Assessment of vascular plants in the Kafa Biosphere Reserve

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1 HIGHLIGHTS

- Although there is data for a transitional Bamboo-Montane forest at Boka, this study presents the first quantitative study of the vegetation of the bamboo forest of Kafa, as well as of the wetland and riverine forest patches.
- In total, 154 vascular plant species were recorded.
- 7 endemic species were recorded: *Aframomum corrorima, Bothrocline schimperi, Clematis longicaudata, Erythrina brucei, Millettia ferruginea, Tiliacora troupinii, Vepris dainellii*.
- 16 species are endangered or threatened: *Bothrocline schimperi* (LC), *Dracaena afromontana* (LC), *Erythrina brucei* (LC), *Ficus ovata* (LC), *Millettia ferruginea* (LC), *Parochaetus communis* (LC), *Phaulopsis imbricata* (LC), *Vepris dainellii* (LC), *Canthium oligocarpum* (NT), *Coffea arabica* (VU), *Maytenus arbutifolia* (VU), *Ocotea kenyensis* (VU), *Pavetta abyssinica* (VU), *Prunus africana* (VU), *Tiliacora troupinii* (VU), *Cyathea manniana* (NT).
- The montane forests are more species diverse than the bamboo forest and the wetlands. The latter, however, present high heterogeneity of habitats, thus increasing the overall diversity.
- Floodplain forests and wetlands feature a higher diversity of plant species than montane Participatory Forest Management (PFM) sites. Therefore establishing core zones in the wetlands/floodplain forests would be advisable. Moreover, more research is needed in this still poorly investigated habitat to extend species lists and investigate potential threats.
- Natural montane forests show higher species diversity than PFM montane forests, as well as being home to considerably more species with high IVI values than the PFM sites. PFM techniques seem to decrease the natural regeneration of trees, thus resulting in a very low species turnover rate.
- *Coffea arabica, Phoenix reclinata* and *Dracaena afromontana* may be considered as flagship species.
- *Cyathea manniana*, *Dracaena afromontana* and *Hippocratea africana* are indicator species for primary montane forest susceptible to disturbances.
- *Pavetta abyssinica* and *Phoenix reclinata* are indicators for floodplain forest and wetland forest patches.

- There is an urgent need to further investigate other areas, which were not included in this assessment. For example, in the western part of the reserve (Gesha and Byta areas) there are complex patches of highland wetlands, which surely differ from the studied wetlands both structurally and compositionally, where the potential to discover new species to science is very high. Similarly, a huge well-conserved patch of montane forest in the extreme northwest (Saylem) is worth of detailed floristic studies. On the other extreme, northeast from Bonga (Adiyo) the alpine vegetation lack quantitative studies, so efforts in this area are needed.
- Given the extreme relevance of wetlands in Kafa, a typification considering functions, processes, biochemistry and composition is fundamental to further investigate this particular habitat. Some wetlands could be even proposed as Ramsar sites once sufficient information is at hand.
- Our results show that montane PFM sites present lower diversity than the surrounding natural montane forests, therefore there is an urgent need to investigate the dynamic of the vegetation (composition, diversity and ecology) in both sites at a time and spatial scale.

2 INTRODUCTION

Kafa is home to the last surviving moist evergreen montane forests, which are part of the Eastern Afromontane Biodiversity Hotspot (Mittermeier et al. 2004). The wild coffee tree*, Coffea arabica*, is indigenous to the understory of Kafas natural montane forest and is in some areas harvested wild without management. In other areas wild coffee is harvested in forest fragments where farmers cut and thin out parts of the upper canopy and annually slash the forest understory on so called "Participatory Forest Management" (PFM) sites. This form of forest usage is known as sustainable for the natural forest vegetation in terms of structural vegetation. However, it still needs to be evaluated to which extent PFM sites are also degrading, as regeneration is hampered by the understory slashing. In the past decades human pressure on forest resources in Ethiopia has increased and destroyed large part of Ethiopians forest resources.

Due to deforestation for timber extraction, conversion to agricultural land and the establishment of plantations, large parts of Kafas forest resources are already decreasing. This ongoing trend does not only threaten the genetic resources of the wild coffee tree but also the remarkable floristic diversity in the area in general. In a study of the PFM sites, where wild coffee is collected and vegetation is cut and slashed, it was found that the species richness was higher. This can be explained by the fact that ruderal herbs, climbers and pioneer species are adapted to regeneration in disturbed habitats. In contrast, the number and abundance of typical forest species requiring shade and humidity, mainly tree species, have declined (Denich and Schmitt, 2006). Typical climax vegetation species, including some afromontane endemics, have considerably decreased, such as *Elaeodendron buchananii, P. adolfi-fiederici, P. africana, Macaranga capensis, Ilex mitis* and *Olea welwitschii*, whereas pioneer species like *Croton macrostachys, Milettia ferruginea* and *Albizia gummifera* dominate the disturbed PFM forest (Aerts et al., 2011). Tree ferns (*Cyathea manniana)* and the Rubiaceae *Psychotria orophila* are also less abundant in disturbed areas and are therefore mainly found in natural forests (Schmitt et al., 2009).

Surveying the current state it becomes apparent that the few existing vegetation studies (Aerts et al., 2011; Denich and Schmitt, 2006; Gobeze et al., 2009; Schmitt et al., 2009; Tadesse et al., 2014a, 2014b) concentrated mainly on the PFM sites with *Coffea arabica* (see figure 1) in the undergrowth and therefore on disturbed habitats. These studies come to the conclusion that the anthropogenic impact leads to homogenisation of the natural vegetation. Therefore we sought to study the differences in species composition in different habitats –disturbed and undisturbed habitats like primary forests in the core zone of the biosphere reserve.

Fig. 1: *Coffea arabica* in the PFM site Awurada

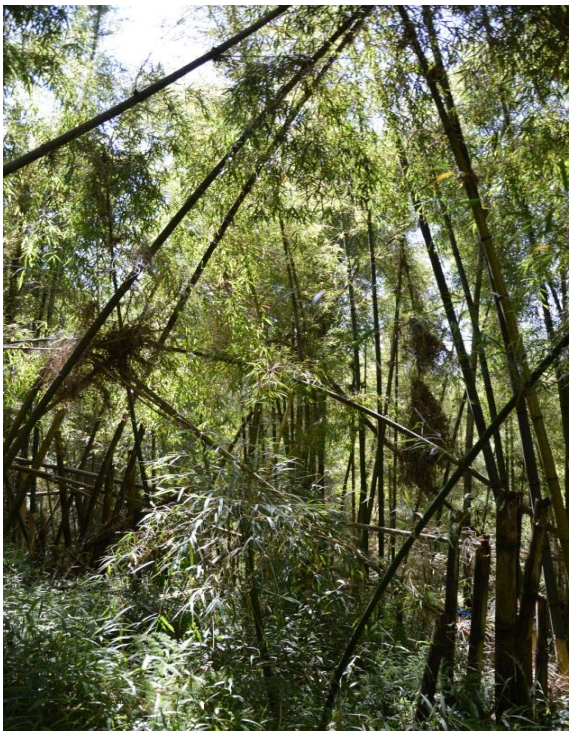

Fig. 2: Dense bamboo forest dominated by the montane bamboo *Arundunaria alpina* (photo by Viola Clausnitzer)

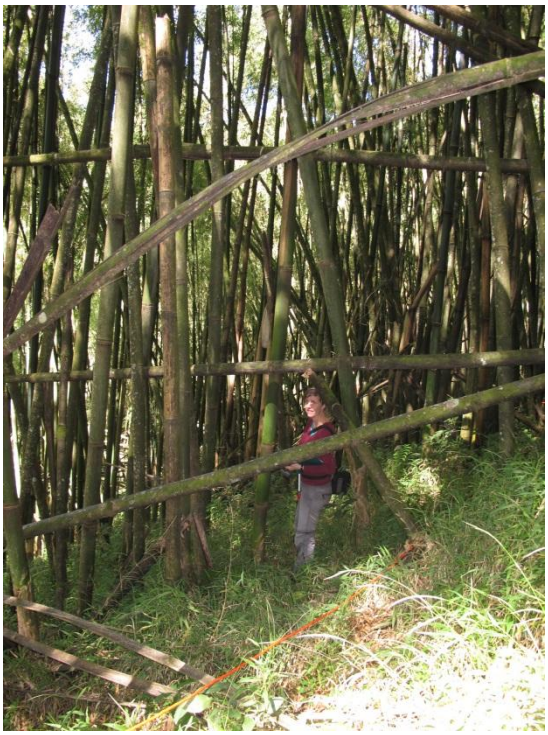

Fig. 3: Understory of the bamboo forest is dominated by few grass species and shrubs (photo by Viola Clausnitzer)

Dense bamboo forest (figure 2 and 3) of very low species diversity occurs at a height of between 2400 and 3050 masl in Bonga, but not in Boginda. It is dominated by bamboo (*Arundinara alpina*), but species like *Hagenia abyssinica* (figure 3) and *Schefflera volkensii* (see figure 4) and are also found within the bamboo stands at high elevations (Forest and Ababa, 2008). This vegetation type has no shrub layer. Bamboo is commonly used for house construction and utensils by local communities (Ababa, 2008). Reviewing literature, it becomes apparent that in all studies in Kafa wetlands were only mentioned as important habitats but no further studies were conducted there.

There are few comprehensive floristic studies in the study area in general. A Rapid Biodiversity Assessment (RAP) in the Kafa Zone was performed in 2007[1], with special emphasis on the Mankira, Saja and Boka forests. This study was conducted by the Ethiopian Wildlife & Natural History Society (EWNHS). Based on an initial and detailed landscape characterization by using Landsat TM satellite images, the study first classified main units to be analysed into systems of Land Use/Land Cover classes.The plant inventory was carried out in verified vegetation types at each forest of Saja, Mankira and Boka. Thus, combining presence/absence and qualitative methods and considering woody plants above 5 cm diameter at breast height and herbs/lianas and ferns, this assessment focused mainly on forested areas.The total number of plants species recorded in the three forests sites was 244 species representing 77 families. Out of the 244 species recorded, 26.6% were trees, 27.9 % were shrubs, 8.6 % were climbers, 27.5% were herbs, 2.9% were epiphytes and 1.2% weregrasses. The most abundant species in Saja forest are *Oxanthus speciosus, Dracaena fragrans* and *Macaranga capensis* while in Mankira forest *Dracaena fragrans, Coffea arabica* and *Chionanthus mildbraedii.* In Boka forest bamboo (*Arundunaria alpina*) and *Scheffleria volkensii* are dominant, with some understory shrubs and herbs (EWNHS, 2007).

Similarly, in collaboration with the GIZ, NABU and GEO SCHÜTZ DEN REGENWALD the EWNHS published the report “Baseline Survey on Land Use & Socio Economic, Flora and Fauna Biodiversity Status of Bonga, Mankira and Boginda Forests in Kafa Zone”[2] in 2008. Although this study classified 7 major land uses, the floristic inventories focused largely on forest covered areas. Using transects and quadrats sampling methods, the assessment recorded about 92 tree/shrub/liana species with a diameter of more than 10 cm at breast height in the three study sites. The Bonga area was the richest site with 70 species, followed by Boginda with 54 species and Mankira with 46 species.With respect to density of trees with a diameter of more than 10 cm, Bonga forest has the highest (590), followed by Boginda forest (575) and Mankira forest (454) (Nune, 2008). The floristic composition of three sampled sites shows a high heterogeneity of habitats. This is revealed by the absence of constantly present species within the three forest sites, indicating that each forest has a heterogeneous species composition. *Croton macrostachyus* in Mankira, *Milletia ferruginea* in Bonga and in Boginda are the most prevalent species. There is no single tree or shrub species that is constantly present in all sample plots within the three study sites (Nune, 2008). These results highlight the high diversity of habitats separated by only a few kilometres in the Kafa BR. This study also reports heavy exploitation of *Cordia africana, Pouteria adolfi-friederici* and *Prunus africana*, which are reported as endangered species.

