloides*) JM 1600
Herb; basal leaves in a rosette, oblong-elliptic, narrowing gradually at base; highland bushed grassland; common.
- Pseudognaphalium (Gnaphalium) luteo-album* (L.) Hilliard & Burt JM 2148
Erect white woolly annual herb; leaves spatulate, oblong; flower heads yellow; disturbed grassland; common.
- Psiadia punctulata* DC. Vatke (*P. arabica*) JM 1367
Glabrous shrub; flower heads yellow, terminal; bushland and forest edges; common.

- Reichardia tingitana* (L.) Roth JM 2216
Glabrous annual herb, 20 cm; leaves oblanceolate, dentate; heads solitary; disturbed ground; uncommon.
- Schkuhria pinnata* (Lam.) O. Kuntze JM 1382
Erect annual; leaves capillary; flower heads small, yellow; roadside and cultivation; common.
- Senecio hadiensis* Forsk. (*S. petitianus*) JM 2225
Semi-succulent robust trailing climber; leaves minutely toothed; forest edges; common.
- Sonchus schweinfurthii* Oliv. & Hiern JM 2128
Robust erect or trailing herb; leaves pinnately divided; heads tight terminal clusters; bushy grassland; occasional.
- Sphaeranthus gomphrenoides* O. Hoffm. JM 1350
Weak herb; leaves lanceolate; stem wings interrupted; water courses; common.
- Sphaeranthus suaveolens* (Forssk.) DC. JM 2213
Trailing herb; leaves ovate, dentate; flower heads orange-yellow; riverine; common.
- Sphaeranthus* sp. nr *ukambensis* Vatke & O. Hoffm. JM 1906
Herb; leaves lanceolate; occasionally waterlogged ground; uncommon.
- Tagetes minuta* L. JM 1463
Strong smelling annual; leaves pinnate; heads creamy yellow, terminal; disturbed ground; common weed.
- Tarchonanthus camphoratus* L. JM 1418
Shrub to 7 m; leaves smell of camphor when crushed, densely white tomentose beneath, green above; level ground; dominant plant over much of ranch.
- Vernonia brachycalyx* O. Hoffm. JM 1424
Trailing scrambler; corymbs terminal; flower heads purple; forest edges; common.
- Vernonia lasiopus* O. Hoffm. JM 2007
Weak shrub; leaves ovate, coarsely serrate, pale tomentose below; disturbed ground; common.
- Vernonia popeana* C. Jeffrey (*V.* sp. C of Agnew ed. 1) TO
Perennial shrub; flower heads terminal, purple; median leaves clasping the stem; bushy grassland; occasional.
- Voluntaria lippii* (L.) Maire JM 2133
Annual or weak perennial; leaves oblong, pinnatifid; flower heads purple; bushy grassland; occasional.

239 Gentianaceae

- Sebaea brachyphylla* Griseb. TPY 2354
Branched annual; leaves sessile, orbicular; flowers terminal, corymbose, crowded, yellow; forest edge; occasional.

240 Primulaceae

- Anagallis arvensis* L. JM 1652
Much branched annual herb; leaves ovate to lanceolate; flowers blue or reddish pink on long pedicels; shallow soils and disturbed places; common.

243 Campanulaceae*Canarina abyssinnica* Engl.

JM 1995

Glaucous climber; leaves triangular–ovate; flowers pendulous, orange; forest and forest edges; uncommon.

244 Lobeliaceae*Lobelia* sp.

TPY 2353

Prostrate herb; mesic sites.

249 Boraginaceae*Cordia monoica* Roxb. (*C. ovalis*)

JM 1575

Shrub or tree to 7 m; bark scaling in strips; leaves sand-papery, sub-opposite; dry bushland; common.

Echiochilon lithospermoides (S. Moore) Johnston

JM 2129

Woody herb; leaves small, sessile, ovate; flowers pink, mauve; bushland; occasional.

Heliotropium longiflorum (A. DC.) Jaub. & Spach. ssp *undulatifolium*

TPY 2189

Perennial herb; leaves linear, undulate; flowers white to cream; bushed grassland; occasional.

Heliotropium strigosum L.

JM 1640

Stiffy-hairy annual herb; leaves elliptic to linear; flowers white; disturbed stony grassland; occasional.

Heliotropium zeylanicum (Burm. f.) Lam. (*H. subulatum*)

JM 2175

Perennial herb; leaves elliptic to linear; flowers yellow; bushland; occasional.

Lithospermum afromontanum Weim.

JM 2232

Trailing silky hairy shrub; leaves sessile, ovate to lanceolate; flowers white; forest clearing; common.

250 Solanaceae*Datura stramonium* L.

JM 1397

Annual herb; leaves ovate, dentate; fruits armed with stout prickles; disturbed ground; common.

Lycium europaeum L.

JM 1525

Much branched armed woody shrub; leaves narrow, spatulate–obovate or oblong; ripe berries orange or red; dry bushland; uncommon.

Physalis peruviana L.

JM 1916

Trailing herb; flowers yellow with brown centres; fruits orange; disturbed ground; common.

Solanum sp. A of Agnew

JM 1471

Herb; leaves linear–oblong; bushed grassland; uncommon.

Solanum aculeastrum Dunal

JM 1913

Shrub or small tree; stems and underside of leaves prickly; forest clearings; common.

Solanum incanum L.

JM 1348

Felty pubescent woody herb or shrub; prickles present or absent; waste ground; common.

Solanum indicum L.

JM 1912

Woody herb or shrub; leaves ovate, sinuate to pinnately lobed; prickles usually on stems and leaves; flowers pale mauve; montane forest clearing; occasional.

