



A new species of *Aframomum* (Zingiberaceae) from Central Africa

JEAN-BAPTISTE DHETCHUVI¹, ALEXANDRA H. WORTLEY² & DAVID J. HARRIS^{2,3}

¹Institut Supérieur Pédagogique, B.P. 340 Bunia, République Démocratique du Congo

²Royal Botanic Garden Edinburgh, 20a Inverleith Row, Edinburgh EH3 5LR, UK

³E-mail d.harris@rbge.org.uk

Abstract

The new species, *Aframomum sericeum*, is described and illustrated for the first time. It differs from the similar *A. sulcatum* by its dense covering of hairs on the abaxial leaf surface.

Introduction

Aframomum Schumann (1904) comprises an estimated 80 species of giant herbs endemic to Africa, where it is the largest genus of Zingiberaceae and is in many places a key ecological component of the forest understory. The genus was described by K. Schumann (1904) to accommodate the African species of *Amomum*. It is monophyletic (Harris *et al.* 2000) and is thought to have diversified during the late Oligocene to the Miocene (Auvray *et al.* 2010). The taxonomy of *Aframomum* is notoriously difficult (Lock & Hall 1975) and the genus is currently undergoing revision.

The diversity of *Aframomum* species is centred on Central Africa with several new species described recently (Dhetchuvi 1993, 1995, Dhetchuvi & Fischer 2006). The new species described in this paper was independently discovered and recognised as new by the first author in Gabon and by the corresponding author in the Central African Republic (Harris 2002). Subsequent comparison of specimens showed that the two discoveries were conspecific. Comparison with existing herbarium specimens revealed several more specimens, with an overall distribution including Cameroon, Equatorial Guinea and the Republic of Congo.

Taxonomy

Aframomum sericeum Dhetchuvi & D.J.Harris, *sp. nov.* (Fig. 1)

Aframomum sulcatum similis sed pagina abaxiali foliorum dense tomentosa differt.

Aframomum sp. D in Harris (2002: 247).

Type:—GABON. Mpassa Forest Reserve, Makokou, 0° 34' N, 12° 52' E, 18 November 1994, *M.M. Dhetchuvi* 1725 (holotype BR!, isotype WAG!).

Clump-forming herbs to 6 m. Rhizomes to 15 mm in diameter, reddish-brown when dry. Stems often swollen up to 4 cm in diameter at base. Leaf sheaths with rounded and branched transverse and longitudinal ridges, glabrous, occasionally ciliate at edges. Ligules rounded, to 9 mm, bilobed towards tip, glabrous. Pseudopetioles to 10 mm, glabrous. Leaves narrowly elliptic, to 55 × 11 cm, base slightly asymmetric, apex caudate, acumen ca. 10 mm, margin glabrous, glabrous adaxially, tomentose abaxially, with erect, swollen-based trichomes to 0.5 mm long on laminae, midribs tomentose, secondary veins usually obscured by strands