[1]Ethiopian Wildlife and Natural History Society (2008a). Rapid Biodiversity Assessment in Kaffa Zone: The case of Mankira, Saja and Boka Forests

[2]Ethiopian Wildlife and Natural History Society (2008b).Baseline Survey on Land Use & Socio Economic, Flora and Fauna Biodiversity Status of Bonga, Mankira and Boginda Forests in Kafa Zone

There are also a number of relevant specific studies, for example the floristic surveys conducted by Schmitt et al. (2006) in areas near Bonga and the technical report on woody species diversity of Boginda Forest conducted by the Forest Genetic Resources Conservation Project, a consortium formed by the GIZ and the Institute of Biodiversity Conservation and Research (IBCR)[3]. Among them are at least 25 plant species which are endemic to Ethiopia, e.g. *Erythrina brucei, Milletia ferruginea* (figure 4), *Solanecio gigas, Hagenia abyssinica* (figure 5) *Vepris dainelli* (figure 7), and species such as *Milicia excelsa, Podocarpus falcatus* and *Prunus africana*, which are endangered according to the IUCN Red List and Ethiopia's and Eritrea's Red List, respectively .

Fig. 4: The endemic species *Milletia ferruginea*.

[3] GTZ/IBC (unpublished). Technical report on woody species diversity of Boginda Forest.

Fig. 5:: *Hagenia abyssinica*.

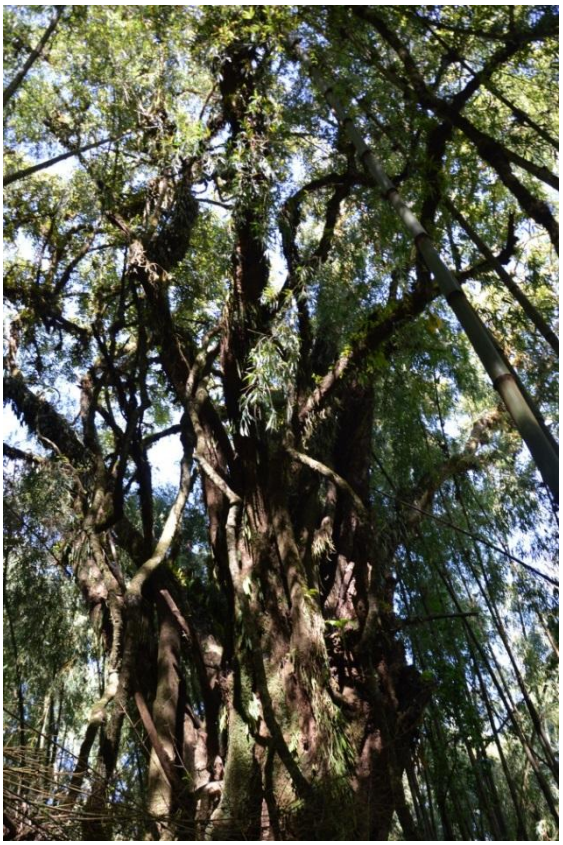

Fig. 6: *Schefflera volkensii*.

Fig. 7: The endemic species *Vepris dainelli*.

According to the Institute of Biodiversity Conservation (2005) there are 5 main habitat types in Kafa:

a) Sub-Afroalpine habitat: This habitat occurs at an altitude of higher than 3 200 m asl and cover only 0.3 % of the total area. This vegetation type is under severe threat due to agricultural expansion. Indigenous tree species such as *Hagenia abyssinica* are under high pressure.

b) Evergreen montane forest and grassland complex: This complex vegetation type occurs between an altitude of 1 900 to 3 300m and cover 52.1 % of the total area. It covers much of the highlands situated within the proposed buffer area of the Biosphere Reserve. This vegetation type is generally highly populated and is also under pressure due to cereal-based agriculture.

c) Moist evergreen montane forest: The habitat occurs between 1 500 and 2 600 m asl and covers 26.1 % of the total area of the BR. This forest type is of global conservation significance due to the occurrence of wild *Coffea arabica* L. (Rubiaceae). In addition to deforestation for cereal-based agriculture, timber extraction is cause for great concern.

d) Combretum-Terminalia woodland [4]: The IBC has classified some areas of the Kafa BR as Combretum-Terminalia Woodland babitat type. However, the coffee PFM sites in the Awurada valley (figure 11) as well as bamboo forest were mistakenly classified as Combretum-Terminalia Woodland. Figure 8 shows the mistaken classification (coloured by light green). Figure 9 shows the corrected habitat types in the biosphere reserve in a land use/land cover map (Dresen, 2014).

e) Wetlands: A complex systems of wetland habitats occurs between 900 and 2600 m asl and covers 6.6 % of the BR. These sensitive ecosystems are of the utmost importance in terms of satisfying the basic human needs of the local communities by for example providing materials for building shelter, grazing of cattle, etc. It is therefore also under intense development pressure.

[4]This habitat does not exist in Kafa. It is probably a mistake by the Institute of Biodiversity and Conservation (IBC).

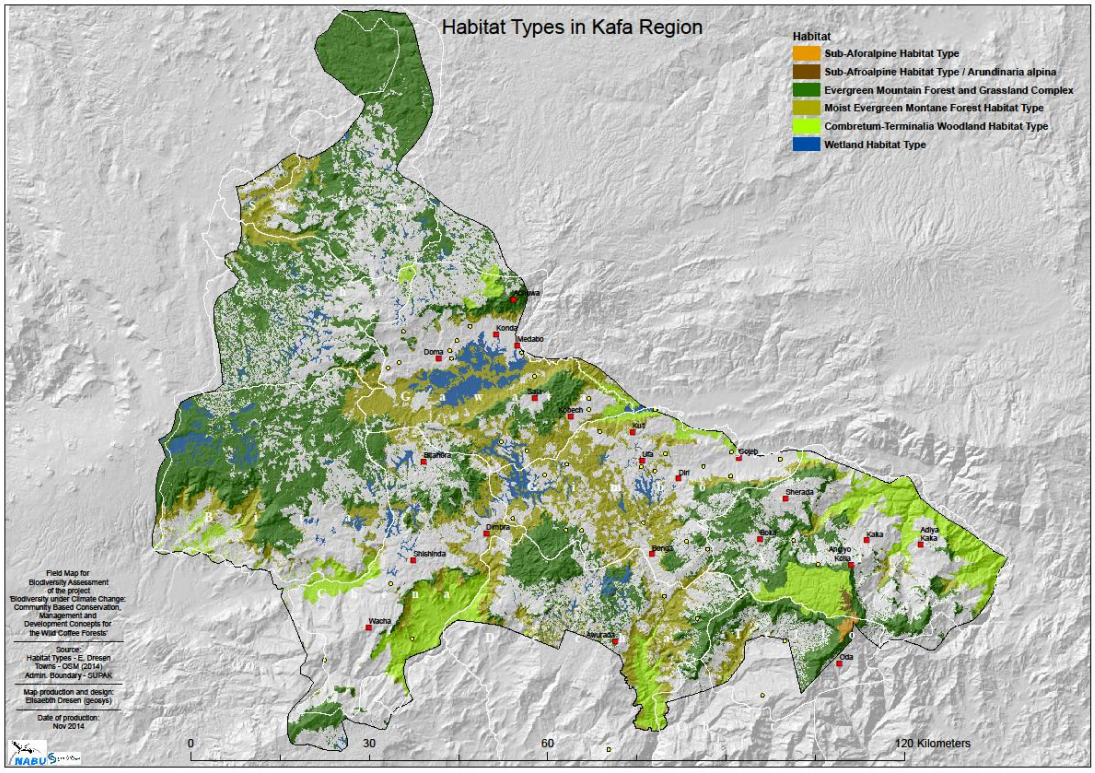

Fig. 8: Habitat Types in Kafa Biodiversity Reserve according to the classification of the Institute of Biodiversity Conservation (IBC, 2005). (elaborated for the purpose of this study by Elisabeth Dresen, 2014).

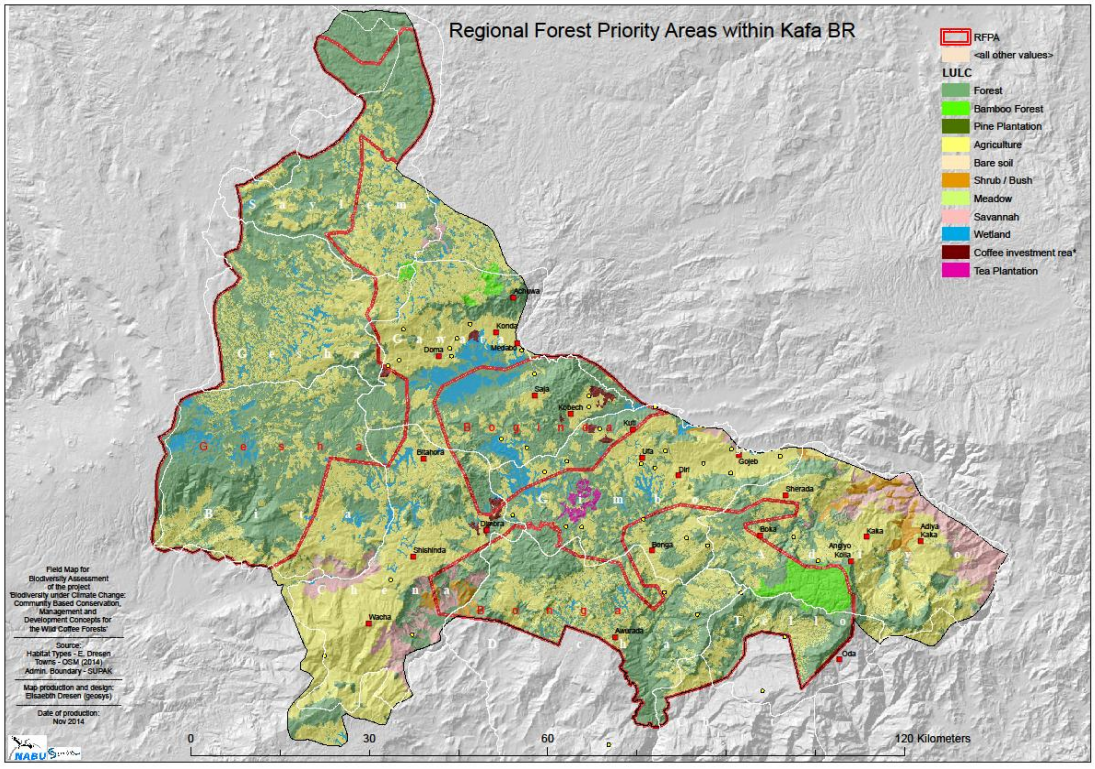

Fig. 9 Regional Forest Priority Areas according to Million, B & Leykun B. (2001) (red lines) projected on land use and land cover at Kafa BR. It shows the corrected habitat denominations to the bamboo forests (elaborated for the porpuse of this study by Elisabeth Dresen, 2014).

