

Hieracium maccoshiana, a new Scottish hawkweed related to *H. dovrense* (Section *Alpestris*, Asteraceae)

Timothy C. G. Rich

Department of Biodiversity & Systematic Biology, National Museum Wales, Cardiff CF10 3NP, UK

Corresponding author: Timothy C. G. Rich (tim.rich@museumwales.ac.uk)

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Abstract

A new species of hawkweed *Hieracium maccoshiana* T.C.G.Rich **sp. nov.** is described. It is related to the Norwegian *H. dovrense* Fr., but differs in the shape and tothing of the stem leaves and in having glabrous-tipped ligules. It is endemic to the county of Sutherland, Scotland where it has been recorded from four sites. A lectotype of *H. dovrense* is designated.

Keywords

Asteraceae, *dovrense*, Endangered, *Hieracium*, lectotype, *maccoshiana*, new species, Norway, Scotland, Section *Alpestris*

Introduction

In 1897, E. S. Marshall and W. A. Shoolbred collected a hawkweed from rocks on the north side of Ben Loyal, Sutherland, Scotland, which they attributed to the Norwegian species, *H. dovrense* Fr. (Marshall and Shoolbred 1898). This identification has been followed in all subsequent accounts of *Hieracium* in Britain (Linton 1905; Pugsley 1948; Sell and West 1965, 1968; Sell and Murrell 2006). Four more sites were discovered in Sutherland at Creag na h-Uidhe, Foinaven and Rhiconich (two sites) in the 1960s and 1970s by A. G. Kenneth and A. McG. Stirling, and the plants were again attributed to *H. dovrense*.

Hieracium dovrense Fr. was described by E. M. Fries in 1848 from several alpine localities in Norway, particularly in the Dovre area (Fries 1848). Fries stated that he had seen Scottish specimens of '*H. amplexicaule*' (presumably in its broad sense), which looked like his *H. dovrense*, but the material he saw has not been traced.

In 2005, D. McCosh suggested that I should visit one of the Rhiconich sites to see if *H. dovrense* was still present, and further visits were carried out in 2010 as part of a revision of *Hieracium* section *Alpestris* (Fr.) Arv.-Touv. in Britain. During this work I compared the Sutherland plants against a specimen in BM cited in Sell and West (1965) as a 'provisional lectotype' and other material. I came to the conclusion that they were not conspecific, and differed consistently in leaf shape and toothing and in hairiness of the ligule tips. The Sutherland plants also do not match the descriptions of any of the other subspecies of Zahn's (1921) general species *H. dovrense* or other Scandinavian material I have seen.

Methods

Material from Sutherland and of Norwegian *H. dovrense* was studied in the field in 2010 (see Supplementary file 1; *Hieracium dovrense* survey 2010; vouchers in NMW) and in the following herbaria in detail: MANCH, NMW, S and UPS. In addition, material from BM, CGE and E was also consulted. A description was drawn up following the format of Sell and Murrell (2006) for comparison with other British species.

The number of leaves on the stem is an important character in section *Alpestris*, but different taxonomists do not adopt a consistent method of counting leaves. The problem arises as leaves on the stem with inflorescences in their axils can also be termed bracts, which may or may not be counted. Furthermore, although there is a gradual transition from stems leaves to bracts, the smallest bracts at the top of the main stem may differ markedly in shape from the lower leaves and may be included or excluded. Here, all leaves and inflorescence bracts on the main stem are counted.

Taxonomic treatment

Lectotype of *H. dovrense* Fr.

Sell and West (1965: 93) discussed the complicated typification of *H. dovrense* in detail. They provisionally designated a lectotype from material in BM labelled 'Norveg. centr. a Dovre in Finmarkiarn copiose, M. N. Blytt', which was sent out as *H. cydonaeifolium* Vill. in Fries's Set 11 no. 12 but noted that the specimen was badly damaged and that a fresh designation should be made if better quality original material were found (NOTE: Under Article 7.11 of the ICBN (McNeill et al. 2006) typifications only have priority if "definitely accepted as such by the typifying author"; usage of the

word 'provisional' in this context means that the typification of Sell & Murrell (1965: 93) can be superseded). Courtesy of Thomas Karlsson, an undamaged specimen from this set has now been found in S (accession number S09.31085, <http://andor.nrm.se/kryptos/fbo/kryptobase/large/S09-031001/S09-31085.jpg>) and is hereby designated as the lectotype of *H. dovrense* Fr.

***Hieracium maccoshiana* T.C.G.Rich, sp. nov.**

urn:lsid:ipni.org:names:77111568-1

http://species-id.net/wiki/Hieracium_maccoshiana

Figs 1, 2 D–N

Rosula basalia sub anthesi fere absenti. Foliis caulinis 4–8 ellipticis dentibus magnis. Pedunculis pilis multis stellatis pilis eglandulosis simplicibus multis pilisque glandulosis paucis. Bracteis involucrialibus 2–2.5 mm latitudinis pilis stellatis paucis pilis eglandulosis simplicibus multis pilisque glandulosis multis. Ligulis apice glabris. Styli obscuris.

Holotype: **Scotland.** Sutherland: by small stream, Allt na Cuile, Rhiconich, 58.4470, -4.9300, 150 m alt., 26 July 2010, M. Jannink (NMW, accession number V.2010.1.213).

Description. Stem to 50 cm, pale green, slightly purple-tinted below, slender to fairly robust; stellate hairs sparse and mainly above; simple eglandular hairs long, pale, sparse and glabrescent to dense (especially below); glandular hairs very small, occasional; sparsely and minutely puberulous. Basal leaves absent or withering before or up to flowering time or rarely persistent, few. Lamina elliptical or subrotund; apex obtuse-mucronulate; base attenuate; margins remotely denticulate to coarsely dentate; with a few, pale, medium simple eglandular hairs above and below or nearly glabrous above. Petioles winged and broadened at base, with numerous medium to long, pale simple eglandular hairs. Stem leaves and inflorescence bracts (3–)4–8, 2–10 × 0.8–3.5 cm, gradually decreasing in size upwards, pale green on upper surface, paler beneath. Lamina of the lower leaves elliptical; apex obtuse-mucronulate to acute; base attenuate; margins denticulate to sharply and irregularly dentate with ascending teeth; petiole winged, semiamplexicaul. Lamina of the median leaves elliptical; apex obtuse-mucronulate to acute; base rounded or abruptly contracted, sessile, semiamplexicaul; margins denticulate to sharply and irregularly dentate with large or small, ascending, mammiform teeth. Lamina of the upper leaves lanceolate; apex acute to acuminate; base cuneate, sessile, semiamplexicaul, margins denticulate to shallowly dentate. All stem leaves with stellate hairs few to sparse on both surfaces; simple eglandular hairs few to numerous below and nearly glabrous above, pale, medium. Inflorescence usually with 2–9(–12) capitula, rather compactly cymose. Peduncles 1–5 cm (accladium 0.3–2 cm), suberect, slender; stellate hairs sparse to dense; simple eglandular hairs few to numerous, short to medium, dark-based; glandular hairs few, very short, black. Capitula 20–30(–45) mm in diameter, subtruncate at base. Involucrial bracts 9–11 × (1.7–)2.0–2.5 mm (the outermost from *c.* 5 mm long), all linear-lanceolate, blackish-green; apex obtuse; stellate hairs

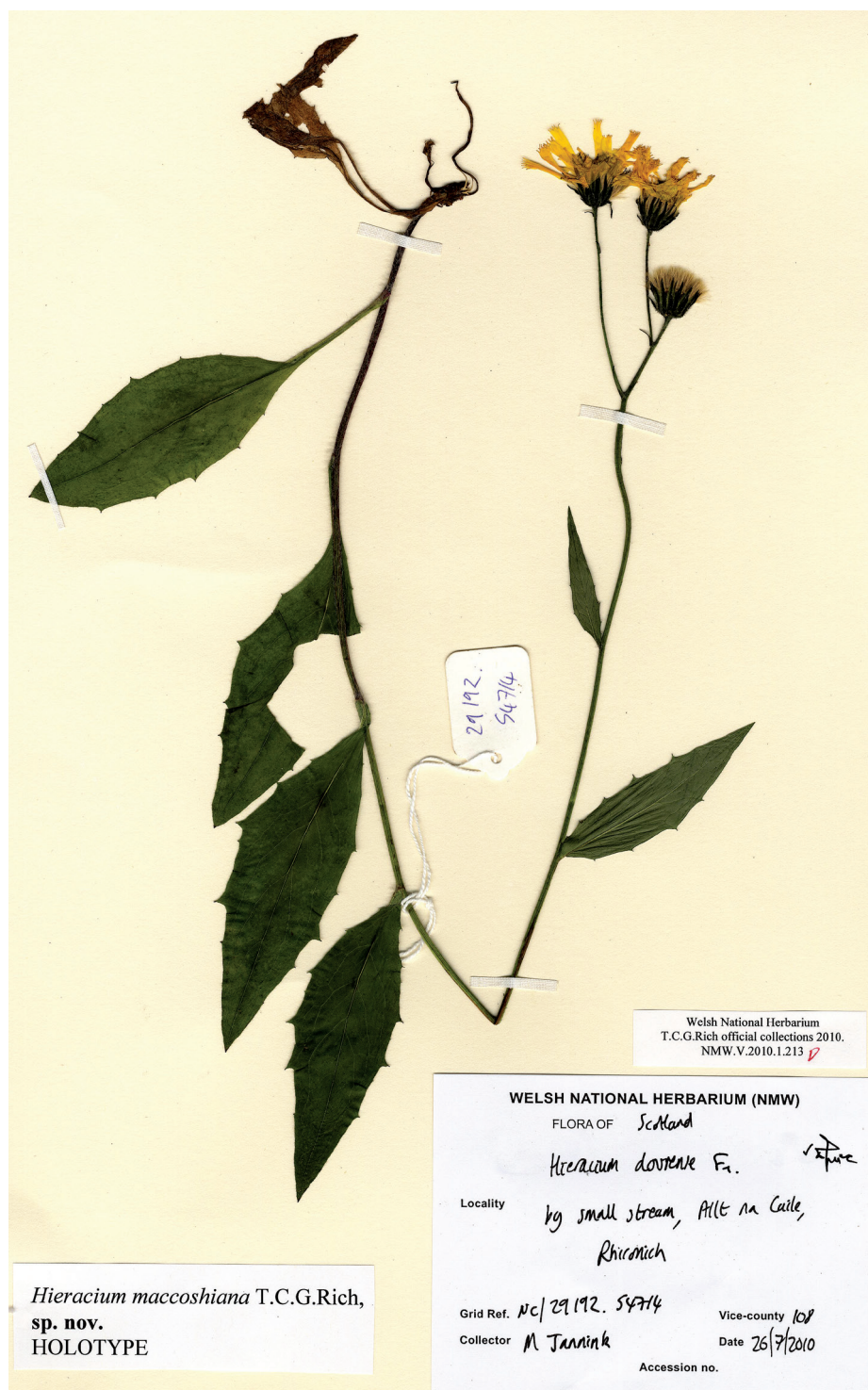


Figure 1. Holotype of *Hieracium maccoshiana* (NMW).

