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CHECKLIST OF THE MIMOSOIDEAE (LEGUMINOSAE) OF EQUATORIAL GUINEA (ANNOBÓN, BIOKO, RÍO MUNI)

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ABSTRACT. — A checklist of the *Mimosoideae* (Leguminosae) of Equatorial Guinea comprising 21 genera and 40 taxa is presented. Two species are known from Annobón, 18 from Bioko and 37 from Río Muni. The best represented genera are *Albizia* and *Newtonia* with five species each. In addition, bibliographic references for Mimosoideae (Leguminosae) from Equatorial Guinea have been gathered and checked. Fourteen taxa are recorded for the first time from the country. A statistical summary is presented at the end of the checklist.

KEY WORDS. — Annobón, Bioko, checklist, Equatorial Guinea, Mimosoideae (Leguminosae), Río Muni.

INTRODUCTION

The Leguminosae form the third largest plant family of the world, comprising about 650 genera and ca. 18000 species. The subfamily Mimosoideae, with ca. 3000 species in 50-60 genera, are distributed worldwide and are abundant in tropical, subtropical and warm-temperate areas (POLHILL & RAVEN 1981). In tropical Africa *Acacia*, *Albizia*, *Entada* and *Newtonia* are the richest in number of species (LEBRUN & STORK 1992).

Important works on Mimosoideae of West tropical Africa include those of OLIVER (1871) and KEAY (1958). The most recent work on Mimosoideae from the region is VILLIERS (1989).

A complete account of the Mimosoideae (Leguminosae) of Equatorial Guinea has never been published. Although they were included in the general vascular plant catalogue of GUINEA (1946), this author added plants that he presumed to be present in Equatorial Guinea.

Over the last 20 years the Real Jardín Botánico has carried out intensive fieldwork in both Bioko and Río Muni. These new collections and the available historical specimens have permitted the preparation of checklists of several groups: *Pteridophytes* (HERRERO *et al*. 2001, VELAYOS *et al*. 2001), *Piperaceae* (FERO *et al.* 2003), *Melastomataceae* (PARMENTIER & GEERINCK 2003) and *Cyperaceae* (CABEZAS *et al*. 2004). This work has been complemented by studies on the inselbergs vegetation carried out by botanists from the Université Libre de Bruxelles (LEJOLY & LISOWSKI 1999, PARMENTIER 2001, 2003, PARMENTIER *et al.* 2001).

The aim of this paper is to update the catalogue of Mimosoideae for the whole of Equatorial Guinea including both bibliographic records and herbarium material. This checklist is a new step towards a modern Flora of Equatorial Guinea.

MATERIAL AND METHODS

The checklist is primarily based on herbarium specimens. We have studied more than 140 specimens from BM, BRLU, K, LISU and MA, including both the historic collections made during British expeditions by

Mann, Tessmann and Vogel, and modern collections obtained by both Belgian and Spanish expeditions.

Bibliographic references for the legumes of Equatorial Guinea have also been checked (AEDO *et al.* 1999). Two species are included, that are based only on literature records since their distribution areas make their presence in Equatorial Guinea probable. They are quoted with the number between brackets. Eight introduced species are presented in the checklist; they are marked with an asterisk (*) before the accepted name.

The locality names used in this checklist have been brought up-to-date following VELAYOS *et al.* (2001 : 147-149), in which a gazeteer including geographical coordinates can be found.

The checklist is alphabetically ordered by genera and species. Generic circumscription is in accordance with LOCK (1989), although recent molecular data suggest that *Acacia* should be divided into three or four genera (MASLIN *et al.* 2003). When available we used monographs or regional works as those of VILLIERS (1984, 1990).

Under each accepted name a list of synonyms used in the relevant literature is given. Specimens are ordered alphabetically by the different regions and provinces: Annobón, Bioko (provinces of Bioko Norte and Bioko Sur) and Río Muni (provinces of Centro Sur, Kie Ntem, Litoral and Wele Nzas).

Previous bibliographical records of each taxon are grouped under the already mentioned three regions. When a taxon was reported under a different name (synonym) it is indicated as follows: GUINEA 1946 : 289, sub *Pithecellobium saman*. In the case of a misidentification the author's name is included following the cited species (LOCK 1989 : 86, sub *Inga rodrigueziana* Pittier). Doubtful records are placed at the end of the checklist.

THE CHECKLIST

ACACIA Mill.

1. — (*)Acacia farnesiana (L.) Willd.