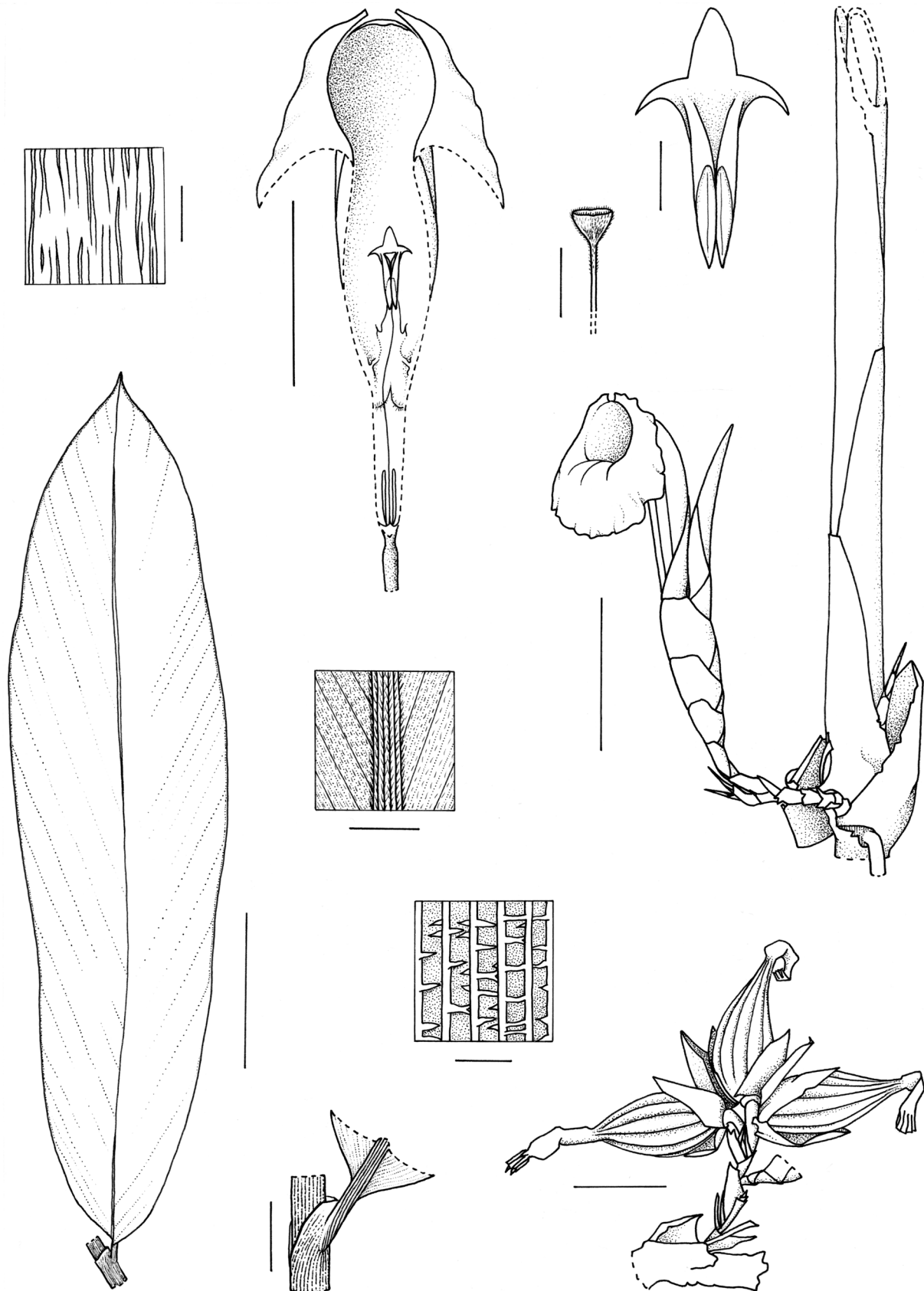


FIGURE 1. *Aframomum sericeum*. A. habit and inflorescence, scale bar 5 cm; B, leaf sheath and ligule, scale bar 1 cm; C. detail of leaf sheath ornamentation, scale bar 2 mm; D, leaf, scale bar 5 cm; E, adaxial lamina showing free hypodermal sclerenchyma, scale bar 1 mm; F, abaxial lamina and midrib, scale bar 5 mm; G, detail of internal floral structures, scale bar 4 cm; H, anther, scale bar 5 mm; I, stigma, scale bar 5 mm; J, infructescence, scale bar 3 cm. A, G–I from *Harris* 3266, B–F from *Harris* 5614, J from *Westphal* 9754. Drawing by Claire Banks.

of free hypodermal sclerenchyma adaxially when dry, clearly visible abaxially. Inflorescences arising at or close to the leaf bases, occasionally on rhizomes to 40 cm away, usually branched, each branch bearing ca. 2 flowers, peduncles to 20 cm, borne at or below ground level for most of their length. Flowers trumpet-shaped, delicate. Calyx tubular, greenish to purple. Corolla tubular, dark reddish purple, dorsal petal to 7 cm, lateral petals ca. 4 cm. Labellum pale purple, to 7 × 5 cm, forming a tube with dorsal petal. Stamen included, anther crest to 5 mm, horns to 5 mm, sometimes forked at tips, anther thecae dehiscing for lower three-quarters of their length. Nectaries paired, free for most of their length. Fruits ellipsoid, to 6.0 × 3.5 cm, distinctly ridged, greenish, ripening bright red, persistent calyx forming beak to 3 cm long, persistent bracts at base, pulp sweet and acidic to taste. Seeds ellipsoid, to 5 × 3 mm, dark brown, smooth.

