

25. Somalia-Masai *Acacia-Commiphora* deciduous bushland and thicket (Bd)

25.1. Description

Within volumes 2 to 5, we use the synonym of “deciduous bushland (Bd)” as a synonym of “Somalia-Masai *Acacia-Commiphora* deciduous bushland and thicket (Bd)”.

Somalia-Masai *Acacia-Commiphora* deciduous bushland and thicket is the climax vegetation type over the greater part of the Somalia-Masai floristic region. It characteristically is a dense bushland of 3 to 5 m tall with scattered emergent trees up to 9 m. Emergent species are only a few species that have well-defined trunks which carry the crown well above the main canopy; they are virtually absent from the driest areas. Most of the characteristic species of the main canopy are multiple-stemmed bushes or small bushy trees that are branched near the base. In higher rainfall areas (especially on rocky hills), the emergent trees occur closer together and are somewhat larger (but only exceptionally taller than 10 m). Some authors have categorized this physiognomic variant as woodland. Locally thickets are formed that are impenetrable. Even when canopy cover is less than 40 percent, but where grasses are inconspicuous (such as the ephemeral species of *Aristida adscensionis*, *Aristida congesta*, *Brachiaria eruciformis* and *Brachiaria leersioides* and the short-lived perennial species of *Cenchrus ciliaris*, *Chloris roxburghiana* and *Schmidtia pappophoroides*) and most of the phytomass consists of bushes (as in many places within deciduous bushland), it would be misleading to classify this vegetation as wooded grassland. In areas where rainfall is somewhat less than 250 mm per year (but probably more than 200 mm - see Somalia-Masai semi-desert grassland and shrubland [S]), the vegetation of 2 to 3 m high bushes and stunted trees (principally of *Acacia reficiens* subsp. *misera*) is intermediate between bushland and shrubland (White 1983 pp. 113 - 114).

There is appreciable variation in floristic composition, but species of *Acacia*, *Commiphora*, *Grewia* and various Capparidaceae species [e.g. *Boscia*, *Cadaba* and *Maerua*]⁽¹⁷⁾ are nearly always present. The dominant *Acacia* species and some of the *Commiphora* species are spinous. Some *Commiphora* species and *Terminalia orbicularis* have several massive branches that radiate from a common base. Most species are deciduous (loosing their leaves simultaneously and usually for several weeks or months [White 1983 p. 46]). Evergreen species occur throughout, but never contribute more than 10 percent of phytomass (White 1983 p. 113).

White (1983 p. 48) describes the African pattern that where annual rainfall is between 250 and 500 mm and where there are two rainy seasons, deciduous bushland and thicket communities of regional extent (such as Somalia-Masai *Acacia-Commiphora* deciduous bushland and thicket) occur. Where

17: Lind and Morrison (1974 p. 60) mention that members of the Capparidaceae family are common and include species of *Boscia*, *Cadaba* and *Maerua*. These are sometimes spiny and can be recognized by their showy flowers with many stamens and succulent, berry-like fruits on long stalks. These authors also refer to *Grewia* species that are commonly found and are often in flower (most have yellow or white flowers with many stamens, but the common *Grewia similis* has bright mauve flowers).

annual rainfall is also between 250 and 500 mm, but falls entirely in the summer - as in the Sahel and Kalahari-Highveld floristic transition zones, grasses are favoured on sandy soils and the most widespread vegetation type becomes wooded grassland.

White (1983 p. 114) describes deciduous bushland that occurs in Tsavo National Park (between Garissa and Voi in Kenya) as typical. Most of the species that White (1983) listed as characteristic were indicator species (see also section 3.2). Only four species (including three climbers) were also listed as characteristic species for evergreen bushland (Be): *Cissus quadrangularis* and *Cissus rotundifolia* (climbers listed for this vegetation type occurring in the Lake Victoria region), *Grewia tembensis* (listed as a smaller bush and shrub for deciduous bushland and as a large bush in East African evergreen bushland) and *Sarcostemma viminalis* (a climber listed for this vegetation type occurring in East Africa).