Centro Sur : Env. de Niefang, dans un village, cultivé, *Lisowski M-770* (BRLU).

Previously reported from Bioko (GUINEA 1946 : 290 ; EXELL 1973a : 355) and from Río Muni (GUINEA 1946 : 290).

This species is native to America but it has been introduced in many African countries : Ethiopia, Ghana, Libya, Mozambique, Rhodesia, South Africa, Tanzania, Togo, Uganda and Zimbabwe, and reported as planted or an escape from cultivation (LOCK 1989 : 67, ROSS 1979 : 102).

2. — Acacia kamerunensis Gand.
Acacia pennata auct.

Bioko Norte : Monte Balea, *Guinea 525* (MA). Bioko Sur : Musola, finca Puente, *Guinea 1814* (MA), *1816* (MA).

Previously reported from Río Muni (GUINEA 1946 : 149, sub *Acacia pennata*).

3. — Acacia pentagona (Schumach. & Thonn.) Hook. f.

Bioko Norte : Malabo – pico Basilé, km 7-8, *Carvalho 3478* (MA), *3957* (MA). Centro Sur : Niefang-Bindeng, pista hacia el río Uoro, *Pérez Viso 2408* (MA). Litoral : Bata-Monson-Dibolo, Mbubuin, *Carvalho 4881* (MA).

Previously reported from Río Muni (BRENAN & EXELL 1957 : 134).

ADENANTHERA L.

4. — (*)Adenanthera pavonina L.

Bioko Sur : Luba-Veiga y Avendaño, *Fernández Casas 12037* (MA).

Previously reported from Bioko (GUINEA 1946 : 291, EXELL 1973 : 356) and Río Muni (GUINEA 1946 : 291).

Originally a species from tropical Asia and nowadays naturalised in many other areas. In Africa this species has been reported from neighbouring Cameroon, Gabon and São Tomé (LOCK 1989 : 86, VILLIERS 1989 : 61).

ADENOPODIA C. Presl

5. — Adenopodia scelerata (A. Chev.) Brenan

Litoral : Bata-Niefang, km 35, Adjape Bibak y Nco, *Carvalho 5909* (MA).

Not previously reported from Equatorial Guinea. This species is distributed in West and Central Africa, and reported from Angola, Cameroon, Gabon, Ghana, Ivory Coast, Liberia, Nigeria, Chad and Zaire (BRENAN 1985 : 76-77, LOCK 1989 : 87).

Albizia Durazz.

6. — Albizia adianthifolia (Schumach.) W. Wight
Albizia fastigiata Oliv.
Albizia intermedia De Wild. & T. Durand

Centro Sur : Bata-Mongo, zona forestal de ALOSA, km 57-58, *Carvalho 5421* (MA) ; P.N. Monte Alén, près du village de Monte Alén, *Senterre, Obiang & Esono 2906* (BRLU). Wele Nzas: dalle rocheuse à 3 km au S de Asoc, *Lejoly 99/301T2* (BRLU) ; Nkolentagan, *Tessmann 242a* (K).

Previously reported from Río Muni (Guinea 1946 : 141 and 290, sub *Albizia fastigiata*, Parmentier *et al.* 2001 : 361) and from Equatorial Guinea (Brenan 1953 : 520, sub *A. intermedia*, Keay 1958 : 503, sub *A. intermedia*).

7. — Albizia ferruginea (Guill. & Perr.) Benth.

Centro Sur : P.N. Monte Alén, 1 km au E de la Cabaña de Mosumo, *Senterre & Obiang 4098* (BRLU).

Not previously reported from Equatorial Guinea. Common in tropical Africa and reported from neighbouring Cameroon and Gabon (Lock 1989 : 81).

8. — Albizia gummifera (J.F. Gmel.) C.A. Sm.

Centro Sur : Evinayong, *Guinea 326* (MA), *502-203* (MA).

Not previously reported from Equatorial Guinea. Common in tropical Africa and reported from neighbouring Cameroon (Lock 1989 : 82).

9. — (*)Albizia lebbeck (L.) Benth.

Bioko : *Mann 416* (K). Bioko Norte : Malabo, junto al Ministerio de Agricultura, *Carvalho 3846* (MA). Bioko Sur : Luba-Malabo, km 2 do cruzamento, *Carvalho 2672* (MA) ; cerca de Luba, dirección a Batete, *Fernández Casas 10270 & al.* (BM, K, MA) ; Luba-Veiga y Avendaño, km 2, *Fernández Casas 12010* (MA).