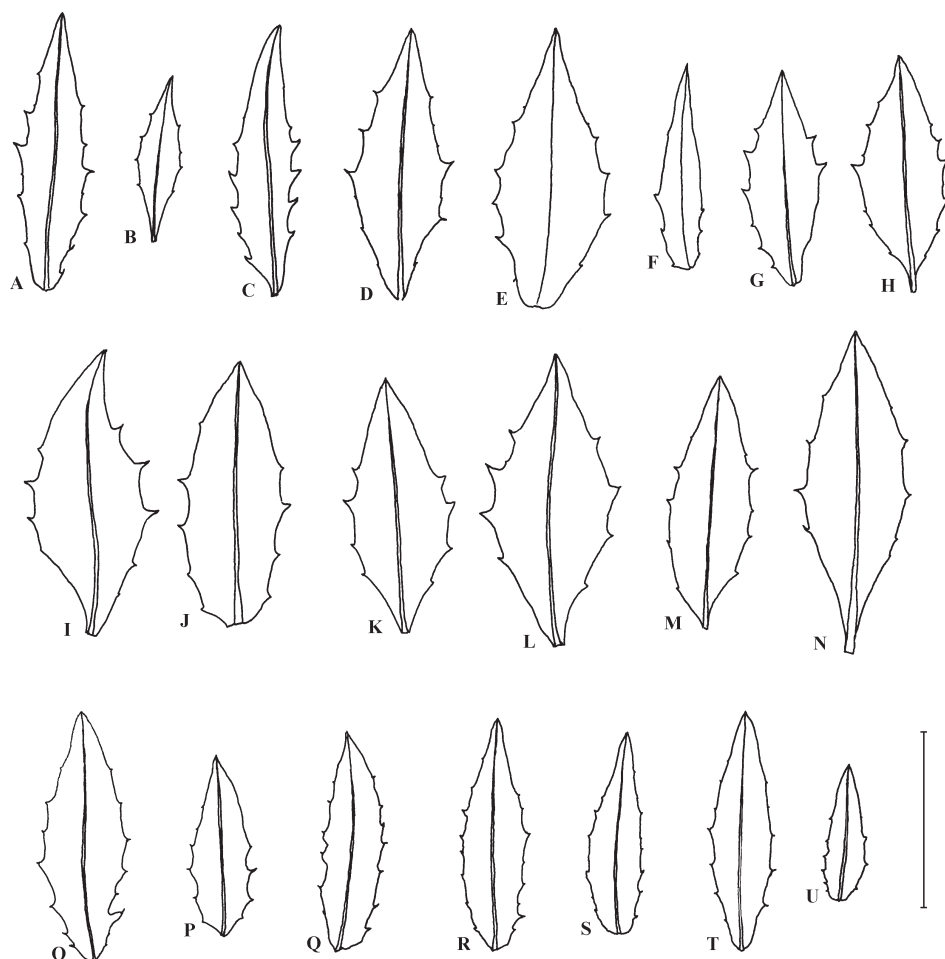


Figure 2. Middle stem leaves. **A–C** possible *H. maccoshiana*. **A–B** Ben Loyal (NMW 28.131.5185). **C** Ben Loyal (BM). **D–N** *H. maccoshiana*. **D–F** Rhiconich gorge (NMW V.2005.1.159). **G–H** Foinaven (CGE). **I–L** Rhiconich (CGE). **M–N** Craig na H’Uidhe (CGE). **O–U** *H. dovrense*, Drivstua, Dovrefj, Norway (S). **O–Q** S09-16213. **R** S09-16217. **S** S09-16224. **T–U** S09-16222. Scale bar 5 cm.

sparse, often with a tuft at the apex; simple eglandular hairs many, short to medium, dark-based; glandular hairs many, very short, black. Ligules yellow, glabrous-tipped. Styles discoloured. Achenes 4.0–4.5 mm, blackish-brown. Margins of receptacle pits long-dentate. Chromosome number $2n = 36$ (cf. Sell and Murrell 2006, as *H. dovrense*).

Distribution. Endemic to Sutherland, Scotland, where it is known from four sites in Sutherland: in a gorge and on a burn side near Rhiconich; on a burn side in Coire Dùail, Foinaven; and on rocks at Creag na h-Uidhe (Fig. 3). The status of plants from Ben Loyal remains to be clarified when it has been re-found in the field.

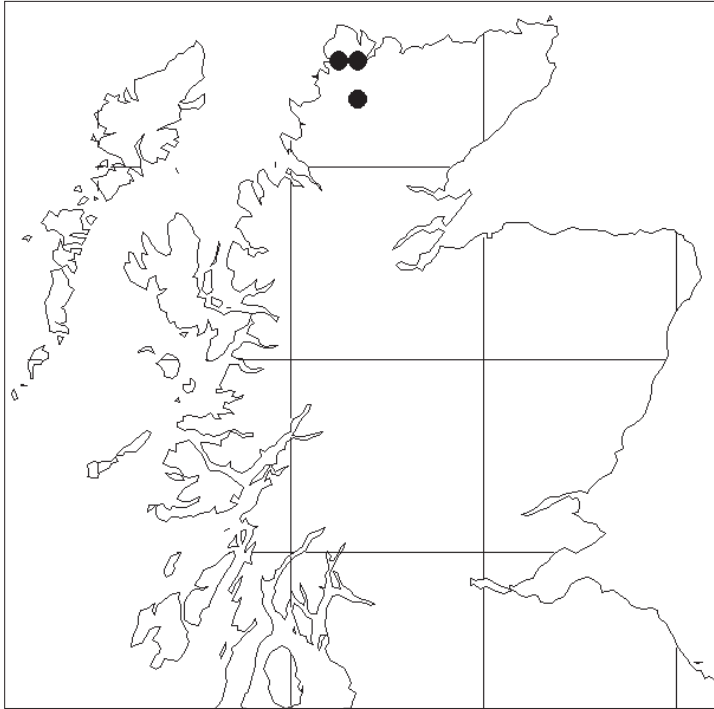


Figure 3. Distribution of *Hieracium maccoshiana* in Scotland.

Ecology. Mountain cliff ledges and rocks, in rocky ravines and on riversides. It mostly occurs out of the reach of large herbivores such as deer or sheep as, like most leafy hawkweeds, is likely to be selectively eaten. The altitudes range from 130–414 m. It flowers from late July to August, and is probably apomictic. Some plants may produce sparse pollen and others none (Thomas et al. in press).

Etymology. The epithet honours David J. McCosh for his work in mapping British and Irish *Hieracium* taxa over the last 30 years, and for mentoring me. The spelling ‘*maccoshiana*’ follows recommendation 60C.5.a of the International Code of Botanical Nomenclature (Vienna Code McNeil et al. 2006).

Conservation status. Surveys in 2010 revealed about 60 plants in four sites (see supplementary file 1: *Hieracium dovrense* survey 2010). It is thus best considered at IUCN (2001) threat status ‘Endangered’ due to the small population size.

Discussion

Hieracium maccoshiana is characterized by the absence of a basal rosette at flowering, the relatively few (4–8), elliptical stem leaves with large teeth, the relatively hairy peduncles, the relatively broad (2–2.5 mm) involucre bracts with few stellate hairs but many simple and glandular hairs, the glabrous ligule tips and the discoloured styles.

Hieracium maccoshiana is quite variable in hairiness and in size, with very small plants growing on dry, exposed rocks, and larger plants in sheltered situations. The basal rosettes have usually withered by flowering time but may persist when sheltered in tall vegetation. Material from Rhiconich cultivated by J. R. N. Mills became much more robust with more stem leaves with larger teeth, and developed many branches down the stem with more capitula (MANCH).

Plants from Ben Loyal tend to have slightly narrower, elliptical leaves (Fig. 2, A–C) and look more similar to Norwegian *H. dovreense* than plants from the other populations but have glabrous ligule tips. I have provisionally grouped them with *H. maccoshiana* but have been unable to refind them in the field yet to carry out more detailed studies.

