

NEW ORCHID RECORDS FROM ATLANTIC CENTRAL AFRICA

V. DROISSART¹, B. SONKÉ^{1,2}, M. SIMO² & T. STÉVART^{1,3,4}

Several papers dealing with *Orchidaceae* from Atlantic Central Africa have recently been published. However, orchid distributions in this area remain poorly known. Over the last decade, we have conducted an intensive fieldwork programme in Cameroon and Equatorial Guinea. This has enabled us to collect 22 taxa that are new national records. Ten taxa are new records for Cameroon, eight for Equatorial Guinea and four for both countries. One of these taxa is also a new record from Nigeria. Fifteen taxa are endemic to the Lower Guinea area and six were previously known only from the type locality.

Keywords. Atlantic Central Africa, Cameroon, Equatorial Guinea, new national records, Nigeria, *Orchidaceae*.

INTRODUCTION

Orchidaceae are, with more than 700 genera (Geerinck, 1992) and approximately 25,000 species, by far the largest monocotyledon family and perhaps the largest plant family (Chase, 2005). On the African mainland, *Orchidaceae* are represented by 1890 valid taxa (Govaerts *et al.*, 2008), from which 602 are reported in Atlantic Central Africa which extends from Nigeria to the Republic of Congo (Stévert, 2003). Within this region, the rainforest that covers Cameroon and Equatorial Guinea possesses one of the most diverse floras in Africa. The Mt Cameroon area, for example, is estimated to harbour 3000–4000 species of vascular plants (Mutke & Barthlott, 2005). The orchid family accounts for a large part of this rich diversity.

Several studies on the *Orchidaceae* from Cameroon have been published over the last 10 years (Cribb, 1998; Cribb *et al.*, 2000; Cribb & Pollard, 2004; Pollard *et al.*, 2004; Droissart *et al.*, 2006), but the most relevant taxonomic accounts on the orchid flora of Cameroon have been published as part of the ‘Flore du Cameroun’ (Szlachetko & Olszewski, 1998, 2001a, 2001b). These list 360 species in 63 genera. These authors

¹ Laboratoire de Botanique systématique et de Phytosociologie, Université Libre de Bruxelles, 50 Av. F. Roosevelt, CP 169, 1050 Bruxelles, Belgium. E-mail: vincent.droissart@ulb.ac.be (author for correspondence).

² Laboratoire de Botanique systématique et d'Ecologie, Département des Sciences Biologiques, Ecole Normale Supérieure, Université de Yaoundé I, B.P. 047, Yaoundé, Cameroon. E-mail: bsonke_1999@yahoo.com, murielle_simo@yahoo.fr

³ Missouri Botanical Garden, Africa & Madagascar Department, PO Box 299, St Louis, MO 63166-0299, USA. E-mail: tariq.stevart@mobot.org

⁴ National Botanic Garden of Belgium, Domein van Bouchout, Nieuwelaan 38, 1860 Meise, Belgium.

also mention 153 species ‘to be found in Cameroon’, showing that this flora still remains incompletely known. Our knowledge of the *Orchidaceae* from Equatorial Guinea is even poorer and only provisional checklists have been published (Sanford, 1971; Olszewski & Szlachetko, 1997; Aedo *et al.*, 1999).

The data presented here result from a larger project devoted to the study of the biogeography of orchids in Atlantic Central Africa. Since 1997, a project that involves collecting and growing living orchids in shadehouses has been conducted in the area (Stévant, 2003). More than 8000 living orchids have been cultivated in São Tomé and Príncipe, Cameroon, Gabon and Equatorial Guinea. This has allowed us to collect more than 5000 herbarium specimens. Examination of this material resulted in the description of numerous novelties and the discovery of new records from Atlantic Central Africa (Stévant & Geerinck, 2000; Stévant *et al.*, 2003, 2006, 2007; Stévant & Cribb, 2004a, 2004b; Stévant & Nguema, 2004; Stévant & Droissart, 2006). This paper presents an additional 22 taxa that are new national records.

METHODS

Fieldwork location

In Cameroon, botanical inventories were made in East Province (Dja reserve), South West Province (Banyang Mbo Wildlife Sanctuary), South Province (Ngovayang and Akom II forest area) and Centre Province (Mbam Minkom massif area). In Equatorial Guinea (Rio Muni), the field survey mostly targeted Monte Alén National Park and inselbergs of the eastern part of Rio Muni.

Ex situ cultivation in Africa

A shadehouse was built in Yaoundé (Cameroon) in 2004. It now contains more than 2500 living specimens from the various parts of the country where inventories were conducted. Since March 2004, a new collection series (Yaoundé shadehouse series) has been established for all herbarium specimens collected from plants in the Yaoundé shadehouse to avoid confusion with specimens collected in the field. In Equatorial Guinea, a shadehouse was also built in Monte Alén and contains approximately 1750 specimens. From these living collections and field inventories, 2243 specimens were collected in Cameroon and 1207 in Equatorial Guinea (Rio Muni) and are deposited at BRLU. Duplicates will be distributed later.

New national records

Twenty-two orchid taxa are considered to be new national records as they are not recorded from Cameroon or Equatorial Guinea in the ‘Flore du Cameroun’, the *World Checklist of Orchidaceae* (Govaerts *et al.*, 2008) and other relevant literature

(Sanford, 1971; Olszewski & Szlachetko, 1997; Cribb, 1998; Aedo *et al.*, 1999; Cribb *et al.*, 2000; Cribb & Pollard, 2004; Pollard *et al.*, 2004; Droissart *et al.*, 2006). Almost all type specimens for these taxa have been seen in K, P or WAG herbaria (herbarium acronyms according to Holmgren & Holmgren, 1998). A specimen which is a new record for Nigeria was also found in WAG herbarium. The distributions of taxa are based on the specimens examined and on the *World Checklist of Orchidaceae* (Govaerts *et al.*, 2008). Information on ecology and habitat given under each species entry has been compiled from the BRLU specimen database on *Orchidaceae* from Atlantic Central Africa. This database includes 8215 digitised specimens.