3 MATERIALS AND METHODS

3.1 Study area

The study areas were mostly core zones of the reserve located around Bonga and the Gojeb wetland, which is located aproximately 80 km away from Bonga. Habitats studied were bamboo forests (BA), montane forests (Boka forest (BK), Komba forest (KO), Boginda forest (BO), Awurada valley (AW, figure 11)), wetlands (AlemGono (AG), Shoriri (SHO), Gojeb (GO-wet)) and river/floodplain forests (Gojeb river (GO-riv), Awurada valley/Gumi river (AW)) (see table 1).

4.1.1. Sites

We visited the Regional Forest Priority Areas within the Kafa BR proposed by Million and Leykun (2001)[5], which were initially united in the establishment ofthe National Forest Priority Area in 1980s. These authors suggest three priority areas in the Kafa zone: Bonga, Boginda and Gesha forests. Following the main criteria for selecting sampling sites, we have defined the Bonga and Boginda Forests as "High Priority" followed by Gesha forest which has middle to low priority. However, due to the limited time we assessed only the Bonga and Boginda Forests.

Table 1: Study areas in Bonga and Boginda

Area	Site	Code	Habitat	Alt.	Lat.	Long.
BONGA	Bamboo forests	BA	Bamboo forests dominated by *Arundunariaalpina*	2700	07°14'10.8"	36°28'03.8"
BONGA	Komba forests	KO	Montane forests	1900	07°18'10"	36°03'50"
BONGA	Boka forests	BK	Montane forests	2500	07°17'51.6"	36°22'28.1"
BONGA	Awurada valley (Gummi River, PFM sites)	AW	Montane forests/Riverine vegetation	1550	07°05'18.0"	36°13'05.9"
BONGA	Alem Gono	AG	Wetland	1700	07°21'27.2"	36°14'18.1"
BONGA	Shoriri	SHO	Wetland	1630	07°21'34.2"	36°12'24.4"
BOGINDA	Gojeb wetland	GO-wet	Wetland	1600	07°33'13.6"	36°02'99.4"
BOGINDA	Gojeb river	GO-riv	River/floodplain forests	1550	07°37'04.5"	36°03'10.5"
BOGINDA	Boginda forests	BO	Montane forests	2100	07°30'01.1"	36°05'29.8"
BONGA	Keja Araba (PFM sites)	KE-AB	Montane forests	1850	07°16'39.8"	36°10'10.2"
BONGA	Beta Chega (PFM sites)	BE-CH	Montane forests	2100	07°17'54.7"	36°05'46.9"

[5]Million, B &Leykun B. (2001): State of Forest Genetic Resources in Ethiopia. Forest Genetic Resources Working Papers, Co-publication of FAO, IPGRI/SAFORGEN, DFSC, ICRAF, Working Paper FGR/21E

Boginda and Bonga:

Ecologically important Areas - nearly intact forests

Bamboo forests.

This extensive and unique vegetation in the BR occurs at altitudes between 2,400 - 3,050 m asl and is characterized by bamboo undergrowth, either in pure stands or in mixture with trees, including *Hagenia abyssinica* (figure 5), *Myrsine melanophloeos* and *Hypericum revolutum* (Bekele,2003)[6]. A huge and unique patch is located in the Woreda Adiyo, in the eastern part of the reserve. Montane forests. See description of the main habitats in the BR. The following woredas were selected: Bonga forests. Woredas: Decha, Tello, Gimbo and Chena. Boginda forests.Woreda: Gawata

Wetlands: Based on NABU´s pilot projects, three sites were selected: AlemGono, Goyeb (see figure 9) and Shoriri wetlands. Constantly low air pressure and high precipitation rates (2,000 mm annually) in an area of 26,832 ha have led to a high diversity of wetlands, which have not yet been sufficiently studied. According to the Kafa Wetland Strategy[7], these include river margins, peatlands, riparian zones, extensive floodplains and alluvial plains, marshes/ swamps as well as forest wetlands. They function as moisture and carbon reservoirs, and represent an important part of supraregional river basins (the rivers Gojeb/ Omo, Baro-Akobo and others).

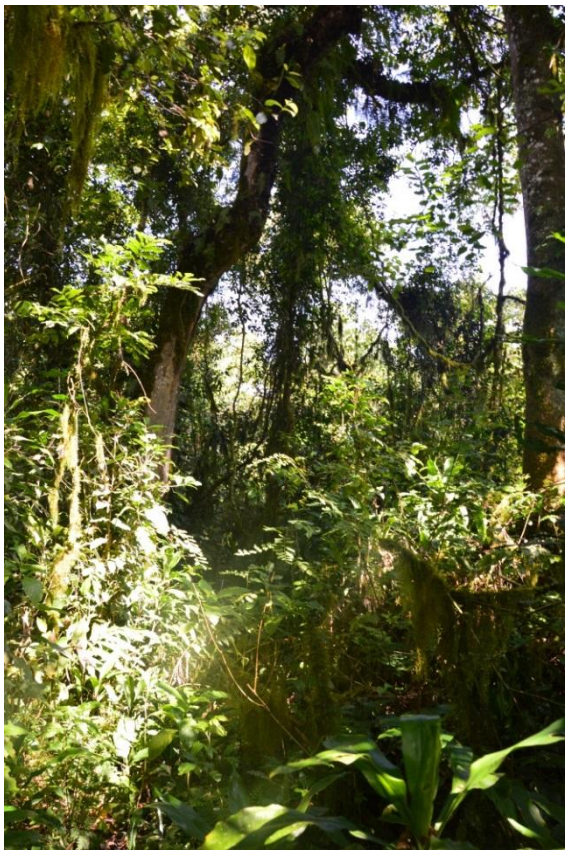

Fig. 10:: : Gojeb riverine/floodplain habitats

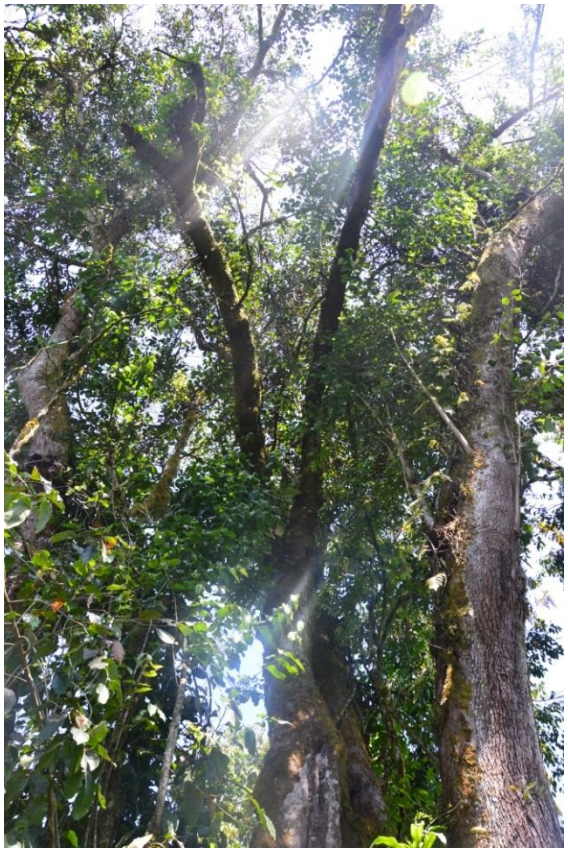

Fig. 11: Sapium ellipticum in the floodplain forests

[6]Bekele, T. (2003). The potential of Bonga forest for certification: A Case Study. National Stakeholders Workshop on Forest Certification: Organized by Institute of Biodiversity Conservation and Research (IBCR), FARM Africa and SOS Sahel.

[7]Ethio Wetlands and Natural Resources Association (2008).A Wetland Strategy for Kafa Zone, South Nations, Nationalities and Peoples Regional State.

4.1.2 Participatory Forests Management sites

Participatory Forest Management (PFM) sites were initially established at Kafa in 2002. PFM is a forest management concept that includes a set of techniques and processes and the participation of the state forest departments and local communities. It gives particular relevance to the local communities'knowledge and their key role as forest managers. Thus, local knowledge and participation are crucial to the successful management and sustainability of PFM sites. To date Kafa has approximately 15.000 hectares of PFM sites distributed mainly across montane forests of Gawata, Decha and Gimbo woredas, with about 12.000 members (Dresen, 2011). These areas cover the main biosphere reserve zones.

In the floristic assessments we sampled the Ufa PFM site, which cover 1208.03 hectares and agglomerates 602 members. This site is located in Decha woreda and forms a transition to the floodplain area formed by the Gumi River.We also sampled the Keja-Araba and Beta Chega PFM sites. The former has 1474.20 hectares and 620 members; there is no data for the latter site.

3.2 Sampling methods

As we knew very little of the studied area and were working in a limited time-frame, we used a "simple random sampling" strategy. In most habitats we conducted transects of the size 10x100 meters (1000 m^2). Longer transects were not possible due to topographical limitations. Distances between transects varied, the minimum being 300 meters, but mostly more than 500 meters. Only in the very dense bamboo forest we used square plot shapes of 20x20 meters. We sampled the major habitats in the Kafa BR. In montane forests we established 16 transects, that is 14000 m^2 (BO 6000 m^2, BK 2000 m^2, KO 6000 m^2), montane forest PFM sites 5000 m^2 (AW 3000 m^2 (figure 11), KE-AB 1000 m^2, BE-CH 1000 m^2), in floodplains/riverine forests 9000 m^2 (SHO 3000 m^2, Go-riv 4000 m^2), in wetlands (see figure 12) 1000 m^2 (GO-wet 1000 m^2) and in bamboo forests 3600 m^2 (BA 3600 m^2).

Fig. 12: PFM site Awurada (AW).

Fig. 13: PFM site Awurada (AW).

1.

Fig. 14: Gojeb wetland.

Fig. 15: Herborisation of unknown species.

We measured the major vascular groups such as trees, shrubs and lianas. Any species with a diameter at breast height (DBH) equal or above of 2.5 cm occurring in the transect/plot counted as an individual and was therefore recorded (figure 16). The DBH was measured using metric tapes. The height of all individuals in the transect/plot was measured using a clinometer and by estimation. In each transect/plot some dominant herb species were additionally recorded to complement the species list. Unfortunately our time-frame was too limited for a complete herb layer inventory. Local and scientific species names were recorded and specimens were collected. Unknown species were herbarised (figure 15) and either identified in the evenings with the help of the different editions of the flora of Ethiopia and Eritrea (Edwards et al. 1995, 1997, 2000, Hedberg et al. 1989, 2003, 2006) or was sent to the national herbarium of the Addis Ababa University for identification. Moreover general information on the site (site name, kebele, woreda, coordinates, altitude, habitat type, topography, reserve zone) was recorded.

3.3 c) Data analysis

Plant species were identified with the flora of Ethiopia and Eritrea (Edwards et al. 1995, 1997, 2000, Hedberg et al. 1989, 2003, 2006) in the field and in the national herbarium of the Addis Ababa University.