No British species is closely allied to *H. maccoshiana*. Four other section *Alpestris* species occur in mainland Scotland and England. *Hieracium perthense* F.N. Williams (*H. carpathicum* auct. angl.) and *H. dewari* Syme have many more (6–20), broader, more hairy stem leaves, narrower (1.1–2.0 mm) involucre bracts with numerous glandular hairs, and hairy tips to the ligules. *Hieracium mirandum* P.D. Sell & C. West has ovate to lanceolate stem leaves with more densely hairy peduncles, and narrower (1.5–2.0 mm), more sparsely hairy involucre bracts. *Hieracium solum* P.D. Sell & C. West has a basal rosette at flowering, a few, nearly entire stem leaves and nearly glabrous peduncles. Sixteen section *Alpestris* species occur in Shetland, of which *H. australis* (Beeby) Pugsley is most similar to *H. maccoshiana* but has generally more (5–12) stem leaves which are more hairy on the upper surface, has larger (to c. 35 mm) capitula, and has less hairy peduncles without glandular hairs.

Hieracium maccoshiana differs from *H. dovreense* having elliptical middle stem leaves, typically (14–)25–40 mm wide and 2.0–2.8 times as long as wide, with few, large teeth (Fig. 2), and glabrous ligule tips. *Hieracium dovreense* has elliptical to narrowly elliptical middle stem leaves 13–25 mm wide and 2.6–3.4 times as long as wide with more, smaller teeth (Fig. 2) and ciliate ligule tips. Sell & West (1965) described the achenes of Scandinavian plants as 2.0–2.5 mm long and dark brown but I suspect these were immature as fruits of both species I have seen are very similar.

Unfortunately, when Fries described *H. dovreense*, he cited the earlier name *H. cydonae*[ii]*folium* Vill. as a synonym thus invalidating the name. As Stace (1998) designated *H. dovreense* as the type species of section *Alpestris*, a separate proposal will be required to conserve the name *H. dovreense* Fr.

Conclusion

Hieracium maccoshiana is a new endemic species from Scotland. It is a member of *Hieracium* section *Alpestris* and differs from *H. dovreense* within which it has previously been included by the shape and toothing of the stem leaves and in having glabrous ligule tips. The status of plants from Ben Loyal remains to be clarified.

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A third species of *Polyspatha*, an African endemic genus of Commelinaceae

Robert B. Faden

Department of Botany, National Museum of Natural History, Smithsonian Institution, MRC 166, PO Box 37012, Washington, DC 20013–7012, U.S.A.

Corresponding author: Robert B. Faden (fadenr@si.edu)

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Abstract

Polyspatha oligospatha Faden, the third species in a small African endemic genus of Commelinaceae, is described. It is widespread but has been overlooked because of its small stature and resemblance to small plants of *P. paniculata*. It differs from both *P. paniculata* and *P. hirsuta*, the two other species, by its leaf pubescence, fewer, more widely spaced and usually patent spathes, deeply ridged seeds with numerous knobby, transversely interrupted ridges, and morning anthesis. It occurs throughout the Congolian forests from Cameroon to Uganda, but it is also disjunct in Ivory Coast, across the Dahomey gap.

Keywords

Cameroon, Dahomey gap, seed morphology, Uganda, Ivory Coast, morning anthesis, disjunct distribution

Introduction

The African endemic genus *Polyspatha* (Comelinaceae) has generally been considered to consist of two species (Morton 1967; Brenan 1968). It was described by Benth (1849) for a single West African species, *P. paniculata* Benth. In his monograph of the family, Clarke (1881) also recognized *P. paniculata* var. *glaucescens* C. B. Clarke, which he subsequently abandoned in the Flora of Tropical Africa (Clarke 1901). Clarke's variety was raised to species rank as *P. glaucescens* (C. B. Clarke) Hutch. in the first edition of the Flora of West Tropical Africa (Hutchinson 1936) but the name was abandoned by Morton in his survey of Commelinaceae of West Africa (Morton 1967) and treated

in synonymy under *P. paniculata* in the second edition of the Flora of West Tropical Africa (Brenan 1968). The second currently recognized species of *Polyspatha*, *P. hirsuta* Mildbr., was described by Mildbraed (1925). Faden (1998) recorded *Polyspatha* as having three species, but the third species had not been described.

When I first began working on the Commelinaceae of Cameroon and examined the *Polyspatha* specimens at the Herbar National du Cameroun (YA) in Yaoundé, Cameroon in 1986, it appeared that there were three distinct species of *Polyspatha*, not the usually accepted two. I came to the same conclusion from studies at the Muséum National d'Histoire Naturelle, Paris (P) the following year. Later studies at the Royal Botanic Gardens Kew (K), in connection with work on the Flora of Tropical East Africa, confirmed that the same three species also occurred in Uganda, some 2000 km away. Studies of collections from other herbaria, particularly the National Botanic Garden of Belgium, Brussels (BR), confirmed that the three species also were present in the intervening territory. It was particularly significant that this species was also found to occur in Ivory Coast, almost 1900 km from the nearest locality in Cameroon.

Methods

More than 540 herbarium specimens of *Polyspatha* were studied from the following institutions: all the collections from BM, BR, EA, K, NY, MO, US, WAG and YA, and some of the collections from P. Living material of *Polyspatha oligospatha* (Poulsen 1275, originally from Uganda, and Faden *et al.* 86/2, originally from Cameroon) was cultivated at the Smithsonian Institution Botany Research Greenhouse, in Suitland, Maryland, USA and provided data on flowering times, root tips for chromosome counts, seed collections and liquid preserved flowers. A mitotic chromosome count was obtained using the techniques of Faden and Suda (1980). The seeds were photographed using an Olympus SZX-12MDU dissecting microscope, equipped with an Olympus Q-Color 5 camera, using Image-Pro and extended depth of field (EDF). The distribution map was created using ArcGIS once latitudes and longitudes were determined or estimated for the collections seen.

Results

Polyspatha oligospatha Faden, sp. nov.

urn:lsid:ipni.org:names:77111569-1

http://species-id.net/wiki/Polyspatha_oligospatha

Polyspatha oligospatha Faden sp. nov. a *P. paniculata* foliis trichomatibus uniseriatis in pagina superiore instructis, spathis plerumque minus numerosis differt; a *P. hirsuta* pubescentia foliorum plerumque multo sparsa trichomatibus uniseriatis in pagina inferiore semper carentibus, spathis minus congestis minus numerosis minus pubescentibus et plerumque

patentibus differt; et ab ambo ordinatione testae et anthesi mane differt. Type: Uganda, Zintengese [=Zintengeze], (Mabira), September 1922, R. A. Dummer 5531 (US!, holo, K!, iso).

Description. Stoloniferous perennial with erect shoots 5–20(–30) cm tall; internodes puberulous with hook-hairs, very rarely also with short, uniseriate hairs. Leaves usually subclustered terminally on the flowering shoot, sheaths 0.8–1.5 cm long, puberulous with hook-hairs (Tomlinson 1966), very rarely also with short, uniseriate hairs, ciliate at the apex with hairs to 3 mm long; lamina petiolate, elliptic or broadly elliptic to ovate or ovate-orbicular, rarely oblong-elliptic, 3–9(–11) × 2–4.5 cm, apex acute to acuminate (to abruptly acute or mucronate), base cuneate to broadly cuneate, margins planar to slightly undulate, scabrous, adaxial surface with scattered, patent, long, uniseriate hairs, abaxial puberulous with hook-hairs. Inflorescence a terminal, simple or compound thyrses 2–7 cm long, up to 7.5 cm wide, the compound thyrses composed of up to 4, closely associated, erect to patent or declinate, terminal and axillary (from the upper leaves) simple thyrses, none of the axillary thyrses perforating a leaf sheath, each simple thyrses consisting of a short peduncle and an elongate, zigzag, retrosely puberulous (with hook-hairs) axis, to which are attached 4–8 distichous spathes; spathes at first erect, then patent, rarely becoming deflexed against the thyrses axis, attached 3–11 mm apart, usually not overlapping the one below (on the opposite side) (occasionally slightly overlapping it), 6.5–10(–12) mm long, (3–)4–7(–9) mm wide (folded), apex acute to rounded, sometimes mucronate, or sometimes the proximal spathes acuminate, surfaces brown or brownish at maturity, at least along the midrib (folded edge), prominent longitudinal veins usually absent, surface cells (in the brown parts) lustrous, distinctly bead-like at 20× or higher magnification, surfaces puberulous with hook-hairs, sometimes with short, uniseriate hairs along the midrib area, margins ciliolate with hairs usually all <1.5 mm long; cincinni ca. 2–3-flowered; bracteoles ovate, with a few short hairs on the margins. Flowers bisexual, 3.5–8 mm wide; pedicels 1–2.5 mm long, glabrous or sparsely puberulous; sepals free, lanceolate or lanceolate-oblong to ovate, 3–4.5 × 1–2.3 mm, puberulous with hook-hairs and short, uniseriate hairs, white or hyaline white, outer sepal hooded distally; corolla white, upper petals clawed, 5–7 × 2.5–3 mm, limb ovate, 2–3 × 2.5–3 mm, claw 3.5–5 mm long, lower petal linear to oblong, (2–)3–4.7 × (0.2–)0.8–1 mm; filaments of stamens and staminodes fused basally, glabrous, white; staminodes 3, posterior, equal, filaments 3–6 mm long, antherodes pointing forwards, V-shaped, yellow, the lobes divergent, oblanceolate, 0.6–0.8 mm long; fertile stamens 3, anterior, filaments subequal, but the medial slightly shorter than the laterals, filaments 4.5–8.5 mm long, anthers ovate-elliptic to elliptic, 1–1.7 mm long, yellow, dehiscence extrorse, pollen yellow; ovary sessile, obovoid, dorsiventrally flattened, ca. 1 mm long and wide, style exceeding the stamens, 5.5–8.5 mm long, white, stigma capitate, white. Capsules bilocular, bivalved, 2-seeded, broadly elliptic, 2.5–3 × 2.5–3 mm, sometimes constricted between the seeds, tan, apex emarginate, cells of the outer capsule wall ±isodiametric. Seeds el-

liptic in outline, $1.6\text{--}2.2(-2.5) \times 1.3\text{--}1.5(-1.6)$ mm, testa radiately ribbed with (17–)18–23 prominent ribs, the ribs more or less knobby and transversely interrupted, surface tan, sometimes more or less exposed except for some darker brown, matted material between the ribs, sometimes mainly covered by this material except for the rib tops; embryotege semidorsal; hilum straight to slightly curved, $1/2$ to $2/3$ the length of the seed (Figure 1; Plate 1: 3, 4)

Distribution. Ivory Coast, Cameroon, Republic of Congo (Congo-Brazzaville), Democratic Republic of Congo (Congo-Kinshasa), Sudan, Uganda (Figure 2).