Solanum mauense Bitter

JM 1917

Similar to *S. indicum* except leaves entire; montane forest clearings; occasional.

- Solanum nigrum* L. JM 1591
Pubescent or glabrous unarmed annual herb; flowers white; disturbed ground; common weed.
- Solanum terminale* Forssk. (*S. nakurense*)
Unarmed herb or shrub; leaves broadly elliptic; flowers white to pale blue; bushland; common.
- Withania somnifera* (L.) Dunal JM 1705
Woody herb or soft shrub; leaves ovate; flowers green; disturbed ground; common.

251 Convolvulaceae

- Astripomoea malvacea* (Klotzsch) Meeuse JM SR
Perennial; leaves elliptic to broadly ovate; flowers white; bushed grassland; common.
- Convolvulus sagittatus* Thunb. AR 4102
Herb; stems twining or prostrate; leaves linear to oblong, sagittate; bushland; uncommon.
- Convolvulus siculus* L. TPY 2226
Annual herb; leaves oblong lanceolate; corolla white; disturbed grassland; occasional.
- Cuscuta kilimanjari* Oliv. TPY 2139
Leafless parasite; flowers cream; pedicels shorter than flowers; forest edge; occasional.
- Evolvulus alsinoides* L. JM 1380
Annual or perennial herb covered with silky hairs; leaves elliptic to linear oblong; grassland; common.
- Falkia canescens* C.H. Wright JM 1668
Prostrate herb rooting at nodes; leaves squarish–reniform, petiolate cordate, glabrous above; flowers white, solitary; fruit white tomentose 4-lobed; grassland; occasional.
- Ipomoea arachnosperma* Welw. DO 609
Annual prostrate or twining herb; leaves 3-lobed, cottony hairy beneath; bushland; uncommon.
- Ipomoea cairica* (L.) Sweet
Perennial twining herb; leaves palmately divided; forest clearing; common.
- Ipomoea hildebrandtii* Vatke TPY 2179
Shrublet, 4m; leaves round to elliptic–oblong, large finely pubescent beneath; grassland; occasional.
- Ipomoea kituensis* Vatke JM 1597
Shrub, partly twining or scrambling; leaves round, very obtuse at apex, large; flowers white cream or yellow; bushland; common.
- Ipomoea longituba* Hall. f. JM 1592
Perennial shrub; leaves ovate, cuneate or truncate at base, entire or lobed; bushed grassland; uncommon.
- Ipomoea marmorata* Brit. & Rendle DO 609
Erect subwoody shrub to 0.6 m flowering when leafless; leaves orbicular or reniform; bushland; occasional.
- Ipomoea mombassana* Vatke JM 2165
Annual or perennial twiner; leaves cordate, sagittate; bushland; common.
- Ipomoea obscura* (L.) Ker. Gawl.
Perennial herb, prostrate or twining; flowers bright yellow, orange, cream or white; bushland; common.

- Ipomoea polymorpha* Roem. & Schultes JM 1875
Annual or biennial erect or prostrate herb to 0.6 m; hairy leaves shallowly to deeply lobed; flowers axillary, white or pink; wet grassland; occasional.
- Ipomoea sinensis* (Desr.) Choisy ssp *blepharosepala* (A. Rich.) Meeuse JM 2047
Annual twiner; leaves ovate-oblong, cordate or subhastate; bushland; occasional.
- Ipomoea wightii* (Wall.) Choisy TPY SR
Perennial prostrate or twining hairy herb; leaves 3-lobed or entire, cottony hairy below; grassland; common.
- Ipomoea* sp. JM 2034
Prostrate herb; leaves cordate, hairy; seasonally waterlogged soil; rare.
- Stictocardia beraviensis* (Vatke) Hall. f. DO 451
Climber; flowers deep red; leaves alternate and simple; bushland; occasional.

252 Scrophulariaceae

- Alectra* sp. nr *kirkii* Hemsl. DO 656
Parasitic herb; flowers yellow; shady forest; uncommon.
- Alectra parasitica* A. Rich. TPY 2249
Parasitic herb; leaves scale-like, yellowish; flowers yellow; dry bushland; uncommon.
- Craterostigma plantagineum* Hochst. JM 1976
Herb; leaves a rosette, serrate; flowers blue; grassland; occasional.
- Craterostigma ?pumilum* Hochst. JM 1786
Herb; leaves in a rosette; occasionally waterlogged grassland; uncommon.
- Cynium tubulosum* (L. f.) Engl. ssp *montanum* (N.E. Br.) O.J. Hansen JM 2005
Herb; leaves linear-lanceolate; flowers white tinted purple or pink; bushland; common.
- Hebenstreitia angolensis* Rolfe (*H. dentata*) TPY SR
Shrub; leaves linear, toothed or entire; flowers white or orange; rocky bushed grassland; occasional.
- Lindernia philcoxii* Fischer (*Ilysanthes pusilla*) TPY 2351
Perennial herb; leaves elliptic; flowers pink; grassland shallow soils; occasional.
- Misopates orontium* (L.) Raf. DO 644
Annual; leaves linear; flowers subsessile, purple or pink or cream; shallow soils; uncommon.
- Pseudosopubia hildebrandtii* (Vatke) Engl. DO 484
Woody herb; leaves linear, acute or obtuse; flowers purple-pink; bushland; uncommon.
- Striga asiatica* (L.) Ktze. DO 619
Annual parasite; leaves linear to filamentous; flowers bright crimson; grassland; occasional.