Previously reported from Bioko (Guinea 1946 : 290, Cufodontis 1954 : 185, Keay 1958 : 502, Exell 1973a : 356, Fernández Casas 1992 : 59-60).

Originally from Asia, this species has been introduced in almost all tropical regions (Villiers 1989 : 156, Lock 1989 : 82).

10. — Albizia zygia (DC.) J.F. Macbr.
Albizia brownei (Walp.) Oliv.

Bioko Norte : Malabo-Baney, estrada km 5-6, *Carvalho 3782* (MA), Malabo-Punta Hermosa, estrada km 7-8, *Carvalho 4248* (MA). Centro Sur : P.N. Monte Alén, entre 0 et 1 km à l'ouest du village de Ale, *Lejoly 93/351* (BRLU). Wele Nzas : Nkolentagan, *Tessmann 175, 845* (K).

Previously reported from Bioko (Exell 1973a : 356) and Río Muni (Guinea 1946 : 141, 144, sub *Albizia brownei*).

Aubrevillea Pellegr.

11. — Aubrevillea platycarpa Pellegr.

Centro Sur: P. N. Monte Alén, 3,7 km au W de Aconangui, *Senterre & Obiang 3865* (BRLU).

Not previously reported from Equatorial Guinea. This species has been reported from neighbouring Cameroon and Gabon (Villiers 1989 : 36, Lock 1989 : 87).

Calliandra Benth.

12. — (*)Calliandra surinamensis Benth.

Litoral : Eyan Bot, Bata–Cogo, km 12, *Pérez Viso 3562* (MA).

Not previously reported from Equatorial Guinea. This species is originally from America, it has been introduced in Africa and reported from neighbouring Gabon (Villiers 1989 : 171).

Calpocalyx Harms

13. — Calpocalyx dinklagei Harms

Centro Sur : P.N. Monte Alén, *Lejoly 95/188* (BRLU). Litoral : Bata-Pembe, km 28-29, *Carvalho 5384* (MA) ; Bata-Niefang, km 35, zona de Comaya, *Carvalho 5682* (MA). Wele Nzas : Eviam, carretera forestal de Bata a Niefang, *Pérez Viso 2584* (MA) ; Nkoletagan, *Tessmann 12, 646* (K).

Previously reported from Río Muni (Guinea 1946 : 144, 291, Parmentier *et al.* 2001 : 364) and from Equatorial Guinea (Keay 1958 : 488).

14. — Calpocalyx heitzii Pellegr.

Litoral : Bicubini, *Wilks 3564* (BRLU). Río Muni : Eman-Ngos, *Obama 837* (BRLU).

Not previously reported from Equatorial Guinea. This species has been reported from Cameroon and Gabon (Lock 1989 : 88).

15. — Calpocalyx klainei Pierre ex Harms

Litoral : Bata-Senge, estrada km 23-24, *Carvalho 5687* (MA) ; Bata-Senge, estrada km 27, *Carvalho 6128* (MA).

Previously reported from Río Muni (Guinea 1946 : 291).

16. — Calpocalyx ngouniensis Pellegr.

Litoral : Bata-Bicomo, km 7-8 de Nkoantoma a Ayelon, *Carvalho 4775* (MA).

Not previously reported from Equatorial Guinea. This species has been reported in neighbouring Cameroon and Gabon (Villiers 1984 : 308).

Cathormion (Benth.) Hassk.

17. — Cathormion altissimum (Hook. f.) Hutch. & Dandy
Pithecellobium altissimum (Hook. f.) Oliv.

Bioko Norte : Bahía Venus, *Guinea 299* (MA). Unknown province : *Guinea 1166bis* (MA).

Previously reported from Río Muni (Guinea, 1946 : 141, sub *Pithecellobium altissimum*).

Cylicodiscus Harms

18. — Cylicodiscus gabunensis Harms

Centro Sur : Niefang, explotación forestal de Matroguisa, *Pérez Viso 2345* (MA). Wele Nzas : pista forestal entre Eviam y Aconibe, *Pérez Viso 2084* (MA) ; Nkolentagan, *Tessmann 209, 1077* (K).

Previously reported from Río Muni (Guinea 1946 : 141, 144, 291, Parmentier *et al.* 2001 : 342).

Dichrostachys (DC.) Wight & Arn.

(19). — Dichrostachys cinerea (L.) Wight & Arn.
Dichrostachys nutans Benth.