Habitat. Understory in evergreen and semi-deciduous forests, forest relicts and other moist, shaded habitats in savanna, shaded cultivation, especially of cacao; ca. (15–)600–1220 m.

Chromosome number. $2n = 28$ (from *Faden et al.* 86/2 from Cameroon, cultivated at the Smithsonian Institution [Faden unpublished]).

Phenology and anthesis. A total of 24 flowering collections of *P. oligospatha* have been seen, with specimens collected from all months except April and May. Anthesis occurs in the morning, based on the following records. *Poulsen* 1275 from Uganda, cultivated at the Smithsonian Institution Botany Research Greenhouse in 1997, had flowers open by 9:30 a.m. and fading at noon. Two collections from Cameroon, *Hall & Kahn* 075/93 and *Keating* 90–13 (both US), record this species as flowering in the morning and fading about noon.

Polyspatha oligospatha is easily recognizable but also readily overlooked, judging by its wide distribution and modest number of collections. It is distinctive because of its small stature, leaves with long, uniseriate hairs only on the adaxial surface, small inflorescences with small, well-spaced, often patent (i.e. not becoming deflexed) spathes whose surface is composed entirely or partly of lustrous, brown, bead-like cells, and seeds with numerous, radiating, knobby ridges that are transversely interrupted (Figure 1: 7, 8; Plate 1: 3, 4).

Specimens seen. Cameroon: Adamoua Region: Near Kongi (10 km NW of Kimi-Bankim on Fouban - Banyo route), 27 June 1967, *Letouzey* 8742 (K, P, WAG) [two additional sheets of this collection at P are *P. paniculata*]. Center Region: N’Kolbisson, ca. 8 km W of Yaoundé, 2 Dec. 1963, *de Wilde & de Wilde-Duyffes* 1369 (P, WAG); same locality, 7 June 1964, *de Wilde & de Wilde-Duyffes* 2647 (BR, K, WAG, YA); Nkolbisson, 8 km W of Yaoundé, Akouandoué Hill S of the town, 23 Jan. 1986, *Faden, Satabié & Mpom* 86/2 (K, P, US, YA); Nkolbisson, 8 km W of Yaoundé, 3 km NW of the town, 24 Jan. 1986, *Faden, Satabié & Mpom* 86/22 (US); Mt. Febe, Yaoundé, 4 July 1987, *Manning* 2166 (K, MO, WAG); Colline au N de Nkolbison (8 km W Yaoundé), 6 Feb. 1963, *Raynal & Raynal* 9445 (P, YA). East Region: Boumba-Ngoko Dept., Moloundou Arrondissement, Lobeke swamp/savanna, adjacent to camp (site of an old sport hunting camp), 6 Feb. 1993, *Hall & Kahn* 075/93 (K, P, US, YA, WAG). South Region: Ntem Departement, Ako’okas, 40 km SE of Ebolowa (by road), 30 June 1993, *Keating* 90–13 (US); same locality, 4 Aug. 1993, *Keating* 90–13 bis (K, P, US, YA); Rocheur de Mokomessi, 20 km NNW of Zoetélé, 35 km NNW of Sangmelima, 9 July 1992, *Letouzey* 11465 (BR, K, P, YA); Ebolowa - Si I



Figure 1. *Polyspatha oligospatha* Faden, sp. nov. 1. Habit. 2. Spathe with open flower, side view. 3. Flower, front view. 4. Flower, side view. 5. Stamen and staminode filaments, showing basal fusion. 6. Dehiscent capsule. 7. Seed, dorsal view. 8. Seed, ventral. All from *Poulsen 1275* (originally from Uganda; cultivated at the Smithsonian Institution). Illustration by A. R. Tangerini.

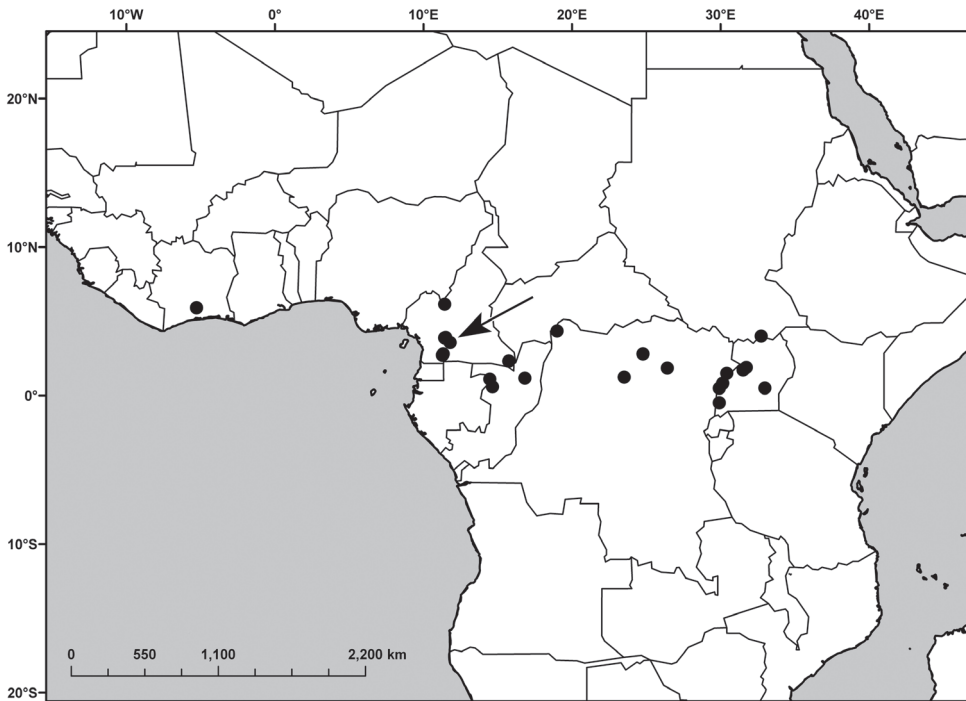


Figure 2. Distribution of *Polyspatha oligospatha* Faden, sp. nov. The arrow indicates the location of the collection *Letouzey 11465*, which is atypical for the species (see text).

(W d'Ebolowa), basses pentes d'une colline dominant la ville, 9 Mar. 1963, *Raynal & Raynal 10340* (P, YA).

Congo Republic: Bassin de l'Alimo-Likoula, Réserve de Chasse de M'Boko, salime au bord de la Lekoli près du campement, 10 Aug. 1961, *Descoings 9059* (P); Grand escarpement d'Odzala, au Nord de la cascade dorée, 27 Nov. 1996, *Lejoly 96/961* (BR); Inter Bonga et Wesso (Sanga), Aug. 1899, *Schlechter 12714* (BR) [mixture with *P. paniculata*; K sheet of this number is pure *P. paniculata*].

Democratic Republic of Congo: Forestier Central (VI): en aval de Barumbu, 27 Oct. 1913, *Bequaert 971* (BR); Panga, 19 Dec. 1913, *Bequaert 1561* (BR); Uelé, Route Buta – Buna, 15 Oct. 1905, *Seret 70* (BR) [2 sheets at BR, each with one plant of *P. oligospatha* (renumbered *Seret 70A*) and one of *P. paniculata* (renumbered *Seret 70B*); mapped as “Buta”]. Ubangi-Uele (VII): Zongo (Ubangi), Nov. 1930, *Lebrun 1729* (BR). Lacs Edouard et Kivu (IX): Vallée de la Semliki, à l'est de Beni, July 1929, *Humbert 8796* (BR, P).

Ivory Coast: Divo Forest, Oct. 1959, *Aké Assi 5707* (K); North Divo Forest Reserve, 12 Oct. 1959, *Fosberg 40559* (K, US).

Sudan: Equatoria Province, Torit District: Tallanga Forest, 28 Dec. 1949, *Jackson 1005* (BM).

