

# 5. Description and species list for Kenya

## 5.1. Methodology

For each of the vegetation types, we obtained information on species assemblages (those tree species expected to occur in a particular vegetation type) based on information that was provided in the national references (details are provided in Volumes 2 to 5). For each of the countries where we had information on the national “manifestation” of a vegetation type (for example, Afromontane rain forest as it was described for Ethiopia by Friis et al. 2010), we created a separate column within which we gave an indication that a particular tree species was expected to occur within that vegetation type and within that country.

Where species were not listed in the national reference for a focal country, we checked with information on national lists of all the tree species that occur in the focal country whether the species could **potentially** occur in the focal vegetation type and focal country **because the species was documented to occur in the same vegetation type in other countries**. For example, the species *Cyathea dregei* was documented to occur in Afromontane rain forest in Malawi, Rwanda and Zambia. From the UNEP-WCMC species database, there was information that this species also occurs in Ethiopia. This led us to indicate that there was information that the species potentially occurred in Afromontane rain forest in Ethiopia (we used the coding of “f” in the species assemblage table to indicate this). **Note that it is possible that species indicated with “f” for a particular country and forest type do NOT occur in that particular country and forest type in reality (meaning that, in reality, differences exist between species assemblages of the same forest type between countries – or possibly indicating errors in the obtained species assemblage for a particular country).**

After compiling information on species assemblages, we selected a subset of species to feature in species composition tables. These were mainly “useful tree species”, which are tree, bushland or liana species that were listed in at least one of the references that we consulted on tree species that are expected to be useful to farming or pastoral communities in the VECEA countries

Information that is provided in species composition tables was simplified from the information provided in Volumes 2 to 5, providing the following types of information:

- “x” in a species composition tables indicates that the species is expected to occur in the vegetation type based on references that we consulted or field experience from a national collaborator
- “C” in a species composition table indicates that the species is a characteristic species for the vegetation type (see Volumes 2 to 5 for details)

- “f” in a species composition table indicates that the species was not initially listed for the country, but could potentially occur because the species is known to occur in that particular country
- A “characteristic species” is a species that was listed for the focal vegetation type in a regional description of potential natural vegetation (this regional description was typically White 1983)
- A species that is “not characteristic” is a species that was not listed for the focal vegetation type in a regional description of potential natural vegetation
- An “indicator species” was defined as a characteristic species that was only listed once (i.e. for the focal vegetation type) among all the vegetation types of the same physiognomic classification and the same floristic region. For example, *Chrysophyllum gorungosanum* is an indicator species for Afromontane rain forest since this species was only listed for Afromontane rain forest (White 1983 p. 164) among all the forests described for the Afromontane floristic region.

Another modification from the species composition tables that were given in Volumes 2 to 5 is that we excluded species that were listed to be present (coding “x” or “C”) in fewer than 50 percent of all the countries in which the vegetation type occurs. We implemented this change to increase consensus among national manifestations of the focal vegetation type (and especially to filter out marginal occurrence of a species), and also to increase confidence about the regional occurrence of a species. Although this approach has led to better agreements between national documentation, we may have excluded some species that widely occur in some situations (please compare the abbreviated lists provided here with the more comprehensive lists provided in Volumes 2 to 5 if you are particularly interested in these species).

## 6. Afromontane rain forest (Fa)

### 6.1. Description

Afromontane rain forest is very similar in structure (physiognomy) to certain types of Guineo-Congolian rain forest. Species composition, however, is almost entirely different (many tree genera have different species in Afromontane rain forest and Guineo-Congolian rain forest, on the other hand). Other physiognomic and floristic differentiation between Afromontane rain forest and Guineo-Congolian rain forest include the greater degree of bud protection, a lesser degree of drip tips of leaves development, the occurrence of tree ferns (*Cyathea*) and the occurrence of conifers (*Podocarpus*; especially *Podocarpus latifolius* as *Podocarpus falcatus* (synonym: *P. gracilior*) are more characteristic of Afromontane undifferentiated forest; White 1983 p. 164 - 165).

