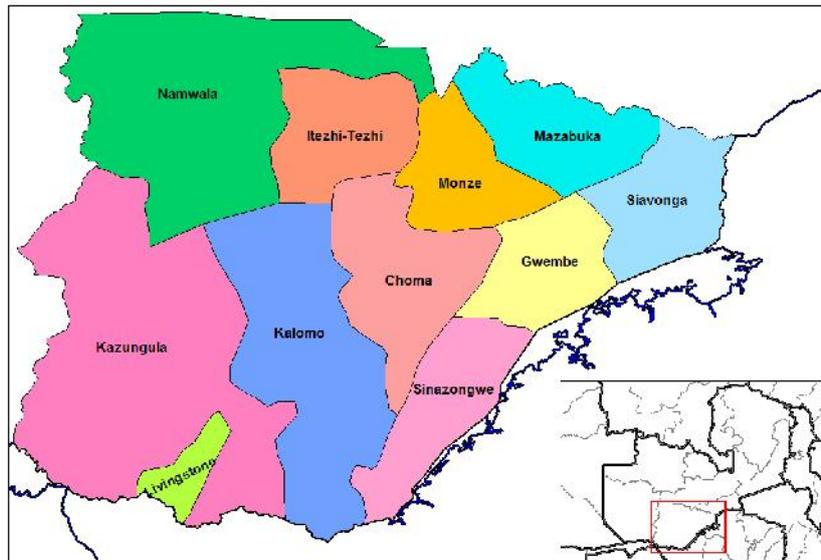


**Vegetation of Namwala district, Zambia
Forest Research Pamphlet No. 42**

by
D.B.Fanshawe

Digitized and edited by Mike Bingham, July 2015



Southern Province – In 1997 Namwala District was subdivided, with the creation of the new district Itezhi-tezhi. In this map, downloaded from Wikipedia, the names are transposed; the larger part (green) is Itezhi-tezhi, the smaller Namwala. Itezhi-tezhi District, most of which lies within Kafue National Park, was moved from Southern to Central Province in 2012.

Most of this series of reports are not dated, but assuming the numbering approximates the order in which they appeared the Namwala report was published in 1971 or '72. The manuscripts were typed on wax stencils. While modern scanners reproduce the text accurately, the imperfections of the wax stencils cause many misreadings. The letters , 'c', 'e' and 'o', for example, often cannot be distinguished.

I have adapted the format of the species lists to be more appropriate as allowed by word processor technology. The appended Index lists all species names alphabetically with a second column to give currently accepted names. Names marked with an asterisk (*) are no longer valid, and the currently accepted names can be found on the index. The authenticity of the names can be checked on the websites African Plant Database, or Zambia Flora.

VEGETATION OF NAMWALA DISTRICT

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by

D.B.Fanshawe

Namwala district forms the north-western corner of Southern province, framed between latitudes 15° 15' and 16°30' south and longitudes 25° 15' and 27° 15' east with an area of 8293 sq. miles of which 3260 sq.m. form the Kafue National Park. It is bounded on the north by Mumbwa, on the north-west by Kaoma (Mankoya), on the south-west by Sesheke, on the south by Kalomo, and on the east by Choma and Mazabuka districts.

Most of the country is flat at an elevation of 915 (3000 ft) above sea level. Only the hilly country of the north-west rises to over 1220 m (4000 ft.). The whole district centres about the Kafue R., the only real perennial stream. The river has an enormous influence on the country flooding vast areas each season and providing the district with an important fishing industry. The Kafue R. enters the district by the granite country of the north-west where it flows fairly rapidly almost due south over a series of broad rapids until it abruptly changes direction at the Meshi-Teshi gap and flows eastwards to the Kafue flats, suddenly changing from a young river, geologically speaking, to an old one meandering slowly over the flats. It rises about 6m (20 ft.) each year during the floods and upwards of ¾ the district becomes waterlogged.