This species has been reported from Río Muni (Guinea 1946 : 291, sub *Dichrostachys nutans*). We have not found any herbarium material of *D. cinerea* from Equatorial Guinea in BM, K, LISU and MA. This pantropical species has been reported from many countries in Africa, including Cameroon and Gabon (Villiers 2002a : 210-211, Lock 1989 : 89). The distribution range of this species suggests it may occur in Equatorial Guinea.

Entada Adans.

20. — Entada gigas (L.) Fawc. & Rendle
Entada scandens Benth.

Bioko : *Mann 230* (K). Centro Sur : P.N. Monte Alén, senda al lago Atok, *Pérez Viso 1318* (MA). Litoral : Bata-Mbini, km 23-24, *Carvalho 5302* (MA) ; Mbonde, *Guinea 775* (MA) ; Utonde, *Guinea 776* (MA) ; Ecuco, *Guinea 777* (MA) ; Miwala, a 5 km de Kogo, *Pérez Viso 3956* (MA). Wele Nzas: cerro cúpula de Kukumankok, *Guinea 11-374* (MA).

Previously reported from Bioko (Oliver 1871 : 325, sub *Entada scandens* ; Guinea 1946 : 291, sub *E. scandens* ; Cufodontis 1955 : 210 ; Keay 1958 : 491 ; Exell 1973a : 358), Río Muni (Guinea 1946 : 154, 178, 179, 291 sub *E. scandens*, Guinea 1946 : 184k, Parmentier *et al.* 2001 : 353, 360) and from Equatorial Guinea (Cufodontis 1955 : 210).

21. — Entada mannii (Oliv.) Tisser
Piptadenia mannii Oliv.

Bioko : *Mann 20, 414* (K). Bioko Norte : Malabo, río Cupapa, *Carvalho 2253* (MA) ; Malabo-Baney, km 8-9, *Carvalho 3521* (MA) ; Malabo-Punta Hermosa, km 14-15, *Carvalho 3804* (MA) ; Malabo-Cupapa, km 19-20, *Carvalho 4019* (MA).

Previously reported from Bioko (Oliver 1871 : 329, sub *Piptadenia mannii*, Mildbraed 1922 : 184, sub *P. mannii*, Guinea 1946 : 291, sub *P. mannii*, Keay 1958 : 491, sub *P. mannii*, Exell 1973a : 358).

22. — Entada rheedii Spreng.

Bioko Norte : Malabo-Luba, praia Manuel Rodrigues, *Carvalho 2344* (MA) ; Malabo-Punta Hermosa, estrada km 6-7, *Carvalho 3939* (MA).

Bioko Sur : Malabo-Riaba, cerca de Baó Grande, *Fernández Casas 11680* (MA). Wele Nzas : Nsuameyang, *Lope del Val s.n.* (MA-705840, MA-705841, MA-705842, MA-705843, MA-705844). Río Muni : *Tessmann 582* (K).

Previously reported from Equatorial Guinea by LOCK (1989 : 92). This record is most probably based on *Tessmann 582* (K).

FILLAEOPSIS Harms

(23). — Fillaeopsis discophora Harms

This species has been reported from Río Muni (GUINEA 1946 : 144, 291). We have not found any herbarium material of *F. discophora* from Equatorial Guinea in BM, K, LISU and MA. This species occurs in West and Central Africa and has been reported from Angola, Cameroon, Gabon, Nigeria and Zaire (VILLIERS 1989 : 41, LOCK 1989 : 93). The distribution range of the species suggests it may occur in Equatorial Guinea.

INGA Mill.

24. — (*)Inga edulis Mart.

Bioko : *Fernández Casas & Carvalho 11416* (MA). Bioko Norte : Malabo-Rebola, estrada km 8-9, *Carvalho 3618* (MA) ; subida al pico Basilé, *Fernández Casas 10177 & al.* (MA) ; Malabo, *Swarbrick 2930* (K). Bioko Sur : cerca de Basacato del Oeste, *Fernández Casas & al. 10056* (MA). Centro Sur: Nsung, entre Monte Alén y Evinayong, *Pérez Viso 1678* (MA).

Previously reported from Equatorial Guinea by LOCK (1989 : 86, sub *Inga rodrigueziana* Pittier). This record is most probably based on *Swarbrick 2930* (K), since it is the only specimen at Kew from Equatorial Guinea. Dr. Pennington kindly confirmed the reidentification as *I. edulis*.

This species is originally from South America, it has been introduced in many tropical regions and used as shade tree in coffee cultures (PENNINGTON 1997 : 744).

LEUCAENA Benth.