259 Acanthaceae

- Asystasia mysorensis* (Roth) T. Anders. (*A. schimperi*) JM 1454
Annual herb; leaves obovate to elliptic; flowers white; pathsides; common.
- Barleria argentea* Rolf. f. (*B. diffusa*)
Woody herb; leaves subsessile; flowers pinkish mauve; grassland; occasional.
- Barleria micrantha* C.B. Cl. TO
Herb; leaves shortly petiolate; flowers pale blue; woodland; occasional.
- Barleria spinisepala* E.A. Bruce JM 1462
Woody herb; leaves subsessile, elliptic, mucronate; calyx spine-margined; flowers blue; grassland; occasional.

- Barleria submollis* Lindau DO 489
Herb; leaves rounded at base; flowers blue; bushland; occasional.
- Barleria ventricosa* Nees JM 1403
Herb; leaves subsessile, attenuate below; flowers blue; forest; occasional.
- Barleria volkensii* Lindau TO
Herb; leaves ovate-elliptic, petiolate; flowers blue; forest edges; occasional.
- Blepharis ciliaris* (L.) B.L. Burt (*B. linariifolia*) DO 488
Annual herb; leaves sessile, unequal, spine toothed; flowers bright blue; open grassland.
- Blepharis maderaspatensis* (L.) Roth. var. *rubrifolia* (Schum.) Napper JM 1429
Trailing herb; leaves entire or rarely toothed, scabrid, verticillate at nodes; flowers white; rocky slopes and forest edges; uncommon.
- Crabbea velutina* S. Moore JM 1354
Herb; leaves shortly petiolate, oblong-elliptic; flowers white; grassland; common.
- Crossandra massaica* Mildbr. (*C. nilotica*) DO 545
Herb; leaves petiolate, elliptic-lanceolate; flowers red; wooded grassland; occasional.
- Crossandra mucronata* Lindau JM 1374
Herb; leaves subsessile, ovate-elliptic; flowers pale orange to red; dry thicket; common.
- Dyschoriste clinopodioides* Mildbr. (*D. radicans*) JM 2179
Trailing herb; leaves elliptic to obovate; flowers pale purple; disturbed grassland; occasional.
- Dyschoriste thunbergiflora* (S. Moore) Lindau DO 555
Herb or subshrub; flowers purple mauve or blue; forest margin; common.
- Hygrophila auriculata* (Schumach.) Heine JM 1794
Herb; stems square; flowers axillary each with stout spines; bushland; occasional.
- Hypoestes forskahlii* (Vahl) R. Br. (*H. verticillaris*) JM 1402
Herb; leaves elliptic, petiolate; flowers axillary, white streaked with pink or purple; bushland; common.
- Isoglossa laxa* Oliv. JM 1389
Herb; leaves ovate, subsessile below the inflorescence which is glandular hairy; woodland; occasional.
- Justicia anselliana* (Nees) T. Anders (*J. leikipiensis*) JM 1440
Herb; leaves linear to narrowly elliptic; marshy grassland; common.
- Justicia cordata* (Nees) T. Anders TO
Shrub; leaves subsessile, oblong, bases shortly clasping stem or cordate; bushland; occasional.
- Justicia diclipteroides* Lindau DO 584
Trailing herb rooting at nodes; flowers purple to pink; forest edges; common.
- Justicia calyculata* (Deflers) T. Anders. (*J. exigua*) TPY 2272
Creeping annual or perennial herb with spreading hairy stems; grassland; common.
- Justicia* sp. nr. *calyculata* (Deflers) T. Anders. DO 575
Creeping or erect herb rooting at nodes; flowers white; forest floor; uncommon.
- Justicia heterocarpa* T. Anders DO 570
Annual herb; leaves ovate to elliptic; flowers pale purple; grassland; common.
- Justicia regis* Hedron (*J.* sp. D of Agnew ed. 1) JM 1502
Shrub, white hairy on stems; leaves ovate to oblong, rounded; rocky bushed grassland; occasional.
- Megalochlamys (Ecbolium) revolutum* (Lindau) Vollesen TPY SR
Semi-woody shrub to 2 m; dry rocky slopes; occasional

- Monechma debile* (Forssk.) Nees JM 1456
Woody annual herb; flowers terminal and axillary purplish, subtended by broad oblong–elliptic bracts; disturbed ground; common.
- Monotheций glandulosum* Hochst. TPY 2315
Trailing herb rooting at nodes; flowers pale purple to mauve; woodland; occasional.
- Ruellia patula* Jacq. JM 1576
Herb; leaves petiolate, ovate–spathulate, obtuse or acute; flowers pinkish lilac; bushland, grassland; common.
- Ruttya fruticosa* Lindau JM 1533
Shrub; leaves ovate to obovate–elliptic; flowers black and red; bushland; common.
- Thunbergia alata* Sims TPY 2328
Twining perennial herb; leaves triangular to lanceolate or ovate; flowers orange; bushland; common.
- Thunbergia ?fischeri* Engl. JM 1973
Densely hairy perennial from a woody rootstock; grassland; uncommon.
- Whitfieldia elongata* (Beauv.) C.B. Cl. JM 2051
Erect or climbing shrub; leaves large, glabrous, elliptic, gradually narrowed at both ends; flowers yellowish white, glandular; corolla tube white; wet forest; rare.