These forests occur mainly between 1200 and 2500 m on the slopes of certain mountains. However, the altitudinal limits vary greatly according to distance from the equator, proximity to the ocean, and size and configuration of the massif on which these forests occur (White 1983 p. 164). The observation that vegetation belts are scaled according to the size of the mountain on which they occur were first observed in the Alps, where this phenomenon is described as the 'Massenerhebung effect' (mass-elevation effect). The mean annual rainfall lies mostly between 1250 and 2500 mm. Mists that frequently occur during the dry season of one to five months may explain the fact that Afromontane rain forest is much less deciduous than lowland semi-evergreen forests that receive similar rainfall. Only a few of the larger tree species (*Entandophragma excelsum* and *Pouteria adolfi-friedericii*) lose their leaves - and then only for a few days (White 1983 p. 164).

Regional indicator species (characteristic species listed by White (1983) [1983] that were only provided for Afromontane rain forest and no other Afromontane forest types) that were listed as characteristic species for one or several national maps include ***Chrysophyllum gorungosanum*, *Cola greenwayi*, *Cylicomorpha parviflora*, *Entandophragma excelsum*, *Ficalhoa laurifolia*, *Hallea rubrostipulata*, *Myrianthus holstii*, *Ochna holstii*, *Ocotea usambarensis*, *Olea capensis*, *Parinari excelsa*, *Pouteria adolfi-friedericii*, *Strombosia scheffleri*, *Syzygium guineense* subsp. *afromontanum* and *Tabernaemontana stapfiana*.**





Figure 6.1. View of canopy from Afromontane rain forest (synonym: moist evergreen Afromontane forest) north of Masha (Ethiopia). Altitude approximately 1950 m. Photograph by I. Friis and Sebsebe Demissew (September 2002). Reproduced from *Biologiske Skrifter of the Royal Danish Academy of Sciences and letters*, Vol. 58, Fig. 25A. 2010.



Figure 6.2. Afromontane rain forest in Nyungwe National Park (Rwanda). Photograph by C. K. Ruffo (June 2008).

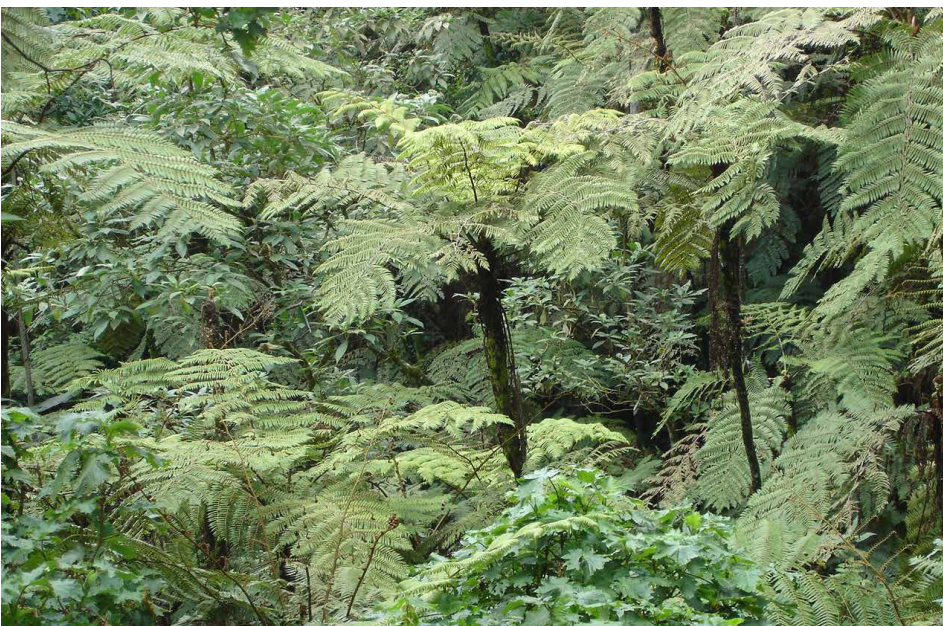


Figure 6.3. *Cyathea manniana* tree ferns in Lake Victoria transitional rain forest (Ff). The presence of tree ferns (*Cyathea* species) is typical for Afromontane rain forest (White 1983 p. 164). However, this species also occurs in other types of forests with admixture of Afromontane species. Photograph by F. Gachathi (2009).