Rainfall averages 750 mm (30 ins) per year with a long dry season from mid-March to mid-November. Temperatures range between 28°F and 104°F. There are two rainfall belts, 708 - 800mm (28 - 32 ins.) and 800 - 900 mm (32 - 36 ins) and two temperature belts 65 - 70°F and 70 - 75°F.

The geology has not been completely mapped. Coarse-grained granites of the Cretaceous period form the hills of the north-west. On the flat ground deposits of the Katanga system overlie the Basement Series on each side of a shallow rift depression containing Karroo sediments, mainly covered by recent Kafue flats alluviums and the residual Kalahari sand caps.

There is a full range of soils divided into 10 main types varying from the heavier, fertile Upper Valley clays and clay loams and the mainly non-arable heavy soils such as the black hydromorphic Kafue Flats clays and the mopane clays to the lighter, sandier soils of the miombo and sand-veld soils and the Kalahari sands.

The vegetation is complex. Baikiaea forest relics, secondary Baikiaea, Kalahari woodland and mopane woodland cover the section of the district within the Kafue National Park. This vegetation has already been described. (F. Res. Pamphlet No. 33).

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Outside the Park miombo (both Trapnell's P5 and P7) occurs on the north bank, Kalahari woodlands (Trapnell's K3.5.8.) on the South bank with a little poor *Baikiaea* forest and K10 thicket. Munga woodland occurs on both banks with *Hyphaene* and *Borassus* palm groves. Allied vegetation occurs on Kalahari sands. Pure mopane woodland occurs on the south bank, mopane on anthills on both banks. The remainder of the area consists of grassland on the Kafue flats.

The woody flora is poor around 700 species of which only just over 600 have been recorded.

The following vegetation types are represented in the district -I. Closed Forest

- A. Climatic
 - 1. Dry Deciduous Forest
 - (a) *Baikiaea* forest)
 - (b) Secondary *Baikiaea* forest) in KNP only
 - (c) *Pteleopsis* forest) already described
 - B. Edaphic
 - 1. Riparian woodland
- II** Open Forest with Grass
- 1. Miombo woodland
 - 2. Kalahari woodland
 - 3. Mopane woodland
 - 4. Munga woodland
 - (a) on Kalahari sands
 - (b) on Upper Valley soils
 - (c) *Suffrutex* savanna
- III** Termite mound vegetation
- 1. Miombo termitaria
 - 2. Munga termitaria
- IV** Grasslands
- 1. Dambo grassland
 - 2. Riverine grassland
 - 3. Flood Plain grassland

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Riparian woodland -

Gallery or riparian woodland occurs in a few places along perennial or even seasonal streams where there are still pools of water in the dry season. It is normally no more than one tree wide and strongly dominated by *Syzygium guineense* ssp. *barotsense*. Naturally there is a greater variety of species along the perennial Kafue R. than along the seasonal streams.

Common tall trees associated with *Syzygium guineense* include **Acacia albida* (on riparian sandbanks), *Albizia glaberrima*, *Diospyros mespiliformis*, *Homalium abdessammadii* and *Syzygium cordatum*. At one place on the Nansenga R. *Syzygium guineense* and *S. cordatum* are replaced by a hybrid between the two species. Small trees are represented chiefly by *Nuxia oppositifolia*, *Oncoba spinosa*, *Phoenix reclinata* palms, *Rhus quartiniana* and *Salix* **subserrata*, the African Willow.

Common shrubs include *Acalypha ornata*, *Antidesma venosum*, *Byrsocarpus orientalis*, *Diospyros lycioides*, *Mimosa pigra* in gaps, *Nidorella resedifolia* on the fringe, *Phyllanthus reticulatus* and *Sesbania sesban* (in gaps and on the fringe) with *Phragmites mauritianus* reeds filling all the gaps.

Climbers are chiefly *Cissampelos mucronata*, **Glycine wightii*, *Jasminum fluminense*, *Mikania cordata* (secondary), *Mucuna pruriens*, the itchy bean, *Paullinia pinnata* and especially *Tacazzea apiculata*.

