Rapid survey of the plants of North Lorma, Gola and Grebo National Forests

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Chapter 1

Rapid survey of the plants of North Lorma, Gola and Grebo National Forests

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SUMMARY

As the dry season had not really started yet, very few plants were flowering or fruiting during our expedition. The total number of species recorded from the three sites in North Lorma, Gola and Grebo National Forests is 548, however 101 (18%) are endemic to the Upper Guinea forest area (Upper Guinea sensu White). The North Lorma and Gola National Forests are considered to be healthy and mature and show only limited disturbance by human activity, which, at the moment does not cause a clear threat to the vegetation. Grebo National Forest was logged about 20 years ago and is now in the process of regeneration and is recovering well. We found three species endemic to Liberia (*Cephaelis micheliae, Sericanthe adamii* and *Trichoscypha linderi*) and three species recorded for the first time the country (*Elytraria ivorensis*, *Gardenia nitida* and *Zanthoxylum psammophilum*). Additionally, three species likely to be new to science were found: *Drypetes* sp., *Leptoderris* sp. and *Rhaphiostylis* sp.

INTRODUCTION

Liberia lies almost entirely within the Upper Guinea forest block, which forms the western part of the West African Guinean Forests hotspot, one of the 34 biologically richest and most endangered terrestrial ecoregions in the world (Mittermeier et al. 2004). The Upper Guinea forest as a whole is threatened, and while most other West African countries have lost the majority of their forest cover (e.g. most of the mature forest in neighboring Côte d'Ivoire is already gone), Liberia's forest cover still seems to be quite extensive. Liberia was originally more than 90% forested, and is currently still covered in large part by mature forest. Liberia's forests are, however, increasingly threatened by logging, shifting agriculture, and hunting and mining activities, with logging companies, such as the Oriental Timber Company, recently demonstrating that these forests can disappear in just a few years when large areas are not protected from exploitation.

Most Upper Guinea endemics are concentrated in and around Liberia and species composition varies greatly within the Liberian forest. Important differences exist between the very wet coastal forest of central Liberia and the much drier forest near the border with Guinea. Variation in rain-fall patterns with increasing seasonality from southeast to northwest Liberia also have an important influence on the vegetation. Liberia's botanical richness is thus certainly not adequately protected within Sapo National Park alone and additional protected areas covering a variety of habitats are needed. More biodiversity research is urgently needed to make it possible for the Liberian government to choose the best locations for new protected areas. Most Liberian forests have never been studied by botanists and many undiscovered species are to be expected here.

During the rapid botanical survey of the North Lorma, Gola and Grebo National Forests we did not attempt to compile a complete list of all plant species occurring at the three sites. With approximately 2300 species known from Liberia (Jongkind 2004), including many epi-

phytes occurring only in the canopy, such a task would have been impossible even if we had spent a month at each site. Because the study sites had rarely been visited by botanists prior to our survey, we were uncertain what to expect. However, as two of the three sites were near to neighboring Côte d'Ivoire and Sierra Leone, where more botanical research has been carried out in the past (e.g. Aké Assi 2001, 2002), we thought it unlikely that we would encounter a large number of unknown species.

METHODS

The North Lorma, Gola and Grebo National Forests were surveyed for six, seven and five days respectively. The three sites were surveyed by walking more or less at random (local guides with detailed knowledge of the forest were unavailable) through the vegetation for most of the daylight hours. We surveyed as many different vegetation types and identifiable vascular plant species as possible. While this was not a particularly scientific based way of working, with the limited time available and the absence of detailed maps, it was the only logical option. Species that were not definitively identified on the spot were collected. These vouchers were dried as soon as possible at the base camp. The drying was done in a special drying press that used hot air produced by a propane cooking stove. These specimens will be kept in the National Herbarium Nederland at the Wageningen University branch, the Netherlands; duplicate fertile specimens will be transferred to other botanical institutes based on the specialists working there. About 80% of the vouchers are now identified to species level.

For western African plant species assessment of the conservation status is very incomplete and represents only a subset of the plant species that are actually threatened. Using data from the IUCN Red List and CITES Appendices would give the wrong indication of the conservation status of the plant species, therefore, no IUCN Red List or CITES status has been listed for this taxonomic group.

RESULTS

As the dry season had not really started, very few plants were flowering or fruiting during our survey. If the dry season had commenced in November as expected, the species lists would have been longer as many plant species are difficult to identify or find when sterile.

Epiphytes are under-represented for all sites. The botanical team had to rely on the relatively few plants that had accidentally fallen from the canopy for collecting specimens of epiphytes. The data from the three study sites are from relatively small areas because the survey work was done on foot from a single base camp at each site. It is not clear whether the vegetation seen was representative of the forests as a whole due to the lack of data from a larger area.

The total number of species recorded from the three sites is 548 (Appendix 1). Of these, 101 (18%) are endemic to the Upper Guinea forest block. Only 21 species (4%) were noted at all three sites, however, it is likely that the real overlap in species composition between the three sites is (much) larger. Many of the species recorded at one or two sites only are known to occur in the general area of the other sites. Although the very different geomorphology of the three sites, combined with differences in climate, in part explains the differences in our species lists, these differences are likely to decrease with increasing research effort.

We found that the three forests have a number of characteristic species in common, namely *Chrysophyllum africanum, Chytranthus carneus*, *Heinsia crinita*, *Ruellia primuloides, Copaifera salikounda*, *Heritiera utilis*, *Pauridiantha sylvicola*, *Stelechantha ziamaeana* and *Strephonema pseudocola*. These are all species of wetter forest and the latter five are endemic to Upper Guinea. The overlap of the species lists of North Lorma and Gola National Forests is 49 species, between North Lorma and Grebo National Forests it is 61 species and between Gola and Grebo National Forests it is 49. Too many variables are involved to know if these differences in overlap are statistically solid; it is expected they are not. A larger overlap between North Lorma and Gola National Forests could have been expected, as the range of several species recorded at these localities, such as the common *Schizocolea linderi*, is not known to extend as far east as Grebo National Forest. However, considerable northward and westward range extensions were noted for several species, including *Mendoncia combretoides*, *Psychotria biaurita*, *Pyrenacantha klaineana* and *Sericanthe adamii*. Three species, *Elytraria ivorensis*, *Gardenia nitida* and *Zanthoxylum psammophilum*, were recorded in Liberia for the first time. The presence of the first two is not a surprise because they were already known from close to the Liberian border.

Site 1: North Lorma National Forest

At this site, 265 species were recorded: 231 species were collected and notes on 34 more were taken (Appendix 1). Of these, 38 species (14%) are endemic to the Upper Guinea forest block. The largest families of flowering plants are the Leguminosae, with 26 species, and the Rubiaceae, with 21 species. Twenty-four species of 'ferns and allies' were identified.

Site 1 consisted of a mostly open, species-rich, riverine forest with abundant *Plagiosiphon emarginatus* mixed with many wet evergreen forest species such as *Achyrospermum oblongifolium*, *Costus deistelii*, *Cryptosepalum tetraphyllum, Mapania* spp., *Strephonema pseudocola* and *Triphyophyllum peltatum*, the latter mixed with many more widespread forest species. Slightly uphill from the Lawa River, the vegetation quickly changed to lower forest with scattered huge trees which even harboured characteristic dry-forest species like *Gardenia nitida* and *Grewia pubescens*. In some places this vegetation gave way to predominantly herbaceous vegetation with several species of Labiatae and Acanthaceae, such as

Plectranthus epilithicus that are usually found on seasonally wet, rocky areas and occasionally, the succulent *Sansevieria liberica* and the climbing *Asparagus drepanophyllus*. The seasonally dry wind from the north is clearly much stronger here than at the other two sites, and the shallow soil on rocky substrate found at several places also influences the species composition. On such soil in open forest, we found the orchid *Habenaria macrandra*, once with *Oeceoclades maculata* and a *Nervillia* species. In small, rocky streams we often encountered *Anubias gracilis* and several fern species, such as *Bolbitis salicina*. In low areas between the hills several *Raphia palma-pinus* swamps occurred, with other swamp plants like *Halopegia azurea*. It appeared that logging did not occur at this site but there was an old logging road that ended close to our base camp.