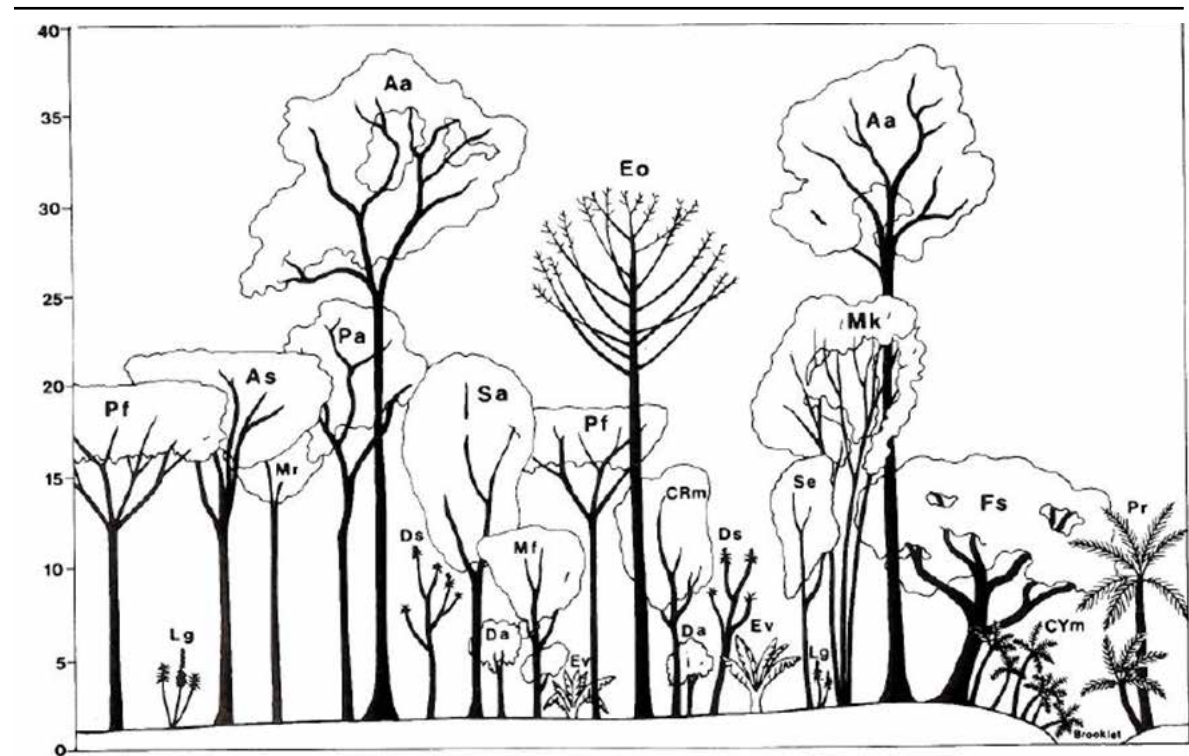


Figure 6.4. Transect of Primary or mature secondary moist evergreen Afromontane forest (classified in VECEA as Afromontane rain forest [Fa]). Generalised representation based on observations made in old secondary forest at approximately 1700 metres altitude south of Gore, IL floristic region. Although this locality is situated just below the altitudinal limit used for mapping (6) Moist evergreen Afromontane forest (Fa) no species restricted to (7) Transitional rain forest (mapped in VECEA as Afromontane moist transitional forest [Fe]) were observed, but a few species, for example *Hallea rubrostipulata*, are known from both vegetation types. The abbreviated names for the species stand for: Aa: *Pouteria (Aningeria) adolfi-friederici*. As: *Albizia schimperiana*. CRm: *Croton macrostachyus*. CYm: *Cyathea manniana*. Da: *Dracaena afromontana*. Ds: *Dracaena steudneri*. Eo: *Euphorbia ampliphylla*. Ev: *Enset ventricosum*. Fs: *Ficus sur*. Lg: *Lobelia giberroa*. Mf: *Millettia ferruginea*. Mk: *Macaranga capensis* var. *kilimandscharica*. Mr: *Hallea (Mitragyna) rubrostipulata*. Pa: *Prunus africana*. Pf: *Polyscias fulva*. Pr: *Phoenix reclinata*. Sa: *Schefflera abyssinica*. Sa: *Sapium ellipticum*. Drawn by Victoria C. Friis. Reproduced from Biologiske Skrifter of the Royal Danish Academy of Sciences and letters, Vol. 58, Fig. 24. 2010.