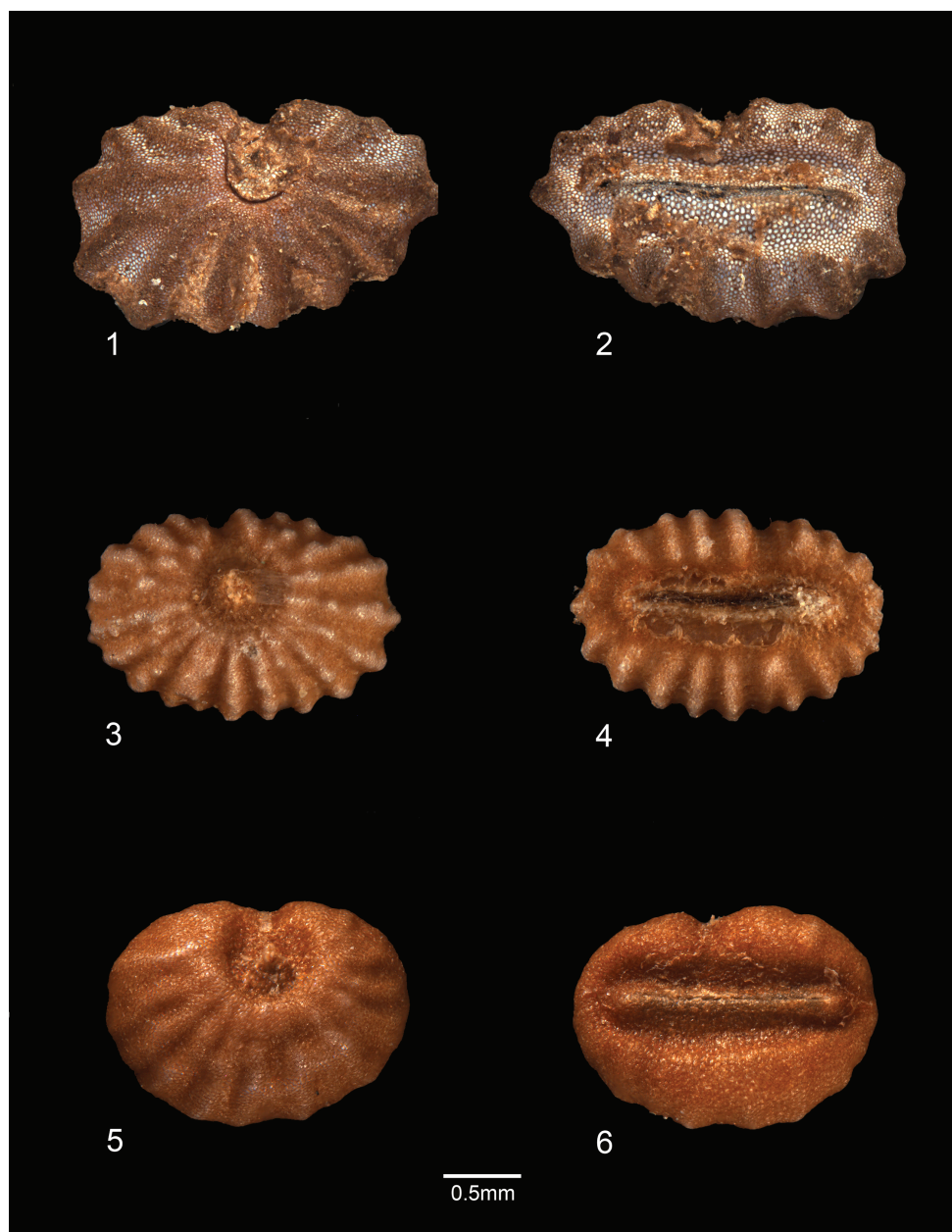


Plate 1. Seeds of *Polyspatha* species **1–2** *Polyspatha paniculata* Benth. **1** Seed, dorsal view **2** Seed, ventral view. (From Faden *et al.* 74/35 from Ghana, cultivated at Smithsonian Institution) **3–4** *Polyspatha oligospatha* Faden, sp. nov. **3** Seed, dorsal view. **4** Seed, ventral view. (From de Wilde & de Wilde-Duyffes 2647 [BR] from Cameroon) **5–6** *Polyspatha hirsuta* Mildbr. **5** Seed, dorsal view **6** Seed, ventral view. (From Kahn 92-1 [US] from Cameroon).

Uganda: Bunyoro (Masindi) District: Pabidi Forest, 14 Sep. 1995, *Poulsen et al.* 958 (C, US); Budongo Forest Reserve, Kanyo-Pabidi Block, 4 Feb. 1996, *Poulsen et al.* 1180 (C); Budongo Forest Reserve, between the Royal Mile and the Nature Reserve, close to the border of the Nature Reserve, at the campsite at the Nyabisabo River (gap), 4 Dec. 1996, *Poulsen et al.* 1245 (US) & 1246 (K, MO); Budongo Forest, 17 July 1969, *Stewart in EAH14170* (EA, K). Kigezi District: Just outside Queen Elizabeth Nat. Park, South Maramagambo Central Forest Reserve, 6.4–11.2 km up Kaizi-Bitereko road which is off the Katunguru-Ishsha road (Congo road), 18 Sep. 1969, *Faden et al.* 69/1113 (BR, EA); South Maramagambo Central Forest Reserve, just outside Queen Elizabeth Nat. Park, 8 June 1969, *Lock 69/155* (EA); Maramagambo Forest, 18 Sep. 1969, Lye et al. 4117 (K). Mengo District: Zintengese [=Zintengeze], (Mabira), Sep. 1922, *Dummer 5531* (K, US). Toro District: “Semliki District,” 31 Oct. 1905, *Daws 683* (K); Bwamba County, 1.2 km S of Sempaya, 23 Sep. 1969, *Faden, Evans & Lye 69/1256* (EA); Bwamba, Buyayu-Sempaya road, Oct. 1929, *Liebenberg 922 & 922A* (K) [both are mixtures with *P. paniculata*].

The three species of *Polyspatha* may be separated by the following key:

- 1a Lamina lacking long, uniseriate hairs, often scabrous above; seeds ribbed, with (12-)14–18 smooth, uninterrupted ribs *P. paniculata*
- 1b Lamina with long, uniseriate hairs, at least on the adaxial surface, never scabrous above; seeds either shallowly ribbed-reticulate or deeply ribbed with (17-)18–23 prominent, knobby ribs that are transversely interrupted **2**
- 2a Long, uniseriate hairs present on the adaxial leaf surface and summits of the leaf sheaths, always lacking from the abaxial leaf surface and usually elsewhere; spathes well spaced, usually patent to slightly deflexed; cells of the spathe surface, at least near the midrib, but often all over, lustrous, brown, and bead-like under a 20× lens; seeds deeply ribbed, the ribs knobby and transversely interrupted..... *P. oligospatha*
- 2b Long, uniseriate hairs usually present on both leaf surfaces, the internodes and sheath surfaces (lacking only in some collections from Nigeria and further west); spathes crowded, becoming deflexed against the inflorescence axis; cells of the spathe surface dull, neither brown nor bead-like under a 20× lens; seeds shallowly ribbed-reticulate, the ribs neither knobby nor transversely interrupted..... *P. hirsuta*

Discussion

Polyspatha oligospatha [etymology: many spathes, few spathes] differs from *P. paniculata* by the consistent presence of long, uniseriate hairs on the adaxial leaf surface (vs. none), which is never scabrous (vs. often scabrous) and by the usually fewer, smaller,

blunter, more widely spaced and less deflexed spathes. It differs from *P. hirsuta* by the usually sparser and shorter uniseriate hairs on the adaxial leaf surface, the absence of such hairs from the abaxial leaf surface and usually the internodes and sheaths (except for the sheath summit), and the inflorescence consisting of fewer, less congested spathes with shorter marginal hairs and with lustrous, brown, bead-like cells on the entire spathe surface or mainly near the midrib (vs. such cells completely lacking). The new species differs from both other species by its generally smaller stature (but see below) and seeds with numerous, knobby, transversely interrupted ridges as compared with generally fewer, smoother, uninterrupted ridges in the seeds of *P. paniculata* and testa shallowly ridged-reticulate in *P. hirsuta* (Figure 1: 7, 8; Plate 1).

Leaf pubescence in *P. hirsuta* can be quite variable, but plants with sparse pubescence or with long hairs confined to the adaxial leaf surface are restricted to Nigeria and further west, overlapping with *P. oligospatha* only in Ivory Coast. Thus throughout nearly all of the range of *P. oligospatha*, the pubescence differences of the leaf lamina, sheath, and internodes between *P. oligospatha* and *P. hirsuta* are consistent. The often much less pubescent plants of West African *P. hirsuta* still exhibit the stature, leaf shape and spathes that are typical of the species, so they would not be readily confused with *P. oligospatha* even if the two species were more broadly sympatric.

The new species has been confused in the past with small specimens of *P. paniculata* which can be of similar stature and appearance. Some may even have very similar looking spathes and smaller capsules and seeds than in typical plants of *P. paniculata*. Such plants can be separated from *P. oligospatha* by the absence of long, uniseriate hairs from the leaves, the spathes generally more crowded, overlapping and deflexed against the inflorescence axis, and the seeds with generally fewer, smooth, uninterrupted ridges, as in typical *P. paniculata* (Plate 1–1).

This species has been overlooked or misinterpreted partly because of Clarke's *P. paniculata* var. *glauescens*, which was raised to a species in the first edition of Flora of West Tropical Africa (FWTA) by Hutchinson (1936), although it had already been abandoned by Clarke (1901) in Flora of Tropical Africa. From a study of the type of this variety, Brenan (1968) in the second edition of FWTA correctly concluded that it was no more than a depauperate form of *P. paniculata*, agreeing with Morton (1967). This led Brenan to annotate the only specimen at Kew of *P. oligospatha* from West Tropical Africa, *Aké Assi 5707* from Ivory Coast, as "small form—I do not consider *P. glaucescens*...as distinct." On the other hand, it is clear that Brenan had begun to suspect that there was more variation in the genus than the two West African species by his note on the species folder of *P. paniculata* from Uganda, which included specimens of *P. oligospatha*: "Some of these Uganda sheets look distinct and should be investigated."

The collection *Letouzey 11465* (Figure 2, arrow) from Cameroon is accepted as *P. oligospatha* with reservation. The pubescence of the upper leaf surface is more like that of *P. hirsuta*, with the uniseriate hairs longer, denser and paler than in typical *P. oligospatha*. However the absence of uniseriate hairs from the lower leaf surface, sheaths (except for the summits) and internodes distinguishes it from all Cameroonian specimens of *P. hirsuta*. Moreover, the outer surface of the small spathes is composed

solely of lustrous, dark brown, bead-like cells, which are present in all specimens of *P. oligospatha* but none of *P. hirsuta*. The short marginal hairs on the spathes also agree with *P. oligospatha*, but are unusual for *P. hirsuta* in the same region. Overall, *Letouzey 11465* is best treated as an atypical specimen of *P. oligospatha*.