The indicator species can be further categorized in: (i) characteristic species of the main canopy; (ii) emergent species; (iii) smaller bushes and shrubs; (iv) succulents; and (v) climbers.

- Characteristic species of the main canopy include⁽¹⁸⁾: ***Acacia bussei***, ***Acacia mellifera*** (also scattered in Somalia-Masai edaphic grassland), ***Acacia nilotica***, ***Acacia reficiens***, ***Acacia thomasii***, ***Balanites rotundifolia***, ***Boscia coriacea*** (evergreen, often one of the few species that are not eliminated by elephants in severely degraded bushland), ***Boswellia neglecta***, ***Cadaba farinosa***, ***Cadaba heterotricha***, ***Cassia abbreviata***, ***Commiphora africana***, ***Commiphora campestris***, ***Commiphora edulis***, ***Commiphora erythraea***, ***Commiphora mollis***, ***Commiphora schimperi*** (also scattered in Somalia-Masai edaphic grassland), ***Cordia monoica***, ***Cordia sinensis***, ***Dobera glabra***, ***Dobera loranthifolia*** (evergreen), ***Euphorbia scheffleri***, ***Givotia gosai***, ***Hymenodictyon parvifolium***, ***Lannea alata***, ***Lannea triphylla***, ***Platycelyphium voense***, ***Premna hildebrandtii***, ***Salvadora persica*** (evergreen), ***Sesamothamnus rivaie***, ***Sterculia africana***, ***Sterculia rynchocarpa***, ***Sterculia stenocarpa***, ***Terminalia orbicularis***, ***Terminalia parvula*** and ***Thylachium thomasii***.
- Emergent species include ***Acacia tortilis*** (also scattered in Somalia-Masai edaphic grassland), ***Adansonia digitata*** (often only 8 m tall with a short but massive trunk), ***Delonix elata***, ***Euphorbia robeckii*** (a candelabra-like succulent), ***Melia volkensii*** (this species persists longer than most woody species in degraded bushland) and ***Terminalia spinosa***.
- Smaller bushes and shrubs include ***Bauhinia taitensis***, ***Bridelia taitensis***, ***Caesalpinia trothae***, ***Carphalea glaucescens***, ***Caucanthus albidus***, ***Combretum aculeatum***, ***Ecbolium amplexicaule***, ***Erythrochlamys spectabilis***, ***Grewia fallax***, ***Grewia tembensis***, ***Grewia tenax***, ***Grewia villosa***, ***Maerua deinhardtiorum***, ***Premna resinosa***, ***Sericocomopsis hildebrandtii*** and ***Sericocomopsis pallida***.
- Succulents include ***Adenium obesum***, ***Calyptrorhiza somalensis***, ***Calyptrorhiza taitensis***, ***Euphorbia grandicornis***, ***Eu-***

18. White (1983 p. 114) did not list *Acacia senegal* among the characteristic species of the main canopy. However, this is probably an oversight since *Acacia senegal* is listed as one of the dominant species of deciduous bushland in Marsabit district (White 1983 p. 121). *Acacia senegal* var. *kerensis* is a typical constituent of deciduous bushland and the main producer of gum arabic in Kenya. The variety of *Acacia senegal* var. *senegal* is a typical variety of biotic Acacia wooded grassland (We; F. Gachathi, pers. comm.).

phorbia nyikae (a candelabra-like succulent that is more restricted than *Euphorbia robechii*), *Euphorbia robecchii* (a candelabra-like succulent that also is an emergent), *Euphorbia quinquecostata* (a candelabra-like succulent that is more restricted than *Euphorbia robechii*) and *Monadenium invenustum*.