263 Verbenaceae

- Clerodendrum glabrum* E.Mey. TO
Evergreen shrub to 5 m; leaves opposite or ternate, underside densely glandular; flowers white; bushland; common.
- Clerodendrum myricoides* (Hochst.) Vatke JM 1346
Shrub to 3 m; leaves subsessile, verticillate, margin deeply toothed, blade glandular punctate below; flowers blue; grassland; common.
- Lantana camara* L. TO
Shrub; stems armed with short hooked prickles; leaves scabrid, serrate; wasteland; disturbed ground; common.
- Lantana trifolia* L. JM 1860
Shrub; leaves usually ternate, scabrid; bushland; common.
- Lippia javanica* (Burm. f.) Spreng JM 1356
Shrub; leaves lanceolate to oblong with dense white pubescence below; flower spikes more than 4 at nodes; disturbed ground; common.
- Lippia kituiensis* Vatke sensu Baker *et al.* (*L. ukambensis*) JM 1800
Similar to *L. javanica* but leaves scabrid; disturbed ground; common.
- Priva curtisiae* Kobuski JM 1654
Herb; leaves oblong to ovate; flowers pink, spicate; bushland; occasional.
- Verbena bonariensis* L. (*V. brasiliensis* Vell.?) TPY 2129
Robust annual; leaves sessile, oblong, serrate; flowers violet; common weed.

264 Labiatae

- Ajuga remota* Benth. JM 2004
Herb, 20 cm; leaves oblanceolate, coarsely toothed; flowers pale blue; disturbed areas; uncommon.
- Becium obovatum* (E. Mey.) N.E. Br. JM 1378
Herb or wiry shrub; leaves oblong, ovate or obovate, rounded at base or apex; flowers white or pale pink; bushed grassland; common.

- Becium* sp. C of Agnew & Agnew TPY 2295
Herb; leaves linear to oblanceolate, acute, stems purple; wooded grassland; common.
- Fuerstia africana* T.C.E. Fr. JM 1357
Shrub or herb; leaves ovate, serrate; flowers white; leaves stain the fingers red when crushed; grassland, undergrowth in wooded grassland; common.
- Leonotis nepetifolia* R. Br. JM 1985
Woody annual; leaves long petiolate, ovate; flowers orange; disturbed ground; common weed.
- Leonotis ocymifolia* (N.L. Burm.) Iwarsson (*L. mollissima*) JM 1938
Woody herb or shrub; leaves woolly, ovate, cordate; flowers orange, occasionally white; disturbed ground; occasional.
- Leucas argentea* Guerke (*L.* sp. A of Agnew ed. 1) TPY 2338
Erect silky-tomentose shrub; leaves orbicular to ovate elliptic; flowers globose clusters, white; disturbed bushland; uncommon.
- Leucas calostachys* Oliv. JM 1755
Shrub; leaves elliptic to obovate, subsessile; flowers in terminal masses, spike-like, white; bushland; occasional.
- Leucas glabrata* R. Br. DO 314
Herb or weak shrub; leaves petiolate, elliptic to ovate; grassland; uncommon.
- Leucas martinicensis* (Jacq.) R. Br. JM 1453
Annual herb; leaves ovate to elliptic; flower tight balls, white; calyces spiny; disturbed soil; occasional.
- Ocimum gratissimum* L. (*O. suave*) JM 1414
Shrub; leaves long petiolate, ovate, serrate; flowers dirty white; forest edges; bushland; common.
- Ocimum kenyense* Paton (*O.* sp. A of Agnew ed. 1) JM 2217
Herb; leaves subsessile, ovate-elliptic; black cotton soil; occasional.
- Plectranthus assurgens* (Bak.) J.K. Morton JM 2212
Trailing shrub; leaves broad-ovate, almost suborbicular; shady montane forest; occasional.
- Plectranthus caninus* Roth. JM 1729
Low fleshy annual herb; leaves elliptic, cuneate; flowers bright blue, spicate; disturbed rocky ground; common.
- Plectranthus comosus* Sims (*P. barbatus*) TPY 2274
Shrub; leaves ovate or ovate-elliptic; flowers bright blue; bushland; occasional.
- Plectranthus* sp. nr *cylindraceus* A. Rich. DO 562
Scrambling fleshy shrub; leaves elliptic to obovate; bushland; uncommon.
- Plectranthus longipes* Bak. TPY 2286
Sub-succulent herb; leaves orbicular, crenate; flowers bright blue; disturbed woodland; occasional.
- Plectranthus pseudomarrubioides* R.H. Willemse DO 530
Trailing succulent herb; leaves ovate to orbicular; flowers lilac; rocky bushed grassland in rock crevices; occasional.
- Plectranthus hadiensis* (Forsk.) Schweinf. (*P. zatarhendi*) TO
Trailing herb; leaves long petiolate, coarsely serrate, orbicular; disturbed rocky ground; occasional.
- Plectranthus* sp. JM 1810
Perennial shrub; leaves opposite, fleshy; dry rocky slopes; uncommon.

- Plectranthus* sp. JM 1979
Perennial shrub, semi-succulent; leaves serrate; dry rocky slopes; uncommon.
- Pycnostachys deflexifolia* Bak. JM 2229
Erect glabrous annual or short-lived perennial herb; leaves lanceolate–elliptic; flowers terminal, usually solitary in long tapering spikes; disturbed ground; uncommon.
- Salvia leucantha* Cav. JM 1682
Straggling shrub; leaves lanceolate, finely serrated; flowers purple and white; disturbed ground; occasional.
- Tetradenia riparia* (Hochst.) Codd. JM 1420
Semi-succulent shrub; leaves opposite, fleshy, serrate, broadly elliptic to orbicular; rocky outcrops; common.
- Tinnea aethiopica* Kotschy & Peyr. ssp *aethiopica* JM 1393
Shrub; leaves elliptic, coarsely toothed; flowers paired; calyx red; corolla black; forest edges; common.

MONOCOTYLEDONS

276 Potamogetonaceae

- Potamogeton thunbergii* Cham. & Schlechtd. (*P. richardii*) TPY 2127
Anchored trailing aquatic; leaves floating; spikes emergent; streams and dams; common.