Three sheets of *Letouzey 11465* have been seen but those at P and YA were not critically examined. Thus my observations and conclusions have been based solely on the duplicate of this collection from BR. Unfortunately, it lacks seeds, which would be diagnostic.

Manning 2166 is unusual for *P. oligospatha* in several characters. The internodes and surface of the leaf sheaths bear numerous uniseriate hairs, a pubescence that has not been noted in any other collection of *P. oligospatha*. The spathes are also more pubescent than usual, bearing many, long, uniseriate hairs on the surface as well as along the midrib. The longest marginal hairs are >1.5 mm long, the normal maximum for *P. oligospatha*. Moreover, the spathes have very few lustrous, brown, bead-like cells and these are confined to the midrib area towards the spathe bases. In all these characters *Manning 2166* resembles *P. hirsuta*. It differs from that species by its shorter stature, absence of long hairs from the abaxial leaf surface--they are typically present in Cameroonian collections--shorter uniseriate hairs on the internodes and sheath surfaces, and more spaced, patent and pointed spathes that bear at least a small number lustrous, brown, bead-like cells along the midrib. *Manning 2166* might possibly represent a hybrid of *P. oligospatha* and *P. hirsuta*, but in view of the different times of anthesis in these species, I think it is best considered an atypical specimen of *P. oligospatha*. As in the case of *Letouzey 11465*, only the WAG sheet of *Manning 2166*, of the three specimens seen, was studied in great detail, thus reinterpretation might be necessary when the other sheets can be reexamined.

Polyspatha oligospatha has sometimes been collected as part of mixed collections with *P. paniculata*. I have seen five such mixed collections: *Lieberberg 922 & 922A(K)* from Uganda, *Seret 70 (BR)* from the Democratic Republic of Congo, *Schlechter 12714 (BR, K)* from the Republic of Congo, and *Letouzey 8742* from Cameroon. Possibly when further duplicates of already seen collections are examined in additional institutions, other mixed collections will be discovered. Thus far no mixed collections have been seen of *P. oligospatha* and *P. hirsuta*.

The disjunct occurrence of *P. oligospatha* in Ivory Coast is probably not an artifact of under-collection because in both Ghana and Nigeria, the two larger of the four countries between Ivory Coast and Cameroon, there were collectors who took a great interest in Commelinaceae. J. K. Morton made numerous collections of Commelinaceae in Ghana and elsewhere and wrote several important papers on the family. D. P. Stanfield was an avid collector of Commelinaceae in Nigeria and was rewarded for his efforts and lengthy and detailed notes by having a new genus *Stanfieldiella* named for him by Brenan (1960). Thus although *P. oligospatha* is somewhat inconspicuous I would have expected it to have been collected in Ghana and/or Nigeria if it occurred there.

Another factor that makes this disjunct distribution interesting is that it places *Polyspatha oligospatha* on both sides of the Dahomey gap, the natural break in the rainforest that separates the Upper Guinean and Congolian forest blocs. A similar distribution pattern is shown by another Commelinaceae species, *Palisota ambigua* (P.Beauv.) C.B.Clarke, which Flora of West Tropical Africa (Brenan 1968) places in southern Nigeria but no further west. However, I observed four collections of this species from Ivory Coast at P in 1987, including *Jolly* 39, so it too spans the Dahomey gap. The question remains whether these Ivory Coast occurrences are relicts of a former, continuous distribution or represent more recent long-distance dispersal events. The berry fruits of the *Palisota* would obviously suggest the latter, but because *Polyspatha* seeds have no obvious means of dispersal—either short distance or long distance—it is more difficult to use the same argument for that disjunction.

Polyspatha oligospatha appears to be reproductively isolated from the other two species because of its morning anthesis and flowers fading about noon. In Flora of West Tropical Africa Brenan (1968) records the flowering times of *P. paniculata* as 2:30–5:00 pm and *P. hirsuta* as 2:30 until evening. Thus anthesis for *P. oligospatha* does not overlap with those of the other two species.

Conclusion

Polyspatha oligospatha Faden, a new species described herein, is a widespread African rainforest species that has been overlooked but is readily distinguished from the other two species by its seed testa pattern, leaf pubescence, spathe characters and morning flowering.

Acknowledgements

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A new genus, *Nothovernonia*, from tropical Africa (Asteraceae or Compositae, Vernonieae)

Harold Robinson, Vicki A. Funk

Department of Botany, MRC 166, US National Herbarium, National Museum of Natural History, P.O. Box 37012, Smithsonian Institution, Washington, DC. 20013–7012

Corresponding author: Harold Robinson (robinsoh@si.edu)

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Abstract

Nothovernonia **gen. nov.**, is described as a new genus for the tropical African *Vernonia purpurea* Sch.Bip. ex Walp. and *V. amblyolepis* Bak, having cymiform inflorescences, pedunculate heads with differentiated foliiform bracts at the base, apiculate involucre bracts with scarious lateral margins, spiculiferous corolla lobes, and strongly spinose, sublopophate tricolporate pollen with the colpi meeting at the poles. The new genus belongs to the subtribe Centrapalinae and a key to the known DNA-sequenced genera of the subtribe is provided. The new species names are *Nothovernonia purpurea* (Sch.Bip. ex Walp.) H.Rob. and V.A.Funk, **comb. nov.**, and *N. amblyolepis* (Baker) H.Rob. & V.A.Funk, **comb. nov.**

Keywords

Compositae, *Nothovernonia*, new genus, tropical Africa, Centrapalinae, Erlangineae, phylogeny

Introduction

Many genera have been named in the tribe Vernonieae over the last 200 years, see Jones (1979b, 1981) and Jeffrey (1988) for citations of many of the names. During that time, some genera have been accepted when based on distinctions involving zygomorphic corollas (*Elephantopus* L, *Pseudelephantopus* Rohr or *Stokesia* L'Hér.), paleaceous receptacles (*Lepidonia* S.F. Blake, *Centauroopsis* Boj. in DC.), syncephaly

(*Elephantopus Eremanthus* Less., *Lychnophora* Mart.), a modified or reduced pappus (*Elephantopus*, *Pseudelephantopus*, *Sparganophorus* Vaill. ex Crantz, *Pacourina* Aubl., *Centratherum* Cass., *Harleya* S.F. Blake), or even sclerified tails on the anther when combined with strongly scandent habit and highly deciduous involucre bracts (*Piptocarpha* R. Br.). However, many other new genera whose members have some more general characters such as a capillary pappus, discrete heads, actinomorphic corollas, including many woody or arborecent types have not been accepted: *Gymnanthemum* Cass., *Critoniopsis* Sch. Bip., *Strobocalyx* (Blume ex DC.) Spach. Even some genera that were based on lophate pollen (*Ambassa* Steetz in Peters, *Crystallipollen* Steetz in Peters = *Polydora* Fenzl) have been summarily reduced to synonymy under the large, geographically improbable, core genus *Vernonia* Schreb. As a result, *Vernonia* s.l. was traditionally defined by what it “was not” rather than by what it “was” (Jones 1977, 1979b, 1981, Jeffrey 1988). Detailed morphological work and molecular phylogenies have finally forced the dismemberment of that unnatural genus, and true *Vernonia* s.s. is now known to be part of native floras only in the Americas (Robinson 1999a, b). As a result, the many paleotropical species that have been placed in the genus *Vernonia* are gradually being shifted into other genera (Robinson 1999a, 2007, Keeley and Robinson 2009). Although much progress has been made, there are still unplaced species, some of which can be assigned to new genera with reasonable assurance even though the defining characters are not necessarily macroscopic. One such genus is described here for a pair of species in tropical Africa including the common *Vernonia purpurea* Sch.Bip. ex Walp.

The species known as *Vernonia purpurea* is a coarse herb (Fig. 1) placed by Jeffrey (1988) in his *Vernonia* Subgroup A, a subgroup that included the genera *Centrapalus* Cass. and *Vernonella* Sond. as synonyms. More recent studies have shown that both *Centrapalus* and *Vernonella* are valid genera that apparently belong to different subtribes, *Centrapalus* to the Centrapalinae and *Vernonella* to the Linziinae (Robinson and Skvarla 2010). The same study has shown that *Vernonia purpurea* does not belong to either of the latter genera, differing in corolla color, corolla lobe pubescence, sweeping hairs of the style, and pollen structure. Isawumi (2008) placed *V. purpurea* in the genus *Linzia* Sch.Bip. ex Walp., but *V. purpurea* has neither the denticulations on the lateral margins of the involucre bracts, the bluish corollas, nor the lophate pollen with mural spurs projecting into the colpi that are characteristic of *Linzia*.

The goal of this study is to recognize the new genus and provide the proper nomenclature for a larger study on the subfamily Cichoroideae.

Methods

The morphology was studied using herbarium material, most of which was from the U.S. National Herbarium in Washington, D.C. Microscopic characters were examined via plant material mounted on microscope slides in semi-permanent, water miscible Hoyer's Solution (Anderson 1954). Pollen grains were mostly treated with acetolysis



Figure 1. *Nothovernonia purpurea* (Sch.Bip. ex Walp.) H. Rob. and V.A. Funk: habit. [Illustration by Alice Tangerini (US)]

(Erdtman 1960), followed by staining with Osmium-thio-carbohydrazide solutions and sputter coating with gold/palladium (Robinson and Skvarla 2006, 2007, Robinson et al. 2008). Unacetylated grains were rehydrated in water or alcohol directly from herbarium sheets and similarly sputter coated. Observations were made with a JEOL 880 (Samuel Roberts Microscopy Laboratory, University of Oklahoma), or a LEICA 440 and AMRAY 1810 (National Museum of Natural History, Washington DC) scanning electron microscopes (SEM), all equipped with lanthanum hexaborate (LaB₆) electron sources.