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Ancistrorhynchus tenuicaulis Summerh., Kew Bull. 8: 590 (1954 [1953]). – Type: Uganda, Ishasha Gorge, Kigezi, iv 1946, *Purseglove* 2034 (holo K!; iso EA). **Fig. 1.**

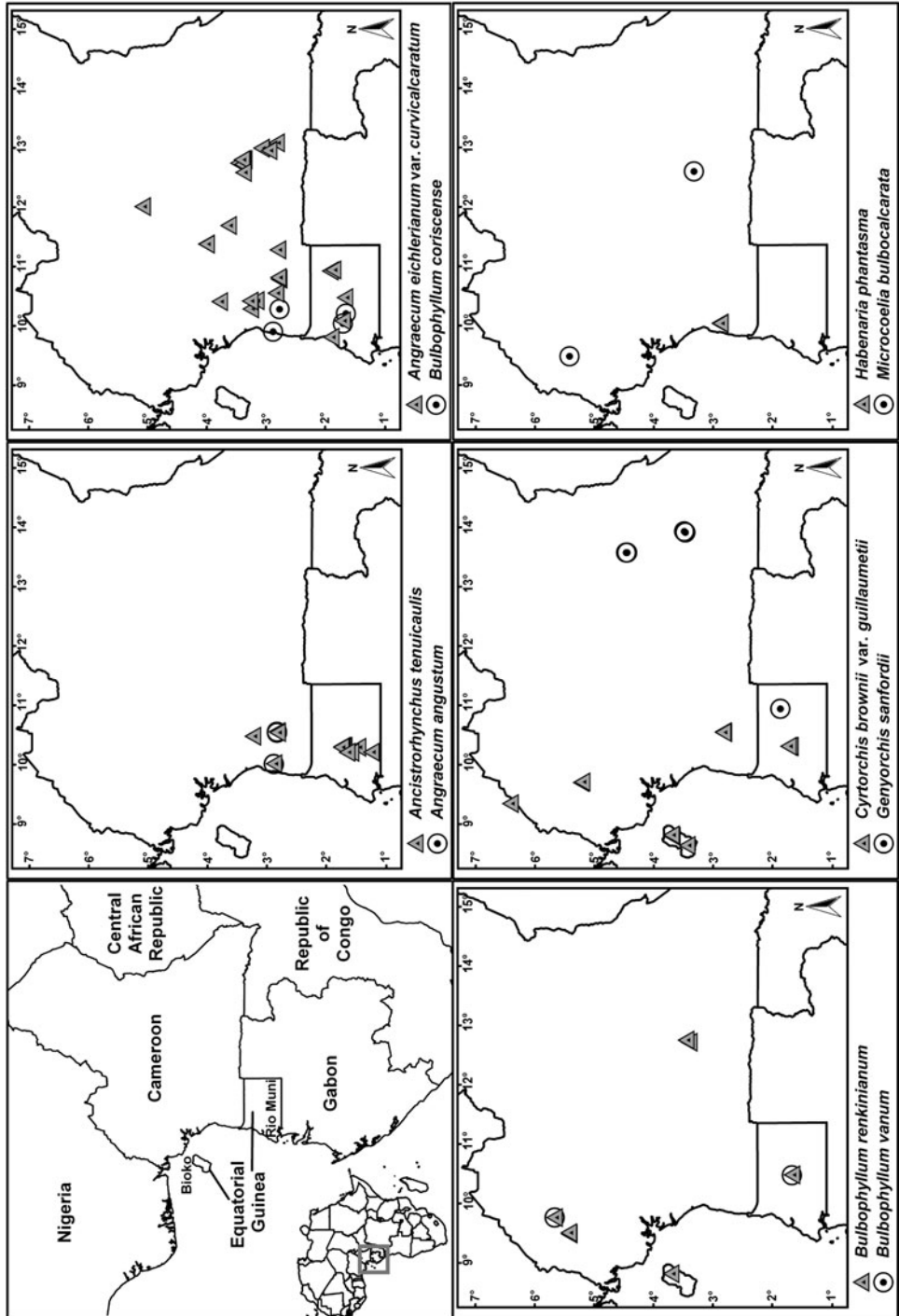
Distribution. Cameroon, Equatorial Guinea (Rio Muni), Gabon, Democratic Republic of Congo, Rwanda, Uganda, Tanzania and Malawi. This taxon is recorded from Cameroon and Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Epiphyte in lowland and submontane primary forest. In Rio Muni, specimens were also collected in the forest fringe of an inselberg. Altitudinal range from 400 to 1200 m. Flowering peaks between May and July.

Note. *Ancistrorhynchus tenuicaulis* is closely related to *A. schumannii* (Kraenzl.) Summerh. also known from Cameroon. However, the two species can easily be separated by the shape of the leaf apex (rounded for *Ancistrorhynchus schumannii* and acute for *A. tenuicaulis*) and the number of flowers in a single inflorescence (usually two for *A. schumannii* and up to five for *A. tenuicaulis*). The apex of the spur is slightly flattened in *Ancistrorhynchus tenuicaulis* but not in *A. schumannii*.

Specimens examined. CAMEROON. Akom II (Kribi-Ebolowa road), 2°44.795'N, 10°32.819'E, 3 vi 2006, *Droissart* 114 (BRLU); *ibid.*, 2°44.334'N, 10°31.932'E, 4 vi 2006, *Droissart* 130 (BRLU); Bidjouka (Ngovayang forest area), 3°09.158'N, 10°28.146'E, 17 vi 2006, *Droissart* 160 (BRLU); *ibid.*, 17 vi 2006, *Droissart* 161 (BRLU); Bidou III/Nkolembonda (Kribi-Ebolowa road), 2°47.968'N, 10°00.281'E, 26 v 2007, *Droissart & Simo* 564 (BRLU); Akom II (Kribi-Ebolowa road), 2°44.813'N, 10°32.810'E, 31 v 2007, *Droissart, Stévert & Simo (Yaoundé shadehouse)* 528 (BRLU); Bidjouka (Ngovayang forest area), 3°09.158'N, 10°28.146'E, 14 vii 2007, *Droissart, Stévert & Simo (Yaoundé shadehouse)* 606 (BRLU).

EQUATORIAL GUINEA (RIO MUNI). Near Miserge, 1°23'N, 10°17'E, 1 vii 1999, *Stévert* 547 (BRLU); near Esamalan, 1°34'N, 10°12'E, 1 vii 1999, *Stévert* 550 (BRLU); Engong (Monte Alén Nat. Park), 1°37'N, 10°18'E, 1 vii 1999, *Stévert* 564 (BRLU); before Esamalan, 1°30'N, 10°12'E, 17 ix 1999, *Ndong Bokung & Stévert* 75 (BRLU); Mirador (inselberg), 1°40'N, 10°17'E, 24 vi 2000, *Ndong Bokung & Stévert* 179 (BRLU); before Esamalan, 1°30'N, 10°12'E, 25 vi 2000, *Ndong Bokung & Stévert* 188 (BRLU); Mitemele, 1°09.438'N, 10°12.137'E, 8 vii 2001, *Stévert* 965 (BRLU); Engong, 1°37.438'N, 10°17.811'E, 20 vii 2001, *Ndong Bokung, Stévert & Obama* 373 (BRLU); Monte Alén Nat. Park, 1°39'N, 10°18'E, 20 ix 2002, *Ndong Bokung & Stévert* 510 (BRLU).