Site 2: Gola National Forest

In total 200 species were recorded here: 172 were collected and notes on 28 other species were taken (Appendix 1). Of these, 52 (26%) are endemic to Upper Guinea, including three species known only from Liberia (in bold and underlined in the list). The largest families of flowering plants are the Rubiacaea, with 29 species, and the Leguminosae, with 11 species. Nineteen species of 'ferns and allies' were identified. The species list for this site is not very long because of the difficulty of access compounded by logistical problems during our stay.

The study site was a completely forested area with good evergreen forest species including *Anisophyllea meniaudii, Cola buntingii, Costus deistelii, Delpydora gracilis, Dicellandra barteri, Diospyros chevalieri, Heinsia crinita, Physacanthus batanganus, P. nematosiphon, Renealmia longifolia,* and *Strephonema pseudocola*. The primary forest canopy had an open structure, probably because of the presence of steep slopes. Lower vegetation was dense in most areas and huge lianas were present. Because of the open structure of the forest, many specialised forest undergrowth species, herbs as well as shrubs, occurred. Along the streams the damage to the vegetation caused by rapidly changing water levels was clearly visible. Several species were adapted to this condition; usually shrubs with flexible twigs and narrow leaves like *Rinorea breviracemosa* were collected along fast-flowing parts of the streams. The tree *Stachyothyrsus stapfiana*, which is near-endemic to Liberia, was found several times on sandy banks of the Gba river, in places where the water was flowing more slowly. On rocks in and above the streams the small specialised herb *Argostemma pumilum* was found in abundance. *Anubias gracilis* and ferns like *Bolbitis salicina* were also abundant on such rocks. The streams in this area definitely held the most interesting waterside vegetation among the three study sites.

The deserted village and a few localized diamond-pits did not have an important influence on the vegetation of the area. Most of the area we saw is likely to be too steep and rocky to be suitable for inhabitation or resource exploitation.

A surprise was the presence of *Zanthoxylum psammophilum,* a large liana not previously known from Liberia and not seen west of eastern Côte d'Ivoire before. Also worth mentioning is the presence of three saprophytic species without chlorophyll, *Burmannia congesta, Gymnosiphon longistylum* and *Voyria platypetala,* at one location even found next to each other. These species are not commonly seen and the author had never seen all three together before. The liana *Sericanthe adamii* was recorded for the first time away from Mt. Nimba. This species, as well as *Trichoscypha linderi* and *Cephaelis micheliae,* is at present known only from Liberia. A species of *Rhaphiostylis* found here and at Grebo National Forest is probably new to science.

Site 3: Grebo National Forest

At this site 220 species were recorded: 177 were collected and notes on 43 other species were taken (Appendix 1). Of these, 37 (17%) are endemic to Upper Guinea. The largest families of flowering plants on the list are the Rubiacaea, with 32 species, and the Leguminosae, with 18 species. Sixteen species of 'ferns and allies' were identified.

This area was heavily logged about twenty years ago and has more or less since then been left undisturbed. However, the damage caused by this logging will continue to exercise a strong influence on the forest structure and the species composition for many years to come. Except for one small area, all forest we saw was open, with only isolated huge trees such as *Antiaris toxicaria*, *Pentaclethra macrophylla*, *Piptadeniastrum africanum*, *Sacoglottis gabonensis*, *Terminalia superba* and *Triplochiton scleroxylon*, which were giving shade to abundant forest re-growth. The forest understory is presumably much poorer in species now than before the logging. Because of the condition of this forest, liana species are well represented in our species list for this site, although large lianas were rare.

The abundant presence of *Psychotria kwewonii* was interesting. It is a recently discovered species occurring in east Liberia and southwest Côte d'Ivoire that is currently being described. A species of *Leptoderris* likely to be new to science was found once at this site as well; it has previously been recorded in the Putu Hills and western Côte d'Ivoire. A *Drypetes* species collected in flower could not be identified and is likely to be new to science, as is a species of *Rhaphiostylis* found also at Gola National Forest.

DISCUSSION

Today most of the mature forest, stretching from coastal Senegal to the border between Ghana and Togo only a century ago, is gone. The rate of disappearance and the percentage that is gone already differs from publication to publication, but no one disagrees with the fact that most is not there anymore. About 35% to 40% of the remaining Upper Guinea forest block is found in Liberia (Poorter et al. 2004). As many species endemic to the western part of the Upper Guinea forest block are found in most or all forests in Liberia and because the Upper Guinea forest as a whole is threatened, all primary and good secondary forest in Liberia is part of a biodiversity hotspot and worth protecting. Hence

the challenge is to distinguish and select Liberian forests with a higher or lower conservation priority.

Site 1 is remarkable because of the many different vegetation types occurring in close proximity to each other. Next to the Lawa River, species-rich wet forest quickly changed into dry forest and even into completely herbaceous vegetation uphill, whereas in lower areas it became swamp forest. If this is characteristic for North Lorma National Forest, Site 1 is definitely worth protecting. As most of these vegetation types occur in narrow bands or small isolated areas only, they are probably easily disturbed and can be expected to have difficulty recovering. The vegetation in this area seems to be balancing between two opposites but the presence of many slow-moving species indicate it has been doing so with success for a long time. There are probably not many areas with the same vegetation pattern, in Liberia or elsewhere.

The many steep slopes and the wet climate at Site 2 caused the water levels in the abundant streambeds to change quickly. The vegetation in this area should be protected if only to avoid rapid erosion. We noted important differences in the vegetation from one location to another within the forest, probably due to this special landscape feature, although these were not as important as at Site 1. Gola National Forest has the highest percentage of restricted-range species of the three forests visited, and the site is expected to hold the richest plant diversity. This would make Gola National Forest one of the richer sites within Upper Guinea. None of the three sites is situated in the hyperwet evergreen forest area, where I would expect the highest percentage of Upper Guinea endemic plants, but the site at Gola National Forest is very close to it (Hawthorne and Jongkind 2006).

Several of the species recorded in North Lorma and Gola National Forests are timber species (*Heritiera*, *Entandrophragma* and *Nauclea*) but the steep slopes of these sites would make any resource extraction difficult. Additionally, these trees and the accompanying vegetation provide erosion control.

At Site 3, patches of primary forest need to be examined in order to better evaluate the successive vegetation stages. At present, forest undergrowth and stream-related vegetation appear to be much poorer than in less damaged forest. Based on the limited knowledge we have, the vegetation before the logging probably resembled that of large parts of Taï National Park in Côte d'Ivoire.

CONSERVATION RECOMMENDATIONS

The vegetation in North Lorma and Gola National Forests showed only limited disturbance by human activities which, at present, do not represent a clear threat. However, additional surveys of the forests should be conducted so that a proper baseline can be established. Additionally, these areas should be closely monitored to ensure that forest composition is not altered by human activity.

Years ago, large-scale logging in Grebo National Forest caused damage to the forest, from which it is now recovering well. Our base camp was located on an old road, the re-opening of which would likely reverse such recovery and, if re-opening is not necessary, the road would be better left to revert to forest. In order to conserve the original vegetation, it is important to protect those animals responsible for seed dispersal of the various plant species. Thus, recommendations that are made to protect animal biodiversity are important for the protection of plants as well.

Additional biodiversity research is needed as soon as possible to aid the Liberian government in the selection and designation of new protected areas. Most Liberian forests have never been studied by botanists and, even in places that have been visited before, specialized research can reveal unexpected new species. For instance, an important component of Liberian forest biodiversity is found high up in the trees. Thus, canopy research will surely discover many new epiphytic Orchids and other plants.

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Appendix 1

Plant species recorded in North Lorma, Gola and Grebo National Forests.

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Herb. = Voucher deposited in National Herbarium Nederland - Wageningen University
-X- = Notes only taken in the field
Photo = Photograph and notes taken
Bold = Endemic to the Upper Guinea forest block
Bold & Underlined = Endemic to Liberia

Species' IUCN and CITES status are not listed because for western African plant species these lists are incomplete and represent only a small number of the plant species that are actually threatened. Combining the IUCN/CITES data with the list below would give a wrong indication for the sites we visited during this RAP survey.