Miombo woodland -

Miombo woodland occurs in two forms 1) dominated by *Julbernardia paniculata* (Trapnell's P5) north of the Kafue R. and 2) dominated by *J. globiflora* (Trapnell's P7) on the south bank of the river. The miombo is of poor quality. Atypical species which occur in the miombo are *Acacia goetzei* ssp. *microphylla* more at home in escarpment country, *Hymenocardia acida* and *Phyllanthus engleri* both typically munga woodland species.

In general common tall trees include *Amblygonocarpus andongensis*, *Brachystegia boehmii*, *B. longifolia* and *B. spiciformis* although most of the muwombo type *Brachystegia* appears to be intermediate between *B. boehmii* and *B. longifolia* and *Erythrophleum africanum*. Small trees are chiefly *Diospyros kirkii*, *Monotes glaber* and *Pseudolachnostylis maprouneifolia*.

Common shrubs are limited to *Dichrostachys cinerea*, *Diplorhynchus condylocarpon*, *Eriosema ellipticum*, *Flacourtia indica*, **Hippocratea indica* growing as a shrub instead of a climber and *Hymenocardia-acida*.

Common sub-shrubs are legion especially members of the following genera – *Abrus*, *Adenodolichos*, *Aeschynomene*, *Clerodendrum*, *Diplolophium*, *Ectadiopsis*, *Fadogia*, *Hypoestes*, *Indigofera*, *Lansea* and *Triumfetta* with bracken fern (*Pteridium aquilinum*) and small colonies of the succulent *Aloe christianii*.

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Kalahari woodland –

Both Kalahari woodland proper (Trapnell's K7 and K8) and miombo/ Kalahari woodland in two forms (Trapnell's K3 and K5) occur on the south bank. The bulk of the sands however is covered by Kalahari woodland proper. *Julbernardia* and *Brachystegia* (K3 and K5 respectively) are invasive in the K7 and K8. It is simpler to treat the Kalahari woodland as one variable type dominated variously by *Burkea africana*, *Brachystegia spiciformis*, *Erythrophleum africanum* and *Julbernardia paniculata*.

In general common tall tree associates include *Amblygonocarpus andongensis*, relic *Baikiaea plurijuga*, *Combretum collinum*, *Guibourtia coleosperma*, *Parinari curatellifolia*, *Pterocarpus angolensis* and *Terminalia sericea*.

Small trees especially characteristic are *Diplorhynchus condylocarpon*, and *Schrebera trichoclada* (unusual but almost a type tree in Namwala), associated with *Baphia massaiensis* ssp. *obovata*, *Diospyros batocana*, *Ochna pulchra*, *Phyllanthus engleri* (unusual), *Pseudolachnostylis maprouneifolia*, *Terminalia brachystemma*, *Xylopia odoratissima* and *Zanha africana*.

Common shrubs are very much in evidence especially the *Bauhinias* (3 spp.) **Byrosocarpus orientalis*, *Cissus cornifolia*, *Copaifera baumiana*, *Diospyros virgata*, *Eriosema affine*, *Friesodielsia obovata*, *Grewia* (2 spp.), *Hymenocardia acida*, *Paropsia brazzeana*, *Salacia luebbertii* in small colonies, *Vangueria infausta* and **Xeromphis obovata*.

Subshrubs are legion but oddly enough not in the *Julbernardia* dominated areas, especially *Annona stenophylla* ssp. *nana*, *Chamaeclitandra henriquesiana*, *Gardenia brachythamnus*, *Hemizygia bracteosa* on the fringes, *Parinari capensis*, *Phyllanthus maderaspatensis*, **Sapium oblongifolium* and *Triumfetta annua*.

Climbers are few in numbers and species. Only *Ipomoea shirambensis* (probably invasive) *Landophia parvifolia* are at all common.

Mopane Woodland -

Mopane woodland occurs on the Kafue flats almost pure or in a mixture with the typical munga species of the flats. In cases the mopane trees are of poor quality and small.