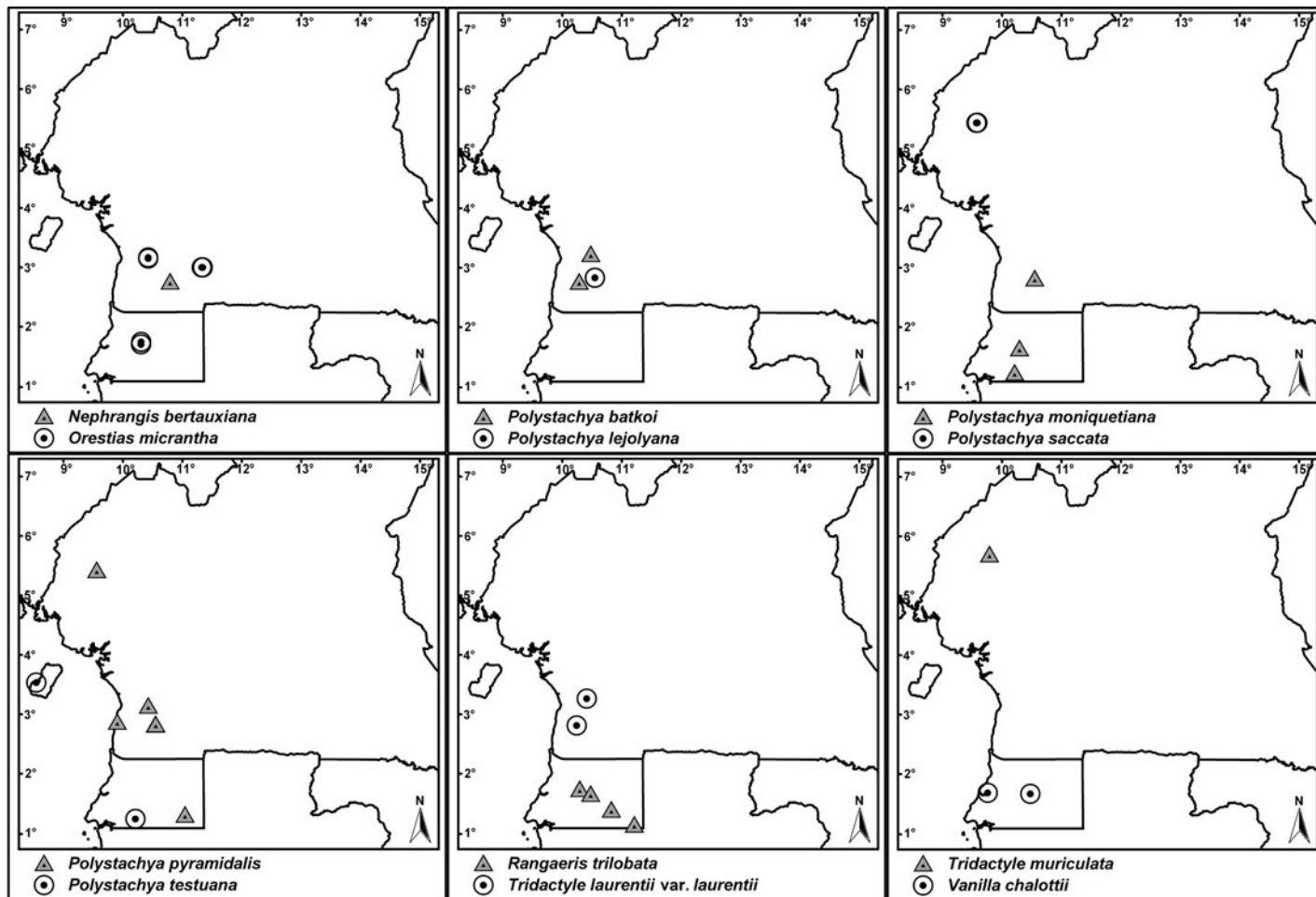


FIG. 1. The study area, Atlantic Central Africa, and maps of taxon distributions in Cameroon and Equatorial Guinea (Rio Muni and Bioko).

Angraecum angustum (Rolfe) Summerh. in Hutch. & Dalziel, Fl. W. Trop. Afr. 2: 452 (1936). – Type: Nigeria, Cross River, Itu, Old Calabar, 20 v 1897, *Holland 27* (holo K!). **Figs 1, 2A.**

Distribution. Nigeria and Cameroon. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Epiphyte usually growing on small mossy branches in submontane forest. Altitudinal range from 450 to 1050 m. Flowering peaks between May and June.

Note. This species was previously only known from the type specimen collected in South Nigeria in 1897. In Cameroon, we collected this species only in submontane forest in two localities in South Province: in the Ngovayang forest area, near Akom II, and at 450 m on the summit of the ‘Mont des Eléphants’.

Specimens examined. CAMEROON. Akom II (Kribi-Ebolowa road), 2°44.889’N, 10°32.383’E, 26 vii 2004, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 57 (BRLU); *ibid.*, 2°44.873’N, 10°31.983’E, 25 x 2004, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 251 (BRLU); Akom II (Kribi-Ebolowa road), 2°44.667’N, 10°31.827’E, 2 vi 2006, *Droissart* 104 (BRLU); *ibid.*, 2°44.795’N, 10°32.819’E, 3 vi 2006, *Droissart* 111 (BRLU); Akom II (Kribi-Ebolowa road), 2°44.889’N, 10°32.383’E, 10 vi 2006, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 371 (BRLU); Bidjouka (Ngovayang forest area), 16 vi 2006, *Droissart* 152 (BRLU); Bidou III/Nkolembonda (Kribi-Ebolowa road), 2°47.852’N, 9°59.987’E, 24 v 2007, *Droissart & Simo* 554 (BRLU); *ibid.*, 24 v 2007, *Droissart & Simo* 555 (BRLU); Akom II (Kribi-Ebolowa road), 2°44.813’N, 10°32.810’E, 31 v 2007, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 531 (BRLU); Bidou III/Nkolembonda (Kribi-Ebolowa road), 2°47.991’N, 10°00.171’E, 30 vi 2007, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 571 (BRLU).

Angraecum eichlerianum Kraenzl. var. *curvicalcaratum* Szlach. & Olszewski, Fl. Cameroun 36: 898 (2001). – Type: Cameroon, Nanga Eboko, *Jacques-Félix* 4740 (holo P). **Figs 1, 2B.**

Distribution. Cameroon, Equatorial Guinea (Rio Muni) and Gabon. This taxon is recorded from Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Epiphyte in lowland and submontane primary forest, but also observed in the forest fringe of inselbergs. Altitudinal range from 100 to 1100 m. Flowering peaks between June and August.

Note. Two varieties of *Angraecum eichlerianum* are recognised by Szlachetko & Olszewski (2001b). The type variety possesses a straight spur and its dorsal sepal is more than 40 mm long. The variety *curvicalcaratum* has a curved spur and its dorsal sepal is usually no more than 40 mm long.