Family	Species	North Lorma	Gola	Grebo
Acanthaceae	***Asystasia scandens* (Lindl.) Hook.**		Herb.	
Acanthaceae	*Asystasia vogeliana* Benth.		Herb.	
Acanthaceae	*Brillantaisia lamium* (Nees) Benth.	Herb.		
Acanthaceae	*Elytraria ivorensis* Dokosi			Herb.
Acanthaceae	*Elytraria marginata* Vahl	Herb.		
Acanthaceae	*Eremomastax speciosa* (Hochst.) Cufod.	Herb.		
Acanthaceae	*Justicia extensa* T.Anderson	Herb.		
Acanthaceae	*Justicia flava* (Forssk.) Vahl	Herb.		
Acanthaceae	*Justicia tenella* (Nees) T.Anderson	Herb.		
Acanthaceae	*Lankesteria brevior* C.B.Clarke		Herb.	
Acanthaceae	*Lepidagathis alopecuroides* (Vahl) R.Br. ex Griseb.	Herb.	Herb.	
Acanthaceae	***Mendoncia combretoides* (A.Chev.) Benoist**		Herb.	Herb.
Acanthaceae	*Physacanthus batanganus* (J.Braun & K.Schum.) Lindau		Herb.	
Acanthaceae	*Physacanthus nematosiphon* (Lindau) Rendle & Britten		Herb.	
Acanthaceae	*Rhinacanthus virens* (Nees) Milne-Redh.	Herb.		
Acanthaceae	*Ruellia primuloides* (T.Anderson ex Benth.) Heine	Herb.	Herb.	Herb.
Acanthaceae	***Staurogyne capitata* E.A.Bruce**	Herb.		Herb.
Acanthaceae	*Thunbergia chrysops* Hook.	Herb.		
Acanthaceae	***Whitfieldia colorata* C.B.Clarke ex Stapf**		Herb.	Herb.
Acanthaceae	***Whitfieldia lateritia* Hook.**	Herb.		Herb.
Adiantaceae	*Adiantum vogelii* Mett. ex Keyserl.	Herb.		Herb.
Adiantaceae	*Pellaea doniana* Hook.	Herb.		

continued

Family	Species	North Lorma	Gola	Grebo
Amaranthaceae	*Cyathula prostrata* (L.) Blume	Herb.		
Amaryllidaceae	*Crinum natans* Baker		-X-	
Anacardiaceae	*Trichoscypha arborea* (A.Chev.) A.Chev.			Herb.
Anacardiaceae	***Trichoscypha barbata* Breteler**		Herb.	
Anacardiaceae	*Trichoscypha bijuga* Engl.	Herb.	Herb.	
Anacardiaceae	***Trichoscypha linderi* Breteler**		Herb.	
Anacardiaceae	*Trichoscypha lucens* Oliv.			Herb.
Ancistrocladaceae	***Ancistrocladus barteri* Scott-Elliot**			Herb.
Anisophylleaceae	*Anisophyllea meniaudii* Aubrév. & Pellegr.		Herb.	
Annonaceae	*Annickia polycarpa* (DC.) Setten & Maas			Herb.
Annonaceae	*Artabotrys oliganthus* Engl. & Diels		Herb.	
Annonaceae	*Artabotrys* sp.	Herb.		
Annonaceae	*Cleistopholis patens* (Benth.) Engl. & Diels		Herb.	Herb.
Annonaceae	*Friesodielsia* sp.	Herb.		
Annonaceae	*Greenwayodendron oliveri* (Engl.) Verdc.	Herb.		
Annonaceae	*Monanthotaxis* sp. 1	Herb.		
Annonaceae	*Monanthotaxis* sp. 2	Herb.		
Annonaceae	*Monanthotaxis* sp. 3		Herb.	
Annonaceae	***Monocyclanthus vignei* Keay**		Herb.	
Annonaceae	*Monodora myristica* (Gaertn.) Dunal			Herb.
Annonaceae	*Neostenanthera gabonensis* (Engl. & Diels) Exell		Herb.	
Annonaceae	*Piptostigma fasciculatum* (De Wild.) Boutique	Herb.		Herb.
Annonaceae	***Piptostigma fugax* A.Chev. ex Hutch. & Dalziel**		Herb.	
Annonaceae	*Uvaria baumannii* Engl. & Diels			Herb.
Annonaceae	*Uvaria* sp. 1		Herb.	
Annonaceae	*Uvaria* sp. 2			Herb.
Annonaceae	*Uvaria* sp. 3			Herb.
Annonaceae	*Uvariastrum pierreanum* Engl. & Diels	Herb.		Herb.
Annonaceae	*Uvariopsis* sp.	Herb.		
Annonaceae	*Xylopia acutiflora* (Dunal) A.Rich.	Herb.	Herb.	
Annonaceae	*Xylopia le-testui* Pellegr.	Herb.		Herb.
Annonaceae	*Xylopia villosa* Chipp	Herb.		
Apocynaceae	*Alstonia boonei* De Wildeman		-X-	
Apocynaceae	*Ancylobotrys scandens* (Schumach. & Thonn.) Pichon			Herb.
Apocynaceae	*Baissea baillonii* Hua	Herb.		
Apocynaceae	*Callichilia subsessilis* (Benth.) Stapf	Herb.	Herb.	
Apocynaceae	***Hunteria simii* (Stapf) H.Huber**	Herb.	Herb.	Herb.
Apocynaceae	*Landolphia dulcis* (R.Br. ex Sabine) Pichon		Herb.	
Apocynaceae	*Landolphia incerta* (K.Schum.) J.G.M.Pers.			Herb.
Apocynaceae	***Landolphia nitidula* J.G.M.Pers.**			Herb.
Apocynaceae	*Landolphia owariensis* P.Beauv.			Herb.
Apocynaceae	*Oncinotis gracilis* Stapf	Herb.		
Apocynaceae	*Orthopichonia* sp.	Herb.		
Apocynaceae	*Pleiocarpa mutica* Benth.		Herb.	

continued

Family	Species	North Lorma	Gola	Grebo
Apocynaceae	*Tabernaemontana psorocarpa* (Pierre ex Stapf) Pichon		Herb.	
Araceae	*Amorphophallus* sp.	-X-		
Araceae	***Anubias gigantea* A.Chev. ex Hutch.**	Herb.		
Araceae	*Anubias gracilis* A.Chev. ex Hutch.	Herb.	Herb.	
Araceae	*Cercestis afzelii* Schott	Herb.		-X-
Araceae	*Cercestis dinklagei* Engl.	Herb.		Herb.
Araceae	*Cercestis* sp.	Herb.		
Araceae	*Culcasia angolensis* Welw. ex Schott	Herb.		
Araceae	*Culcasia sapinii* De Wild.	Herb.		Herb.
Araceae	*Culcasia scandens* P.Beauv.	Herb.		Herb.
Araceae	*Rhaphidophora africana* N.E.Br.	Herb.		
Asclepiadaceae	*Periploca nigrescens* Afzel.			Herb.
Asclepiadaceae	*Tylophora cuspidata* (K.Schum.) Meve & Omlor			Herb.
Aspleniaceae	*Asplenium africanum* Desv.	Herb.	Herb.	
Aspleniaceae	*Asplenium anisophyllum* Kunze	Herb.		
Aspleniaceae	*Asplenium barteri* Hook.	Herb.	Herb.	
Aspleniaceae	*Asplenium formosum* Willd.	Herb.		
Aspleniaceae	*Asplenium unilaterale* Lam.	Herb.		
Aspleniaceae	*Asplenium variabile* Hook.		Herb.	Herb.
Begoniaceae	***Begonia cavallyensis* A.Chev.**		Herb.	
Begoniaceae	*Begonia fusialata* Warb. var. *fusialata*	Herb.		Herb.
Begoniaceae	*Begonia polygonoides* Hook.f.	Herb.		
Begoniaceae	*Begonia quadrialata* Warb. subsp. *quadrialata*	Herb.		
Bignoniaceae	*Newbouldia laevis* (P.Beauv.) Seeman ex Bureau	Herb.		
Bombacaceae	*Ceiba pentandra* (L.) Gaertn.	-X-		
Burmanniaceae	*Burmannia congesta* (Wright) Jonker		Herb.	
Burmanniaceae	*Gymnosiphon longistylus* (Benth.) Hutch.	Herb.	Herb.	
Burseraceae	*Dacryodes klaineana* (Pierre) H.J.Lam		Herb.	-X-
Capparaceae	*Euadenia eminens* Hook.f.			Herb.
Capparaceae	*Ritchiea capparoides* (Andr.) Britten		Herb.	Herb.
Celastraceae	*Salacia lehmbachii* Loes.		Herb.	
Celastraceae	*Salacia owabiensis* Hoyle			Herb.
Celastraceae	*Salacia* sp.		Herb.	
Celastraceae	*Salacia staudtiana* Loes.	Herb.		
Chrysobalanaceae	*Afrolicania elaeosperma* Mildbr.	Herb.		
Chrysobalanaceae	***Dactyladenia hirsuta* (A.Chev. & De Wild.) Prance & F.White**		Herb.	
Chrysobalanaceae	***Dactyladenia whytei* (Stapf) Prance & White**		Herb.	
Chrysobalanaceae	*Magnistipula zenkeri* Engl.			Herb.
Chrysobalanaceae	***Maranthes aubrevillei* (Pellegr.) Prance**	Herb.		Herb.
Chrysobalanaceae	*Maranthes glabra* (Oliv.) Prance	Herb.		
Chrysobalanaceae	*Parinari excelsa* Sabine	Herb.		Herb.
Combretaceae	*Combretum aphanopetalum* Engl. & Diels			Herb.
Combretaceae	*Combretum comosum* G.Don			Herb.