280 Commelinaceae

- Aneilema aequinoctiale* (P. Beauv.) Kunth. TPY 2300
Herb with trailing stems; hairs hooked; flowers yellow; forest; occasional.
- Aneilema recurvatum* Faden (*A. sp. C* of Agnew ed. 1) TPY 2301
Herb; upper petals narrower and more pointed; bushland; occasional.
- Aneilema petersii* (Hassk.) C.B. Cl. JM 1853
Herb; flowers white to pale mauve; bushland; occasional.
- Commelina africana* L. var. *africana* JM 1517
Small herb; branches prostrate; roots thickened, fibrous; grassland; common.
- Commelina africana* L. var. *glabriuscula* (Norl.) Brenan DO 448
Perennial semi-succulent, trailing or straggling or semi-erect herb; forest floor; occasional.
- Commelina albescens* Hassk. DO 629
Small herb; spathes strongly falcate, grassland/bushland; common.
- Commelina benghalensis* L. DO 446
Herb; leaves petiolate and oblique based; weed of cultivation and disturbed areas; common.
- Commelina erecta* L. JM 1482
Herb; stems erect; flowers with paired sepals fused; grassland/bushland; common.
- Commelina forskolii* Vahl DO 596
Trailing herb rooting at nodes; leaf margins undulate; grassland; common.
- Commelina latifolia* A. Rich. TPY 2145
Herb; flowers dark blue; forest edges; common.
- Commelina petersii* Hassk. DO 541
Herb; erect or scrambling; spathes large, acuminate; bushland; occasional.
- Commelina luggardii* Bullock (*C. purpurea*)
Tufted herb; internodes purple; shallow soils in rocky areas; common.
- Commelina subulata* Roth
Small herb; stems single or tufted, erect, 5–25 cm; grassland in vleis soils; occasional.

- Cyanotis* sp. aff. *foecunda* Hassk. DO 532
Herb with many noded flowering shoots; among rocks; uncommon.
- Murdamia simplex* (Vahl) Brenan JM 2130
Herb; flowers lavender to bluish mauve; swamps, grassland; occasional.
- 293 Liliaceae**
- Albuca* sp. JM 1779
Bulbous herb; leaves linear; rocky grassland; uncommon.
- Aloe lateritia* Engl. var. *graminicola* (Reynolds) S. Carter JM 2231
Medium sized aloe; leaves a rosette, sessile, white spotted and streaked; wooded grassland; occasional.
- Aloe nyeriensis* Christian
Shrub, thicket forming; leaves deep green, narrow; flowers red, penduncles green; rocky bushland; uncommon.
- Aloe francombei* L. Newton. TPY 2321
Succulent herb; leaves a rosette, sessile or short stem with age; rock slopes of the Mukutan Gorge and Milima and Kisu ridge; uncommon. Spotted leaves that dry black and pale pink flowers.
- Aloe secundiflora* Engl. DO SR
Large fleshy herb; leaves a rosette, unspotted; flowers red; alluvial sandy soils; common.
- Aloe* sp. JM 1881
Acaulescent succulent 20 cm tall; rosette leaves 2 cm wide, with a purplish tinge on drying; riparian; uncommon
- Asparagus aethiopicus* L. var. *angusticladus* Jessup JM 1386
Armed woody struggler or scrambler; woodland; common.
- Asparagus africanus* Lam. JM 1384
Armed woody climber, stems slightly grooved, zig-zagging; forest edges; common.
- Asparagus asparagoides* (L.) Wight JM 1711
Climbing or straggling glabrous unarmed herb; cladodes alternate; upland forest under shade; occasional.
- Asparagus flagellaris* (Kunth.) Bak. JM 1439
Erect to climbing armed woody perennial; stem grooved; cladodes needle-like, terete; rocky bushland; common.
- Asparagus racemosus* Willd. (*A. buechananii*) TO
Woody climber; stems zig-zagging, spineless; forest; occasional.
- Bulbine abyssinica* A. Rich. JM 1540
Herb; leaves in basal rosette, filiform to linear; flowers sulphur yellow; grassland; common.
- Chlorophytum* sp. nr *comosum* (Thunb.) Jacq. DO 597
Herb; leaves linear-lanceolate; roots tuberous; fruits 3-angled; riverine; occasional.
- Chlorophytum (Anthericum) subpetiolatum* (Bak.) Kativu DO 631
Perennial herb; leaves linear-lanceolate; roots tuberous; flowers white; woodland; occasional.
- Chlorophytum sylvaticum* Dammer (*Dasystachys gracilis*) JM 2228
Small plant from an erect shortly fibrous rhizome; roots swollen, fleshy; leaves in ascending rosette; inflorescence dense; grassland and open woodland; common.
- Gloriosa superba* L.
Erect or climbing herb; leaves lanceolate; flowers scarlet or yellow to dark red; grassland; bushland, forest; common.

Ornithogalum tenuifolium Delaroch (*O. ecklonii*) TPY 2236
Herb; from a globose bulb; leaves long, linear–lanceolate; open woodlands on seasonally wet soils; occasional.

Scilla kirkii Bak. JM 2158
Herb; bulbs to 8 cm diameter; leaves ovate to sword shaped, sessile; seasonally wet soils; uncommon.

305 Typhaceae

Typha domingensis Pers. TPY SR
Stout grasslike herb; leaf blades linear narrowing at base; dams; occasional.

306 Amaryllidaceae

Böophone disticta Herb. TPY SR
Herb with an annually-produced fan of leaves; rocky bushed grassland; common.

Crinum macowanii Bak. JM 2169
Herb; leaves spiral, linear or strap shaped; flowers pink; sandy streams; uncommon.

Scadoxus (Haemanthus) multiflorus (Martyn) Raf. TPY SR
Bulbous herb with leaves and inflorescence appearing at different times; leaves elliptic; sheaths purple spotted; flowers densely packed, red to pink; rocky places in forest edges, riverine; common.