- Climbers include *Adenia globosa* (a climber with enormous half-submerged water storing tubers), *Gerrardanthus lobatus*, *Kedrostis gijef*, *Pergularia daemia*, *Pyrenacantha malvifolia* (a climber with enormous half-submerged water storing tubers, often one of the few remaining species in severely degraded bushland) and *Thunbergia guerkeana*.

25.2. 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).



Figure 25.1. *Acacia-Commiphora* deciduous bushland 57 km from Konso on route to Yabelo (Ethiopia). Photograph by Sebsebe Demissew (May 2008).



Figure 25.2. *Acacia-Commiphora* bushland on fine-grained reddish sand. The photograph was taken near Yabelo (Ethiopia) after a rainy season with above-average rainfall. Altitude approximately 1600 metres. Photograph by I. Friis and Sebsebe Demissew (November 1997). Reproduced from *Biologiske Skrifter* of the Royal Danish Academy of Sciences and letters, Vol. 58, Fig. 15B. 2010.



Figure 25.3. Partly exposed tubers of *Pyrenacantha malviifolia* in the underground of *Acacia-Commiphora* deciduous bushland (Bd), here partly on black cotton soil (vertisol). Near Sof Omar (Ethiopia). Altitude approximately 1500 metres. White (1983 p. 114) described this species as a climber with enormous half-submerged water storing tubers and often one of the few remaining species in severely degraded Somalia-Masai *Acacia-Commiphora* deciduous bushland. Photograph by I. Friis and Sebsebe Demissew (October 1984). Reproduced from *Biologiske Skrifter* of the Royal Danish Academy of Sciences and letters, Vol. 58, Fig. 15H. 2010.

Figure 25.4. *Acacia-Commiphora* deciduous bushland in Garbatula (Kenya). The species in the foreground is *Commiphora holtziana*. The emergent tree at the right is *Acacia tortilis*. Photograph by F. Gachathi (2011).

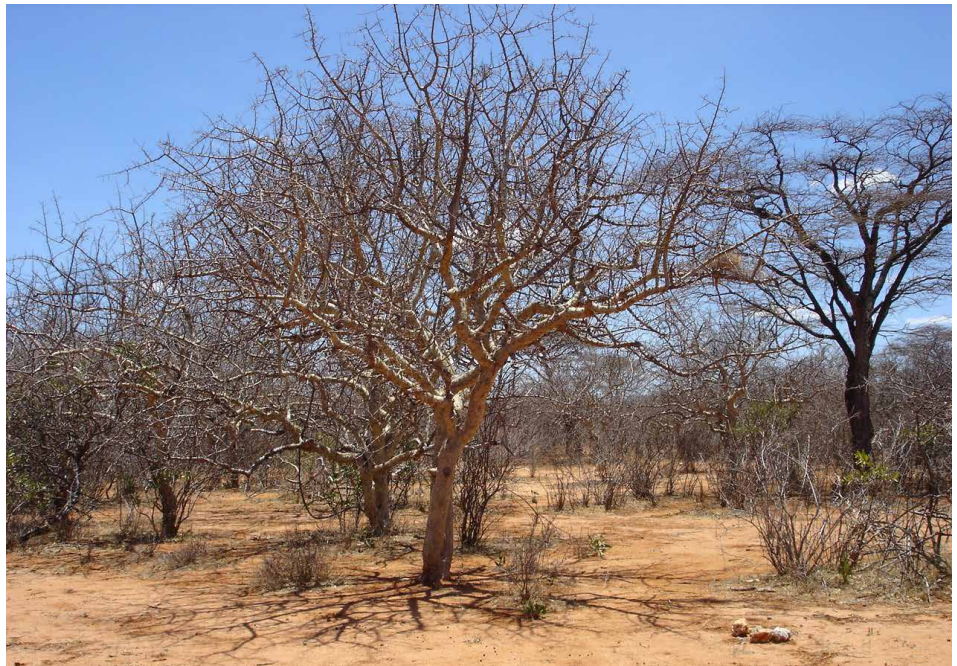


Figure 25.5. *Commiphora africana* is a typical species of *Acacia-Commiphora* deciduous bushland. The image above shows the species during the dry season (Garbatula, Kenya, photograph taken in 2011), whereas the image below shows the species during the wet season (Samburu district, Kenya, photograph taken in 2009). Photographs by F. Gachathi.