continued

Family	Species	North Lorma	Gola	Grebo
Combretaceae	*Combretum oyemense* Exell	Herb.		
Combretaceae	***Strephonema pseudocola* A.Chev.**	Herb.	Herb.	Herb.
Combretaceae	*Terminalia ivorensis* A.Chevalier	-X-		
Combretaceae	*Terminalia superba* Engler & Diels			-X-
Commelinaceae	***Buforrestia obovata* Brenan**	Herb.		
Commelinaceae	*Commelina capitata* Benth.	Herb.	Herb.	Herb.
Commelinaceae	*Floscopa africana* (P.Beauv.) C.B.Clarke		Herb.	Herb.
Commelinaceae	*Palisota bracteosa* C.B.Clarke	Herb.		Herb.
Commelinaceae	*Pollia condensata* C.B.Clarke	Herb.		Herb.
Commelinaceae	*Polyspatha paniculata* Benth.	Herb.		
Commelinaceae	*Stanfieldiella imperforata* (C.B.Clarke) Brenan	Herb.		
Compositae	*Adenostemma perrottetii* DC.		Herb.	
Compositae	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Herb.		
Compositae	*Vernonia titanophylla* Brenan	-X-		
Connaraceae	*Agelaea paradoxa* Gilg var. *microcarpa* Jongkind	-X-		Herb.
Connaraceae	*Agelaea pentagyna* (Lam.) Baill.	-X-	Herb.	Herb.
Connaraceae	***Cnestis bomiensis* Lemmens**		Herb.	
Connaraceae	*Connarus africanus* Lam.	Herb.		
Connaraceae	*Manotes expansa* Sol. ex Planchon		-X-	
Connaraceae	*Manotes macrantha* (Gilg) Schellenb.		Herb.	
Connaraceae	*Rourea minor* (Gaertn.) Alston		Herb.	Herb.
Connaraceae	*Rourea solanderi* Baker		Herb.	Herb.
Connaraceae	*Rourea thomsonii* (Baker) Jongkind			Herb.
Convolvulaceae	*Bonamia thunbergiana* (Roem. & Schult.) F.N.Williams			Herb.
Convolvulaceae	*Calycobolus africanus* (G.Don) Heine	Herb.		
Convolvulaceae	*Calycobolus heudelotii* (Baker ex Oliv.) **Heine**	Herb.		
Convolvulaceae	*Ipomoea aitonii* Lindl.	Herb.		
Convolvulaceae	*Ipomoea obscura* (L.) Ker Gawl.	Herb.		
Convolvulaceae	*Neuropeltis acuminata* (P.Beauv.) Benth.			Herb.
Convolvulaceae	*Stictocardia beraviensis* (Vatke) Hallier f.	Herb.		
Costaceae	***Costus deistelii* K.Schum.**	Herb.		
Costaceae	*Costus* sp.	-X-	-X-	
Cucurbitaceae	*Momordica charantia* L.	Herb.		
Cucurbitaceae	*Momordica foetida* Schumach.			Herb.
Cyatheaceae	*Cyathea camerooniana* Hook.	Herb.		
Cyperaceae	*Hypolytrum heteromorphum* Nelmes	Herb.		
Cyperaceae	*Hypolytrum purpurascens* Cherm.	Herb.		
Cyperaceae	*Hypolytrum* sp. 1	Herb.		
Cyperaceae	*Hypolytrum* sp. 2			Herb.
Cyperaceae	***Mapania ivorensis* (Raynal) Raynal**		Herb.	
Cyperaceae	***Mapania linderi* Hutch. ex Nelmes**	Herb.	Herb.	
Cyperaceae	*Scleria boivinii* Steud.		-X-	
Cyperaceae	*Scleria naumanniana* Boeckeler		Herb.	

continued

Family	Species	North Lorma	Gola	Grebo
Dennstaedtiaceae	*Microlepia speluncae* (L.) Moore			Herb.
Dichapetalaceae	*Dichapetalum angolense* Chodat			Herb.
Dichapetalaceae	*Dichapetalum heudelotii* (Planch. ex Oliv.) **Baill.**		Herb.	
Dichapetalaceae	*Dichapetalum* sp.			Herb.
Dichapetalaceae	***Dichapetalum toxicarium* (G.Don) Baill.**			Herb.
Dilleniaceae	*Tetracera alnifolia* Willd.		-X-	-X-
Dioncophyllaceae	***Triphyophyllum peltatum* (Hutch. & Dalziel) Airy Shaw**		Herb.	Herb.
Dioscoreaceae	*Dioscorea* sp.	Herb.		
Dracaenaceae	*Dracaena aubryana* Brongn. ex C.J.Morren	Herb.	-X-	Herb.
Dracaenaceae	*Dracaena camerooniana* Baker			Herb.
Dracaenaceae	***Dracaena cristula* W.Bull**			Herb.
Dracaenaceae	*Dracaena ovata* Ker Gawl.		Herb.	
Dracaenaceae	*Dracaena surculosa* Lindl. var. *maculata* Hook.f.			Herb.
Dracaenaceae	*Sansevieria liberica* Gér. & Labr.	-X-		
Dryopteridaceae	*Callipteris prolifera* (Lam.) Bory			Herb.
Dryopteridaceae	*Tectaria* sp.	Herb.		
Dryopteridaceae	*Triplophyllum buchholzii* (Kuhn) Holttum		Herb.	
Dryopteridaceae	*Triplophyllum* sp. 1	Herb.		
Dryopteridaceae	*Triplophyllum* sp. 2		Herb.	
Dryopteridaceae	*Triplophyllum* sp. 3		Herb.	
Ebenaceae	***Diospyros chevalieri* De Wild.**		Herb.	Herb.
Ebenaceae	*Diospyros ferrea* (Willd.) Bakh.		Herb.	
Ebenaceae	*Diospyros gabunensis* Gürke		Herb.	
Ebenaceae	***Diospyros heudelotii* Hiern**	Herb.		
Ebenaceae	*Diospyros mannii* Hiern	Herb.	Herb.	Herb.
Ebenaceae	*Diospyros sanza-minika* A.Chev.			Herb.
Ebenaceae	*Diospyros soubreana* F.White			Herb.
Ebenaceae	*Diospyros* sp.	Herb.		
Erythroxylaceae	*Erythroxylum mannii* Oliv.			Herb.
Euphorbiaceae	*Alchornea cordifolia* (Schum. & Thonning) Muell.Arg.		-X-	-X-
Euphorbiaceae	*Antidesma* sp.			Herb.
Euphorbiaceae	***Crotonogyne caterviflora* N.E.Br.**		Herb.	
Euphorbiaceae	*Discoglypremna caloneura* (Pax) Prain			Herb.
Euphorbiaceae	***Macaranga heterophylla* (Muell.Arg.) Muell.Arg.**	-X-	-X-	
Euphorbiaceae	*Macaranga hurifolia* Beille			-X-
Euphorbiaceae	*Maesobotrya barteri* (Baillon) Hutch.	-X-		
Euphorbiaceae	*Manniophyton fulvum* Müll.Arg.	-X-	-X-	-X-
Euphorbiaceae	*Mareya micrantha* (Benth.) Müll.Arg.		Herb.	
Euphorbiaceae	***Phyllanthus kerstingii* Brunel**	Herb.		
Euphorbiaceae	*Phyllanthus profusus* N.E.Br.	Herb.		
Euphorbiaceae	*Plesiatropha paniculata* (Pax) Breteler	Herb.		
Euphorbiaceae	*Spondianthus preussii* Engler			-X-
Euphorbiaceae	*Tragia spathulata* Benth.	Herb.		