307 Iridaceae

Gladiolus newii Bak. (*Gladiolus natalensis*, *G. psittacinus*) JM 2040
Perennial herb; leaves linear; flowers streaked reddish orange; grassland; occasional.

Gladiolus (Acidanthera) ukambensis (Bak.) Marais var. *elatus* Marais JM 1568
Erect herb; flowers long, white, scented; rocky bushed grassland; common.

311 Dioscoreaceae

Dioscorea astericus Burkill DO 547
Annual twiner; leaf blades heart-shaped; flowers star-shaped; forest; common.

Diocorea quartiniana A. Rich. var. *quartiniana* JM 1710
Climber; leaves 3–5 foliolate; leaflets obovate to elliptic; wooded grassland; occasional.

Dioscorea schimperana Kunth
Robust climber; leaves ± orbicular, cordate, acuminate; forest edges; occasional.

313 Dracaenaceae (Agavaceae)

Sansevieria robusta N.E. Br. (*S. ehrenbergii*) TPY SR
Perennial; leaves succulent, a basal rosette; rocky slopes; occasional.

Sansevieria parva N.E. Br. JM 1851
Succulent; leaves linear–elliptic in a rosette; flowers racemose, whitish to dull reddish; woodland; uncommon.

Sansevieria raffillii N.E. Br. JM SR
Rhizomatous herb; leaves 3–6, strap shaped, variagated; flowers whitish; dry bushland; occasional.

314 Palmae

Phoenix reclinata Jacq. JM 1598
Palm about 7 m; flowers pendulous, cream; watercourses; uncommon.

318 Hypoxidaceae

Hypoxis obtusa Burch. JM 1802

Perennial herb; leaves narrow, strap-shaped, recurved; flowers 2–4 on a slender scape, yellow; burnt grassland on rocky shallow soil; common.

Hypoxis sp. nr *obtusa* Burch. JM 1909

Similar to *H. obtusa* except flowers up to 7 and leaves less hairy.

326 Orchidaceae

Angraecum erectum Summerh. DO 567

Epiphyte; stems erect, 10–100 cm; leaves rigid, lanceolate; flowers white, dry forest; common.

Ansellia africana Lindley DO 621

Robust plant, 50–100 cm; flowers dull yellowish green, spotted; deep shade; occasional.

Diaphanthe subsimplex Summerh. JM 1827

Straggling herb with long aerial roots; inflorescence shorter than leaves; forest; common.

Eulophia orthoplectra (Reichb. f.) Summerh. TPY SR

Herb; leaves lanceolate; flowers lax; grassland; occasional.

331 Cyperaceae

Cyperus assimilis Steudel TPY 2138

Slender to fairly robust annual; root system minute; culms 1–50 cm; seasonally wet habitats; common.

Cyperus involucratus Rottb. (*C. alternifolius*) JM 2120

Robust perennial; rhizome 2–10 cm thick, woody, creeping; wet sites and stream banks; common.

Cyperus laevigatus L. JM 2118

Leafless rhizomatous perennial; inflorescence of one to many sessile spikelets subtended by a short bract which is continuation of the culm; sand banks, river banks; common.

Cyperus rotundus L. (*C. merkeri*) JM 2062

Medium sized perennial; stem base swollen; seasonally wet grassland; common.

Cyperus niveus Retz.

Perennial; culms crowded growing on straight line; dry grassland; occasional.

Cyperus obtusiflorus Vahl DO 598

Perennial; bases swollen; sheaths dark brown; seasonally wet grassland; common.

Cyperus rigidifolius Steudel TPY SR

Slender to fairly robust perennial; base woody; grassland near roads and cultivations; common.

Cyperus (Mariscus) impubes Steud. DO 599

Robust perennial with a thick horizontal rhizome; seasonally waterlogged ground; common.

Cyperus sp. TPY 2137

Perennial; culms 20 cm; leaf bases swollen; seasonally waterlogged areas; uncommon.

Cyperus sp. JM 2103

Perennial; culms up to 45 cm; rhizome horizontal; seasonally waterlogged ground; uncommon.

Cyperus sp. JM 2104

Perennial; culms up to 30 cm; bases swollen; seasonally wet habitats; uncommon.