Etymology:—Named for the dense covering of hairs on the leaves abaxially.

Distribution:—Central and eastern Cameroon, central and northern Gabon, southern Central African Republic, northern Republic of Congo, on cleared land, around villages, fields and roads, occasionally in *Gilbertiodendron dewevrei* forests, at 350–620 m elevation.

Additional specimens examined:—CAMEROON. Mbalmayo, 3° 31' N, 11° 30' E, 24 March 1981, *W. Meijer 15218* (BR!, MO!, P!, WAG!); Lomié, 3° 10' N, 13° 38' E, 590 m, 18 November 1965, *A.J.M. Leeuwenberg 6785* (BR!, P!, WAG!); River Ja, 3° 01' N, 12° 21' E, *G.L. Bates s.n.* (BM!); Doumé, 4° 14' N, 13° 26' E, 11 September 1960, *F.J. Breteler 225* (P!, WAG!); 48 km S of Yaoundé, road to Mbalmayo, 3° 25' N, 11° 30' E, 22 November 1977, *E. Westphal & J.M.C. Westphal-Stevens 9754* (WAG!); 15 km S of Mbalmayo, 3° 25' N, 11° 30' E, 25 November 1977, *E. Westphal & J.M.C. Westphal-Stevens 9760* (WAG!); Yaoundé, cultivated, 17 December 1976, *E. Westphal & J.M.C. Westphal-Stevens 9370* (P!, WAG!); East of Yokadouma, road to Central African Republic, 3° 25' N, 15° 10' E, 17 March 1981, *W. Meijer 15133* (MO!, WAG!); Nkolembembe, 65 km SE Akonolinga, 3° 15' N, 12° 32' E, 5 June 1981, *J.N. Asonganyi 188* (P!); 18 km from Yaoundé to Mbalmayo, 3° 41' N, 11° 31' E, 10 April 1973, *R. Letouzey 12247* (P!, YA!). GABON: Lopé, 0° 10' S, 11° 35' E, 8 November 1993, *M.M. Dhetchuvi 1144* (BR!, BRLU!), *1146* (BRLU!), *1148* (BR!); 9 November 1993, *M.M. Dhetchuvi 1161* (BRLU!); 12 November 1993, *M.M. Dhetchuvi 1212* (BR!, BRLU!); Lopé, 16 July 1997, *J. Lejoly 93/141* (BRLU!); Makandé, 0° 41' S, 11° 54' E, 17 November 1993, *M.M. Dhetchuvi 1260* (BRLU!); 11 November 1994, *M.M. Dhetchuvi 1715A* (C!); Lopé–Okanda Reserve, ca. 38 km WSW of Booué, 0° 15' S, 11° 35' E, September 1984, *M.E. Rogers 151* (E!), *152* (E!); Makokou, 0° 34' N, 12° 52' E, 500 m, 15 May 1985, *L. Dorr & Barnett 4277* (K!, P!, WAG!); Belinga, 1° 08' N, 13° 12' E, May 1982, *C. Tutin 5* (K!); Ogooué–Ivindo, 7 km on road from Makokou to Okondja, 0° 32' N, 12° 55' E, 550 m, 23 December 2001, *J.J. Wieringa, C.C.H. Jongkind, J.G. Schoonhoven, & M. Mbombet 3527* (WAG!). REPUBLIC OF CONGO: 55 km SW of Souanké, 1° 56' N, 13° 54' E, 25 November 1991, *D.J. Harris 3266* (E!); 52 km SW Souanké, road to Garabinzam, 1° 56' N, 13° 54' E, 9 November 1991, *D.W. Thomas 8797* (MO!); Souanké Airport, 2° 00' N, 14° 10' E, 2 December 1991, *D.J. Harris 3280* (E!). CENTRAL AFRICAN REPUBLIC: Bayanga, 2° 55' N, 16° 12' E, 17 November 1997, *D.J. Harris 5633* (E!), *5634* (E!), *5635* (E!); 2 December 1997, *D.J. Harris 5653* (E!); Babongo Stream, confluence with Sangha River, 2° 59' N, 16° 13' E, 10 November 1997, *D.J. Harris 5614* (E!); Ndakan, 2° 21' N, 16° 09' E, 350 m, 9 October 1988, *D.J. Harris 1366* (MO!); 2° 23' N, 16° 09' E, 350 m, 20 October 1988, *D.J. Harris 1444* (MO!); 12 km S of Lidjombo, 2° 34' N, 16° 05' E, 350 m, 28 March 1994, *D.J. Harris 4851* (E!). EQUATORIAL GUINEA: Asoc Inselberg, 15 km from Mongomo, 1° 27' N, 11° 20' E, 620 m, 5 June 2002, *I. Parmentier & Esono 3725* (BRLU!), *3688* (BRLU!).