Fig. 16: Diameter Breast Height (DBH) measurements in the Awurada valley

The floristic composition was evaluated by using the species Importance Value Index (IVI, Curtis &McIntosh, 1951), which summarizes relative species density, dominance, and frequency. Large numbers of small trees or unequal distributions of individual plants and species per plot do not affect the IVI. Species richness and various alpha-diversity coefficients were calculated for each plot and transect. Most of them, such as the Simpson and Shannon indexes have been widely used in tropical montane habitats. All data was entered in Excel and analysed in Excel and Past (Hammer et al. 2001).

4 RESULTS AND DISCUSSION

Overall we assessed 30 transects of 1000 m² and 9 plots of 400 m² with a total area of 3.3 ha. We recorded 154 plant species of 114 genera and 61 families. Out of the 154 recorded plant species, 129 species were woody, of which 20 are climbers, 39 shrubs and 70 trees. Additionally, we collected 25 herbaceous species (18 herbs, 5 grasses, 1 fern) that were dominant in the understory (see Appendix 1).

Table 2: Diversity indices for the different sampling sites.

	bamboo	PFM sites			montane forest			floodplain forest			wetland
	BA	AW	BE-CH	KE-AB	KO	BK	BO	GO-riv	SHO	AG	GO-wet
Number of plots	9	3	1	1	6	2	6	4	3	3	1
Size (ha)	0.36	0.3	0.1	0.1	0.6	0.2	0.6	0.4	0.3	0.3	0.1
Species richness	6	24	27	14	60	27	72	50	33	32	21
Individuals in total	7777	1440	960	480	768	710	1338	992	816	797	810
Dominance_D	0.99	0.32	0.09	0.24	0.06	0.07	0.05	0.14	0.09	0.17	0.16
Simpson_1-D	0.01	0.68	0.91	0.76	0.94	0.92	0.95	0.86	0.91	0.83	0.84
Shannon_H	0.04	1.91	2.80	1.94	3.24	2.82	3.47	2.77	2.74	2.27	2.31

The Simpson_1-D index shows the species diversity in a community. The diversity is highest in Boka (BK), Boginda (BO) and Komba (KO) forest (see table 2) while the diversity is very low in the bamboo (BA) forest. Since the Simpson index is the complement of the dominance index D, this index shows the contrary. The very high dominance_D value for the bamboo forest (close to 1) shows that diversity is considerably low. The contrary is the case for the three montane forests Boka (BK), Boginda (BO) and Komba (KO). Due to low dominance the diversity is very high. The Shannon_H index shows a similar trend. Shannon's index accounts for both abundance and evenness of the species present. Again the montane forests Boka, Boginda and Komba feature the highest value.

Our results show that the diversity and evenness in the undisturbed habitats (primary rain forest) are much higher than in the disturbed habitats (PFM-sites) and the wetland and floodplain habitats. The lowest diversity is shown in the very dense bamboo forest, as it is mainly dominated by one species, *Arundinaria alpina*, the bamboo. The primary rain forest is not only home to a greater number of species, but the individuals in the community are distributed more equally among these species.

Interestingly, diversity indices are also high in the wetlands (AlemGono (AG), Shorori (SHO), Gojeb (GO-wet, Go-riv)). Both Simpson and Shannon index are higher in the wetlands and floodplain forests than in the montane forest PFM sites in Awurada (AW) and Keja Araba (KE-AB). This result supports the hypothesis that PFM sites are in a degrading process. The high diversity of plant species in the wetlands shows that establishing core zones there would be worth pursuing.

To assess the relative dominance of species in our forest communities we calculated an Importance Value Index (IVI). We calculated the overall IVI within all transects/plots (see Appendix 2) as well as the separate IVI for each site (see table 3), reflecting different habitat types. To compare the ecological significance of species within a habitat, the Importance value index (IVI) is an essential tool of measurement (Lamprecht, 1989).

In order to get an IVI rank list all woody species registered were grouped into five IVI classes based on their total IVI values (Appendix 2). Species with lowest IVI values were grouped into the fifth IVI class, whereas species with high IVI values were grouped in class one. Those species, which were grouped in the fifth IVI class need high conservation efforts, while those grouped in the first IVI class are considered stable. Based on the IVI output, the following species obtained the highest priority for conservation efforts: The climber *Asparagus africanus*, *Clematis longicaudata, Ipomoea tenuirostris*, *Peponium voglii, Tacazzea conferta*, *Oncinotis tenuiloba* and *Periploca linearifolia,* the shrubs *Myrsine africana*, *Piper umbellatum*, *Rumex abyssinicus, Lantana trifolia*, *Ocimum urticifolium*, *Ocimum lamiifolium*, *Clerodendrum myricoides, Triumfetta brachycerask* and *Rhamnus prinoides* and the tree *Diospyros abyssinica* (Appendix 2).

Species with the highest IVI are generally abundant, frequent and dominant in the forest (Curtis and McIntosh, 1951). The following species feature the highest IVI: *Arundinaria alpina, Olea welwitschii, Schefflera volkensii, Millettia ferruginea* (see figure 5), *Phoenix reclinata, Croton macrostachyus, Syzigium guineense subsp. afromontanum , Coffea arabica, Scheffleria abyssinica, Ficussur, Elaeodendron buchananii, Vepris dainellii, Chionanthus mildbraedii, Sapiumellipticum, Dracaena steudenri , Ficus ovata, Mimusops kummel, Macaranga capensis, Trilepisium madagascariens, Galiniera saxifraga, Ocotea kenyensis, Ilex mitis, Bersama abyssinica , Allophyllus abyssinicus, Pouteria adolfi-friederici*. For them less conservation effort is needed.

Table 3: Importance Value Index (IVI) for all recorded species per habitat.

	floodplain forest			wet-land	montane forest			montane forest, PFM			bamboo forest
species	**AG**	**GO-riv**	**SHO**	**GO-wet**	**BK**	**BO**	**KO**	**KE-AB**	**BE-CH**	**AW**	**BA**
Acacia brevispica Harms						0.7					
Albizia grandibracteata Taub.			5.7	5.9						7.3	
Albizia gummifera (J.F.Gmil.) GA.Sm.	2.6			6.8		1.5	2.9				
Allophyllus abyssinicus (Hochst) Radlk.					23.1	5.6	4.4		6.6		
Apodytes dimidiata E. Mey. ex Arn.		1.4				5.5					
Arundinaria alpina K. Schum.											215.4
Asparagus africanus lam.				5.8							
Bersama abyssinica Fresen	16.2	6.7	4.7		3.3	3.7	1.0		4.9	3.2	
Bothrocline schimperi olivi & Hiern.			2.4								
Brucea antidysenterica J. F. Mill		1.7	2.3				1.0				
Canthium oligocarpum Hiern							2.0	9.7			
Cassipourea malosana (Baker) Alston		2.0									
Celtis africana Burm. f.							1.1			15.7	
Chionanthus mildbraedii (Gilg & Schellenb.) Stearn	2.6	12.5	10.4		3.3	12.8	7.8			5.7	
Clausena anisata (Willd.) Hook.f. ex Benth.					3.3	4.7	1.0		7.0		

Clematis longicaudata Steud ex A. Rich.						0.7					
Clerodendrum myricoides (Hochst) Vatke		1.4									
Coffea arabica L.	2.7	4.4	7.0			3.0	2.5	15.6	5.8	62.1	
Combretum paniculatum Vent.		3.3	2.3				1.0		4.8		
Cordia africana Lam.		2.6	5.8	5.9			2.8			2.7	
Croton macrostachyus Del.	24.1	7.4	36.2	9.7		15.9	8.9		8.5	8.0	
Cyathea manniana Hook.							1.0				
Cyphostemma adenocaule (Steud. ex A. Rich.) Desc.					8.0	0.7					
Cyphostemma sp						2.4					
Dalbergia lactea Vatke							1.0				
Deinbollia kilimandscharica Taub.		1.4				0.9					
Diospyros abyssinica (Hiern) F. White						0.7					
Dombeya torrida (J.F.Gmel.) Bamps					3.3						
Dracaena afromontana Mildbr.						1.2	4.7				
Dracaena fragrans (L.) Ker Gawl.			2.4	8.4			1.0		4.8	3.4	
Dracaena steudneri Engl.	7.3		66.5	8.4		0.7	3.7		6.2		
Ehertia cymosa Thonn.		1.7	10.5	14.2		2.6	2.4				
Ekebergia capensis Sparm	6.2						2.4			3.3	
Elaeodendron buchananii (Loes.) Loes.		29.2	2.4			3.9	9.0			17.1	
Embelia schimperi Vatke					12.9						6.0
Erythrina brucei Schweinf.	3.1										
Erythrococca trichogyne (Muell Arg.) Prain	3.6					2.9	1.0				
Euphorbia candelabrum Kotschy						0.8	1.0				
Ficus exasperata Vahl	2.6		7.2			2.7	1.0				
Ficus lutea Vahl	2.9	4.7									
Ficus ovata Vahl	2.6					3.5	2.9			31.7	
Ficus plamata Forssk.	3.1					1.5					
Ficus platyphylla Del.	6.7	6.4									
Ficus sp.	2.6				9.2	4.0	3.6		8.8		
Ficus sur Forssk.		12.4				4.3	1.0			33.1	
Ficus thonningi Blume		1.4				0.7			4.8		

Ficus vasta Forssk	12.6										
Galiniera saxifraga (Hochst.) Bridson	3.1	3.4	2.4		14.7	10.9	3.0	9.3	9.4		
Hagenia abyssinica (Bruce) J.F. Gmel.					3.3						7.5
Hippocratea africana (Willd.) Loes.						1.3	1.0				
Hippocratea goetzei Loes.	3.1	5.0	4.7		9.0	4.6	1.0		5.8		
Ilex mitis (L.) Radlk.		4.6	2.3		5.0	12.9	1.0	25.4			6.0
Ipomoea tenuirostris chelsy						0.7					
Jasminum abyssinicum Hochst. ex DC.		1.4			4.0						
Justicia schimperiana (Hochst. ex Nees) T. Anders		1.4					1.0				
Landolphia buchananii (Hallier f.) Stapf		3.7	2.3	5.8		6.6	2.0				
Lantana trifolia L.						0.7					
Lepidotrichilia volkensis (Gurke) Leory.		1.4	4.2		13.7	5.2	2.5		27.4		6.2
Macaranga capensis (Baill) Sim	45.0					11.8	3.3	9.2			
Maesa lanceolata Forssk.		3.4	5.6	7.4	15.2	4.6	2.0				
Maytenus arbutifolia (A. Rich.) Wilczek	2.7					10.8					
Maytenus graulipes loes.			2.3				1.0				
Maytenus spp.					12.5	3.9			4.8		
Millettia ferruginea (Hochst.) Bak.	35.4	8.2	11.7	17.4		15.6	21.2	9.9	31.9	6.8	
Mimusops kummel A.DC.		39.2								20.3	
Myrsine africana L.					3.3						
Ocimum lamiifolium Hochst,ex Benth						0.7					
Ocimum urticifolium Roth						0.7					
Ocotea kenyensis (Chiov.) Robyns & Wilcze							1.0	138.6			
Olea welwitschii (Knobl) Gilg&Schellenb.					3.3	3.3	82.4		38.5	10.4	
Oncinotis tenuiloba Stapf.		1.4									
Oxyanthus speciosus DC.	3.1	3.1	5.2	10.1		2.8	3.3				
Oxyanthus speciosus DC.sbsp.*globosus* (Sond.) Bridson		8.4		5.8			2.2	18.4	4.8	2.9	
Pavetta abyssinica Fresen.		1.4		5.8							
Pavetta oliveriana Hiern					10.1	7.1					
Pavonia urens Cav.	2.6					0.7					
Peponium vogelii (Hook.f.) Engl.						0.7					