25. — (*)Leucaena leucocephala (Lam.) De Wit *Leucaena glauca* (Willd.) Benth.

Previously reported from Bioko (OLIVER 1871 : 336, sub *Leucaena glauca*, GUINEA 1946 : 290-291, sub *L. glauca*, KEAY 1958 : 495, sub *L. glauca*, EXELL 1973a : 359) and Río Muni (GUINEA 1946 : 290-291, sub *L. glauca*).

Originally from America, this species has been introduced all over the tropical areas. Previously reported from many African countries, also from neighbouring São Tomé & Príncipe (LOCK 1989 : 93, HUGHES 1998 : 114-117).

25.a. — (*)Leucaena leucocephala (Lam.) De Wit subsp. **leucocephala**

Bioko : *Vogel 79* (K). Bioko Norte : Malabo, finca das Carboneras, *Carvalho 2020* (MA) ; servicio agronómico de Malabo, *Guinea 123* (MA), *628* (MA). Bioko Sur : Luba-Veiga y Avendaño, *Fernández Casas 12012* (MA). Litoral : Ayamiken, Río Campo, km 38 de la carretera que sale a la derecha de Adjakom, *Pérez Viso 2785* (MA).

25.b. — (*)Leucaena leucocephala subsp. **glabrata** (Rose) Zárate

Bioko Norte : Malabo-Sampaca, estrada km 4-5, *Carvalho 2566* (MA) ; cerca de Basilé, *Fernández Casas 10109 & al.* (BM, K, MA) ; Malabo, *Lope del Val s.n.* (MA-706055). Bioko Sur : cerca de Riaba, *Fernández Casas 11684* (MA).

Not previously reported from Equatorial Guinea.

MIMOSA L.

26. — Mimosa pudica L.

Bioko Norte : Malabo, finca das Carboneras, *Carvalho 2816* (MA) ; servicio agronómico de Malabo, *Guinea 611* (MA) ; pico Basilé, *Lope de Val s.n.* (MA-500362, MA-696929, MA-706184). Centro Sur : Niefang, explotación forestal de Matroguisa, *Pérez Viso 2294* (MA) ; carretera forestal Bata-Niefang, km 40, *Pérez Viso 2717* (MA). Litoral : Bata, *Davies 215* (K); Miboman, a 22 km de Bata, *Castroviejo 9160* (MA).

Previously reported from Bioko (GUINEA 1946 : 71, 290, EXELL 1973a : 359).

NEWTONIA Baill.

27. — Newtonia duparquetiana (Baill.) Keay

Centro Sur : SE du P.N. Monte Alén, transect Ecofac de Nkumékié, *Senterre & Obiang 3641* (BRLU). Litoral : Etembue (Réserve de Ndote),

Eneme & Lejoly 43 (BRLU) ; Ndote Sud, *Lisowski M-569* (BRLU).

Not previously reported from Equatorial Guinea, this species has been reported from Cameroon and Gabon (Villiers 1990 : 126).

28. — Newtonia glandulifera (Pellegr.) G.C.C. Gilbert & Boutique

Centro Sur : P.N. Monte Alén, transect de Monte Chocolate, *Lejoly 95T/L3768* (BRLU).

Not previously reported from Equatorial Guinea.

29. — Newtonia grandifolia Villiers

Centro Sur : SO du P.N. Monte Alén, 200 m au S du transect Ecofac de Mosumo, *Senterre & Ngomo 846* (BRLU). Wele Nzas : P.N. Nsork, Obamicu, *Nguema, Esono & Lejoly 244* (BRLU).

Not previously reported from Equatorial Guinea. This species has been reported from Cameroon and Gabon (Villiers 1990 : 129).

30. — Newtonia griffoniana (Baill.) Baker f.
Newtonia zenkeri Harms
Newtonia klainei Pierre ex Harms

Bioko Norte : Malabo-Luba, estrada km 19-20, *Carvalho 4198* (MA) ; Malabo-Batoicopo, estrada km 19-20, *Carvalho 4456* (MA). Centro Sur : P.N. Monte Alén, *Pérez Viso 86* (MA) ; SO du P.N. Monte Alén, 200 m au S du transect Ecofac de Mosumo, *Senterre & Ngomo 672* (BRLU). Unknown province : *Lope del Val s.n.* (MA-705395).

Previously reported from Río Muni (Guinea 1946 : 144, sub *Newtonia zenkeri*, 291, sub *N. klainei*).