Figure 25.6. *Commiphora holtziana* produces opoponax (hagar). This species can dominate large sections of *Acacia-Commiphora* bushland in Kenya as in Garbatula shown here. Photograph by F. Gachathi (2011).



Figure 25.7. *Acacia senegal* var. *kerensis* is a typical constituent of *Acacia-Commiphora* deciduous bushland and thicket, as in the thicket shown here from Isiolo District (Kenya). This species is the main producer of gum arabic in Kenya. Another variety of this species, *Acacia senegal* var. *kerensis*, is typical of biotic *Acacia* wooded grassland (We, see Volume 3). Photograph by F. Gachathi (2008).



Figure 25.8. *Acacia reficiens* ssp. *misera* can form almost uniform stands as shown here in Garbatula (Kenya).



Figure 25.9. White (1983 p. 114) describes that *Acacia reficiens* ssp. *misera* is the typical stunted tree species of vegetation that is intermediate between bushland and shrubland (in VECEA, this vegetation type was mapped as the “stunted bushland” subtype of Somalia-Masai *Acacia-Commiphora* deciduous bushland and thicket [Bds]). Photographs taken by F. Gachathi (2011).

Table 25. Species composition for Somalia-Masai *Acacia-Commiphora* deciduous bushland and thicket (Bd)

SPECIES	Regional status	Ethiopia	Kenya	Kenya (BdsK subtype)	Tanzania	Uganda	Uganda (BdvU subtype)	Uganda (BdrU subtype)
<i>Acacia bussei</i>	indicator species	C	x	x	f		C	
<i>Acacia mellifera</i>	indicator species	x	x	x	x	C	C	C
<i>Acacia nilotica</i>	indicator species	x	x	x	f	C	x	x
<i>Acacia reficiens</i>	indicator species	C	x	x	f	C	C	
<i>Acacia thomasii</i>	indicator species		x					
<i>Acacia tortilis</i>	indicator species	C	x	x	x	C	C	C
<i>Adansonia digitata</i>	indicator species	f	x		x			
<i>Adenia globosa</i>	indicator species	x	x		f			
<i>Adenium obesum</i>	indicator species	x	x			x	x	
<i>Balanites rotundifolia</i>	indicator species	C	x	x		C	x	
<i>Bauhinia taitensis</i>	indicator species		x					
<i>Boscia coriacea</i>	indicator species	x	x	x	f	f		
<i>Boswellia neglecta</i>	indicator species	C	x	C	f	x		
<i>Bridelia taitensis</i>	indicator species		x					
<i>Cadaba farinosa</i>	indicator species	f	x	x	f	x	x	x
<i>Cadaba heterotricha</i>	indicator species	x	x					
<i>Caesalpinia trochae</i>	indicator species	x	x		f			
<i>Calyptrotheca somalensis</i>	indicator species	x	x					
<i>Calyptrotheca taitense</i>	indicator species		x					
<i>Carphalea glaucescens</i>	indicator species	x	x		f			
<i>Cassia abbreviata</i>	indicator species		x		f			
<i>Caucanthus albidus</i>	indicator species	x	x					
<i>Combretum aculeatum</i>	indicator species	C	x		f	f		
<i>Commiphora africana</i>	indicator species	x	x	x	f	C	x	x
<i>Commiphora campestris</i>	indicator species	C	x		f	x	C	
<i>Commiphora edulis</i>	indicator species	C	x		f	C		
<i>Commiphora erythraea</i>	indicator species	x	x	x				
<i>Commiphora mollis</i>	indicator species		x		f			
<i>Commiphora schimperi</i>	indicator species	x	x		f	C		
<i>Cordia monoica</i>	indicator species	x	x		f	f		
<i>Cordia sinensis</i>	indicator species	x	x	x	x	f	x	
<i>Delonix elata</i>	indicator species	x	x	x	f	f		
<i>Dobera glabra</i>	indicator species	x	x	x	f	f		
<i>Dobera loranthifolia</i>	indicator species		x		f			
<i>Ecbolium amplexicaule</i>	indicator species		f		x			
<i>Erythrochlamys spectabilis</i>	indicator species	x	x					
<i>Euphorbia grandicornis</i>	indicator species		x			x	x	
<i>Euphorbia invenusta</i>	indicator species		f					
<i>Euphorbia nyikae</i>	indicator species		x		x			
<i>Euphorbia quinquecostata</i>	indicator species		x		f			
<i>Euphorbia robecchii</i>	indicator species	x	x		f			
<i>Euphorbia scheffleri</i>	indicator species	x	x		f			
<i>Gerrardanthus lobatus</i>	indicator species		x		f	f		
<i>Givotia gosai</i>	indicator species	x	x					
<i>Grewia arborea</i>	indicator species		x		f	f		
<i>Grewia tenax</i>	indicator species	x	x	x	f	x	C	
<i>Grewia villosa</i>	indicator species	x	x	x	f	x	x	