Periploca linearifolia Quart.-Dill. & A. Rich.					3.3						
Phoenix reclinata Jacq	50.5	55.1	16.9	44.6			6.7			7.2	
Phyllanthus reticulatus Poir.		2.8									
Piper umbellatum L.			0.4								
Pittosporum virdiflorum Sims			2.4			1.3	3.2		4.8		
Podocarpus falcata R.Br.									37.7		
Polyscias fulva (Hiern.) Harms						1.9	12.9	10.8	15.2	8.6	
Pouteria adolfi-friederici (Engl.) Baehni			3.2			15.9	2.0			8.8	
Premna schimperi Engl.							1.0				
Prunus africana (Hook.f.) kalkm	3.1		2.4		3.3	9.1	1.0				
Rhamnus prinoides L'Herit.		1.4									
Ricinus communis L.			2.4								
Ritchiea albersii Gilg		2.0									
Rothmannia urcelliformis (Hiern.) Robyns		1.4	3.3			5.5	2.9		4.8	3.0	
Rumex abyssinicus Jacq.						0.7					
Rytigynia neglecta (Hiern) Robyns						2.9	2.3	9.2	12.5		
Sapium ellipticum (Hochst.) Pax.	14.1	14.1		65.2			6.8			12.6	
Schefflera volkensii (Engl.) Harms					87.0						58.0
Scheffleria abyssinica Hochst.ex A. Rich) Harrms					15.8	7.7	21.6	11.0			
Solanecio mannii (hook f.) C. Jeffery	2.7										
Spathodae sp.						2.1	2.0				
Spp. 1						0.8			4.8		
Spp. 10		0.2									
Spp. 11						0.8					
Spp. 12					4.7						
Spp. 13						1.4					
Spp. 14						1.0					
Spp. 15		1.4									
Spp. 16						1.6					
Spp. 17		1.7				0.8	2.2				
Spp. 18		0.2									
Spp. 19							1.3				
Spp. 2	2.6										
Spp. 20		3.6									
Spp. 21		1.4				1.1					

Spp. 4						0.7					
Spp. 5						2.2					
Spp. 6						0.7					
Spp. 7				5.8							
Spp. 9					3.3						
Syzigium guineense (Willd.) DC. subsp.afromontanum	9.5	6.1		8.7		32.8	11.0	12.1	7.6		
Tacazzea conferta N.E. Br.					3.3						
Teclea nobilis Del.						1.1	3.2				
Tiliacora troupinii Curod.		1.4				0.7	2.0				
Trichilia emetica Vahl	10.5	3.2		11.2						4.6	
Trilepisium madagascariense DC	4.5	5.8	23.5			3.0		11.6		16.7	
Triumfetta brachycerask.Schum		1.4									
Urera hypselodendron (A. Rich.) Wedd.					12.6						
Vangueria apiculata K. Schum.		1.4									
Vepris dainellii (Pichi-serm) Kokwara		3.7	21.3	35.6		7.1	13.9	9.3	6.9	2.9	
Vernonia amygdalina Del.	5.8		13.8	5.8		1.9	1.0		4.8		
Vernonia auriculifera Hiern.						0.9	1.0		16.1		

Looking at the IVI separately for the different habitats (see table 3) it becomes apparent that the species *Millettia ferruginea* (see figure 5), *Croton macrostachyus*, *Elaeodendron buchananii*, *Vepris dainellii, Dracaena steudneri, Syzigiumguineense subsp. afromontanum, Ilex mitis, Trilepisium madagascariense, Coffea Arabica, Oxyanthus speciosus* subsp. *globosusare* are generalists, as they occur in different habitat types, in the wetland in lower elevations and in the mountain forests on higher elevations. The IVI for those species is considerably high (see table 3).

Bersama abyssinica, Hippocratea goetzei, Vernonia amygdalina, Oxyanthus speciosus, Prunus africana, Galiniera saxifraga, Chionanthus mildbraedii, Rothmannia urcelliformis (figure 15), *Lepidotrichilia volkensis, Maesa lanceolata, Combretum paniculatum, Landolphia buchananii, Dracaena fragrans, Cordia africana* are also generalists occurring in different habitats but with a lower IVI.

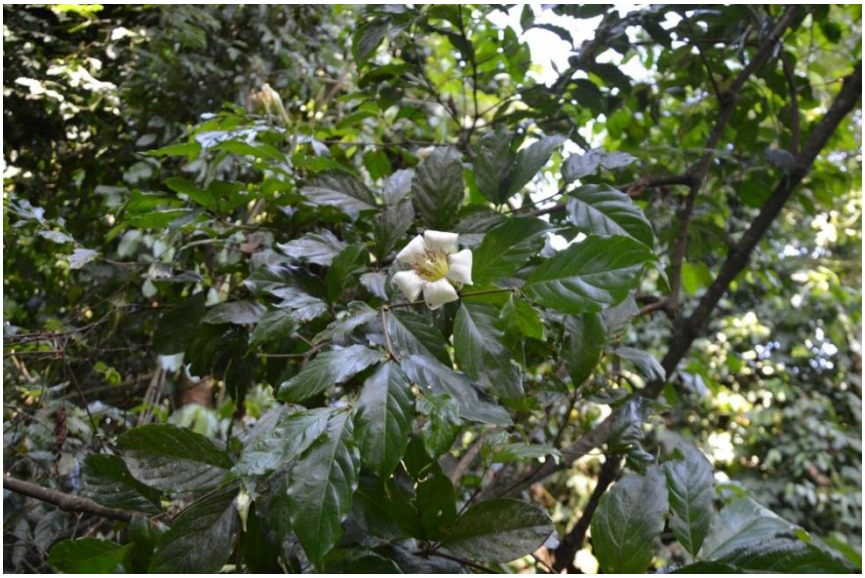

Figure 15: ***Rothmannia urcelliformis***

Olea welwitschii, Allophyllus abyssinicus, Scheffleria abyssinica, Polyscias fulva, Ocotea kenyensis, Pouteria adolfi-friederici, Ficus ovata are species with a high IVI in the montane forests habitats and not occurring in the floodplain forests/wetlands.

Albizia gummifera, Rytigynia neglecta, Clausena anisata, Maytenus spp., Pavetta oliveriana are species with a lower IVI but also typical for the montane forests.

Vernonia auriculifera, Cyathea manniana, Hippocratea africana, Dracaena afromontana, Teclea nobilis, Euphorbia candelabrum, Canthium oligocarpum, Spathodae sp, *Ehertia cymosa* feature a very low IVI but are also solely present in the montane forest habitats. For the bamboo habitat only bamboo itself *Arundinaria alpina* and *Schefflera volkensii* are species with a high IVI.

In the floodplain and wetland habitats *Phoenix reclinata, Sapium ellipticum* (see figure 10), *Trichilia emetica*, are species with a high IVI in both the floodplain and wetland habitats. The species *Pavetta abyssinica* and *Albizia grandibracteata* feature a lower IVI, but also occurr in floodplain/riverine and wetland habitats. In contrast, *Mimusops kummel*, with a high IVI, and *Ficus platyphylla* and *Ficus lutea*, with a lower but still considerably high IVI, only occur in floodplain/riverine habitats and were not recorded in the wetland habitat.

In montane forest PFM sites some of the species with a high IVI are the same as in natural montane forests like: *Olea welwitschii*. The species *Albizia gummifera* and *Pavetta oliveriana* feature a high IVI in the natural montane forests, but do not occur in the PFM sites, whereas *Ocotea kenyensis*, *Ficus sur* and *Ficus ovata* have a considerably higher IVI in the PFM sites compared to the natural habitats. *Podocarpus falcata* only occurs in PFM sites and not in natural ones. *Coffea arabica* shows the highest IVI in PFM sites, which can be explained by the promotion of this species in these sites. These results show that there is a significant difference in species composition between PFM sites and natural montane forests. In general it is very conspicuous that we have less species with high IVI values in PFM sites than in natural forest montane sites.

5 CONCLUSIONS AND RECOMMENDATIONS FOR CONSERVATION AND MONITORING

Diversity indices showed that the montane forests of Boginda, Komba and Boka had the highest species diversity and therefore need more studies and further protection. But the wetlands also showed very high species diversity (see table 1). Since no core area is yet established in the wetland and riverine forests, we recommend doing so to protect the high plant diversity in these habitats. This recommendation is not only based on the high vascular plant diversity itself but also on the fact that we found a considerably different species composition in the wetlands compared to the other habitats.

The most famous plant species of the montane forest in Kafa is beyond doubt the coffee tree *Coffea arabica* (figure 1). It is popular due to its cultural and economic importance for local society, as well as due to the fact that it originates from the montane cloud forests of Kafa and surrounding similar habitats. Therefore the coffee tree should be considered as the most important flagship plant species. Since *Coffea arabica* is the main income for many households in Kafa and is favoured by an annually slashing of other shrubs in the mountainous PFM sites, such as the Awurada PFM sites, *Coffea arabica* is currently not under threat and well protected by local communities. But as Ethiopia is the center of origin of the species, the wild coffee varieties are only available in the SW Ethiopian forests (Bonga forest being one of the major sites). Hence, conservation of these forests is vital for the preservation of the wild coffee variety, as it can be the basis for the improvement of the productivity and quality of coffee. Another flagship species could be *Phoenix reclinata* (figure 16). This palm tree is abundant in the wetland areas of Kafa, it is conspicuous, well recognisable plant and it is known for its numerous usages for food, medication and timber. The mature stems of the species are being overutilized by the local community for construction of traditional bridges and for fencing purposes. As its regeneration is very slow, overutilisation may lead to local reduction of the species.

The African dragon tree, *Dracaena afromontana* (figure 17), with its conspicuous appearance, could also be a flagship species for Kafa Biosphere Reserve, representing a threatened plant species (least concern (LC) by the IUCN) and as representative for natural primary forests in Kafa. The main threat for this species is habitat fragmentation and light penetration though disturbance by deforestation, selective slashing or grazing.

Fig. 16: *Phoenix reclinata* in Gojeb river (GO-riv)

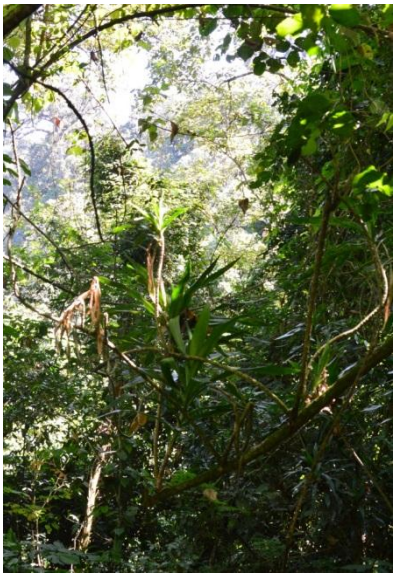

Figure 17: *Dracaena afromontana* in Boginda (BO)

The tree fern *Cyathea manniana*, an indicator for natural montane forests and a so called living fossil could also be a candidate for the role of flagship species. Even slight selective forest thinning can already be a threat for this sensitive forest species and therefore it needs to be carefully protected in undisturbed forests.