31. — Newtonia leucocarpa (Harms) G.C.C. Gilbert & Boutique

Centro Sur : SE du P.N. Monte Alén, au N du rio Laña, près de la Cabaña Ecofac de Misergue, *Senterre & Obiang 3170* (BRLU).

Not previously reported from Equatorial Guinea. This species has been reported from the neighbouring Cameroon and Gabon (Villiers 1990 : 132).

Parkia R. Br.

32. — Parkia bicolor A. Chev.
Parkia klainei Pierre ex De Wild.
Parkia zenkeri Harms

Litoral : Bata-Pembe, alrededores de Ebenvang, *Carvalho 5478* (MA).

Previously reported from Río Muni (Guinea 1946 : 144, sub *Parkia zenkeri*, 291, sub *Parkia klainei*).

33. — (*)Parkia biglobosa (Jacq.) R. Br. ex G. Don
Parkia oliveri J. F. Macbr.
Parkia africana R. Br.
Parkia clappertonia Keay

Annobón : Ilha de Anno Bon, terras cultivadas, *Newton s.n.* (LISU-165621).

This species has been reported from Annobón (Sobrinho 1953 : 183, sub *Parkia oliveri*, Exell 1956 : 18, sub *P. oliveri*, Exell 1973a : 359, sub *P. oliveri*), Bioko (Guinea 1946 : 291, sub *P. africana*, Exell 1973a : 359, sub *P. clappertonia*) and Río Muni (Guinea 1946 : 291, sub *P. africana*).

We have identified the previously mentioned sterile specimen as *P. biglobosa* because it has 11-12 pairs of pinnae, 13-38 subopposite leaflets pairs (7-15 × 1.5-3 mm), with a straight main nerve, and a single, orbicular gland at petiole base as well as greyish pubescence along the main rachis (Hopkins 1983 : 141-148, Hall *et al*. 1997 : 6). This identification is also in accordance with the label included by M.C. Liberato in the specimen at LISU, although under the name *Parkia africana* (synonym of the currently accepted name *P. biglobosa*).

The occurrence of this species in Annobón is remarkable, since it falls outside the range of this well known Sahel-Soudan-zone species. The propagation by seeds is only possible after seeds have been eaten by large mammals (or 100% HCl) to break down the woody seed coat, such introduction cannot have taken place without great difficulties (Wieringa, pers. comm.). Hall *et al*. (1997 : 20) suggested that this species could be present in Annobón and neighbouring Cameroon and São Tomé, as a result of introductions.

34. — Parkia filicoidea Welw. ex Oliv.

Centro Sur : Mafanebú, *Guinea 202* (MA).

Not previously reported from Equatorial Guinea. Widespread in tropical Africa, and reported from many African countries, also from neighbouring Cameroon and Gabon (Hopkins 1983 : 154-155, Lock 1989 : 99).

Pentaclethra Benth.

35. — Pentaclethra eetveldeana De Wild. & T. Durand

Litoral : Bata-Bome, cerca de Aman, *Carvalho 4708* (MA-597840).

Not previously reported from Equatorial Guinea. Common in West and Central Africa. This species has been reported from Angola, Cameroon, Gabon and Zaire (Villiers 1989 : 26, Lock 1989 : 99).

36. — Pentaclethra macrophylla Benth.

Bioko Norte : Malabo-Rebola, estrada km 8-9, *Carvalho 4145* (MA) ; Malabo-Punta Hermosa, estrada km 10-11, *Carvalho 4614* (MA) ; Malabo-Punta Hermosa, *Fernández Casas 12073* (MA) ; Batoicopo, camino de Rebola, *Lope del Val s.n.* (MA-705834, MA-705835, MA-705836). Bioko Sur : Basacato del Oeste, *Lope del Val s.n.* (MA-631914). Litoral : Bata-Pembe, estrada km 17-18, *Carvalho 5513* (MA) ; Corisco, Endote, *Pérez Viso 1960* (MA) ; Corisco, casa de Yniestrosa, *Velayos & al. 9934* (MA-706185). Río Muni : *Tessmann 146* (K). Unknown province : *Lope del Val s.n.* (MA-389401, MA-706189, MA-706190, MA-706191, MA-706192).

Previously reported from Annobón (Oliver 1871 : 322-323, Exell 1973a : 359), Bioko (Mildbraed 1922 : 184, Exell 1944 : 168, Guinea 1946 : 291, Keay 1958 : 487, Exell 1973a : 359) and Río Muni (Guinea 1946 : 141, 144, 184e, 291, Parmentier *et al.* 2001 : 363).