continued

Family	Species	North Lorma	Gola	Grebo
Euphorbiaceae	*Uapaca paludosa* Aubrév. & Léandri			Herb.
Flacourtiaceae	*Oncoba brevipes* Stapf		-X-	
Flacourtiaceae	*Oncoba echinata* Oliv.	Herb.		
Gentianaceae	*Anthocleista nobilis* G.Don		-X-	
Gentianaceae	*Voyria primuloides* Baker		Herb.	
Gleicheniaceae	*Dicranopteris linearis* (Burm.) Underwood		-X-	-X-
Gramineae	*Acroceras gabunense* (Hack.) Clayton	Herb.		
Gramineae	*Centotheca lappacea* (L.) Desv.	Herb.	Herb.	
Gramineae	*Guaduella oblonga* Hutch. ex W.D.Clayton	Herb.	Herb.	
Gramineae	*Leptaspis zeylanica* Nees ex Steud.	Herb.		
Gramineae	*Olyra latifolia* L.	Herb.		
Gramineae	*Oplismenus hirtellus* (L.) P.Beauv.	Herb.		
Gramineae	*Panicum laxum* Sw.		Herb.	
Gramineae	*Pseudechinolaena polystachya* (Kunth) Stapf	Herb.		
Gramineae	*Setaria megaphylla* (Steud.) Dur. & Schinz	Herb.		
Gramineae	*Streptogyna crinita* P.Beauv.	Herb.		Herb.
Grammitidaceae	*Cochlidium serrulatum* (Swartz) L.E. Bishop		Herb.	
Guttiferae	*Garcinia epunctata* Stapf			Herb.
Guttiferae	*Harungana madagascariensis* Lamarck ex Poiret		-X-	-X-
Guttiferae	*Mammea africana* Sabine			-X-
Guttiferae	*Pentadesma butyracea* Sabine	-X-	-X-	-X-
Humiriaceae	*Sacoglottis gabonensis* (Baill.) Urb.		Herb.	Herb.
Hymenophyllaceae	*Hymenophyllum hirsutum* (L.) Sw.		Herb.	
Hymenophyllaceae	*Trichomanes chamaedrys* Taton		Herb.	
Hymenophyllaceae	*Trichomanes fallax* Christ	Herb.		
Hymenophyllaceae	*Trichomanes guineense* Afzel. ex Sw.		Herb.	
Icacinaceae	*Desmostachys vogelii* (Miers) Stapf		Herb.	
Icacinaceae	***Iodes liberica* Stapf**			Herb.
Icacinaceae	*Pyrenacantha acuminata* Engl.	Herb.		
Icacinaceae	*Pyrenacantha glabrescens* (Engl.) Engl.			Herb.
Icacinaceae	*Pyrenacantha klaineana* Pierre ex Exell & Mendonça		Herb.	
Icacinaceae	***Rhaphiostylis cordifolia* Hutch. & Dalziel**		Herb.	
Icacinaceae	*Rhaphiostylis* sp. nov.		Herb.	Herb.
Irvingiaceae	*Irvingia gabonensis* (Aubry-Lecomte) Baillon			-X-
Labiatae	*Achyrospermum oblongifolium* Baker	Herb.		Herb.
Labiatae	*Plectranthus epilithicus* B.J.Pollard	Herb.		
Labiatae	*Plectranthus* sp.	Herb.		
Lecythidaceae	*Napoleonaea vogelii* Hook. & Planch.			Herb.
Lecythidaceae	*Petersianthus macrocarpus* (P.Beauv.) Liben	-X-		
Leguminosae-Caes.	*Afzelia* sp.		-X-	
Leguminosae-Caes.	*Anthonotha crassifolia* (Baill.) J.Léonard	Herb.		
Leguminosae-Caes.	*Anthonotha fragrans* (Baker f.) Exell & Hillcoat	Herb.	Herb.	
Leguminosae-Caes.	***Bussea occidentalis* Hutch. ex Chipp.**	Herb.		

continued

Family	Species	North Lorma	Gola	Grebo
Leguminosae-Caes.	***Copaifera salikounda* Heckel**	Herb.	-X-	Herb.
Leguminosae-Caes.	***Cryptosepalum tetraphyllum* Benth.**	Herb.		
Leguminosae-Caes.	***Daniella thurifera* Bennett**	-X-		
Leguminosae-Caes.	***Dialium aubrevillei* Pellegr.**	Herb.	Herb.	Herb.
Leguminosae-Caes.	*Distemonanthus benthamianus* Baillon	-X-		
Leguminosae-Caes.	*Erythrophleum ivorense* A.Chev.			Herb.
Leguminosae-Caes.	***Gilbertiodendron aylmeri* (Hutch. & Dalziel) J.Léonard**		Herb.	
Leguminosae-Caes.	*Gilbertiodendron preussii* (Harms) J.Léonard	-X-	Herb.	Herb.
Leguminosae-Caes.	*Griffonia simplicifolia* (Vahl ex DC.) **Baillon**			-X-
Leguminosae-Caes.	***Guibourtia leonensis* J.Léonard**	Herb.		
Leguminosae-Caes.	*Paramacrolobium coeruleum* (Taub.) J.Léonard	Herb.		
Leguminosae-Caes.	*Plagiosiphon emarginatus* (Hutch. & Dalziel) J. Léonard	Herb.	Herb.	
Leguminosae-Caes.	*Senna podocarpa* (Guill. & Perr.) Lock	Herb.		
Leguminosae-Caes.	*Senna tora* (L.) Roxb.	Herb.		
Leguminosae-Caes.	***Stachyothyrsus stapfiana* (A.Chev.) J.Léonard & Voorhoeve**		Herb.	
Leguminosae-Caes.	***Tessmannia baikiaeoides* Hutch. & Dalziel**	Herb.		
Leguminosae-Mim.	***Calpocalyx brevibracteatus* Harms**		Herb.	
Leguminosae-Mim.	*Newtonia duparquetiana* (Baill.) Keay	Herb.		
Leguminosae-Mim.	*Newtonia* sp.			Herb.
Leguminosae-Mim.	*Parkia bicolor* A.Chev.	Herb.	-X-	
Leguminosae-Mim.	*Pentaclethra macrophylla* Bentham	-X-		-X-
Leguminosae-Mim.	*Piptadeniastrum africanum* (Hooker f.) Brenan			-X-
Leguminosae-Mim.	***Xylia evansii* Hutch.**	Herb.		
Leguminosae-Pap.	*Abrus fruticulosus* Wall. ex W. & A.	Herb.		
Leguminosae-Pap.	*Amphimas pterocarpoides* Harms			Herb.
Leguminosae-Pap.	*Baphia capparidifolia* Baker subsp. *polygalacea* Brummitt	Herb.		
Leguminosae-Pap.	*Baphia nitida* Lodd.			Herb.
Leguminosae-Pap.	*Dalbergia adamii* Berhaut	Herb.		
Leguminosae-Pap.	*Dalbergia afzeliana* G.Don			Herb.
Leguminosae-Pap.	*Dalbergia heudelotii* Stapf	Herb.		
Leguminosae-Pap.	*Dalbergia oblongifolia* G.Don	Herb.		Herb.
Leguminosae-Pap.	*Dalbergia* sp.		Herb.	
Leguminosae-Pap.	*Leptoderris sassandrensis* Jongkind			Herb.
Leguminosae-Pap.	*Leptoderris* sp. nov.			Herb.
Leguminosae-Pap.	*Millettia chrysophylla* Dunn	Herb.		Herb.
Leguminosae-Pap.	***Millettia lane-poolei* Dunn**	Herb.		
Leguminosae-Pap.	***Millettia liberica* Jongkind**			Herb.
Leguminosae-Pap.	***Millettia lucens* (Scott-Elliot) Dunn**	Herb.		
Leguminosae-Pap.	*Millettia* sp.	Herb.		
Leguminosae-Pap.	***Millettia warneckei* Harms var. *porphyrocalyx* (Dunn) Hepper**	Herb.		
Leguminosae-Pap.	***Platysepalum hirsutum* (Dunn) Hepper**			Herb.
Leguminosae-Pap.	*Vigna gracilis* (Guill. & Perr.) Hook.f.	Herb.		Herb.
Liliaceae	*Asparagus drepanophyllus* Welw.	Herb.		