SPECIES	Regional status	Ethiopia	Kenya	Kenya (Bdsk subtype)	Tanzania	Uganda	Uganda (BdvU subtype)	Uganda (BdrU subtype)
<i>Hymenodictyon parvifolium</i>	indicator species		x		f	f		
<i>Kedrostis gijef</i>	indicator species		x		f			
<i>Lannea alata</i>	indicator species		x		f			
<i>Lannea triphylla</i>	indicator species	x	x		f	C	C	C
<i>Maerua deinhardtiorum</i>	indicator species	x	x					
<i>Melia volkensii</i>	indicator species	x	x		f			
<i>Pergularia daemia</i>	indicator species	x			f			
<i>Platycelyphium voense</i>	indicator species	x	x		f			
<i>Premna hildebrandtii</i>	indicator species		x		f			
<i>Premna resinosa</i>	indicator species	x	x		f	f		
<i>Pyrenacantha malvifolia</i>	indicator species	x	x		f			
<i>Salvadora persica</i>	indicator species	x	x	x	x	f		
<i>Sericocomopsis hildebrandtii</i>	indicator species	x	x	x	f	x		
<i>Sericocomopsis pallida</i>	indicator species	x	x	x	f			
<i>Sesamothamnus rivae</i>	indicator species	x	x		f	x		
<i>Sterculia africana</i>	indicator species	x	x		f			
<i>Sterculia rynchocarpa</i>	indicator species	x	f		f	x		
<i>Sterculia stenocarpa</i>	indicator species	x	x		f	f		
<i>Terminalia orbicularis</i>	indicator species	C	x					
<i>Terminalia parvula</i>	indicator species		x					
<i>Terminalia spinosa</i>	indicator species	x	x	x	f	f		
<i>Thilachium thomasi</i>	indicator species		x					
<i>Thunbergia guerkeana</i>	indicator species		x		f			
<i>Cissus quadrangularis</i>	characteristic species		x		x	x	x	
<i>Cissus rotundifolia</i>	characteristic species	x	x		f	x	x	
<i>Grewia tembensis</i>	characteristic species	x	x	x				
<i>Sarcostemma viminale</i>	characteristic species	x	f			x	x	
<i>Acacia asak</i>		x						
<i>Acacia brevispica</i>		x	x	x	f	C	C	
<i>Acacia drepanolobium</i>		C	x	x	x	x		x
<i>Acacia gerrardii</i>		f	x		f	x		
<i>Acacia hockii</i>		f	x		f	C		
<i>Acacia lahai</i>		x	x		f	f		
<i>Acacia oerfota</i>		x	x	x	f	f	C	
<i>Acacia paolii</i>		x	x	x				
<i>Acacia senegal</i>		x	x	x	f	C		
<i>Acacia seyal</i>		x	x		x	C	C	C
<i>Albizia amara</i>		f	x	x	f	C		
<i>Albizia anthelmintica</i>		x	x		f	x	x	
<i>Allophylus rubifolius</i>		x	x		f	f		
<i>Balanites aegyptiaca</i>		C	x	x	f	C	x	x
<i>Balanites glabra</i>		x	x		f			
<i>Berchemia discolor</i>		x	x		f	f		
<i>Boscia angustifolia</i>		x	x		f	x		
<i>Boscia salicifolia</i>		x	x		f	f		
<i>Boswellia microphylla</i>		C	x	x				
<i>Boswellia rivae</i>		x	x					