## 6.2. Species composition

(Please check the methodology and information from Volumes 2 - 5 for more details on how the information on species composition for the different manifestations of this potential natural vegetation type was compiled. In composition tables, "x" indicates that the species is expected to be present, "C" indicates that the species was identified as characteristic species and "f" indicates a species that was not listed in the documentation that we consulted although it is known to occur in the specific country).

Table 6. Species composition of Afromontane rain forest (Fa)

SPECIES	Regional status	Ethiopia	Kenya	Malawi	Rwanda	Tanzania (FarT subtype)	Tanzania (FawT subtype)	Uganda	Zambia	
<i>Chrysophyllum gorungosanum</i>	indicator species		C	C	x	x	f	C	f	
<i>Cola greenwayi</i>	indicator species		C	C		x	f		C	
<i>Cylicomorpha parviflora</i>	indicator species		C	x		f	f			
<i>Entandrophragma excelsum</i>	indicator species			C	C	f	f	C	f	
<i>Ficalhoa laurifolia</i>	indicator species			C	C	x	C	f	f	
<i>Hallea rubrostipulata</i>	indicator species	C	x	x		x	f	f		
<i>Myrianthus holstii</i>	indicator species		x	x	x	x	f	f	f	
<i>Ochna holstii</i>	indicator species	x	C	x	x	x	C	f	f	
<i>Ocotea usambarensis</i>	indicator species		C	C	C	x	C	f	f	
<i>Olea capensis</i>	indicator species	C	C	C	C	f	C	C	f	
<i>Parinari excelsa</i>	indicator species			C	C	x	f	f	C	
<i>Pouteria adolfi-friedericii</i>	indicator species	C	C	C	x	C	C	C	C	
<i>Strombosia scheffleri</i>	indicator species		C	C	C	x	f	C		
<i>Syzygium guineense</i>	indicator species ( <i>Syzygium guineense</i> ssp. <i>afromontanum</i> )	C	C	x	C	x	f	x	f	
<i>Tabernaemontana stapfiana</i>	indicator species		C	x	x	f	f	x		
<i>Diospyros abyssinica</i>	characteristic species	x	C	x	f	f	f	f	f	
<i>Podocarpus latifolius</i>	characteristic species (conifer species that is absent from Guineo-Congolian rain forest, but more characteristic of other types of Afromontane forest)		C	C	C	f	C	C	C	
<i>Prunus africana</i>	characteristic species	C	C	C	C	f	x	C	f	
<i>Xymalos monospora</i>	characteristic species		C	x	C	x	C	x	f	
<i>Acacia abyssinica</i>	invasive species	x	C	x	f	f	f	f		
<i>Acacia lahai</i>	invasive species		f	x		f	f	f		
<i>Agauria salicifolia</i>			f	x	x	x	f	x	f	C
<i>Albizia grandibracteata</i>			C	x		f	f	f	f	
<i>Albizia gummifera</i>	not characteristic		C	C	C	f	x	f	C	f
<i>Albizia schimperiana</i>			C	f	C		f	f	f	f