Both suggested flagship species, *Cyathea manniana* and *Dracaena afromontana*, are adapted to natural and undisturbed habitats and are susceptible to disturbances. They occurred only in the montane forests habitats with a considerable low IVI. The liana *Hippocratea africana* is another species with a low IVI in the afromontane forest in Kafa, but typical only for the montaneforest habitat and absent from all other habitats. It needs dense closed forest vegetation.

Since those species are susceptible to disturbances they are chosen as indicator species for primary and near to natural mountain forests. Part of this finding is in accordance with Schmitt et al. (2009) who found that tree ferns only appear in natural forests and need well-shaded and moist surroundings.

Indicator species for undisturbed wetlands and riverine forests is the rare tree species Pavetta abyssinica. It is considered a threatened (VU, vulnerable) according to IUCN. It is not only rare and threatened, but it only appeared in the Gojeb wetland of all studied sites. *Phoenix reclinata* (figure 16) is considerably dominant in the riverine forest vegetation but does not occur in other habitats. Therefore, it is also chosen as an indicator species for wetland forest patches and floodplain forest.

In the bamboo habitat species diversity was very low. Only the bamboo itself, *Arundinaria alpina* (figure 2), had a high IVI and was the only dominant species. Therefore it doesn't make sense to set an indicator species for this habitat. Bamboo doesn't appear at all in the other habitats. Since it is the very dominating species with an IVI of 215 it is not endangered at all.

In conclusion we can state that further investigations on vascular plant species are needed. The limiting time factor didn't allow us to also focus on herbaceous vegetation and epiphytes. A more in-depth analysis should include these vegetation types to better understand impacts of forest fragmentation through tree crown thinning, shrub slashing, clear cuttings and deforestation. Moreover habitat comparisons would be more reliable with a higher amount of transects/plots investigated which needs more and intense studies on the vegetation. Especially riverine and wetland habitats have not yet been investigated sufficiently. The fact that they seem to be quite species rich promotes the need for more in-depth analysis of Kafas wetlands in the future, particularly with the inclusion of herbaceous plant species, , since wetlands are often tree- and shrub less.

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7 APPENDICES

Table 4: Recorded vascular plant species during the NABU Biodiversity assessment (life form: T: Tree, Sh: Shrub, C: Climber, H: Herb, G: Grass; distribution: w: wide, k: Kafa, r: rare, ni: no information; endemism: e: endemic;Threat: LC: Least concern, VU: vul).

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Acacia brevispica Harms	Fabaceae	Mengi garoo	C	97	Montane forests	BO	w		1	E
Acanthus pubescens (Oliv.)Engl	Acanthaceae	Pheco/gucino	H	Pc4	Wetlands	SHO	w			NE
Achyranthes aspera L.	Amaranthaceae	Shwudo	H	0	Montane forests	BK	w			NE
Achyrospermum schimperi (Hochst. ex Briq.) Perkins	Lamiaceae	Sheaddo	H	91	Montane forests/Wetlands	AW/GO-wet	w			NE
Aframomum alboviolaceum (RidL.) K. Schum.	Zingiberaceae	Shexxo agiyo	H	88	Floodplain forests	GO-riv	w			NE
Aframomum corrorima (Braun) Jansen	Zingiberaceae	Ogiyo/Ofiyo	H	AL6	Floodplain forests	GO-riv	k	e		NE
Albizia grandibracteata Taub.	Fabaceae	Kadchino	T	19	Montane forests/Wetlands	AW/GO-wet/SHO	w		8	E
Albizia gummifera (J.F.Gmil.) GA.Sm.	Fabaceae	Caatto	T	75	Montane forests/Wetlands	AG/BO/GO-wet/KO	w		7	E
Alchemilla fischeri Engl.	Rosaceae	AL6	H	AL1	Bamboo forests	BA	w			NE
Allophyllus abyssinicus (Hochst) Radlk.	Sapindaceae	She'o	T	29	Montane forests	BE-CH/BK/BO/KO	w		32	NE

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Apodytes dimidiata E. Mey. ex Arn.	Icacinaceae	Wundifo	T	AL13/689	Floodplain forests/Montane forests	GO-riv/BO	w		14	NE
Arthopteris monocarpa (Cordem) C.Chr.	Oleandraceae	Gixo	F	47	Montane forests	KO	w			NE
Arthraxon micans (Nees) Hochst	Poaceae	Doli moco	G	73	Floodplain forests/Montane forests	KO/GO-riv	w			NE
Arundinaria alpina K. Schum.	Poaceae	Chinato	T	3	Bamboo forests	BA	w		2787	NE
Asparagus africanus lam.	Asparagaceae	Ufoo	C	109	Wetlands	GO-wet	w		1	NE
Bersama abyssinica Fresen	Melianthaceae	Boqo	T	15	Floodplain forests/Montane forests/Wetlands	AG/AW/BE-CH/BK/BO/GO-riv/KO/SHO	w		36	NE
Bothrocline schimperi Olivi & Hiern.	Asteraceae	Yamesho	Sh	113	Wetlands	SHO	k	e	1	LC
Brucea antidysenterica J. F. Mill	Simaroubaceae	Nuqisho	Sh	PL2	Floodplain forests/Montane forests/Wetlands	GO-riv/KO/SHO	w		4	NE
Canthium oligocarpum Hiern	Rubiaceae	Titidibo	T	71	Montane forests	KE-AB/KO	w		3	LR
Cassipourea malosana (Baker) Alston	Rhizophoraceae	Worallo	T	0	Floodplain forests	GO-riv	w		2	NE
Celtis africana Burm. f.	Ulmaceae	Ufo	Sh	0	Montane forests	AW/KO	w		31	NE
Chionanthus mildbraedii (Gilg & Schellenb.) Stearn	Oleaceae	Shigiyo	T	27	Floodplain forests/Montane forests/Wetlands	AG/AW/BK/BO/GO-riv/KO/SHO	w		134	NE

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Clausena anisata (Willd.) Hook.f. ex Benth.	Rutaceae	Emicho	T	0	Montane forests	BE-CH/BK/BO/KO	w		26	NE
Clematis longicaudata Steud ex A. Rich.	Ranunculaceae	Shagee qombo	C	113	Montane forests	BO	w	e	1	NE
Clerodendrum myricoides (Hochst) Vatke	Lamiaceae	Agiiyo	Sh	96	Floodplain forests	GO-riv			1	NE
Coffea arabica L.	Rubiaceae	Bunoo	Sh	20	Floodplain forests/Montane forests/Wetlands	AG/AW/BE-CH/BO/GO-riv/KE-AB/KO/SHO	w		262	VU
Combretum paniculatum Vent.	Combretaceae	Bagee qombo	C	61	Floodplain forests/Montane forests/Wetlands	BE-CH/GO-riv/KO/SHO			7	NE
Commelina latifolia Hochst. ex A Rich.	Commelinaceae	AL1	H	AL9	Bamboo forests	BA	w			NE
Cordia africana Lam.	Boraginaceae	Di'o	T	51	Floodplain forests/Montane forests/Wetlands	AW/GO-riv/GO-wet/KO/SHO	w		15	NE
Croton macrostachyus Del.	Euphorbiaceae	Wago	T	6	Floodplain forests/Montane forests/Wetlands	AG/AW/BE-CH/BO/GO-riv/GO-wet/KO/SHO	w		130	E
Cyathea manniana Hook.	Cyatheaceae	Sheshino	T	45	Montane forests	KO	w		1	NT
Cyphostemma adenocaule (Steud. ex A. Rich.) Desc. ex Wild & Drummond	Vitaceae	Cheecho	C	2	Montane forests	BK/BO	w		5	NE
Cyphostemma sp	Vitaceae	Shudo	C	39	Montane forests	BO			13	0
Dalbergia lactea Vatke	Fabaceae	Bitibito	C	77	Montane forests	KO			1	NE

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Deinbollia kilimandscharica Taub.	Sapindaceae	Qaqirecho	T	92	Floodplain forests/Montane forests	BO/GO-riv	w		3	NE
Desmodium repandum (Vahl) DC	Fabaceae	AL9	H	99	Montane forests	AW	w			NE
Diospyros abyssinica (Hiern) F. White	Ebenaceae	Gayo	T	117	Montane forests	BO	w		1	NE
Dissotis canescens Graham/hook.f.	Melastamaceae	Gashi gano	H	AL5	Floodplain forests	GO-riv	w			NE
Dombeya torrida (J.F.Gmel.) Bamps	Sterculiaceae	Shawuko	S	Pc8	Montane forests	BK	w		1	NE
Dracaena afromontana Mildbr.	Dracanaceae	Coqimaxo	T	0	Montane forests	BO/KO	w		16	LC
Dracaena fragrans (L.) Ker Gawl.	Dracanaceae	Emo	Sh	66	Montane forests/Wetlands	AW/BE-CH/GO-wet/KO/SHO	w		10	NE
Dracaena steudneri Engl.	Dracanaceae	Yudo	T	0	Montane forests/Wetlands	AG/BE-CH/BO/GO-wet/KO/SHO	w		62	NE
Ehertia cymosa Thonn.	Boraginaceae	Wogamo	T	13	Floodplain forests/Montane forests/Wetlands	BO/GO-riv/GO-wet/KO/SHO	w		32	NE
Ekebergia capensis Sparm	Maliaceae	Ororoo	T	23	Montane forests/Wetlands	AG/AW/KO	w		8	NE
Elaeodendron buchananii (Loes.) Loes.	Celastraceae	Washo	T	11	Floodplain forests/Montane forests/Wetlands	AW/BO/GO-riv/KO/SHO	w		80	NE
Embelia schimperi Vatke	Myrsinaceae	Dupho	T	33	Bamboo forests/Montane forests	BA/BK	w		13	NE
Erythrina brucei Schweinf.	Fabaceae	Beroo	Sh	70	Wetlands	AG		e	1	LC

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Erythrococca trichogyne (Muell Arg.) Prain	Euphorbiaceae	Biceeri kucoo	Sh	34	Montane forests/Wetlands	AG/BO/KO			12	NE
Euphorbia candelabrum Kotschy	Euphorbiaceae	Gacho	T	0	Montane forests	BO/KO	w		2	E
Ficus exasperata Vahl	Moraceae	Bu/Caro mocero	T	24	Montane forests/Wetlands	AG/BO/KO/SHO	w		9	NE
Ficus lutea Vahl	Moraceae	Meello	T	PL3	Floodplain forests//Wetlands	AG/GO-riv	w		2	E
Ficus ovata Vahl	Moraceae	Caroo	T	83	Montane forests/Wetlands	AG/AW/BO/KO	w		34	LC
Ficus plamata Forssk.	Moraceae	Shotto	T	54	Montane forests/Wetlands	AG/BO			3	
Ficus platyphylla Del.	Moraceae	Opo	T	58	Floodplain forests//Wetlands	AG/GO-riv	w		5	NE
Ficus spec	Moraceae	Charo	T	31/94	Montane forests/Wetlands	AG/BE-CH/BK/BO/KO			13	
Ficus sur Forssk.	Moraceae	Naco caroo	T	25	Floodplain forests/Montane forests	AW/BO/GO-riv/KO	w		5	NE
Ficus thonningi Blume	Moraceae	Chigago	T	53	Floodplain forests/Montane forests	BE-CH/BO/GO-riv	w		3	NE
Ficus vasta Forssk	Moraceae	Capheero	T	60	Wetlands	AG	w		2	NE
Galiniera saxifraga (Hochst.) Bridson	Rubiaceae	Angrango	Sh	1	Floodplain forests/Montane forests/Wetlands	AG/BE-CH/BK/BO/GO-riv/KE-AB/KO/SHO			82	NE
Hagenia abyssinica (Bruce) J.F. Gmel.	Rosaceae	Koso	T	8	Bamboo forests/Montane forests	BA/BK	w		3	E