In general the chief canopy associates are *Acacia nigrescens*, *Combretum imberbe*, especially *Lannea *stuhlmannii* and *Sterculia quinqueloba*. The only common small trees are *Erythrina abyssinica*, *Piliostigma thonningii* and *Pterocarpus *antunesii*. Colonies of the succulent *Aloe chabaudii* occur here and there on the ground floor.

Munga woodland -

This open savanna type of woodland occurs in two forms
a) on shallow Kalahari sands over alluvium b) on upper valley clays and clay loams.

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a) The former (Trapnell's K12) is only found on a few small areas of Kalahari sand e.g. around Namwala boma. It is characterized by widely spaced *Acacia* and *Albizia* spp. especially **Acacia albida*, *A. galpinii*, *A. gerrardii* and *A. giraffae*, *Albizia amara* and *A. versicolor*. Common associates are *Combretum imberbe*, especially *Commiphora karibensis*, *Ficus sycomorus*, *Kigelia africana*, **Lonchocarpus capassa*, *Parinari curatellifolia* and *Terminalia sericea*.

Small trees are chiefly *Combretum fragrans*, *Diplorhynchus condylocarpon*, *Markhamia obtusifolia*, *Piliostigma thonningii* and *Terminalia brachystemma*.

Common shrubs include *Baphia massaiensis* ssp. *obovata*, *Bauhinia petersiana* (Baikiea forest relics), *Grewia praecox*, *Phyllanthus reticulatus* and invasive *Urena lobata*.

Subshrubs are chiefly *Annona stenophylla* ssp. *nana*, **Clerodentum uncinatum*, *Eugenia angolensis*, *Ochna leptoclada* and the odd-looking *Pollichia campestris*. Climbers are reduced to *Combretum paniculatum* and *Jasminum fluminense*.

b) The latter occurs on the base rich upper valley soils mainly represented on the north bank. It is a typical munga woodland with widely spaced trees except in some areas with pure *Acacia* where the canopy is closed. It varies from a *Pterocarpus-Combretum* mixture on the higher levels to an *Acacia-Combretum* mixture to pure *Acacia* on the lower levels.

In general common tall trees are **Acacia albida*, *A. galpinii*, *A. gerrardii*, *A. nigrescens*, *A. polyacantha*, *A. sieberiana*, *Albizia amara*, *A. harveyi*, *A. versicolor*, *Combretum imberbe*, *Erythrina abyssinica*, *Erythrophleum africanum*, *Ficus sycomorus*, *Kigelia africana*, **Lonchocarpus capassa*, *Parinari curatellifolia*, *Pericopsis angolensis*, *Pseudolachnostylis maprouneifolia*, *Pterocarpus angolensis* and *Terminalia sericea*.

Small trees are chiefly *Acacia kirkii* (in gregarious stands), *Combretum fragrans*, *Piliostigma thonningii* and *Terminalia mollis* associated with *Antidesma venosum*, *Combretum apiculatum*, *Dalbergiella nyassae*, *Diplorhynchus condylocarpon*, *Lanea discolor*, *Markhamia obtusifolia*, *Phyllanthus engleri*, *Pterocarpus rotundifolius*, *Terminalia brachystemma* and *T. stenostachya*.

Shrubs are less numerous, the commonest being *Baphia massaiensis* ssp. *obovata*, *Bauhinia petersiana*, *Holarrhena pubescens*, *Hymenocardia acida*, *Phyllanthus reticulata* and *Vangueria infausta*.

Subshrubs are mostly *Annona stenophylla* ssp. *nana*, *Disperma crenatum*, *Ipomoea vernalis* (the Spring Morning Glory), *Lanea edulis*, *Ochna leptoclada*, *Sphenostylis marginata* and *Syzygium guineense* ssp. *huillense*. *Combretum paniculatum* is the only common climber.

Pockets of thicket are found in the munga woodland of the north bank on upper valley soils. These are presumably degraded relics of mutemwa from the time when there was a wash of Kalahari sand over the upper valley soils.