Piptadeniastrum Brenan

37. — Piptadeniastrum africanum (Hook. f.) Brenan
Piptadenia africana Hook. f.

Bioko : *Fernández Casas & Carvalho 12204* (MA). Bioko Norte : Malabo-Rebola, km 2-3, *Carvalho 3550* (MA) ; misión católica de Malabo, *Guinea 788* (MA). Bioko Sur : Malabo-Luba, estrada km 43, *Carvalho 2053* (MA) ; Malabo-Riaba, km 50, cerca de Bilelipa, *Carvalho 2450* (MA). Centro Sur : Mafanebú, *Guinea 205* (MA). Litoral : Bata-Pembe, km 18-19, *Carvalho 5160* (MA) ; Sendge à Ongamnsok, *Lejoly 01/76* (BRLU). Wele Nzas : Nkolentagan, *Tessmann 235* (K). Unknown province : *Guinea 1169*, *1171* (MA).

Previously reported from Bioko (Exell 1973a : 360) and Río Muni (Guinea 1946 : 64b, 116, 141, 144, 291 sub *Piptadenia Africana*, Parmentier *et al*. 2001 : 342).

Samanea (Benth.) Merr.

38. — (*)Samanea saman (Jacq.) Merr.
Pithecellobium saman (Jacq.) Benth.

Bioko Norte : Malabo, *Carvalho 3705* (MA), *3813* (MA) ; pico Basilé, *Lope del Val s.n.* (MA-705941).

Previously reported from Bioko (Guinea 1946 : 289, sub *Pithecellobium saman*, Exell 1973a : 360) and Río Muni (Guinea 1946 : 289, sub *P. saman*).

This species originally is from South America but has been introduced in many countries all around the world. It also has been reported from neighbouring Gabon and São Tomé & Príncipe (Lock 1989 : 84, Villiers 2002b : 269).

Tetrapleura Benth.

39. — Tetrapleura tetraptera (Schumach. & Thonn.) Taub.
Tetrapleura thonningii Benth.

Centro Sur : Bata-Senge, km 29, *Carvalho 5039* (MA) ; Bata-Senge-Mitom-Emangës, km 30-31, *Carvalho 6487* (MA) ; near Gabon, *McPherson 13989* (K). Wele Nzas : Nkolentagan, *Tessmann 84* (K).

Previously reported from Río Muni (Guinea 1946 : 141, 144, 154, 184e, 291, sub *Tetrapleura thonningii*).

DOUBTFUL RECORDS

Albizia moluccana Miq.

This species has been reported from Bioko (Guinea 1946 : 290, Exell 1973a : 356). Barneby & Grimes (1996) included this species sub *Falcataria moluccana* (Miq.) Barneby & Grimes. It originates from the islands of the Pacific Molucas and Papua New Guinea, and has been introduced in Central America. We also found this species reported sub *Albizia falcataria* (L.) Fosberg from several African countries like Angola, Nigeria and São Tomé (Liberato 1973 : 24, Lock 1989 : 81). We have not been able to study the specimens supporting these records and, therefore, we cannot ascribe them to any accepted name. Its presence in Equatorial Guinea seems not very likely.

Desmanthus virgatus (L.) Willd.

This species has been reported from Río Muni (Guinea 1946 : 291). We have not found any herbarium material of *D. virgatus* from Equatorial Guinea in BM, K, LISU and MA. This species originally is from America and it has been introduced in the neighbouring São Tomé & Príncipe (Lock 1989 : 88, Luckow 1993 : 135), but we found neither material nor previous references from any other place in Central Africa. Hence its presence in Equatorial Guinea seems not very likely.

Entada africana Guill. & Perr.

This species has been reported from Bioko (Oliver 1871 : 326, Guinea 1946 : 291, Exell 1973a : 358). The reference by Oliver (1871) is based on a voucher by *Mann*, and Oliver explained that the "Flora of Tropical Africa" was based on the material deposited at Kew. Berhaut (1952) argued that this record most probably concerns *Mann 20* which belongs to *E. mannii*. The record from Guinea (1946) is probably based on the same specimen of *Mann*, while Exell (1973a) only referred to Guinea's book. Although *E. africana* is a West and Central African species, we have not found any herbarium material of *E. africana* from Equatorial Guinea in BM, K, LISU and MA. Since its distribution seems to be restricted to the drier zones (Brenan 1963 : 364), its occurrence in Equatorial Guinea seems unlikely.