Aframomum sericeum may be recognised in the field by its large leaves with erect hairs on the lamina and midrib below, dark red corolla and large, ridged fruits. In the herbarium additional useful characters for identification include free strands of hypodermal sclerenchyma cells (Lock & Hall 1975) which can be observed using a ×10 lens on air-dried leaves, and transverse ridging of the leaf sheath.

There is some variability in vegetative characters within *A. sericeum*: occasionally the transverse ridges on the leaf sheath are absent and some specimens (e.g. *Tutin 5* and *Rogers 151*), have almost sessile young leaves. The midrib can also become glabrous towards the base of the leaf with age.

Acknowledgements

We would like to thank the Royal Botanic Garden Edinburgh (Sibbald) Trust for funding part of this study. Claire Banks is acknowledged for providing the excellent illustration of our new species.

References

- Auvray, G., Harris, D.J., Richardson, J.E., Newman, M.F. & Särkinen, T.E. (2010) Phylogeny and dating of *Aframomum* (Zingiberaceae). In: Barfod, A., Davis, J.I., Petersen, G. & Seberg, O. (eds.), *Diversity, Phylogeny, and Evolution in the Monocotyledons*. Aarhus University Press, Aarhus, pp. 287–305.
- Dhetchuvi, J.-B. & Fischer, E. (2006) A new species of *Aframomum* (Zingiberaceae) from Nyungwe National Park/Rwanda. *Systematics and Geography of Plants* 76: 241–254.
- Dhetchuvi, M.M. (1993) Observations sur les Zingiberaceae de l’Afrique Centrale. *Bulletin du Jardin Botanique National de Belgique* 62: 181–186.
- Dhetchuvi, M.M. (1995) Observations sur les Zingiberaceae de l’Afrique Centrale. *Bulletin du Jardin Botanique National de Belgique* 64: 197–200.
- Harris, D.J. (2002) *The vascular plants of the Dzanga-Sangha Reserve, Central African Republic*. National Botanic Garden (Belgium), Meise, 274 pp.
- Harris, D.J., Poulsen, A.D., Frimodt-Møller, C., Preston, J. & Cronk, Q.C.B. (2000) Rapid radiation in *Aframomum* (Zingiberaceae): Evidence from nuclear ribosomal DNA internal transcribed spacer (ITS) sequences. *Edinburgh Journal of Botany* 57: 377–395.
- Lock, J.M. & Hall, J.B. (1973) Three new species of *Aframomum* K.Schum. (Zingiberaceae) from Ghana, with notes on spherical geocarpic fruits in the genus. *Kew Bulletin* 28: 441–449.
- Lock, J.M. & Hall, J.B. (1975) Taxonomic studies in the genus *Aframomum* (Zingiberaceae). *Boissiera* 24: 225–231.
- Schumann, K. (1904) Zingiberaceae. In: Engler, A. (ed.), *Das Pflanzenreich*. Wilhelm Engelmann, Leipzig, pp. 201–221.