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The only common emergent is *Lonchocarpus capassa*, an invader of long standing. Common small trees are especially *Combretum elaeagnoides* associated with *Boscia salicifolia*, *Markhamia obtusifolia* and *Schrebera trichoclada*.

Common shrubs not already mentioned include *Boscia mossambicense*, *Clerodendrum capitatum*, especially *Dalbergia martini*, *Friesodielsia obovata*, *Maerua juncea* and *Ximenia americana*. There are no common subshrubs.

Climbers are much in evidence, especially *Bonamia spectabilis*, *Combretum mossambicense* and *Maerua friesii* associated with *Capparis tomentosa*, *Hippocratea africana*, *Ipomoea shirambensis* and *Tiliacora funifera*.

Groves of *Borassus* and *Hyphaene* palms occur in munga woodland or rather munga grassland on the Kafue flats.

Suffrutex savanna -

Dry dambos occur both in Kalahari sand country and in the upper valleys which are not on Kalahari sand. They carry a distinctive shrub, subshrub, herb, sedge, grass flora characterised by the presence of *Annona stenophylla* ssp. *nana*, *Combretum platypetalum*, the Fire bush, *Eugenia angolensis*, *Lannea edulis*, *Ochna leptoclada*, *Parinari capensis*, *Pygmaeothamnus zeyheri*, *Salacia luebbertii*, *Sesamum calycinum* and especially *Syzygium guineense* ssp. *huillense*.

Termite Mound Vegetation –

Miombo termitaria

Termite mounds are widely distributed in miombo woodland. Their flora is quite distinct from that of the surrounding miombo. They are dominated by *Diospyros mespiliformis*, *Manilkara mochisia* and *Mimusops zeyheri* associated with *Albizia amara*, *Combretum molle*, *Euphorbia candelabrum*, *Markhamia obtusifolia* and *Ziziphus mucronata* ssp. *rhodesiaca*. Small trees are represented by the two *Boscias*, *B. angustifolia* and *B. salicifolia*, *Euclea divinorum* and *Lannea discolor*. Shrubs are limited to *Byrosocarpus orientalis*, *Diospyros lycioides*, *Feretia aeruginescens* and *Grewia flavescens*. The succulent bowstring hems, *Sansevieria desertii* and *S. kirkii* are the only common subshrubs with *Capparis tomentosa* and *Carissa edulis* the only common climbers.

Munga termitaria

Termite mounds in the valley munga woodland are characterised by *Albizia amara*, *Ficus* spp. *Lannea discolor* and *Markhamia obtusifolia* in the upper storey, *Cassine aethiopica* the lower storey. Shrubs are largely *Acalypha chirindica* and *Clerodendrum tanganyikense*, subshrubs *Aloe zebrina* and the weedy *Achyranthes aspera*. Common climbers include *Capparis tomentosa*, *Glycine wightii*, *Jasminum fluminense* and *J. streptopus* and *Turbina schirensis*.

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Grasslands -

Dambo grassland

The vegetation is a moderately dense mat of grasses, sedges and herbs 50-75 cm (20-30ins) high with flowering culms 1-1.5 m (3-5ft.) high. The grasses are perennial bunch grasses, cushion-like or tussocky with *Loudetia simplex* as the characteristic species.

Riverine grassland

The perimeter belt is a narrow belt of *Hyparrhenia* grasses of many different species. Bunch grasses typified by *Loudetia simplex* cover extensive areas of the seasonally inundated flats.

Flood plain grassland

It consists of a very uniform mat of perennial bunch grasses with leaf table at 1.2- 1.8 m (4-6ft.) high. Pure stands of a single grass are a feature. *Hyparrhenia rufa* associated with *Setaria *phragmatoides* and *S. *ciliolata* are the typical grasses of shallow flooded margins, *Echinochloa pyramidalis* of the flood plain proper and *Vossia cuspidata* of the swamp area where the flooding is deepest and most prolonged.

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