Table 1

Species that may occur in Río Muni since they have been reported from Cameroon and/or Gabon

Species expected in Río Muni	Cameroon	Gabon
Albizia glaberrima (Schumach. & Thonn.) Benth.	+	+
Albizia laurentii De Wild.	+	+
Aubrevillea kerstingii (Harms) Pellegr.	+	–
Calpocalyx atlanticus Villiers	+	–
Calpocalyx brevifolius Villiers	–	+
Calpocalyx letestui Pellegr.	+	+
Dichrostachys cinerea (L.) Wight & Arn.	+	+
Fillaeopsis discophora Harms	+	+
Mimosa pigra L.	+	+
Newtonia buchananii (Baker f.) G.C.C. Gilbert & Boutique	–	+
Newtonia zenkeri Harms	+	+
Pseudoprosopis claessensii (De Wild.) G.C.C. Gilbert & Boutique	–	+
Pseudoprosopis gilletii (De Wild.) Villiers	–	+
Schrankia leptocarpa DC.	–	+

Source : Lock (1989) and Villiers (1989).

STATISTICAL SUMMARY

The total number of indigenous and introduced taxa listed here for Equatorial Guinea is 40. The species list is based on herbarium material, with the exception of two reports from the literature: *Dichrostachys cinerea* and *Fillaeopsis discophora*, whose distribution ranges suggest they may occur in Equatorial Guinea.

It is known that Equatorial Guinea is poorly explored from a botanical point of view. The history and intensity of botanical expeditions has been quite different for the three main regions of the country (AEDO & VELAYOS 2001), with Río Muni being the less explored territory. Although we present 37 taxa in this paper, many species reported from both Cameroon and Gabon have not been found yet. For example the flora of Gabon (260 000 km^2) includes 45 species of Mimosoideae. If we assume Río Muni (26 000 km^2) can shelter such a number of species, about 82% of the species have already been found. Species that can be expected to occur in Río Muni, including our two reports accepted from the literature, are listed in Table 1. We hope that this would facilitate future explorations.

It is interesting to note that the number of indigenous Mimosoideae species found on the islands of the Gulf of Guinea decreases as the distance to the mainland increases (Table 2). However, other factors such as size of the island or altitudinal range could contribute to explain these differences in species number. The high number of species found in Bioko reflects the continental influence in this island (EXELL 1973b : 7), since it is only separated 32 km from Cameroon coast.

Eight introduced species were included in the checklist, since they may be naturalized in Equatorial Guinea owing to human activity. This number of aliens is similar to those found in neighbouring Gabon (9 species, VILLIERS 1989) and São Tomé & Príncipe (13 species, LIBERATO 1973). The most striking is the high percentage of naturalized Mimosoideae in São Tomé & Príncipe (76%) and Bioko (38%) in comparison with Río Muni (21%) or Gabon (20%) (Table 2). Gabon and Equatorial Guinea are two of the countries of West and Central Africa with the largest percentage of original closed canopy forest (88.2% - 227 500 km^2 and 65.4% - 17 004 km^2, respectively ; HAMILTON 1994). On the other hand, São Tomé & Príncipe and Bioko have been intensively culti-

TABLE 2

Indigenous and introduced species of Mimosoideae from Mt. Cameroon and the four island of the Gulf of Guinea

	Mt. Cameroon[1]	Bioko	Príncipe[2]	São Tomé[2]	Annobón
Indigenous	13	11	2	4	1
Introduced	1	7	3	13	1

Source : [1]CABLE & CHEEK (1998) and [2]LIBERATO (1973).

TABLE 3

Number species and genera of Mimosoideae, Cyperaceae and Melastomataceae from Equatorial Guinea

Family		Annobón	Bioko	Río Muni	Equatorial Guinea
Mimosoideae	Genera	2	12	21	21
	Species	2	18	37	40
Cyperaceae[1]	Genera	5	14	16	20
	Species	13	45	73	95
Melastomataceae[2]	Genera	4	12	15	17
	Species	6	23	49	57

Source : [1]CABEZAS *et al*. (2004) and [2]PARMENTIER & GEERINCK (2003).

vated for a long time, and in the former only 299 km^2 (31.1%) of original closed forests have remained untouched.

In Equatorial Guinea Mimosoideae are comparatively poor in species but rich in genera (Table 3). According to VILLIERS (1989 : 13) this is a characteristic of the Mimosoideae in Africa, where there are a great number of monospecific genera or genera with few species, such as *Aubrevillea*, *Cylicodiscus* or *Piptadeniastrum*.

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