Specimens examined. CAMEROON. Mbassakok (Mama), 3°19.023’N, 12°42.403’E, 12 vii 2001, *Stévant, Chamba & Pial* 105 (BRLU); Schouam (Dja reserve), 3°19.323’N, 12°47.445’E, 12 vii 2001, *Stévant, Chamba & Pial* 106 (BRLU); *ibid.*, 17 vii 2001, *Stévant, Chamba & Pial* 123

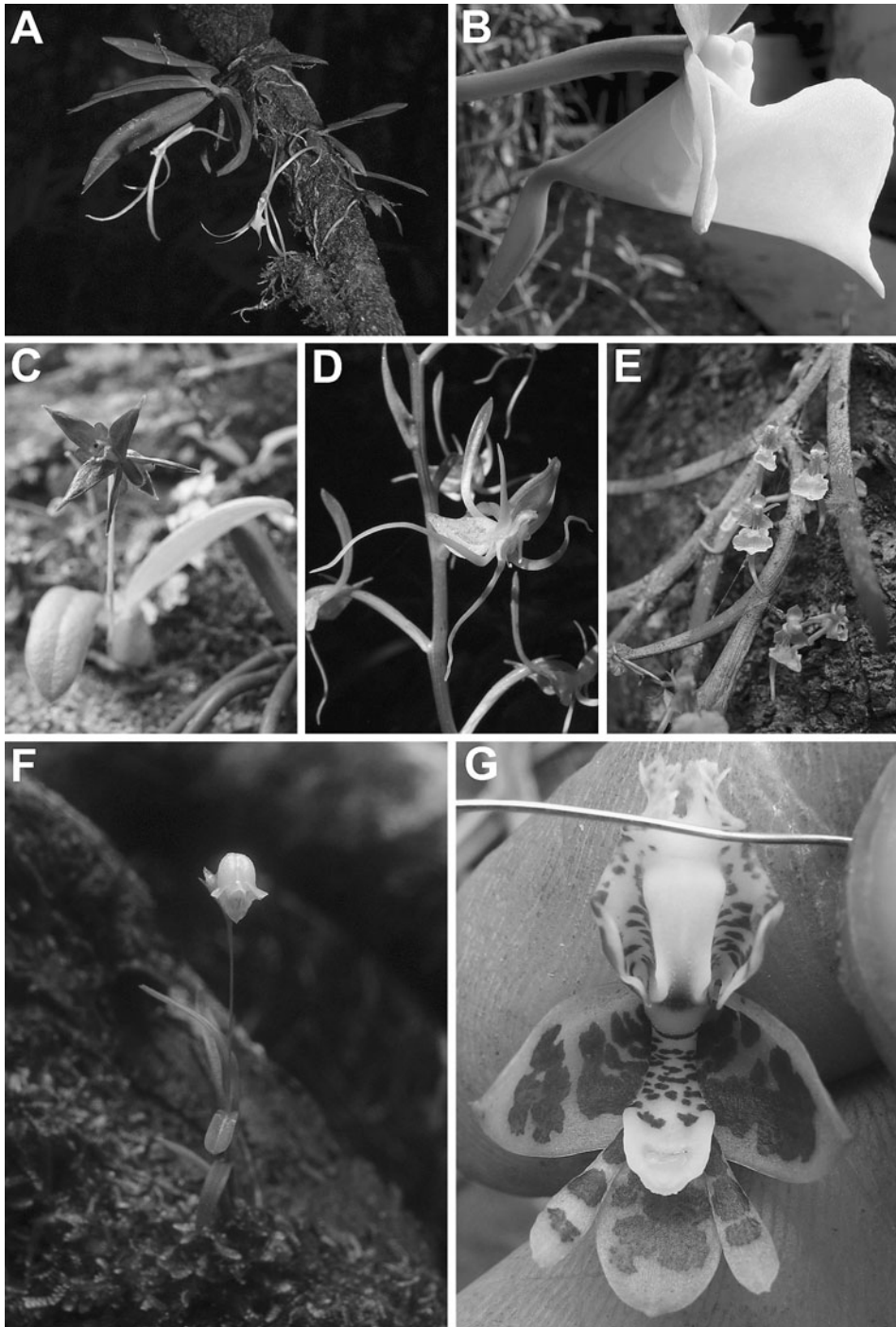


FIG. 2. Rare orchid taxa from Atlantic Central Africa. A, *Angraecum angustum*; B, *Angraecum eichlerianum* var. *curvicalcaratum*; C, *Bulbophyllum vanum*; D, *Habenaria phantasma*; E, *Nephrangis bertauxiana*; F, *Polystachya batkoi*; G, *Polystachya lejolyana*.

(BRLU); *ibid.*, 17 vii 2001, *Stévant, Chamba & Pial* 129 (BRLU); Mbassakok (Mama), 3°19.023'N, 12°42.403'E, 17 vii 2001, *Stévant, Chamba & Pial* 126 (BRLU); *ibid.*, 7 viii 2001, *Stévant, Chamba & Pial* 159 (BRLU); Schouam (Dja reserve), 3°19.323'N, 12°47.445'E, 7 viii 2001, *Stévant, Chamba & Pial* 166 (BRLU); *ibid.*, 7 viii 2001, *Stévant, Chamba & Pial* 167, 172 (BRLU); *ibid.*, 3°19.323'N, 12°47.445'E, 22 viii 2001, *Stévant & Pial* 195 (BRLU); Philippe's hill (Dja reserve), 3°17.165'N, 12°47.478'E, 20 vi 2002, *Stévant & Pial* 387 (BRLU); between Philippe's hill and Schouam (Dja reserve), 3°18.069'N, 12°47.485'E, 21 vi 2002, *Stévant & Pial* 395 (BRLU); Schouam (Dja reserve), 3°19.307'N, 12°47.467'E, 22 vi 2002, *Stévant & Pial* 404 (BRLU); Mbolo's falls (S of Dja reserve), 2°52.093'N, 12°57.334'E, 4 vii 2002, *Stévant & Pial* 420 (BRLU); Bali (S of Dja reserve), 12 km NE Mbolo's falls, 2°59.624'N, 12°59.222'E, 6 vii 2002, *Stévant & Pial* 425 (BRLU); Mbolo's falls (S of Dja reserve), 2°51.938'N, 12°56.670'E, 10 vii 2002, *Stévant & Pial* 456 (BRLU); Schouam (Dja reserve), 3°19.323'N, 12°47.445'E, 17 vii 2002, *Stévant & Pial* 481 (BRLU); *ibid.*, 17 vii 2002, *Stévant & Pial* 484 (BRLU); Mbassakok (between Mama and Bifos), 3°18.946'N, 12°42.615'E, 28 vii 2002, *Stévant & Pial* 544 (BRLU); Nguti, (Edjuigang), 5°35.722'N, 9°44.992'E, 14 iii 2004, *Stévant, Droissart & Simo P.* 2139 (BRLU); Nkolsia (23 km NW of Bipindi), 3°10.5'N, 10°16.5'E, *Villiers s.n.* (YA); Mbam-Minkom, (Nye-Meyong), 3°55.240'N, 11°22.029'E, 11 v 2006, *Droissart* 21 (BRLU); *ibid.*, 3°55.544'N, 11°22.210'E, 13 v 2006, *Droissart* 67 (BRLU); *ibid.*, 3°55.240'N, 11°22.029'E, 15 vii 2006, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 394 (BRLU); Schouam (Dja reserve), 3°19.323'N, 12°47.445'E, 21 vii 2006, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 396 (BRLU); Memel II (N of Bipindi), 3°11.107'N, 10°24.544'E, 22 vii 2006, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 400 (BRLU); Bindem (Messama road), 2°41.701'N, 10°46.623'E, 19 viii 2006, *Droissart & Simo* 271 (BRLU); *ibid.*, 2°42.423'N, 10°48.320'E, 20 viii 2006, *Droissart & Simo* 277 (BRLU); Akom II (Kribi-Ebolowa road), 2°45.007'N, 10°32.435'E, 28 vi 2007, *Droissart* 597 (BRLU); Bindem (Messama road), 2°42.423'N, 10°48.320'E, 16 vii 2007, *Droissart & Simo* 622 (BRLU); Mbassakok (Mama) et Bifos, 2°44.795'N, 10°32.819'E, 3 viii 2007, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 633 (BRLU); Bissombo (Dja reserve), 3°17.953'N, 12°34.505'E, 3 viii 2007, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 634 (BRLU).