<i>Alchornea hirtella</i>			x	x	x	f	f	f	f	f
<i>Allophylus abyssinicus</i>			x	C	x	x	f	f	x	f
<i>Allophylus africanus</i>			f	C	f	f	f	f	f	f
<i>Anthocleista grandiflora</i>				C	x		x	f	x	
<i>Apodytes dimidiata</i>	not characteristic		x	C	C	x	f	f	f	f
<i>Balthasaria schliebenii</i>								C		
<i>Berberis holstii</i>			f	x	x		f	f	f	
<i>Bersama abyssinica</i>			x	C	x	x	x	x	C	f
<i>Blighia unijugata</i>			x	x	f	f	f	f	f	f
<i>Bridelia brideliifolia</i>					x	C	f	C	f	
<i>Carapa procera</i>						C	f	f	f	
<i>Casearia battiscombei</i>				C	x		f	f	f	
<i>Cassipourea malosana</i>	not characteristic		C	C	C		f	C	x	f
<i>Cassipourea ruwensoriensis</i>			f	f		C	f	f	f	
<i>Catha edulis</i>			f	C	x	f	f	f	f	f
<i>Celtis africana</i>			C	C	C	f	f	f	f	f
<i>Celtis gomphophylla</i>			f	x	x	f	f	f	f	f
<i>Clausena anisata</i>			x	x	x	x	f	f	x	f
<i>Cordia africana</i>			x	x	f	f	f	f	f	f
<i>Cornus volkensii</i>				C	C	x	x	f	f	
<i>Croton macrostachyus</i>			C	C	C	x	f	f	x	f
<i>Croton megalocarpus</i>	not characteristic			f	x	x	f	f	f	f
<i>Croton sylvaticus</i>			f	C	x		f	f	f	f
<i>Cussonia spicata</i>				x	C		f	f	x	f
<i>Cyathea dregei</i>	tree fern that is characteristic of Afromontane rain forest and that is absent from Guineo-Congolian rain forest		f	f	x	x	f	f		f
<i>Cyathea humilis</i>	tree fern that is characteristic of Afromontane rain forest and that is absent from Guineo-Congolian rain forest			x			f	f		
<i>Cyathea manniana</i>	tree fern that is characteristic of Afromontane rain forest and that is absent from Guineo-Congolian rain forest		x	x	x	x	f	f	C	
<i>Discopodium penninervium</i>			f	x	x	x	f	f	f	
<i>Dodonaea viscosa</i>			f	f	x	x	f	f	f	f
<i>Dombeya torrida</i>			x	C	x	x	f	C	x	
<i>Dovyalis abyssinica</i>			f	x	x		f	f	f	f
<i>Dovyalis macrocalyx</i>				x	x	x	f	f	f	f
<i>Dracaena fragrans</i>			x	f	x	f	f	f	f	
<i>Dracaena steudneri</i>			x	C	x	x	f	f	x	f
<i>Ehretia cymosa</i>			x	C	x	x			f	
<i>Ekebergia capensis</i>			C	C	C	x	f	f	x	f
<i>Elaeodendron buchananii</i>			x	f	x	f	f	f	f	f
<i>Embelia schimperi</i>			f	x	x	x	f	f	f	f
<i>Ensete ventricosum</i>			x	f	x	x	f	f	f	f
<i>Eugenia capensis</i>			x	f	x	x	f	f	f	f
<i>Euphorbia abyssinica</i>			f	C	x		f	f	x	f
<i>Fagaropsis angolensis</i>	not characteristic		x	f	x	x	f	f	f	f
<i>Ficus exasperata</i>			f	x	f	x	f	f	f	f
<i>Ficus natalensis</i>				x	x	x	f	f	f	f
<i>Ficus ovata</i>			C	f	x	f	f	f	f	f
<i>Ficus sur</i>			C	C	x	f	f	f	f	f