continued

Family	Species	North Lorma	Gola	Grebo
Liliaceae	*Chlorophytum alismaefolium* Baker	Herb.		
Liliaceae	*Chlorophytum comosum* (Thunb.) Jacq. var. *sparsiflorum* (Baker) A.D.Poulsen & Nordal	Herb.	Herb.	
Linaceae	*Hugonia* sp.	-X-		
Linaceae	*Ochthocosmus africanus* Hook.f.	Herb.		
Loganiaceae	*Strychnos aculeata* Solereder		-X-	
Loganiaceae	*Strychnos afzelii* Gilg	Herb.		Herb.
Loganiaceae	*Strychnos barteri* Soler.			Herb.
Loganiaceae	*Strychnos camptoneura* Gilg & Busse		Herb.	
Loganiaceae	*Strychnos densiflora* Baill.		Herb.	
Loganiaceae	*Strychnos icaja* Baill.	Herb.		Herb.
Loganiaceae	*Strychnos splendens* Gilg	Herb.		
Loganiaceae	*Strychnos usambarensis* Gilg		Herb.	
Lomariopsidaceae	*Bolbitis acrostichoides* (Afzel. ex Sw.) Ching	Herb.		
Lomariopsidaceae	*Bolbitis salicina* (Hook.) Ching	Herb.	Herb.	
Lomariopsidaceae	*Bolbitis* sp.		Herb.	
Lomariopsidaceae	*Elaphoglossum* sp. 1		Herb.	
Lomariopsidaceae	*Elaphoglossum* sp. 2		Herb.	
Lomariopsidaceae	*Lomariopsis guineensis* (Underw.) Alston		Herb.	Herb.
Lomariopsidaceae	*Lomariopsis palustris* (Hook.) Mett. ex Kuhn	Herb.		Herb.
Loxogrammataceae	*Loxogramme abyssinica* (Baker) M.G.Price	Herb.		
Lycopodiaceae	*Lycopodiella cernua* (L.) Pichi Sermolli			Photo
Malpighiaceae	***Acridocarpus longifolius* (G.Don) Hook.f.**			Herb.
Malpighiaceae	***Acridocarpus plagiopterus* Guill. & Perr.**			Herb.
Malpighiaceae	*Flabellaria paniculata* Cav.	Herb.		
Malvaceae	*Wissadula amplissima* (L.) R.E.Fr. var. *rostrata* (Schumach. & Thonn.) R.E.Fr.	Herb.		
Marantaceae	*Halopegia azurea* (K.Schum.) K.Schum.	Herb.	Herb.	
Marantaceae	***Marantochloa cuspidata* (Rosc.) Milne-Redh.**	Herb.		
Marantaceae	*Marantochloa filipes* (Benth.) Hutch.	Herb.		
Marantaceae	*Marantochloa leucantha* (K.Schum.) Milne-Redh.			Herb.
Marantaceae	*Sarcophrynium brachystachyum* (Benth.) K.Schum.		Herb.	Herb.
Marattiaceae	*Marattia fraxinea* J.Sm.		Herb.	
Medusandraceae	***Soyauxia floribunda* Hutch.**	Herb.		
Melastomataceae	*Calvoa monticola* A.Chev. ex Hutch. & Dalziel	Herb.		
Melastomataceae	*Dicellandra barteri* Hook.f.		Herb.	
Melastomataceae	*Dichaetanthera africana* (Hook.f.) Jacq.-Fél.			Herb.
Melastomataceae	*Guyonia ciliata* Hook.f.		Herb.	
Melastomataceae	*Melastomastrum theifolium* (G.Don) A.Fern. & R.Fern.	Herb.		
Melastomataceae	*Memecylon lateriflorum* (G.Don) Bremek.		Herb.	
Melastomataceae	*Memecylon* sp.	Herb.		
Melastomataceae	*Ochthocharis dicellandroides* (Gilg) C.Hansen & Wickens			Herb.
Melastomataceae	*Tristemma akeassii* Jacq.-Fél.			Herb.
Melastomataceae	***Tristemma coronatum* Benth.**	Herb.	Herb.	

continued

Family	Species	North Lorma	Gola	Grebo
Melastomataceae	*Warneckea cinnamomoides* (G.Don) Jacq.-Fél.		Herb.	
Melastomataceae	***Warneckea golaensis* (Baker f.) Jacq.-Fél.**	Herb.		
Melastomataceae	*Warneckea memecyloides* (Benth.) Jacq.-Fél.			Herb.
Melastomataceae	*Warneckea* sp.		Herb.	
Meliaceae	*Carapa procera* DC.	Herb.		
Meliaceae	*Entandrophragma angolensis* (Welwitsch) DC.	-X-		
Meliaceae	*Entandrophragma utile* (Dawe & Sprague) Sprague	-X-		
Meliaceae	*Khaya* sp.			-X-
Menispermaceae	***Albertisia ferruginea* (Diels) Forman**		Herb.	
Menispermaceae	***Kolobopetalum leonense* Hutch. & Dalziel**		Herb.	
Menispermaceae	***Penianthus patulinervis* Hutch. & Dalziel**	Herb.		
Menispermaceae	***Tiliacora leonensis* (Scott-Elliot) Diels**			Herb.
Moraceae	*Antiaris toxicaria* (Rumph. ex Pers.) **Leschen.**			-X-
Moraceae	*Ficus barteri* Sprague			Herb.
Moraceae	*Ficus elasticoides* De Wild.			Herb.
Moraceae	*Ficus leonensis* Hutch.		Herb.	
Moraceae	*Ficus lingua* Warb. ex De Wild. & T.Durand subsp. *lingua*			Herb.
Moraceae	*Ficus natalensis* Hochst. subsp. *leprieurii* (Miq.) C.C.Berg	Herb.		
Moraceae	***Ficus pachyneura* C.C.Berg**		Herb.	
Moraceae	*Ficus sansibarica* Warb.	Herb.		
Moraceae	*Ficus saussureana* DC.		Herb.	
Moraceae	*Ficus umbellata* Vahl			Herb.
Moraceae	*Ficus vogeliana* (Miq.) Miq.			Herb.
Moraceae	***Milicia regia* (A.Chev.) C.C.Berg**		Herb.	
Moraceae	*Musanga cecropioides* F.Br.	-X-	-X-	-X-
Moraceae	***Myrianthus libericus* Rendle**	Herb.		
Moraceae	*Streblus usambarensis* (Engl.) C.C.Berg	Herb.		
Moraceae	*Treculia africana* Decne.	Herb.		Herb.
Moraceae	*Trilepisium madagascariense* Thouars ex DC.	Herb.		
Myristicaceae	*Pycnanthus angolensis* (Welwitsch) Warb.	-X-		-X-
Ochnaceae	***Campylospermum amplectens* (Stapf) Farron**		Herb.	
Ochnaceae	*Campylospermum congestum* (Oliv.) Farron	Herb.		
Ochnaceae	*Campylospermum duparquetianum* (Baill.) Tiegh.			Herb.
Ochnaceae	*Campylospermum glaberrimum* (P.Beauv.) Farron		Herb.	
Ochnaceae	*Campylospermum schoenleinianum* (Klotzsch) Farron	Herb.	Herb.	Herb.
Ochnaceae	***Campylospermum subcordatum* (Stapf) Farron**	Herb.	Herb.	
Ochnaceae	*Lophira alata* Banks ex Gaertn.		-X-	-X-
Ochnaceae	*Ochna membranacea* Oliv.	Herb.		
Ochnaceae	*Rhabdophyllum calophyllum* (Hook.f.) Tiegh.	Herb.		
Olacaceae	*Coula edulis* Baill.			Herb.
Olacaceae	*Heisteria parvifolia* Sm.		-X-	Herb.
Olacaceae	*Olax gambecola* Baill.	Herb.		
Olacaceae	***Ptychopetalum anceps* Oliv.**		Herb.	Herb.