- Mariscus dubius* Rottb. JM 2121
Robust tussocky perennial; culms usually few, together, 10–60 cm; rocky outcrops; common.
- Schoenoplectus ?proximus* (Steud.) J. Rayn. TPY SR
Dwarf annual growing in small tufts; culms 1–2 cm; wet grassland; uncommon.
- Rikliella rehmannii* (Ridley) J. Rayn. (*Scirpus rehmannii*) JM 2105
Slender annual; roots reddish brown; culms 2–30 cm; seasonally wet grassland; occasional.
- 332 Gramineae**
- Alloteropsis cimicina* (L.) Stapf DO 607
Tufted annual; culms 30–120 cm; nodes hairy; open places; occasional.
- Andropogon shirensis* A. Rich JM 2068
Tufted perennial; culms 40–120 cm, sometimes coated with fibrous remains of old leaf sheaths; bushland, common.
- Aristida adoensis* Hochst. JM 2092
Perennial; culms 25–60 cm, densely caespitose; bushland; common.
- Aristida adscensionis* L. DO 500
Annual; culms 10–100 cm forming erect or sprawling tufts; waste places; common.
- Bothriochloa insculpta* (A. Rich.) A. Camus JM 2070
Tufted perennial; culms 25–200 cm; inflorescence subdigitate; grassland; common.
- Brachiaria brizantha* (A. Rich.) Stapf JM 2083
Tufted perennial; culms 30–200 cm, geniculately ascending; wooded grassland; occasional.
- Brachiaria deflexa* (Schumach.) Robyns DO 591
Loosely tufted perennial; culms 15–70 cm, weak; bushland; occasional.
- Brachiaria dictyoneura* (Fig. & De Not.) Stapf JM 2080
Densely tufted perennial; culms 40–100 cm, never rooting at base; wooded grassland; occasional.
- Brachiaria serrata* (Thunb.) Stapf JM 2089
Densely tufted perennial; basal sheaths silk tomentose; wooded grassland; occasional.
- Brachiaria serrifolia* (Hochst.) Stapf DO 519
Annual; culms 40–100 cm; leaf-blades cordate; deciduous bushland; occasional.
- Brachiaria xantholeuca* (Schinz) Stapf DO 624
Tufted annual; culms 20–40 cm; leaves velvety pubescent; bushland; common.
- Chloris gayana* Kunth JM SR
Perennial; culms 0.5–2.2 m; riverine woodland; common.
- Chloris pycnothrix* Trin. TPY SR
Annual; culms up to 0.5 m; grassland with scattered trees; occasional.
- Chloris virgata* Sw. JM 2073
Annual; culms up to 1 m; scattered tree grassland; occasional.
- Ctenium somalense* (Chiov.) Chiov. JM 2063
Tufted wiry perennial; basal sheaths dense mass of fibres; grassland; occasional.
- Cymbopogon pospischilii* (K. Schum.) C.E. Hubbard DO 551
Tufted perennial; culms 40–100 cm; basal sheaths persistent; bushland; common.
- Cynodon plectostachyus* (K. Schum.) Pilg. DO 659
Perennial without a rhizome; stolons stout and woody; disturbed bushland; occasional.
- Dactyloctenium aegyptium* (L.) Willd. TPY 2238
Annual; culms to 70 cm; geniculately ascending; open grassland, weed; common.

- Digitaria diagonalis* (Nees) Stapf JM 2090
Tufted perennial; basal sheaths silky hairy; open grassland; common.
- Digitaria milanjiana* (Rendle) Stapf TPY 2208
Loosely tufted rhizomatous perennial; basal sheaths glabrous; old cultivations and habitations; common.
- Elionurus muticus* (Spreng.) Kuntze (*E. argenteus*) JM 2066
Densely tufted perennial; culms 15–100 cm, leaf blades filiform; stony bushland; common.
- Enneapogon cenchroides* (Roem. & Schult.) C.E. Hubbard JM 2085
Tufted robust annual; culms up to 1 m; wooded grassland; common.
- Eragrostis aspera* (Jacq.) Nees DO 476
Tufted annual, culms 20–80 cm; disturbed grassland; common.
- Eragrostis cilianensis* (All.) Lut. JM 2081
Loosely tufted annual; culms 10–90 cm; leaf blades with warty glands along the margin; overgrazed places; common.
- Eragrostis papposa* (Roem. & Schult.) Steud. JM 2097
Tufted perennial; short lived; culms 10–40 cm; bushland; occasional.
- Eragrostis pycnostachys* W.D. Clayton JM 2110
Tufted perennial; culms hard, wiry, 1 m; forest stream banks; occasional.
- Eragrostis racemosa* (Thunb.) Steud. JM 2087
Tufted perennial; culms 9–80 cm; shallow stony soils; common.
- Eragrostis superba* Peyr. JM 2078
Perennial forming mats; culms 20–120 cm; wooded grassland; common.
- Hackelochloa granularis* (L.) Kuntze DO 638
Annual; culms 5–100 cm; leaf blades coarsely hispid; disturbed ground; occasional.
- Harpachne schimperi* A. Rich. JM 2095
Densely tufted perennial; culms 13–52 cm; inflorescence lax; grassland; occasional.
- Heteropogon contortus* (L.) Roem. & Schult. JM 2065
Tufted perennial; culms 30–100 cm; basal sheaths laterally compressed; wooded grassland; common.
- Hyparrhenia hirta* (L.) Stapf JM 2075
Mat forming perennial; culms 30–60 cm; bushland; common.
- Leptochloa* sp. TPY 2220
Tufted perennial; grassland; uncommon.
- Loudetia flavida* (Stapf) C.E. Hubbard TPY 2214
Tufted perennial; culms 30–150 cm; bushland on rocky slopes; common.
- Loudetia kagerensis* (K. Schum.) Hutch. JM 2067
Tufted perennial; culms 25–90 cm, blacked at nodes; stony hillsides; common.
- Loudetia simplex* (Nees) C.E. Hubbard JM 2064
Tufted perennial; culms 30–150 cm, nodes yellowish to black and glabrous to bearded; panicle linear to narrowly ovate; deciduous bushland; common.
- Microchloa indica* (L.f.) P. Beauv. TPY 2198
Loosely mat forming annual (individual tufts); culms 5–50 cm; open grassland; occasional.
- Oplismenus burmannii* (Retz.) P. Beauv. TPY 2329
Annual, prostrate or trailing; culms 10–60 cm; forest shade or bushland trees; common.
- Panicum atrosanguineum* A. Rich. DO 499
Tufted annual; culms 10–40 cm; disturbed places; occasional.
- Panicum maximum* Jacq. JM 2101
Loosely to densely tufted perennial; culms 25–200 cm; damp bushland; common.