SPECIES	Regional status	Ethiopia	Kenya	Malawi	Rwanda	Tanzania (FarT subtype)	Tanzania (FawT subtype)	Uganda	Zambia
<i>Ficus thonningii</i>		C	C	C	f	f	f	f	f
<i>Galiniera saxifraga</i>		x	C	x	C	f	f	C	
<i>Garcinia buchananii</i>		x	x	f	f	f	f	x	f
<i>Hagenia abyssinica</i>		f	C	C	C	f	f	f	f
<i>Harungana madagascariensis</i>			C	f	f	f	f	f	f
<i>Hypericum revolutum</i>		f	f	x	x	f	f	f	f
<i>Ilex mitis</i>	not characteristic	C	x	C	x	f	C	x	f
<i>Kigelia moosa</i>			C			f	f	f	
<i>Landolphia buchananii</i>		x	f	x		f	f	f	f
<i>Lepidotrichilia volkensii</i>		x	C	x	x	f	f	C	f
<i>Macaranga capensis</i>		f	C	C	C	x	C	C	f
<i>Maesa lanceolata</i>		x	C	f	x	f	C	x	C
<i>Manilkara butugii</i>		x	x					f	
<i>Maytenus acuminata</i>			C	C	x	f	C	x	f
<i>Maytenus undata</i>		x	x	x	x	f	f	f	f
<i>Milicia excelsa</i>		f	x	x	f	f	f	f	
<i>Millettia dura</i>			x	x	f	f	f	f	
<i>Neoboutonia macrocalyx</i>			C	C	C	x	f	x	f
<i>Newtonia buchananii</i>	not characteristic		x	f	x	x	f	f	f
<i>Nuxia congesta</i>	not characteristic	x	C	x	x	f	C	f	f
<i>Nuxia floribunda</i>	not characteristic		f	x	x	f	f	f	f
<i>Ocotea kenyensis</i>	not characteristic	C	C	x	x	f	x	f	
<i>Olea europaea</i>	not characteristic	f	C	x	f	f	f	f	f
<i>Olinia rochetiana</i>		f	f	x	x	f	x	f	f
<i>Peddiea fischeri</i>			x		x	f	f	f	f
<i>Phoenix reclinata</i>	palm species	x	x	x	f	f	f	f	f
<i>Phytolacca dodecandra</i>		f	x	x	f	f	f	f	f
<i>Pittosporum viridiflorum</i>		x	x	x	x	f	x	C	f
<i>Pleiocarpa pycnantha</i>			x		x	f	f	f	f
<i>Podocarpus falcatus</i>	not characteristic	x	x	x	C	C	f	f	
<i>Podocarpus henkelii</i>	conifer species that is absent from Guineo-Congolian rain forest, but more characteristic of other types of Afromontane forest; species that is very localized north of the Limpopo river			C					
<i>Podocarpus usambarensis</i>	conifer species that is absent from Guineo-Congolian rain forest, but more characteristic of other types of Afromontane forest		x			f	f	f	
<i>Polyscias fulva</i>		C	f	C	C	x	f	x	f
<i>Pouteria altissima</i>		f	f		f	f	f	f	C
<i>Psychotria mahonii</i>			C	x	x	f	x	C	f
<i>Psydrax parviflora</i>		f	C	x	x	f	f	f	f
<i>Pterolobium stellatum</i>		f	x	x	f	f	f	f	f
<i>Rapanea melanophloeos</i>	not characteristic	f	C	C	x	f	C	x	f
<i>Rauvolfia caffra</i>			f	x		x	f	f	f
<i>Rhamnus prinoides</i>		x	x	x	x	f	f	x	f
<i>Rinorea angustifolia</i>			x		x	f	f	f	
<i>Ritchiea albersii</i>		x	x		x	f	f	f	f
<i>Rothmannia urcelliformis</i>		x	f	x		f	f	f	f
<i>Rubus apetalus</i>		f	x	x	x	f	f	f	f
<i>Sambucus ebulus</i>			x			f	f	f	
<i>Schefflera abyssinica</i>		C	C	C		f	f	x	f
<i>Schefflera volkensii</i>		x	C			f	f	C	
<i>Scutia myrtina</i>		f	x	x	f	f	f	f	f
<i>Shirakiopsis elliptica</i>		C	x	x	x	f	f	f	f
<i>Sinarundinaria alpina</i>	Afromontane bamboo	C	f	x	x	f	f	x	
<i>Smilax anceps</i>		x	x		x	f	f	f	f
<i>Solanecio mannii</i>		x	f	x	f	f	f	f	f
<i>Solanum aculeastrum</i>			x	x	x	f	f	f	
<i>Symphonia globulifera</i>					C	f	C	C	f
<i>Synsepalum brevipes</i>			C	f		f	f	f	f
<i>Syzygium cordatum</i>							C		f
<i>Tabernaemontana pachysiphon</i>			C	f		f	f	f	f
<i>Trema orientalis</i>		x	x	f	x	f	f	f	f
<i>Trichilia dregeana</i>		x	x	f		f	f	f	f
<i>Vangueria apiculata</i>		f	f	x	x	f	f	f	f
<i>Vepris nobilis</i>		x	C	x	x	f	f	f	f
<i>Vernonia auriculifera</i>		x	x		x	f	f	f	
<i>Vernonia myriantha</i>		x	x	x	x	f	f	f	f
<i>Vitex keniensis</i>			C						
<i>Zanthoxylum gillettii</i>		f	C		x	f	f	f	