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Hippocratea africana (Willd.) Loes.	Celastraceae	Phi'o	C	0	Montane forests	BO/KO	w		6	NE
Hippocratea goetzei Loes.	Celastraceae	Kawo	C	42	Floodplain forests/Montane forests/Wetlands	AG/BE-CH/BK/BO/GO-riv/KO/SHO	w		39	NE
Ilex mitis (L.) Radlk.	Aquifoliaceae	Qeto	T	17	Bamboo forests/Floodplain forests/Montane forests/Wetlands	BA/BK/BO/GO-riv/KE-AB/KO/SHO	w		73	NE
Impatiens hochstetteri Warb.	Balsaminaceae	AL5	H	AL4	Bamboo forests	BA	w			NE
Ipomoea tenuirostris chelsy	Convolvulaceae	Yimbiro	C	112	Montane forests	BO	w		1	NE
Jasminum abyssinicum Hochst. ex DC.	Oleaceae	Hawuto	C	0	Floodplain forests/Montane forests	BK/GO-riv	w		3	NE
Justicia schimperiana (Hochst. ex Nees) T. Anders	Acanthaceae	Sharisharo	Sh	114	Floodplain forests/Montane forests	GO-riv/KO	w		2	NE
Landolphia buchananii (Hallier f.) Stapf	Apocynaceae	Ceele yeemo	C	28	Floodplain forests/Montane forests/Wetlands	BO/GO-riv/GO-wet/KO/SHO	w		29	NE
Lantana trifolia L.	Verbenaceae	Shoboo	Sh	0	Montane forests	BO	w		1	E
Laportea alatipes Hook. f.	Euphorbiaceae	AL4	H	0	Bamboo forests	BA	w			NE
Leersia hexandra Sw.	Poaceae	Shavkirubo	G	AL3	Wetlands	SHO	w			NE
Lepidotrichilia volkensis (Gurke) Leory.	Meliaceae	Shahiyo	T	0	Bamboo forests/Floodplain forests/Montane forests/Wetlands	BA/BE-CH/BK/BO/GO-riv/KO/SHO	w		65	NE

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Macaranga capensis (Baill) Sim	Euphorbiacae	Shakero	T	67	Montane forests/Wetlands	AG/BO/KE-AB/KO	w		108	NE
Maesa lanceolata Forssk.	Myrsinaceae	Caggo	T	0	Floodplain forests/Montane forests/Wetlands	BK/BO/GO-riv/GO-wet/KO/SHO	w		45	NE
Maytenus arbutifolia (A. Rich.) Wilczek	Celastraceae	Anami agixo	Sh	#NV	Montane forests/Wetlands	AG/BO			47	VU
Maytenus graulipes loes.	Celastraceae	Mach shiko	Sh	0	Montane forests/Wetlands	KO/SHO			2	
Maytenus spp.	Celastraceae	Shiko	T/Sh	0	Montane forests	BE-CH/BK/BO			23	
Millettia ferruginea (Hochst.) Bak.	Fabaceae	Bibero	T	12	Floodplain forests/Montane forests/Wetlands	AG/AW/BE-CH/BO/GO-riv/GO-wet/KE-AB/KO/SHO		e	220	LC
Mimusops kummel A.DC.	Sapotaceae	Gayo	T	36	Floodplain forests/Montane forests	AW/GO-riv	w		68	E
Monothecium glandulosum Hochst.	Acanthaceae	AL3	H	AL7	Bamboo forests	BA	w			NE
Myrsine africana L.	Myrsinaceae	Gexxoo	Sh	74	Montane forests	BK	w		1	NE
Ocimum lamiifolium Hochst,ex Benth	Lamiaceae	Damo	Sh	AL8	Montane forests	BO	ni		1	NE
Ocimum urticifolium Roth	Lamiaceae	Dame gaboo	Sh	0	Montane forests	BO	w		1	NE
Ocotea kenyensis (Chiov.) Robyns & Wilcze	Lauraceae	Najjo	T	5	Montane forests	KE-AB/KO	w		23	VU
Olea welwitschii (Knobl) Gilg&Schellenb.	Oleaceae	Yaho	T	0	Montane forests	AW/BE-CH/BK/BO/KO	w		78	NE

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Oncinotis tenuiloba Stapf.	Apocynaceae	Bayiree qombo	C	114	Floodplain forests	GO-riv			1	NE
Oxyanthus speciosus DC.	Rubiaceae	Aa'imato	Sh	43	Floodplain forests/Montane forests/Wetlands	AG/BO/GO-riv/GO-wet/KO/SHO	w		27	NE
Oxyanthus speciosus DC.sbsp.*globosus* (Sond.) Bridson	Rubiaceae	Ophero	T	0	Floodplain forests/Montane forests/Wetlands	AW/BE-CH/GO-riv/GO-wet/KE-AB/KO	w		30	NE
Panicum subabidum Kunth	Poaceae	Shomeko	G	80	Wetlands	SHO				
Parochaetus communis D. Don	Fabaceae	AL7	H	AL11	Bamboo forests	BA	w			LC
Pavetta abyssinica Fresen.	Rubiaceae	Naxxachee gabo	T	0	Floodplain forests/Wetlands	GO-riv/GO-wet	r		2	VU
Pavetta oliveriana Hiern	Rubiaceae	Aemato	T	65	Montane forests	BK/BO			40	NE
Pavonia urens Cav.	Malvaceae	Gahiijjoo	Sh	109	Montane forests/Wetlands	AG/BO	w		2	NE
Peponium vogelii (Hook.f.) Engl.	Cucurbitaceae	Tojjo	C	82	Montane forests	BO	w		1	NE
Periploca linearifolia Quart.-Dill. & A. Rich.	Asclepiadaceae	Borimoo	C	0	Montane forests	BK	w		1	NE
Phaulopsis imbricata (Forssk.) Sweet	Acanthaceae	AL11	H	95	Montane forests	AW	w			LC
Phoenix reclinata Jacq	Arecaceae	Yeeboo	T	10	Floodplain forests/Montane forests/Wetlands	GO-riv/GO-wet	w		249	NE
Phyllanthus reticulatus Poir.	Euphorbiaceae	Meego	Sh	50	Floodplain forests	GO-riv	w		2	NE

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Physalis peruviana L.	Solanaceae	Huqicho	H	90	Floodplain forests	GO-riv	w			NE
Piper capense L.f.	Piperaceae	Turifo	H	122	Floodplain forests/Montane forests	AW/GO-riv	w			NE
Piper umbellatum L.	Piperaceae	Turife gabo	Sh	119	Wetlands	SHO	w		1	NE
Pittosporum virdiflorum Sims	Pittosphoraceae	Shollo	T	79	Montane forests/Wetlands	BE-CH/BO/KO/SHO	w		11	NE
Podocarpus falcata R.Br.	Podocarpaceae		T	0	Montane forests	BE-CH	w		1	VU
Polyscias fulva (Hiern.) Harms	Araliaceae	Karesho	T	52	Montane forests	AW/BE-CH/BO/KE-AB/KO	w		52	E
Pouteria adolfi-friederici (Engl.) Baehni	Sapotaceae	Qareero	T	26	Montane forests/Wetlands	AW/BO/KO/SHO	w		9	E
Premna schimperi Engl.	Lamiaceae	Xumo	T	0	Montane forests	KO	w		1	NE
Prunus africana (Hook.f.) kalkm	Rosaceae	Omo	T	18	Montane forests/Wetlands	AG/BK/BO/KO/SHO	w		10	VU
Pycnostachs recurvata Rydiag	Lamiaceae	Boqeli kakkoo	H	48	Montane forests	BO	w			NE
Rhamnus prinoides L'Herit.	Rhamnaceae	Gesho	Sh	100	Floodplain forests	GO-riv	w		1	NE
Ricinus communis L.	Euphorbiaceae	Eho	Sh	0	Wetlands	SHO	w		1	NE
Ritchiea albersii Gilg	Capparidaceae	Uchee wamoo	Sh	85	Floodplain forests	GO-riv	w		3	NE
Rothmannia urcelliformis (Hiern.) Robyns	Rubiaceae	Diboo	Sh	35	Floodplain forests/Montane forests/Wetlands	AW/BE-CH/BO/GO-riv/KO/SHO	w		33	NE

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Rumex abyssinicus Jacq.	Polygonaceae	Ambaxxoo	Sh	106	Montane forests	BO			1	NE
Rytigynia neglecta (Hiern) Robyns	Rubiaceae	Natacho	T	16	Montane forests	BE-CH/BO/KE-AB/KO	w		20	NE
Sanicula elata Buch.-Ham. ex D. Don	Apiaceae	Xepheleshe	H	AL16	Montane forests	KO	w			NE
Sapium ellipticum (Hochst.) Pax.	Euphorbiaceae	Sheddo	T	22	Floodplain forests/Montane forests/Wetlands	AG/AW/GO-riv/GO-wet/KO	w		24	NE
Schefflera volkensii (Engl.) Harms	Araliaceae	Komo	T	4	Bamboo forests//Montane forests/	BA/BK	w		24	E
Scheffleria abyssinica Hochst.ex A. Rich) Harrms	Araliaceae	Buttoo	T	9	Montane forests	BK/BO/KE-AB/KO	w		19	NE
Snowdenia polystchya (Fresen.) Plig.	Poaceae	Cameroo	G	78	Wetlands	SHO				NE
Solanecio mannii (hook f.) C. Jeffery	Asteraceae	Amitibalo	Sh	32	Wetlands	AG			1	NE
Spathodae Sps	Bignoniacea	Yayo	T	55	Montane forests	BO/KO			4	
Spp. 1		Chokmacho	T	41	Montane forests	BE-CH/BO			2	
Spp. 10		Shasheroo	Sh	0	Floodplain forests	GO-riv			1	
Spp. 11		Shekino	Sh	56	Montane forests	BO			1	
Spp. 12		Shinato	T	69	Montane forests	BK			3	
Spp. 13		Shino	T	0	Montane forests	BO			1	
Spp. 14		Shurato	T	0	Montane forests	BO			3	
Spp. 15		Smirico	Sh	103	Floodplain forests	GO-riv			1	

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Spp. 16		Titiroo	T	87	Montane forests	BO			3	
Spp. 17		Tushimo	Sh	44	Floodplain forests/Montane forests	BO/GO-riv/KO			7	
Spp. 18		Woyeello	C	Pc-7	Floodplain forests	GO-riv			1	
Spp. 19		Xixidebo	T	93	Montane forests	KO			2	
Spp. 2		Cikkoo	Sh	0	Wetlands	AG			1	
Spp. 20		Yagibaroo	Sh	0	Floodplain forests	GO-riv			9	
Spp. 21		Yeem gombo	T	0	Floodplain forests/Montane forests	BO/GO-riv			5	
Spp. 4		Kakusho	Sh	120	Montane forests	BO			1	
Spp. 5		Kereth	T	81	Montane forests	BO			1	
Spp. 6		Kombo	T	62	Montane forests	BO			1	
Spp. 7		Mechii majeech	Sh	46	Wetlands	GO-wet			1	
Spp. 9		Shaqo	C	105	Montane forests	BK			1	
Stellaria media (L.) Vill.	Caryophyllaceae	AL16	H	AL2	Montane forests	AW	w			NE
Streblochaete longiarista (A. Rich.) Pilg.	Poaceae	AL2	G		Bamboo forests	BA	w			NE
Syzigium guineense (Willd.) DC. subsp.afromontanum F	Myrtaceae	Yino	T	37	Floodplain forests/Montane forests/Wetlands	AG/BE-CH/BO/GO-riv/GO-wet/KE-AB/KO	w		107	NE
Tacazzea conferta N.E. Br.	Asclepiadaceae	Tugo	C	P3/10	Montane forests	BK			1	NE
Teclea nobilis Del.	Rutaceae	Shenigaro	T	57	Montane forests	BO/KO	w		11	NE