EQUATORIAL GUINEA (RIO MUNI). Bata-Bicomo, 28 xii 1993, *Carvalho* 5454 (MA); Akuom (inselberg), 1°50'N, 10°55'E, 13 vi 1999, *Parmentier & Nguema* 336 (BRLU); Bikurga (inselberg), 18 ii 2001, *Stévant* 763 (BRLU); SW Monte Alén Nat. Park, 20 i 2002, *Senterre, Obiang & Ngomo* 2009 (BRLU); Akoak Benguan (inselberg), 1°47'N, 10°56'E, 23 viii 2002, *Deman, Ndong Bokung & Nguema* 11 (BRLU); Bicurga (inselberg), 1°35'N, 10°28'E, ii 2001, *Parmentier* 1681 (BRLU).

Bulbophyllum coriscense Rchb.f., *Otia Bot. Hamburg.*: 118 (1881). – Type: Gabon, Corisco Bay, 1862, *Mann* 1883 (holo K!). **Fig. 1.**

Distribution. Cameroon, Equatorial Guinea (Rio Muni) and Gabon. This taxon is recorded from Cameroon and Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Epiphyte in the understory of coastal primary forest. Altitudinal range from 50 to 600 m. Flowering peaks between September and October.

Note. Until this observation in Monte Alén National Park, the species was only known from the type specimen collected in Gabon in 1862 in Corisco Bay. We have also collected a fertile specimen of this rare species in the Cristal Mountains (Gabon) near Tchimbélé and Andok Foula.

Specimens examined. CAMEROON. Bifa (Kribi-Ebolowa road), 2°41.308'N, 10°16.406'E, 5 x 2007, *Droissart, Stévert & Simo (Yaoundé shadehouse)* 773 (BRLU); Eboundja I (Kribi-Campo road), 2°47.793'N, 9°53.700'E, 30 x 2007, *Droissart, Stévert & Simo (Yaoundé shadehouse)* 793 (BRLU).

EQUATORIAL GUINEA (RIO MUNI). Cataratas (big rainfall), 1°37'N, 10°02'E, 1 vii 1999, *Stévert* 600 (BRLU); Esamalan, 1°34'N, 10°12'E, 3 ix 1999, *Ndong Bokung & Stévert* 50 (BRLU).

Bulbophyllum renkinianum (Laurent) De Wild., Pl. Bequaert. 1: 95 (1921). – Type: Democratic Republic of Congo, Injolo, *Laurent* 1772 (lecto BR!, designated by Vermeulen, 1987). **Fig. 1.**

Distribution. Cameroon, Equatorial Guinea (Rio Muni and Bioko Island), Gabon and Democratic Republic of Congo. This taxon is recorded from Equatorial Guinea (Rio Muni and Bioko Island) for the first time here.

Ecology and habitat. Epiphyte in primary and secondary lowland forest. Altitudinal range from 200 to 650 m. Flowering peaks between March and May.

Note. This species is not recorded for Cameroon in the *World Checklist of Orchidaceae* (Govaerts *et al.*, 2008). However, it has been recently reported by Cribb & Pollard (2004) from South West Province of Cameroon. We have also collected this species in East Province (Dja Wildlife Reserve).

Specimens examined. CAMEROON. Dja river (Somalomo), 3°22.178'N, 12°44.513'E, 14 v 2001, *Stévert, Chamba & Pial* 78 (BRLU); *ibid.*, 3°22.178'N, 12°44.513'E, 14 vii 2001, *Stévert, Chamba & Pial* 142 (BRLU); *ibid.*, 3°22.178'N, 12°44.513'E, 16 iv 2002, *Stévert & Pial* 323 (BRLU); *ibid.*, 15 iv 2003, *Stévert & Pial* 766 (BRLU); Mbassakok (Mama), 3°18.946'N, 12°42.403'E, 12 v 2003, *Stévert & Pial* 779 (BRLU); Mama (Dja reserve), 3°18.946'N, 12°42.403'E, 21 v 2003, *Stévert & Pial* 783 (BRLU); Dja river (Somalomo), 3°22.178'N, 12°44.513'E, 21 v 2003, *Stévert & Pial* 786 (BRLU); Nguti (Banyang Mbo Wildlife Sanctuary), 5°20.590'N, 9°29.824'E, 13 iii 2004, *Stévert, Droissart & Simo P.* 2147 (BRLU); Nguti (Edjuigang), 5°35.165'N, 9°45.085'E, 14 iii 2004, *Stévert, Droissart & Simo P.* 2130 (BRLU); Nguti (Banyang Mbo Wildlife Sanctuary), 5°20.591'N, 9°29.825'E, 15 iii 2004, *Stévert, Droissart & Simo P.* 2156 (BRLU); Dja river (Somalomo), 30 iv 2004, *Stévert & Pial* 1011 (BRLU); Mbassakok (Mama), 3°18.946'N, 12°42.403'E, 15 v 2004, *Stévert & Pial* 1015 (BRLU); Nguti (Banyang Mbo Wildlife Sanctuary), 5°20.234'N, 9°28.411'E, 23 iii 2007, *Droissart, Stévert & Simo (shadehouse)* 456 (BRLU).

EQUATORIAL GUINEA (BIOKO). Bioko Norte, 12 vi 1988, *Carvalho* 3485 (MA). EQUATORIAL GUINEA (RIO MUNI). Bikurga (Timber exploitation), 23 v 2002, *Stévert, Ndong Bokung & Ndong Maye* 1529 (BRLU); *ibid.*, 1°34.966'N, 10°28.252'E, 18 i 2003, *Deman* 265 (BRLU).

Bulbophyllum vanum J.J.Verm., Bull. Jard. Bot. Natl. Belg. 54: 148 (1984). – Type: Gabon, Ogooué-Ivindo. Bélinga, lower slopes of Babel Nord, southern exposition, 15 ix 1978, *Breteler & de Wilde* 642 (holo WAG!). **Figs 1, 2C.**

Distribution. Cameroon, Equatorial Guinea (Rio Muni), Gabon and Democratic Republic of Congo. This taxon is recorded from Cameroon and Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Epiphyte in rainforest rich in *Caesalpinioideae*, or lithophytic on rock outcrops in Rio Muni. Altitudinal range from 150 to 900 m.

Note. A specimen collected in South Province of Cameroon (Droissart 380) is probably this taxon but identification cannot be certain as the specimen is sterile.