Scanned images of the syntypes of *Vernonia amblyolepis* Baker were sent by the Herbarium at the Royal Botanic Gardens, Kew.

The position on the molecular phylogeny was determined by analyzing DNA sequence data of ITS, *ndhF*, *trnL-F* and *matK*. The details of the molecular work will be published as part of a larger study of the subfamily Cichorioideae (Funk and Chan 2009, unpublished data, Funk pers comm) (Fig. 2). Before the subfamily paper can be submitted, some nomenclatural issues must be straightened out, hence the necessity of this paper.

Discussion

The new genus, named here as *Nothovernonia*, can be distinguished from *Centrapalus* by the erect rather than decumbent bases of the stems, the apiculate laterally scarious rather than long herbaceous non-scarious tips on the involucre bracts, and the purple or lilac rather than blue-purple corollas (Fig. 3, B-D). The corolla color may be most useful in the field, with *Centrapalus* usually being bluish and *Nothovernonia* apparently never being blue. The stout spreading sweeping hairs of the style branches are different from the slender usually more appressed hairs in *Centrapalus*. The achenes are similar in having narrow though small raphids, many idioblasts on the surface, setulae with pairs of cells usually separated to a third or more of their length, but differ in the cells of the setulae being fused in the basal one to two thirds and the pappus being white to rufous. In *Centrapalus* the cells of the setulae are separate and essentially solitary to near the base, and the pappus is sordid grayish.

Robinson and Skvarla published images of the pollen of *Nothovernonia* (Robinson and Skvarla 2010, Fig 5 A-C) and *Centrapalus* Cass. (Robinson and Skvarla 2010, Fig 3 A-D); at this time there are no images available for *Parapolydora* H. Rob. or *Brachythrix* Wild & G.V. Pope. The two species treated here in *Nothovernonia* have pollen that is similar to but not identical with *Centrapalus*. They have long spines arranged in a sublophate pattern that is much less irregular than *Centrapalus* and the colpi are not truncated, rather they reach to and meet at the poles (Robinson and Skvarla 2010). This type of pollen is widely distributed in the tribe and of uncertain use at this point. Never-the-less, pollen is frequently very useful in the tribe and it is essential to document the characters of the pollen for future comparative studies.

The two species treated here have their corolla color and stem bases more like those of *Vernonella*, but the colpi of the pollen are not truncated and thus failing to reach the poles, the involuclral bracts are not scarious across the tips, the corolla lobes are spiculiferous with stiff hairs outside distally, and the achenes have setulae with cell pairs separated nearly half way but not to the base. In addition, the two species differ from both *Centrapalus* and *Vernonella* by the small to large differentiated foliiform bracteoles at the base of the head. This contrasts with the loose but undifferentiated narrow involuclral bracts at the base of the head in *Centrapalus* and the small and broad but otherwise undifferentiated bracts at the base of the head in *Vernonella*.

On the basis of structural features, the genus is clearly distinct, but the position nearer *Centrapalus* of the subtribe Centrapalinae or closer to *Vernonella* of the Linziinae, has been resolved with certainty only with DNA sequencing. Sequence data are available for *Centrapalus*, *Parapolydora* and *Nothovernonia purpurea* (see below). Members of *Vernonella* have not been sequenced, but the subtribal placement is derived from the report of elemanolide sesquiterpene lactones from one of the species, *V. praemorsa* (Muschl.) H. Rob. & Skvarla (Jakupovic et al. 1987), a type of sesquiterpene lactone known in the Vernonieae almost exclusively from the more basal members of the tribe.

Phylogeny

Figure 2 is the result of the analysis of DNA sequence data and shows all of the subtribes in the Vernonieae and all the known genera within the Centrapalinae. Within this scheme, *Vernonia purpurea* belongs in the broad group first placed by Robinson (1999a) in the Erlangeinae, but subsequently shown by DNA sequencing to belong to the distinct subgroup seen in Keeley et al. (2007) containing *Centrapalus*, *Cabobanthus* H. Rob., *Parapolydora* H. Rob. (as *Vernonia fastigiata* Oliv. & Hiern in Oliv.), *Brachythrix* Wild & Pope, *Centauroopsis* Bojer ex DC., *Hilliardiella* H. Rob., and *Polydora* Fenzl. This group is now recognized as part of the subtribe Centrapalinae H. Rob. (Keeley and Robinson 2009). Of the more restricted clade containing the closest relatives of *Centrapalus* and *Vernonia purpurea*, according to the DNA sequence results, *Cabobanthus* is the most basal in the group; it differs from the more highly nested genera by its lophate pollen. *Parapolydora*, the closest to *Centrapalus*, shares the characters of numerous idioblasts on the achenes and the deeply divided or mostly solitary elongate cells of the setulae on the achenes. *Nothovernonia*, the genus named here based on *Vernonia purpurea*, falls somewhat outside the *Centrapalus*/*Parapolydora* group with strongly acuminate tips on the involuclral bracts, foliiform bracts subtending the heads, and achenes with short narrow raphids, and more extensively fused elongate cells in the setulae. It is notable, however that the three closely related genera, *Nothovernonia*, *Centrapalus* and *Parapolydora* all share setulae with cells separated to at least one third of their length, more separated than in the less closely related genera of the Centrapalinae.

Taxonomic Treatment

Genera known to be in the subtribe Centrapalinae based on DNA sequence data are shown in Figure 2.

Key to the Genera known to be in the Centrapalinae

(for a key to the subtribes of Vernoniaeae see Keeley and Robinson 2009)

- 1 Receptacles with paleae *Centauriopsis*
- Receptacles without paleae 2
- 2 Inner pappus reduced of 3–15 short easily caduous bristles *Brachythrix*
- Inner pappus of 30 or more well-developed rather persistent long capillary bristles 3
- 3 Inflorescence spiciform, with clusters of heads in axils of leaves ... *Cabobanthus*
- Inflorescence a spreading panicle 4
- 4 Heads 0.5 cm or less wide, with 12–30 florets; setulae of achene with paired cells united essentially to tip 5
- Heads 0.5 cm or more wide, with 30 florets or more; setulae of achenes with paired cells distinctly separated at tips or from base 6
- 5 Plants mostly annuals; stems with simple or L-shaped hairs pappus bristles usually tawny, yellowish or green, rarely white; pollen triporate or with short colpi *Polydora*
- Perennials; stems, leaves, involucre and corolla lobes with large T-shaped hairs; heads with 12–20 florets; pappus white; pollen sublophate, tricolporate *Hilliardiella*
- 6 Setulae of achenes with pairs of cells fused to a third or more of their length; heads with small or large foliose bracts at base; involucre bracts acuminate at tips *Nothovernonia*
- Setulae of achenes with cells separated or solitary for most of their length; heads without differentiated foliose bracts at base; involucre bracts mostly with narrowly attenuate tips 7
- 7 Base of stem decumbent; pappus bristles grayish or tawny; setulae of achenes with cells elongate but separated to near base *Centrapalus*
- Base of stem erect; pappus bristles whitish; setulae of achenes with only one of cells elongate and solitary from near base *Parapolydora*

Nothovernonia H. Rob & V. A. Funk, gen. nov.

urn:lsid:ipni.org:names:77111570-1

<http://species-id.net/wiki/Nothovernonia>

Ad Vernonella in habitis herbaceis et floribus purpureis simila sed capitulis base bracteoliferis in lobis corollarum distaliter spiculiferis et in grana pollinis sublophatis totaliter