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Family	Species	North Lorma	Gola	Grebo
Olacaceae	*Strombosia pustulata* Oliv.		Herb.	Herb.
Oleaceae	*Jasminum pauciflorum* Benth.	Herb.		
Oleandraceae	*Arthropteris palisotii* (Desv.) Alston			Herb.
Oleandraceae	*Nephrolepis biserrata* (Sw.) Schott	Herb.		
Orchidaceae	*Angraecum birrimense* Rolfe	Herb.		
Orchidaceae	*Angraecum distichum* Lindl.		Herb.	
Orchidaceae	*Angraecum podochiloides* Schltr.		Herb.	
Orchidaceae	*Angraecum subulatum* Lindl.	Herb.		
Orchidaceae	*Bulbophyllum magnibracteatum* Summerh.		Herb.	
Orchidaceae	*Bulbophyllum oreonastes* Rchb.f.		Herb.	
Orchidaceae	*Calyptrochilum christyanum* (Rchb.f.) Summerh.			Herb.
Orchidaceae	*Chamaeangis odoratissima* (Rchb.f.) Schltr.			Herb.
Orchidaceae	*Habenaria macrandra* Lindl.	Herb.		
Orchidaceae	*Nervilia* sp.	Photo		
Orchidaceae	*Oeceoclades maculata* (Lindley) Lindley	Photo		
Orchidaceae	*Polystachya* Hook.			Herb.
Orchidaceae	*Polystachya polychaete* Kraenzl.		Herb.	
Orchidaceae	*Tridactyle bicaudata* (Lindl.) Schltr.		Herb.	
Orchidaceae	*Vanilla africana* Lindl.	Herb.		
Palmae	*Eremospatha* sp.		-X-	
Palmae	*Laccosperma* sp.		-X-	
Palmae	*Raphia hookeri* Mann & Wendl.			-X-
Palmae	***Raphia palma-pinus* (Gaertn.) Hutch.**	-X-		
Pandaceae	*Microdesmis keayana* J.Léonard	Herb.		-X-
Pandaceae	*Panda oleosa* Pierre			Herb.
Passifloraceae	*Adenia cissampeloides* (Planch. ex Benth.) Harms			Herb.
Passifloraceae	*Adenia lobata* (Jacq.) Engler			-X-
Passifloraceae	*Adenia mannii* (Mast.) Engl.			Herb.
Passifloraceae	***Androsiphonia adenostegia* Stapf**		Herb.	
Passifloraceae	***Crossostemma laurifolium* Planch. ex Benth.**	Herb.		
Passifloraceae	*Smeathmannia pubescens* Sol. ex R.Br.	Herb.		
Piperaceae	*Peperomia rotundifolia* (L.) H.B.& K.	Herb.		
Piperaceae	*Piper guineense* Schum. & Thonning	-X-	-X-	-X-
Piperaceae	*Piper umbellatum* L.			-X-
Polygalaceae	*Carpolobia alba* G.Don	Herb.		
Polygonaceae	*Afrobrunnichia erecta* (Asch.) Hutch. & Dalziel	-X-		Herb.
Polypodiaceae	*Drynaria laurentii* (Christ) Hieronymus			-X-
Polypodiaceae	*Microgramma lycopodioides* (L.) Copel.			Herb.
Polypodiaceae	*Microsorium punctatum* (L.) Copeland	-X-		-X-
Polypodiaceae	*Phymatosorus scolopendria* (Burm.f.) Pic.Serm.			Herb.
Polypodiaceae	*Platycerium stemaria* (P.Beauv.) Desvaux	-X-		Photo
Pteridaceae	*Pityrogramma calomelanos* (L.) Link			-X-
Pteridaceae	*Pteris burtonii* Baker		Herb.	

continued

Family	Species	North Lorma	Gola	Grebo
Putranjivaceae	*Drypetes gilgiana* (Pax) Pax & K.Hoffm.	Herb.	Herb.	
Putranjivaceae	*Drypetes inaequalis* Hutch.	Herb.		
Putranjivaceae	***Drypetes* sp. nov.**			Herb.
Rapateaceae	***Maschalocephalus dinklagei* Gilg & K.Schum.**		Herb.	
Rhamnaceae	*Lasiodiscus fasciculiflorus* Engl.	Herb.	Herb.	
Rhamnaceae	*Lasiodiscus mannii* Hook.f.		Herb.	
Rhamnaceae	*Ventilago africana* Exell			Herb.
Rhizophoraceae	***Cassipourea nialatou* Aubrév. & Pellegr.**			Herb.
Rubiaceae	***Argocoffeopsis afzelii* (Hiern) Robbr.**	Herb.		
Rubiaceae	***Argostemma pumilum* Benn.**		Herb.	
Rubiaceae	*Bertiera bracteolata* Hiern			Herb.
Rubiaceae	*Bertiera breviflora* Hiern.	Herb.		
Rubiaceae	*Bertiera racemosa* (G.Don) K.Schum.			Herb.
Rubiaceae	***Bertiera spicata* (C.F.Gaertn.) K.Schum.**		Herb.	
Rubiaceae	***Cephaelis micheliae* J.-G.Adam**		Herb.	
Rubiaceae	*Chassalia afzelii* (Hiern) K.Schum.			Herb.
Rubiaceae	***Chassalia corallifera* (A.Chev. ex De Wild.) Hepper**		Herb.	
Rubiaceae	***Chassalia* sp. nov.**		Herb.	
Rubiaceae	*Corynanthe pachyceras* K.Schum.			Herb.
Rubiaceae	*Craterispermum caudatum* Hutch.			Herb.
Rubiaceae	*Cremaspora triflora* (Thonn.) K.Schum.			Herb.
Rubiaceae	*Gaertnera longevaginalis* (Hiern) E.M.A.Petit	Herb.		
Rubiaceae	*Gaertnera* sp.		Herb.	
Rubiaceae	*Gardenia nitida* Hook.	Herb.		
Rubiaceae	*Geophila afzelii* Hiern	Herb.		Herb.
Rubiaceae	*Geophila obvallata* (Schumach.) F.Didr.	Herb.		
Rubiaceae	*Heinsia crinita* (Afzel.) G.Taylor	-X-	Herb.	-X-
Rubiaceae	*Hutchinsonia barbata* Robyns		Herb.	
Rubiaceae	*Hymenocoleus neurodictyon* (K.Schum.) Robbr.	Herb.		
Rubiaceae	*Hymenocoleus* sp. 1		Herb.	
Rubiaceae	*Hymenocoleus* sp. 2		Herb.	
Rubiaceae	***Ixora aggregata* Hutch.**			Herb.
Rubiaceae	***Ixora nimbana* Schnell**	Herb.		
Rubiaceae	***Keetia bridsoniae* Jongkind**	Herb.		
Rubiaceae	*Keetia leucantha* (Krause) Bridson			Herb.
Rubiaceae	***Keetia obovata* Jongkind**		Herb.	
Rubiaceae	*Keetia rufivillosa* (Robyns ex Hutch. & Dalziel) Bridson	Herb.		Herb.
Rubiaceae	*Keetia* sp.		Herb.	
Rubiaceae	*Lasianthus batangensis* K.Schum.	Herb.	Herb.	
Rubiaceae	*Lasianthus repens* Hepper	Herb.		
Rubiaceae	*Massularia acuminata* (G.Don) Bullock ex Hoyle	Herb.		
Rubiaceae	***Mussaenda chippii* Wernham**		Herb.	
Rubiaceae	***Mussaenda grandiflora* Benth.**			Herb.