Specimens examined. CAMEROON. Nguti (Timber exploitation), 5°34.810'N, 9°45.240'E, 25 x 2004, Droissart, Stévant, Nguembou & Djuikouo (*Yaoundé shadehouse*) 165 (BRLU); *ibid.*, 25 x 2004, Droissart, Stévant, Nguembou & Djuikouo (*Yaoundé shadehouse*) 166 (BRLU); *ibid.*, 31 x 2005, Droissart, Stévant, Nguembou & Djuikouo (*Yaoundé shadehouse*) 339 (BRLU); *ibid.*, 13 viii 2006, Droissart, Stévant & Simo (*Yaoundé shadehouse*) 406 (BRLU).

EQUATORIAL GUINEA (RIO MUNI). Bikurga (inselberg), 1°35'N, 10°28'E, 18 ii 2001, Stévant 777 (BRLU).

Cyrtorchis brownii var. *guillaumetii* Pérez-Vera, *Orchidées Côte D'Ivoire*: 250 (2003).

– Type: Ivory Coast, Between Buyo and Soubré, right bank of Sassandra, 16 xii 1963, Guillaumet 1767 (holo UCJ; iso ABI). **Fig. 1.**

Distribution. Ivory Coast, Nigeria, Cameroon and Equatorial Guinea (Rio Muni and Bioko Island). This taxon is recorded from Nigeria, Cameroon and Equatorial Guinea (Rio Muni and Bioko Island) for the first time here.

Ecology and habitat. Epiphyte in evergreen moist forest on mossy branches, and in saxicolous forests around inselbergs. *Cyrtorchis brownii* var. *guillaumetii* is restricted to submontane forest. Altitudinal range from 900 to 2300 m. Flowering peaks between May and July.

Note. This variety of *Cyrtorchis brownii* was recently described from Ivory Coast (Perez-Vera, 2003). It differs from the type variety by its leaf shape and size, by its larger floral bracts, and by small differences in floral morphology. *Cyrtorchis brownii* (Rolfe) Schltr. is reported by Cribb & Pollard (2004) from South West Province of Cameroon, without stating which variety. The ecology and altitude given by these authors suggest that the specimen they examined (Cheek 8379) also belongs to *Cyrtorchis brownii* var. *guillaumetii*.

Specimens examined. NIGERIA. Boshi extension forest reserve, between pillar 12 and 13, 23 v 1971, van Meer 1765 (WAG).

CAMEROON. Mucton (9 km SW of Bamgem), 2 vi 1982, Villiers 1397 (YA); Kupe-Manengouba (Ebamut), 29 x 2001, Simo P., Zapfack & Salazar 44 (YA); Akom II (Kribi-Ebolowa road), 2°44.795'N, 10°32.819'E, 31 v 2006, Droissart 112 (BRLU); *ibid.*, 2°44.334'N, 10°31.932'E, 3 vi 2006, Droissart 129 (BRLU); *ibid.*, 2°44.976'N, 10°32.089'E, 4 vi 2006, Droissart 135 (BRLU).

EQUATORIAL GUINEA (BIOKO). Lago Moka, 30 i 1947, Guinea 2236 (MA); Bioco (pico Basilé), 3 vii 1986, Carvalho, Casas, Regueiro & Tellería 10166 (MA); Bioko (Malabo-Pico Basilé), 2 vii 1989, Carvalho 4004 (MA). EQUATORIAL GUINEA (RIO MUNI). Monte Alén-Mirador slope, 1°39'N, 10°18'E, 1 viii 1999, Ndong Bokung & Stévant 5 (BRLU); Engong (Monte Alén Nat. Park), 1°37'N, 10°18'E, 25 vi 2000, Ndong Bokung & Stévant 185 (BRLU); *ibid.*, 14 vi 2001, Ndong Bokung & Stévant 273 (BRLU); *ibid.*, 1°37.395'N, 10°17.572'E, 29 v 2002, Stévant 1593 (BRLU).

Genyorchis sanfordii Szlach. & Olszewski, Fl. Cameroun 35: 485 (2001). – Type: Cameroon, Near Dimako, *Sanford* 5256 (holo P!). **Fig. 1.**

Distribution. Cameroon, Equatorial Guinea (Rio Muni), Gabon and Republic of Congo. This taxon is recorded from Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Epiphyte in lowland forest. Altitudinal range from 600 to 750 m. Flowering peaks between August and September.

Specimens examined. CAMEROON. Mindourou near Lomie (AC 5), 6 viii 2001, *Stévant, Chamba & Pial* 151 (BRLU); *ibid.*, 15 viii 2001, *Stévant & Pial* 181 (BRLU); *ibid.*, 22 viii 2001, *Stévant & Pial* 188 (BRLU); *ibid.*, 1 ix 2001, *Stévant & Pial* 201 (BRLU); *ibid.*, 3°24.305'N, 13°55.356'E, 15 viii 2002, *Stévant & Pial* 583 (BRLU); *ibid.*, 3 ix 2002, *Stévant & Pial* 602 (BRLU); *ibid.*, 11 viii 2003, *Stévant & Pial* 844 (BRLU); *ibid.*, 20 ix 2004, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 118 (BRLU); *ibid.*, 3°23.123'N, 13°54.410'E, 20 viii 2007, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 655 (BRLU).

EQUATORIAL GUINEA (RIO MUNI). Akoak Benguan (inselberg), 1°47'N, 10°56'E, 23 viii 2002, *Deman, Ndong Bokung & Nguema* 7 (BRLU); *ibid.*, 24 viii 2002, *Deman, Ndong Bokung & Nguema* 14 (BRLU).

Habenaria phantasma la Croix, Kew Bull. 48: 369 (1993). – Type: Republic of Congo, Niari Region, Col de Bamba (Mayombe), 9 xii 1990, *La Croix & La Croix* 1090 (holo K!). **Figs 1, 2D.**

Distribution. Cameroon and Republic of Congo. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Terrestrial in evergreen forest rich in *Caesalpinioideae*. Several populations of 5–10 individuals growing in mid to deep shade were found in a recently logged area. These populations were observed between 50 and 150 m altitude on the E-SE side of a small hill (summit at 450 m), 30 km from the coast. Flowering occurs in May.

Note. This species was previously known only from the type specimen collected in very deep shade in a forest at Col de Bamba near Fougouti Mountain (SW Republic of Congo) in 1990.

Specimens examined. CAMEROON. Bidou III/Nkolembonda (Kribi-Ebolowa road), 2°47.746'N, 10°01.689'E, 13 v 2007, *Droissart & Simo* 568 (BRLU); *ibid.*, 2°48.136'N, 10°01.544'E, 25 v 2007, *Droissart & Simo* 560 (BRLU); *ibid.*, 2°48.213'N, 10°01.937'E, 26 v 2007, *Droissart & Simo* 561 (BRLU).