Species scientific	Family	Local name	Life form	Voucher	Forest type	Site	Dis-tri-bu-tion	Ende-mism	No indi-viduals	Threat (IUCN)
Tiliacora troupinii Curod.	Menispermacee	Caamo	C	63	Montane forests	KO	k	e	4	VU
Trichilia emetica Vahl	Meliaceae	Timo	T	49	Floodplain forests/Montane forests/Wetlands	AG/AW/GO-riv/GO-wet	w		4	NE
Trilepisium madagascariense DC	Moraceae	Gaboo	T	PS3	Floodplain forests/Montane forests/Wetlands	AG/AW/BO/GO-riv/KE-AB/SHO	w		43	NE
Triumfetta brachycerask.Schum	Tiliaceae	Mogeco	Sh	103	Floodplain forests	GO-riv	w		1	NE
Urera hypselodendron (A. Rich.) Wedd.	Urticaceae	Emaamo	C	PT3	Montane forests	BK	w		10	NE
Vangueria apiculata K. Schum.	Rubiaceae	Gujjii machoo	Sh	76	Floodplain forests	GO-riv	w		1	NE
Vepris dainellii (Pichi-serm) Kokwara	Rutaceae	Mengorexo	T	7	Floodplain forests/Montane forests/Wetlands	AW/BE-CH/BO/GO-riv/GO-wet/KE-AB/KO/SHO		e	137	LC
Vernonia amygdalina Del.	Asteraceae	Girawo	T	30	Montane forests/Wetlands	AG/BE-CH/BO/GO-wet/KO/SHO	w		27	NE
Vernonia auriculifera Hiern.	Asteraceae	Dangireto	T	0	Montane forests	BE-CH/BO/KO	w		14	NE

Table 5: Overall Importance Value index. Life form: T: Tree, Sh: Shrub, C: Climber, H: Herb, G: Grass

Species scientific	Life form	Importance value	Rank	Rank class
Spp. 10	Sh	0.17	1	5
Spp. 9	C	0.17	1	5
Asparagus africanus lam.	C	0.17	1	5
Clematis longicaudata Steud ex A. Rich.	C	0.17	1	5
Ipomoea tenuirostris chelsy	C	0.17	1	5
Peponium vogelii (Hook.f.) Engl.	C	0.17	1	5
Spp. 18	C	0.17	1	5
Tacazzea conferta N.E. Br.	C	0.17	1	5
Myrsine africana L.	Sh	0.17	1	5
Piper umbellatum L.	Sh	0.17	1	5
Rumex abyssinicus Jacq.	Sh	0.17	1	5
Spp. 7	Sh	0.17	1	5
Lantana trifolia L.	Sh	0.17	1	5
Spp. 4	Sh	0.17	1	5
Ocimum urticifolium Roth	Sh	0.17	1	5
Oncinotis tenuiloba Stapf.	C	0.17	1	5
Ocimum lamiifolium Hochst,ex Benth	Sh	0.17	1	5
Diospyros abyssinica (Hiern) F. White	T	0.17	1	5
Clerodendrum myricoides (Hochst) Vatke	Sh	0.17	1	5
Triumfetta brachycerask.Schum	Sh	0.17	1	5
Rhamnus prinoides L'Herit.	Sh	0.17	1	5
Spp. 15	Sh	0.17	1	5
Spp. 2	Sh	0.17	1	5
Spp. 6	T	0.17	1	5
Periploca linearifolia Quart.-Dill. & A. Rich.	C	0.17	1	5
Dombeya torrida (J.F.Gmel.) Bamps	S	0.17	1	5
Ricinus communis L.	Sh	0.18	2	4
Acacia brevispica Harms	C	0.18	2	4
Vangueria apiculata K. Schum.	Sh	0.18	2	4
Dalbergia lactea Vatke	C	0.18	2	4
Bothrocline schimperi olivi & Hiern.	Sh	0.18	2	4
Cyathea manniana Hook.	T	0.18	2	4
Spp. 11	Sh	0.18	2	4
Solanecio mannii (hook f.) C. Jeffery	Sh	0.18	2	4
Premna schimperi Engl.	T	0.18	2	4
Erythrina brucei Schweinf.	Sh	0.19	3	4

Species scientific	Life form	Importance value	Rank	Rank class
Spp. 12	T	0.21	4	4
Spp. 14	T	0.21	4	4
Cassipourea malosana (Baker) Alston	T	0.21	4	4
Ritchiea albersii Gilg	Sh	0.22	5	4
Spp. 19	T	0.23	6	4
Spp. 13	T	0.25	7	4
Spp. 20	Sh	0.33	8	4
Spp. 5	T	0.34	9	4
Pavetta abyssinica Fresen.	T	0.35	10	4
Pavonia urens Cav.	Sh	0.35	10	4
Justicia schimperiana (Hochst. ex Nees) T. Anders	Sh	0.35	10	4
Phyllanthus reticulatus Poir.	Sh	0.35	10	4
Maytenus graulipes loes.	Sh	0.35	10	4
Spp. 1	T	0.35	10	4
Jasminum abyssinicum Hochst. ex DC.	C	0.37	11	4
Deinbollia kilimandscharica Taub.	T	0.37	11	3
Spp. 16	T	0.37	11	3
Euphorbia candelabrum Kotschy	T	0.37	11	3
Cyphostemma sp	C	0.40	12	3
Spp. 21	T	0.41	13	3
Hippocratea africana (Willd.) Loes.	C	0.43	14	3
Ficus thonningi Blume	T	0.52	15	3
Urera hypselodendron (A. Rich.) Wedd.	C	0.53	16	3
Brucea antidysenterica J. F. Mill	Sh	0.54	17	3
Ficus plamata Forssk.	T	0.55	18	3
Canthium oligocarpum Hiern	T	0.55	18	3
Cyphostemma adenocaule (Steud. ex A. Rich.) Desc. ex Wild & Drummond	C	0.56	19	3
Ficus lutea Vahl	T	0.59	19	3
Ficus vasta Forssk	T	0.59	19	3
Tiliacora troupinii Curod.	C	0.70	20	3
Teclea nobilis Del.	T	0.72	21	3
Hagenia abyssinica (Bruce) J.F. Gmel.	T	0.73	22	3
Vernonia auriculifera Hiern.	T	0.76	23	3
Spp. 17	Sh	0.76	24	3
Spathodae Sps	T	0.78	25	3
Embelia schimperi Vatke	T	0.87	26	3
Dracaena afromontana Mildbr.	T	0.87	26	3
Ekebergia capensis Sparm	T	0.95	27	3

Species scientific	Life form	Importance value	Rank	Rank class
Dracaena fragrans (L.) Ker Gawl.	Sh	0.96	28	3
Erythrococca trichogyne (Muell Arg.) Prain	Sh	1.00	29	3
Ficus platyphylla Del.	T	1.01	30	3
Combretum paniculatum Vent.	C	1.06	31	2
Pittosporum virdiflorum Sims	T	1.15	32	2
Albizia grandibracteata Taub.	T	1.17	33	2
Albizia gummifera (J.F.Gmil.) GA.Sm.	T	1.21	34	2
Ficus exasperata Vahl	T	1.23	35	2
Trichilia emetica Vahl	T	1.34	36	2
Apodytes dimidiata E. Mey. ex Arn.	T	1.34	36	2
Clausena anisata (Willd.) Hook.f. ex Benth.	T	1.43	37	2
Celtis africana Burm. f.	Sh	1.44	38	2
Cordia africana Lam.	T	1.46	39	2
Rytigynia neglecta (Hiern) Robyns	T	1.47	40	2
Maytenus spp.	T/Sh	1.49	41	2
Podocarpus falcata R.Br.	T	1.54	42	2
Maytenus arbutifolia (A. Rich.) Wilczek	Sh	1.63	43	2
Pavetta oliveriana Hiern	T	1.71	44	2
Oxyanthus speciosus DC.sbsp.*globosus* (Sond.) Bridson	T	1.94	45	2
Ehertia cymosa Thonn.	T	1.98	46	2
Prunus africana (Hook.f.) kalkm	T	2.02	47	2
Rothmannia urcelliformis (Hiern.) Robyns	Sh	2.15	48	2
Vernonia amygdalina Del.	T	2.15	48	2
Oxyanthus speciosus DC.	Sh	2.26	49	2
Landolphia buchananii (Hallier f.) Stapf	C	2.46	50	2
Ficus spec	T	2.58	51	2
Maesa lanceolata Forssk.	T	2.75	52	2
Hippocratea goetzei Loes.	C	2.75	52	2
Lepidotrichilia volkensis (Gurke) Leory.	T	3.27	53	2
Pouteria adolfi-friederici (Engl.) Baehni	T	3.38	54	1
Allophyllus abyssinicus (Hochst) Radlk.	T	3.45	55	1
Bersama abyssinica Fresen	T	3.54	56	1
Ilex mitis (L.) Radlk.	T	3.57	57	1
Polyscias fulva (Hiern.) Harms	T	3.67	58	1
Ocotea kenyensis (Chiov.) Robyns & Wilcze	T	4.10	59	1
Galiniera saxifraga (Hochst.) Bridson	Sh	4.32	60	1
Trilepisium madagascariense DC	T	4.65	61	1

Species scientific	Life form	Importance value	Rank	Rank class
Macaranga capensis (Baill) Sim	T	4.70	62	1
Mimusops kummel A.DC.	T	5.06	63	1
Ficus ovata Vahl	T	5.23	64	1
Dracaena steudneri Engl.	T	5.37	65	1
Sapium ellipticum (Hochst.) Pax.	T	5.55	66	1
Chionanthus mildbraedii (Gilg & Schellenb.) Stearn	T	5.79	67	1
Vepris dainellii (Pichi-serm) Kokwara	T	5.84	68	1
Elaeodendron buchananii (Loes.) Loes.	T	6.08	69	1
Ficus sur Forssk.	T	6.29	70	1
Scheffleria abyssinica Hochst.ex A. Rich) Harrms	T	7.31	71	1
Coffea arabica L.	Sh	7.44	72	1
Syzigium guineense (Willd.) DC. subsp.afromontanum F	T	7.95	73	1
Croton macrostachyus Del.	T	9.06	74	1
Phoenix reclinata Jacq	T	9.75	75	1
Millettia ferruginea (Hochst.) Bak.	T	10.59	76	1
Schefflera volkensii (Engl.) Harms	T	12.36	77	1
Olea welwitschii (Knobl) Gilg&Schellenb.	T	21.90	78	1
Arundinaria alpina K. Schum.	T	58.51	79	1