SPECIES	Regional status						Ethiopia	Kenya	Kenya (Bdsk subtype)	Tanzania	Uganda	Uganda (BdvU subtype)	Uganda (BdrU subtype)
<i>Calotropis procera</i>	x	x	x	f	f								
<i>Canthium lactescens</i>	x	x		f	f								
<i>Capparis tomentosa</i>	C	x		f	f								
<i>Carissa spinarum</i>	x	x		f	f								
<i>Commiphora habessinica</i>	x	x		x	C	x							
<i>Commiphora myrrha</i>	C	x											
<i>Commiphora rostrata</i>	C	x											
<i>Dichrostachys cinerea</i>	x	f		f	C								
<i>Erythrina burtii</i>		x		f									
<i>Erythrina melanacantha</i>	x	x		f									
<i>Euclea divinorum</i>	x	x		f	f								
<i>Euphorbia candelabrum</i>	x	x		x	C	C							
<i>Euphorbia tirucalli</i>	x	x		x	f								
<i>Faidherbia albida</i>	x	x		f	f								
<i>Gardenia volkensii</i>	x	x		f	f								
<i>Grewia bicolor</i>	x	x		f	f	x							
<i>Grewia similis</i>	f	x		f	x	C							
<i>Harrisonia abyssinica</i>	x	x		f	f								
<i>Hyphaene compressa</i> (palm species)	x	x	x	f									
<i>Hyphaene thebaica</i> (palm species)	x	f	x										
<i>Lannea humilis</i>	x	f		f	C	C	C						
<i>Lannea rivae</i>	x	x		f									
<i>Lawsonia inermis</i>	x	x	x	f	f								
<i>Maerua decumbens</i>	x	x		f	f								
<i>Maytenus senegalensis</i>	x	x		f	f								
<i>Opilia campestris</i>	x	x		f									
<i>Ormocarpum kirkii</i>		x		f									
<i>Ormocarpum trachycarpum</i>	x	x		f	f								
<i>Ormocarpum trichocarpum</i>	x	x		f	x								
<i>Otostegia integrifolia</i>	x												
<i>Ozoroa insignis</i>	x	f		f	x								
<i>Phoenix dactylifera</i>		x		f									
<i>Plectranthus barbatus</i>	x	f		f	C	C							
<i>Psydrax schimperiana</i>	x	x		f	f								
<i>Rhus natalensis</i>	x	x	x	f	x	x							
<i>Sclerocarya birrea</i>	f	x		f	C								
<i>Senna alexandrina</i>	x	x											
<i>Steganotaenia araliacea</i>	x	x		f	x								
<i>Tarenna graveolens</i>	x	f		f	x								
<i>Terminalia brownii</i>	x	f		f	C								
<i>Terminalia prunioides</i>	x	x		f									
<i>Ximenia americana</i>	x	x		f	x								
<i>Zanthoxylum chalybeum</i>	x	x	x	f	C	x							
<i>Ziziphus mauritiana</i>	x	x		f	f								
<i>Ziziphus mucronata</i>	x	x		f	f								
<i>Ziziphus spina-christi</i>	x	x		f	f								