continued

Family	Species	North Lorma	Gola	Grebo
Rubiaceae	*Nauclea diderrichii* (De Wild. & Th.Dur.) Merrill	-X-		-X-
Rubiaceae	*Nauclea vanderguchtii* (De Wild.) Petit		Herb.	
Rubiaceae	*Nichallea soyauxii* (Hiern) Bridson			Herb.
Rubiaceae	*Oxyanthus formosus* Hook.f. ex Planch.	Herb.		
Rubiaceae	*Parapentas setigera* (Hiern) Verdc.	Herb.		
Rubiaceae	*Pauridiantha sylvicola* (Hutch. & Dalziel) Bremek.	Herb.	Herb.	Herb.
Rubiaceae	*Pavetta* sp.		Herb.	
Rubiaceae	*Poecilocalyx stipulosa* (Hutch. & Dalziel) N.Hallé		Herb.	
Rubiaceae	*Psychotria biaurita* (Hutch. & Dalziel) Verdc.	Herb.		
Rubiaceae	*Psychotria gabonica* Hiern			Herb.
Rubiaceae	***Psychotria kwewonii* Jongkind ined.**			Herb.
Rubiaceae	***Psychotria ombrophila* (Schnell) Verdc.**		Herb.	
Rubiaceae	*Psychotria peduncularis* (Salisb.) Verdcourt			-X-
Rubiaceae	*Psychotria* sp. 1	Herb.		
Rubiaceae	*Psychotria* sp. 2			Herb.
Rubiaceae	*Psychotria* sp. 3			Herb.
Rubiaceae	*Psychotria* sp. 4			Herb.
Rubiaceae	***Psychotria yapoensis* (Schnell) Verdc.**			Herb.
Rubiaceae	*Rothmannia whitfieldii* (Lindl.) Dandy		Herb.	
Rubiaceae	*Rytigynia canthioides* (Benth.) Robyns			Herb.
Rubiaceae	***Sabicea ferruginea* Benth.**		-X-	Herb.
Rubiaceae	*Sabicea rosea* Hoyle			Herb.
Rubiaceae	***Schizocolea linderi* (Hutch. & Dalziel) Bremek.**	Herb.	Herb.	
Rubiaceae	***Sericanthe adamii* (N.Hallé) Robbr.**		Herb.	
Rubiaceae	***Sherbournia calycina* (G.Don) Hua**			Herb.
Rubiaceae	***Stelechantha ziamaeana* (Jacq.-Fél.) N.Hallé**	Herb.	Herb.	Herb.
Rubiaceae	*Tarenna fusco-flava* (K.Schum.) S.Moore			Herb.
Rubiaceae	*Tarenna* sp.		Herb.	
Rubiaceae	*Tricalysia pallens* Hiern			Herb.
Rubiaceae	*Tricalysia reflexa* Hutch.		Herb.	
Rubiaceae	*Tricalysia* sp. nov.		Herb.	
Rubiaceae	*Trichostachys aurea* Hiern	Herb.		-X-
Rubiaceae	*Uncaria africana* G.Don		-X-	-X-
Rubiaceae	*Virectaria procumbens* (Sm.) Bremek.		Herb.	Herb.
Rubiaceae	*Virectaria* sp.		Herb.	
Rutaceae	*Vepris* sp.		Herb.	
Rutaceae	*Vepris verdoorniana* (Exell & Mendonça) W.Mziray	Herb.		
Rutaceae	***Zanthoxylum psammophilum* (Aké Assi) Waterman**		Herb.	
Rutaceae	*Zanthoxylum* sp.	-X-		
Sapindaceae	*Allophylus* sp.		Herb.	
Sapindaceae	*Chytranthus carneus* Radlk.	Herb.	Herb.	Herb.
Sapindaceae	*Chytranthus* sp.	Herb.		
Sapindaceae	*Eriocoelum racemosum* Baker		Herb.	

continued

Family	Species	North Lorma	Gola	Grebo
Sapindaceae	*Pancovia* sp.	Herb.		
Sapindaceae	*Paullinia pinnata* Linné	-X-		
Sapindaceae	***Placodiscus pseudostipularis* Radlk.**		Herb.	
Sapotaceae	*Chrysophyllum africanum* A.DC.	Herb.	Herb.	Herb.
Sapotaceae	*Chrysophyllum subnudum* Baker	Herb.		
Sapotaceae	*Chrysophyllum welwitschii* Engl.	Herb.		Herb.
Sapotaceae	*Delpydora gracilis* A.Chev.		Herb.	
Sapotaceae	*Englerophytum* sp.		Herb.	
Sapotaceae	*Gluema ivorensis* Aubrév. & Pellegr.		Herb.	
Sapotaceae	*Ituridendron bequaertii* De Wild.			Herb.
Sapotaceae	*Manilkara* sp.		Herb.	
Sapotaceae	*Neolemonniera* sp. Heine	Herb.		
Sapotaceae	*Pouteria aningeri* Baehni	Herb.		Herb.
Scytopetalaceae	*Scytopetalum tieghemii* Hutch. & Dalziel			Herb.
Selaginellaceae	*Selaginella cathedrifolia* Spring	Herb.	Herb.	
Selaginellaceae	*Selaginella myosurus* (Swartz) Alston			-X-
Selaginellaceae	*Selaginella soyauxii* Hieron.	Herb.		
Selaginellaceae	*Selaginella versicolor* Spring	Herb.		
Simaroubaceae	*Hannoa klaineana* Pierre ex Engl.	Herb.		
Solanaceae	*Solanum terminale* Forssk.	Herb.		
Sterculiaceae	***Cola buntingii* Baker f.**		Herb.	Photo
Sterculiaceae	***Cola caricifolia* (G.Don) K.Schum.**			-X-
Sterculiaceae	*Cola heterophylla* (P.Beauv.) Schott. & Endl.	Herb.		
Sterculiaceae	*Cola lateritia* K.Schum.			-X-
Sterculiaceae	*Cola* sp.	Herb.		
Sterculiaceae	***Heritiera utilis* Sprague**	Herb.	Herb.	-X-
Sterculiaceae	***Leptonychia occidentalis* Keay**			Herb.
Sterculiaceae	*Sterculia* sp.			Herb.
Sterculiaceae	*Triplochiton scleroxylon* K.Schum.			-X-
Thelypteridaceae	*Cyclosorus striatus* (Schum.) Ching	Herb.		
Thymelaeaceae	*Dicranolepis* sp.	-X-		-X-
Tiliaceae	*Desplatsia chrysochlamys* (Mildbr. & Burret) Mildbr. & Burret	Herb.		Herb.
Tiliaceae	*Grewia malacocarpa* Mast.	Herb.		
Tiliaceae	*Grewia pubescens* P.Beauv.	Herb.		
Urticaceae	*Urera* sp.	-X-		
Verbenaceae	***Vitex phaeotricha* Mildbr. ex W.Piep.**			Herb.
Violaceae	*Decorsella paradoxa* A.Chev.		Herb.	Herb.
Violaceae	*Rinorea brachypetala* (Turcz.) Kuntze	Herb.		
Violaceae	*Rinorea breviracemosa* Chipp	Herb.	Herb.	
Violaceae	*Rinorea ilicifolia* (Welw. ex Oliv.) **Kuntze**	Herb.		Herb.
Violaceae	***Rinorea microdon* M.Brandt**	Herb.	Herb.	
Violaceae	*Rinorea oblongifolia* (C.H.Wright) Marquand ex Chipp	Herb.		
Violaceae	*Rinorea* sp.			Herb.

continued

Family	Species	North Lorma	Gola	Grebo
Vitaceae	*Cissus diffusiflora* (Baker) Planch.	Herb.		
Vitaceae	***Cissus miegei* Tchoumé**			Herb.
Vitaceae	*Cissus producta* Afzel.			Herb.
Vitaceae	*Cissus smithiana* (Baker) Planch.			Herb.
Vitaceae	*Cissus* sp.	Herb.		
Vitaceae	*Leea guineensis* G.Don			-X-
Vittariaceae	*Antrophyum mannianum* Hook.	Herb.		
Vittariaceae	*Vittaria guineensis* Desv.	Herb.		
Zingiberaceae	*Aframomum* sp.		-X-	
Zingiberaceae	***Renealmia longifolia* K.Schum.**		Herb.	