Microcoelia bulbocalcarata L.Jonss., Symb. Bot. Upsal. 23: 121 (1981). – Type: Uganda, Kigezi, S Kayonza, Impenetrable Forest, near Ihizo R., xi 1977, *Meyer* 56 (holo K). **Fig. 1.**

Distribution. Cameroon, Principe Island, Gabon, Rwanda, Uganda. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Epiphyte in lowland evergreen forest rich in *Caesalpinioideae*. Altitudinal range from 200 to 700 m.

Specimens examined. CAMEROON. Bifos, 3°14.365'N, 12°35.418'E, 15 xi 2002, *Stévant & Pial* 694 (BRLU); Nguti (Banyang Mbo Wildlife Sanctuary), 5°20.234'N, 9°28.411'E, 13 ix 2004, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 116 (BRLU).

Nephrangis bertauxiana Szlach. & Olszewski, Fl. Cameroun 36: 696 (2001). – Type: Gabon, Bélinga, aéroport, *Hallé* 2847 (holo P). **Figs 1, 2E.**

Distribution. Cameroon and Gabon. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Epiphyte in lowland semi-caducifoliate rainforest. Approximately 15 individuals were found growing on branches with a diameter of 20–35 cm, partially covered with lichens and creeping ferns. The only locality where we observed this species was at 600 m altitude. Flowering occurs in August.

Note. The species was previously known only from the type specimen from Gabon.

Specimens examined. CAMEROON. Bindem (Messama road), 2°41.139'N, 10°47.059'E, 15 viii 2006, *Droissart & Simo* 258 (BRLU).

Orestias micrantha Summerh., Bull. Misc. Inform. Kew 1937: 460 (1937). – Type: Cameroon, Bipindi, *Zenker* 1380 (holo K!). **Fig. 1.**

Distribution. São Tomé Island, Cameroon, Equatorial Guinea (Rio Muni). This taxon is recorded from Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Terrestrial in lowland and submontane moist evergreen forest rich in *Caesalpinioideae*. Altitudinal range from 200 to 1200 m. Flowering peaks between August and September.

Specimens examined. EQUATORIAL GUINEA (RIO MUNI). Monte Alén Nat. Park, 11 iii 2002, *Senterre, Obiang & Esono* 756 (BRLU); *ibid.*, 1°37.371'N, 10°17.678'E, 10 v 2002, *Stévant, Ndong Bokung & Ndong Maye* 1417 (BRLU); *ibid.*, 11 v 2002, *Parmentier & Esono* 2826 (BRLU).

Polystachya batkoi Szlach. & Olszewski, Fl. Cameroun 35: 586 (2001). – Type: Gabon, Monts de Cristal, Riv. Balakabo, 20 ii 1968, *Hallé* 5416 (holo P!). **Figs 1, 2F.**

Distribution. Cameroon, Gabon and Democratic Republic of Congo. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Epiphyte in primary and secondary forest rich in *Caesalpinioideae*. Altitudinal range from 100 to 600 m.

Note. This species has been recorded from the Democratic Republic of Congo by Szlachetko *et al.* (2004) but no specimen has been cited for this country.

Specimens examined. CAMEROON. Bidjouka (Ngovayang forest area), 3°09.158'N, 10°28.146'E, 17 vi 2006, *Droissart* 159 (BRLU); Bifa (Kribi-Ebolowa road), 2°41.308'N, 10°16.406'E, 14 iv 2007, *Droissart & Simo* 391 (BRLU); *ibid.*, 13 ix 2007, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 727 (BRLU).

Polystachya lejolyana Stévant, *Adansonia*, III, 26: 219 (2004). – Type: Gabon, Mont Mbilan, 7 iv 2002, *Stévant & Kombila* 1289 (holo BRLU!). **Fig. 1, 2G.**

Distribution. Cameroon and Gabon. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Epiphyte in lowland moist evergreen forest rich in *Caesalpinioideae*. Altitudinal range from 600 to 650 m. Flowering is sequential: the inflorescence produces only one flower at any one time but for a period of more than three months.

Specimens examined. CAMEROON. Akom II (Kribi-Ebolowa road), 2°44.889'N, 10°32.383'E, 8 xi 2004, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 179 (BRLU); *ibid.*, 9 v 2005, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 263 (BRLU); *ibid.*, 31 x 2005, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 336 (BRLU); *ibid.*, 18 v 2006, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 350 (BRLU); *ibid.*, 16 viii 2007, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 645 (BRLU).

Polystachya moniquetiana Stévant & Geerinck, *Syst. Geogr. Pl.* 73: 281 (2003). – Type: Equatorial Guinea (Rio Muni), Engong (Monte Alén Park Nat.), 11 ix 2001, *Ndong Bokung S. & Stévant* 418 (holo BR!; iso K!). **Fig. 1.**

Distribution. São Tomé Island, Cameroon, Equatorial Guinea (Rio Muni) and Gabon. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Epiphyte in lowland moist evergreen forest rich in *Caesalpinioideae*. Altitudinal range from 650 to 850 m.

Specimens examined. CAMEROON. Akom II (Kribi-Ebolowa road), 2°44.650'N, 10°32.406'E, 13 ix 2004, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 106 (BRLU).

EQUATORIAL GUINEA (RIO MUNI). Between Engong and Lago, 1°34'N, 10°17'E, 19 ix 2001, *Ndong Bokung & Stévant* 425 (BRLU).

Polystachya pyramidalis Lindl., *J. Proc. Linn. Soc., Bot.* 6: 130 (1862). – Type: Nigeria, s.l., *Mann* 522 (holo K!). **Fig. 1.**

Distribution. Nigeria, Cameroon, Equatorial Guinea (Rio Muni) and Gabon. This taxon is recorded from Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Epiphyte in lowland primary and secondary forest. Usually found in wet places on tree trunks. Once found as a terrestrial plant in the

herbaceous fringe of an inselberg. Altitudinal range from 50 to 1300 m. Flowering peaks between September and November.

Specimens examined. CAMEROON. Akom II (Kribi-Ebolowa road), 2°44.650'N, 10°32.406'E, 5 iii 2004, *Stévant & Droissart* 2053 (BRLU); *ibid.*, 2°44.953'N, 10°32.143'E, 6 iii 2004, *Stévant & Droissart* 2094 (BRLU); *ibid.*, 2°44.889'N, 10°32.383'E, 29 xi 2004, *Droissart, Stévant, Nguembou & Djuikouo (shadehouse)* 204 (BRLU); *ibid.*, 7 xi 2005, *Droissart, Stévant, Nguembou & Djuikouo (shadehouse)* 341 (BRLU); Bifa (Kribi-Ebolowa road, 5 km SE of Zingui), 2°39.837'N, 10°16.923'E, 14 vi 2007, *Droissart* 581 (BRLU); Eboundja I (Kribi-Campo road), 2°47.793'N, 9°53.700'E, 26 ix 2007, *Droissart, Stévant & Simo (shadehouse)* 753 (BRLU); Akom II (Kribi-Ebolowa road), 2°45.260'N, 10°32.484'E, 3 x 2007, *Droissart, Stévant & Simo (shadehouse)* 767 (BRLU).