- Panicum* sp. TPY 2221
Tufted perennial.
- Panicum* sp. TPY 2213
Tufted perennial; culms 20 cm; bushed woodland; uncommon.
- Pennisetum mezianum* Leeke JM 2082
Shrubby perennial; culms 30–120 cm, ascending from a prostrate base; bushland; occasional.
- Rhynchelytrum repens* (Willd.) C.E. Hubbard JM 2072
Annual or loosely tufted perennial; culms 30–100 cm; disturbed places, weed; common.
- Sehima nervosum* (Rottler) Stapf DO 463
Tufted perennial; culms 30–100 cm; leaf blades long acuminate; stony bushland; occasional.
- Setaria acromelaena* (Hochst.) Th. Dur. & Shinz TPY 2197
Loosely tufted annual; culms 15–50 cm; weedy places; common.
- Setaria homonyma* (Steud.) Chiov. DO 498
Loosely tufted annual; culms 25–100 cm; weed of shady cultivation; uncommon.
- Setaria orthosticha* Herrm. TPY 2205
Loosely tufted annual; culms 10–150 cm; woodland shade; common.
- Setaria plicatilis* (Hochst.) Engl. JM 2093
Tufted perennial; culms slender (2–3 mm basal diameter) radiating outwards to form a clump 0.5–1 m high; forest shade; occasional.
- Setaria pumila* (Poir.) Roem. & Schult. JM 2074
Loosely tufted annual; culms 5–130 cm, nodes glabrous; pathsides, weed.
- Setaria sphacelata* (Schumach.) Moss JM 2071
Tufted perennial from short rhizomes; culms 20–300 cm; wooded grassland; common.
- Setaria verticillata* (L.) P. Beauv. JM 2107
Loosely tufted annual; culms 10–100 cm, geniculately ascending; deserted human habitations; common.
- Sorghum arundinaceum* (Desv.) Stapf DO 617
Annual or short lived perennial; culms 0.3–4 m, often robust; disturbed places; common.
- Sporobolus fimbriatus* (Trin.) Nees JM 2094
Tufted perennial; culms 50–100 cm; leaves mostly basal; open bushland; common.
- Sporobolus panicoides* A. Rich. TPY 2211
Loosely tufted perennial; culms 15–100 cm; primary branches of panicles in whorls; bushland; occasional.
- Sporobolus piliferus* (Trin.) Kunth TPY 2210
Tufted annual; culms 5–40 cm; primary branches of panicles subverticillate, short; open places; occasional.
- Sporobolus* sp. TPY 2216
Perennial; culms erect to 80 cm; grassland; uncommon.
- Themeda triandra* Forssk. JM 2069
Tufted perennial; culms 30–200 cm; false panicle wedge shaped; bushland; common.
- Tragus berteronianus* Schult. JM 2079
Loosely tufted annual; culms 5–60 cm; inflorescence compactly cylindrical; overgrazed areas; occasional.
- Urochloa panicoides* P. Beauv. DO 635
Tufted annual; culms 10–100 cm, base prostrate; deserted human habitations; common.

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REFERENCES

- Agnew, A.D.Q. & S. Agnew (1995). *Upland Kenya Wildflowers*. East African Natural History Society, Nairobi.
- Ahn, P.S. & L.C. Geiger (1987). *Soils of Laikipia District*. National Agricultural Laboratories, Republic of Kenya, Nairobi.
- Anonymous (1977). *Geological map of Lake Baringo-Laikipia area*. Government of Kenya, Nairobi.
- Anonymous (1987). Kenya 1:250,000 (Geology). Baringo-Laikipia, Government of Kenya, Nairobi.
- Barbour, M.G., J.H. Burk & W.D. Pitts (1987). *Terrestrial Plant Ecology*. Benjamin/Cummings, Menlo Park, CA, USA.
- Beentje, H. (1994). *Kenya Trees Shrubs and Lianas*. National Museums of Kenya, Nairobi.
- Dale, I.R. & J.P. Greenway (1961). *Kenya Trees and Shrubs*. Buchanan Estates, Kenya.
- Hutchinson, J. (1934). *Families of Flowering Plants*.
- Newton, L.E. (1990). Notes on *Ceropegia powysii*. *E. Afr. Nat. Hist Soc. Bull.* **20**: 2–3.
- Newton, L.E. (1994). Four new species of *Aloe* in Kenya. *Brit. Cact. Succ. J.* **12**: 50–56.
- Odinga, R.S. (1971). *The Kenya Highlands. Land Use and Agricultural Development*. East African Publishing House, Nairobi.
- Oloo, T.W., R. Brett & T.P. Young (1994). Seasonal variation in the feeding ecology of black rhinoceros (*Diceros bicornus* L.) in Laikipia, Kenya. *African Journal of Ecology* **32**: 142–157.
- Polhill, R.M., W.B. Turrill, & E. Milne-Redhead (eds.) 1957–continuing. *Flora of Tropical East Africa* (numerous vols.), Crown Agents, London. (Later volumes by other editors, and published by A.A. Balkema, Rotterdam.)
- Taiti, S.W. (1992). The vegetation of Laikipia District Kenya. Laikipia - Mt Kenya Papers, B-2. Laikipia Research Programme, Universities of Nairobi and Bern.
- Young, T.P. & C. Francombe (1991). Growth and yield estimates in natural stands of leleshwa (*Tarconanthus camphoratus*). *Forest Ecology and Management* **41**: 309–321.
- Young, T.P. & K.W. Lindsay (1988). The role of even-aged population structure in the disappearance of *Acacia xanthophloea* woodlands. *African Journal of Ecology* **26**: 69–72.
- Yuong, T.P., N. Patridge & A. Macray (1995). Long-term glades in acacia bushland and their edge effects in Laikipia, Kenya. *Ecological Applications* **5**: 97–108.
- Young, T.P. & M.M. Peacock (1992). Giant senecios and alpine vegetation of Mount Kenya. *Journal of Ecology* **80**: 141–148.