EQUATORIAL GUINEA (RIO MUNI). Akoak Ebanga (inselberg), 31 v 2002, *Parmentier & Esono* 3507 (BRLU); Nsork (Ngong Mokomo), 1°14'N, 11°02'E, 30 i 2003, *Ndong Bokung & Stévant* 526 (BRLU).

Polystachya saccata (Finet) Rolfe, *Orchid Rev.* 26: 107 (1918). – Type: Guinea, Pita, Pobéguin 2304 bis (holo P). **Fig. 1.**

Distribution. Guinea-Bissau, Guinea, Liberia, Nigeria, Cameroon, Gabon, Democratic Republic of Congo and Zambia. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Epiphyte in lowland evergreen forest rich in *Caesalpinioideae*. Altitudinal range from 250 to 350 m. Flowering period occurs in March.

Specimens examined. CAMEROON. Nguti (Banyang Mbo Wildlife Sanctuary), 5°21.390'N, 9°34.475'E, 16 iii 2004, *Stévant, Droissart & Simo P.* 2162 (BRLU); *ibid.*, 5°21.295'N, 9°33.693'E, 7 iii 2005, *Droissart, Stévant, Nguembou & Djuikouo (Yaoundé shadehouse)* 225 (BRLU); *ibid.*, 4 iii 2007, *Droissart, Stévant & Simo (Yaoundé shadehouse)* 438 (BRLU).

Polystachya testuana Summerh., *Kew Bull.* 14: 136 (1960). – Type: Gabon, Upper Ngounyé River, Etoughi, E of Kembélé, xi 1925, *Le testu* 5706 (holo P!). **Fig. 1.**

Distribution. Equatorial Guinea (Rio Muni) and Gabon. This taxon is recorded from Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Epiphyte in lowland primary forest. Also collected on roadsides. This species was collected at 500 m altitude.

Specimens examined. EQUATORIAL GUINEA (RIO MUNI). Mitemele (Schimmer site), 1°09.445'N, 10°12.114'E, 17 vii 2001, *Ndong Bokung & Stévant* 300 (BRLU); *ibid.*, 26 v 2002, *Ndong Bokung & Stévant* 462 (BRLU).

Rangaeris trilobata Summerh., *Bull. Misc. Inform. Kew* 1936: 229 (1936). – Type: Nigeria, Eket district, 1912–13, *Talbot* 3299 (holo BM!; iso FHI, K!). **Fig. 1.**

Distribution. Nigeria, São Tomé Island, Cameroon, Equatorial Guinea (Rio Muni) and Gabon. This taxon is recorded from Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Epiphyte in lowland and submontane forest. Also observed in herbaceous, shrubby and forest fringes of inselbergs. Altitudinal range from 100 to 1200 m. Flowering peaks in May.

Note. May also be present on Príncipe Island (Gulf of Guinea) but only sterile specimens have been collected on this island.

Specimens examined. EQUATORIAL GUINEA (RIO MUNI). Sine loc., inselberg, 21 vi 1999, *Parmentier & Nguema* 1128 (BRLU); Mirador (inselberg), 1°40'N, 10°17'E, 1 vii 1999, *Stévant* 589 (BRLU); *ibid.*, 5 ii 2001, *Stévant* 755 (BRLU); Monte Alén Nat. Park, 1°35'N, 10°28'E, 11 v 2002, *Parmentier & Esono* 2794 (BRLU); Mungum (inselberg), 1°19.072'N, 10°48.936'E, 24 v 2002, *Stévant, Ndong Bokung & Ndong Maye* 1537 (BRLU); Akoak Ebanga (inselberg), 1°04'N, 11°12'E, 31 v 2002, *Parmentier & Esono* 3521 (BRLU).

Tridactyle laurentii (De Wild.) Schltr. var. *laurentii*, Beih. Bot. Centralbl. 36(2): 145 (1918). – Type: Democratic Republic of Congo, Eala, 1903, *Laurent* 28 (holo BR!; iso K!). **Fig. 1.**

Distribution. Cameroon, Gabon and Democratic Republic of Congo. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. Epiphyte in lowland evergreen forest rich in *Caesalpinioideae*. We found several groups of this taxon on large horizontal branches of an old *Bikinia letestui* (Pellegr.) Wieringa (*Caesalpinioideae*) in a recently logged area. Altitudinal range from 0 to 100 m.

Note. This variety can be differentiated from *Tridactyle laurentii* var. *kabareensis* Geerinck (1990) mainly by the leaf shape and size. Leaves of the type variety are shorter (2–4 cm vs. 5–8.5 cm), narrower (1–3 mm vs. 15–20 mm) and linear (vs. oblong to narrowly elliptic). However, the leaves of the specimens reported here are even shorter than usual for the type variety (< 1 cm vs. 2–4 cm).

Specimens examined. CAMEROON. Bipindi (Memel II village), 3°10.820'N, 10°24.059'E, 1 iii 2004, *Stévant & Droissart* 2018 (BRLU); Bifa (Kribi-Ebolowa road), 2°43.675'N, 10°13.974'E, 3 x 2007, *Droissart, Stévant & Simo* (*Yaoundé shadehouse*) 769 (BRLU).

Tridactyle muriculata (Rendle) Schltr., Beih. Bot. Centralbl. 36(2): 146 (1918). – Type: Nigeria, Oban, 1911, *Talbot* 904 (holo K!; iso BM!). **Fig. 1.**

Distribution. Nigeria and Cameroon. This taxon is recorded from Cameroon for the first time here.

Ecology and habitat. The only specimen we observed was an epiphyte on an isolated tree in a village at 700 m altitude.

Note. The species was previously known only from the type specimen collected in South Nigeria in 1911.

Specimens examined. CAMEROON. Komba Tida road, 5°37.238'N, 9°46.664'E, 4 vii 2005, Droissart, Stévant, Nguembou & Djuikouo (*Yaoundé shadehouse*) 303 (BRLU).

Vanilla chalogii Finet, Bull. Soc. Bot. France 56: 102 (1909). – Type: Gabon, Environs de Libreville, *Chalot* 4027 (holo P!). **Fig. 1.**

Distribution. Equatorial Guinea (Rio Muni) and Gabon. This taxon is recorded from Equatorial Guinea (Rio Muni) for the first time here.

Ecology and habitat. Terrestrial and epiphytic in lowland moist forest. Also found in the *Clappertonia polyandra* Bech. shrubby fringe of inselbergs. Altitudinal range from 400 to 1200 m.

Note. The species was previously known only from the type specimen. The three specimens cited from Rio Muni are sterile but the unusual leaf shape, elongated and linear, is very characteristic. Moreover, the type locality is very close. We also collected fertile specimens in Gabon (Mont Mbilan, *Stévant* 1658).

Specimens examined. EQUATORIAL GUINEA (RIO MUNI). Bata-Senge, 27 iii 1997, *Carvalho* 6262 (MA); N Monte Alén Nat. Park, 14 xi 2002, *Senterre & Ngomo* 3415 (BRLU); Bikurga (inselberg), 1°35'N, 10°28'E, ii 2001, *Stévant* 759 (BRLU).

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