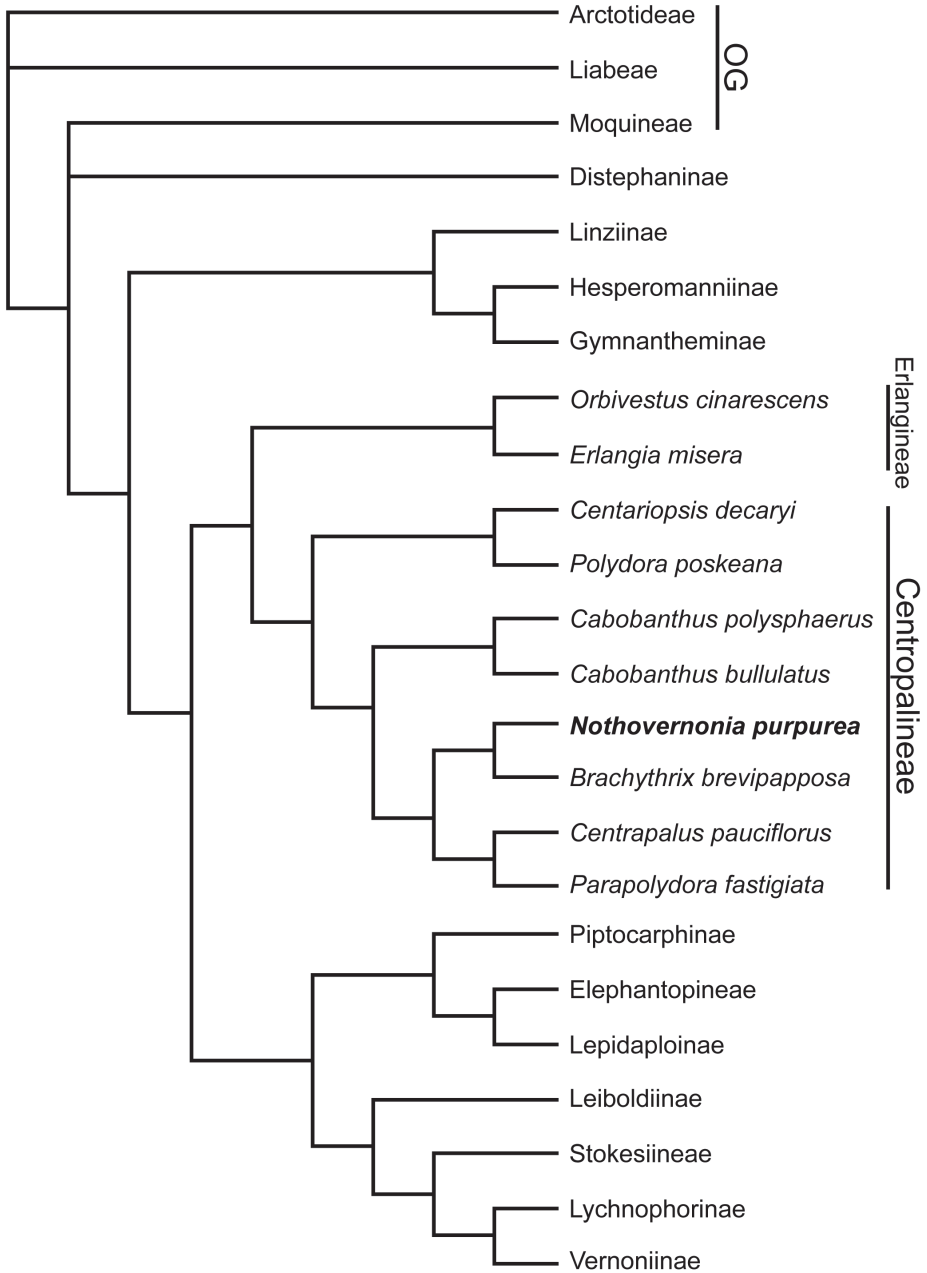


Fig. 2

Figure 2. A phylogeny of the subtribes of the Vernonieae, with a detailed look at the subtribe Centropalinae. This tree is the strict consensus tree from a PAUP analysis that produced 28 trees. The data included were ITS, *ndhF*, *trnL-F* and *matK*. The analysis included all known sequenced genera of the Centropalinae and is part of a larger analysis of the subfamily Cichorioideae.

tricolporatis differt. *A Centrapalus in basis erectis et bracteis involcri apiculatis lateraliter scariosis* differt.

Type. *Vernonia purpurea* Sch.Bip. ex Walp.

Description. Coarse branching herbs to 0.7 m tall, stems erect from base, distinctly ribbed, pilose with spreading simple hairs. Leaves alternate with petioles 0.2–2.0 mm long; leaf blades oblong to lanceolate, sparsely pilose above with prominent persistent bases on the hairs, lower surface coarsely and densely pilose on major veins, surface with many glandular dots, secondary veins pinnate, ca. 6 pairs. Inflorescences terminal and from axils of reduced upper leaves, distinctly cymiform with distinct short to long peduncles; heads broadly campanulate, with minute to large foliose bracts at base; involucre bracts in ca. 5 series, strongly gradate, appressed, ovate to narrowly oblong, with dark median stripe, apex apiculate with distinct dark or rarely pale awn, with pale scarious lateral margins, outer surface with numerous arachnoid hairs from median band, spreading transversely as the head expands; receptacles flat, without pales or hairs. Florets ca. 30–65 per head; corollas purple, with lobes and upper throat exceeding the pappus at anthesis, glanduliferous on throat, lobes spiculiferous with stout straight hairs distally on outer surface; anther thecae with small sterile border at base, endothelial cells oblong with sinuous lateral walls, apical appendage triangular, firm. Style base with annuliform sclerified node, distally with stout spreading sweeping hairs covering backs of style branches and upper 1 mm of style shaft. Achenes prismatic, 8–10-ribbed, with numerous idioblasts on surface, with small narrow raphids, setulae with pairs of cells fused together beyond basal 1/3; pappus with inner series of many crowded capillary bristles, white or rufous, less than 2/3 as long as corollas; outer pappus series of shorter, crowded lanceolate scales.

Pollen grains ca. 40 μ m in diam., tricolporate with colpi reaching poles, spinose, surface sublophate with perforated tectum continuous between colpi, bacculae single under each spine.

Chromosome number $n = 9$ (Jones 1979a, as *Vernonia purpurea* Sch.Bip. ex Walp.).

Etymology. The new generic name, *Nothovernonia*, means “false *Vernonia*”.

***Nothovernonia purpurea* (Sch.Bip. ex Walp.) H.Rob. & V.A.Funk, comb. nov.**

urn:lsid:ipni.org:names:77111572-1

http://species-id.net/wiki/Nothovernonia_purpurea

Vernonia purpurea Sch.Bip. ex Walp., Rep. 2: 946 (1843). Type: Ethiopia, *Schimper 1197* (holotype P).

Vernonia inulifolia Steud. ex Walp., Rep. 2:946 (1843). Type: Ethiopia, Sholoda, *Schimper 221* (holotype P, isotypes BM, K).

Vernonia jaceoides A. Rich., Tent. Fl. Abyss. 1: 376 (1848). Type: Ethiopia, Chire, *Dillon s.n.* (holotype P).

Vernonia rigorata S. Moore, J. Bot. 41: 155 (1903). Type: Kenya, Simba, *Kassner 724* (holotype BM).



Figure 3. Images of *Nothovernonia purpurea* (Sch.Bip. ex Walp.) H. Rob. and V.A. Funk **A** Habitat **B** Head before flowering with outer bracts tightly appressed **C** Fully flowering head showing well developed bracts **D** Head with only a few flowers but showing the well developed bracts. [Photographs by A. Thiombiano, M. Schmidt, and K. Schumann]

Vernonia scabrida C.H. Wright, Bull. Misc. Inf. Kew 1906: 21 (1906). Type: Malawi, Namasi, *Cameron 41* (holotype K).

Vernonia duemmeri S. Moore, J. Bot. 52: 91 (1914). Type: Uganda, *Dummer 35* (syntype BM, isosyntype K), *Wilson 72* (syntype BM).

Vernonia pascuosa S. Moore, J. Linn. Soc., Bot. 47: 263 (1925). Type: Angola, Uije, Gossweiler 7404 (holotype BM).

Vernonia keniensis R.E. Fr., Acta Hort. Berg. 9: 114 (1929). Type: Kenya, Fries and Fries 948 (holotype UPS; isotype K).

Centrapalus purpureus (Sch.Bip. ex Walp.) H. Rob., Proc. Biol. Soc. Wash. 112(1): 236 (1999).

Linzia purpurea (Sch.Bip. ex Walp.) Isawumi, Comp. Newsl. 46: 40 (2008).

Distribution. The species is known from the Sudan, Ethiopia, Kenya, Tanzania, and Uganda, south to Angola and Malawi and west to southern Senegal.

Specimens examined. **Congo.** Bafuka (ueli), 1929, Steyaert 77 (US). **French Equatorial Africa.** Dans la Haute-Kotto (Oubangu-Chari-A.E.F.), 100 km NW Labuya, 1921–1923, herb. G. le Testu 4127 (BM, US). **Malawi.** s.l., 1891, Buchanan 143 (K, US). Machinga District: Liwonde Forest Reserve, in *Brachystegia* woodland on steep hillside, 15°07'S, 35°23'E, 3000 ft., 11 Apr 1984, Christenson and Solubeni 1454 (US). Ntcheu District: Golomati Road, 4 km E of road to Dedza, 14°50'S, 35°25'E, 20 Apr 1984, Christenson, Patel and Lipende 1477 (US). Lilongwe District: Dzalanyana Forest Reserve, about 8 km from entrance gate, 14°15'S, 33°25'E, 3000 ft, 2 May 1984, Christenson and Lipende 1493 (US). **Senegal.** Tambacounda, Dindéfello, à proximité du campement touristique, dans le vallée de la cascade, 12°22'N, 12°19'W, 200 m, 22 Sep 1994, Sambou et Madsen, Goudiaby, Traoré and Laegaard 319 (AAU, DAKAR, US). **Uganda.** s.l., s.d., Dummer 84 (US, isotype of *Vernonia dummeri*). **Upper Volta.** Ifan, Solenso, 16 Sep 1974, Bognounou-Quattara 2 (US). **Zambia.** Kitwe, 15 May 1967, DZF? F10,062 (NDO, US).

Diagnostic characters. Figure 3 illustrates the habit of *Nothovernonia purpurea*, note the large bracteoles at the base of the capitula. Figure 4 has the details of the capitula, note the stout hairs of the style branches (Fig. 4D) and the setulae of the achenes that have pairs of cells fused together beyond the basal 1/3 (Fig. 4H).

Nothovernonia purpurea has large, obvious foliiform bracteoles at the bases of the capitula, bracteoles that can often cover the involucre completely. In contrast, *N. amblyolepis* has minute foliose bracts that are easily overlooked.

***Nothovernonia amblyolepis* (Baker) H. Rob. & V.A. Funk, comb. nov.**

urn:lsid:ipni.org:names:77111573-1

http://species-id.net/wiki/Nothovernonia_amblyolepis

Vernonia amblyolepis Baker, Bull. Misc. Inf. Kew 1898: 146 (1898). Type: Malawi, Nyika Plateau, Whyte 204 (Lechtotype designated here, K, scanned image at US!), Mpata to Nyasa-Tanganyika Plateau, Whyte s.n. (isolectotype, K, scanned image at US!). The two specimens at K are labeled as syntypes. The Whyte 204 was selected as the lectotype because it is numbered.

Vernonia pratensis Hiern, Cat. Afr. Pl. Welw. 1: 523 (1898) homonym illeg., non Klatt 1892 nec Drake 1897. Type: Angola, Welwitsch 3364 (isotype K).

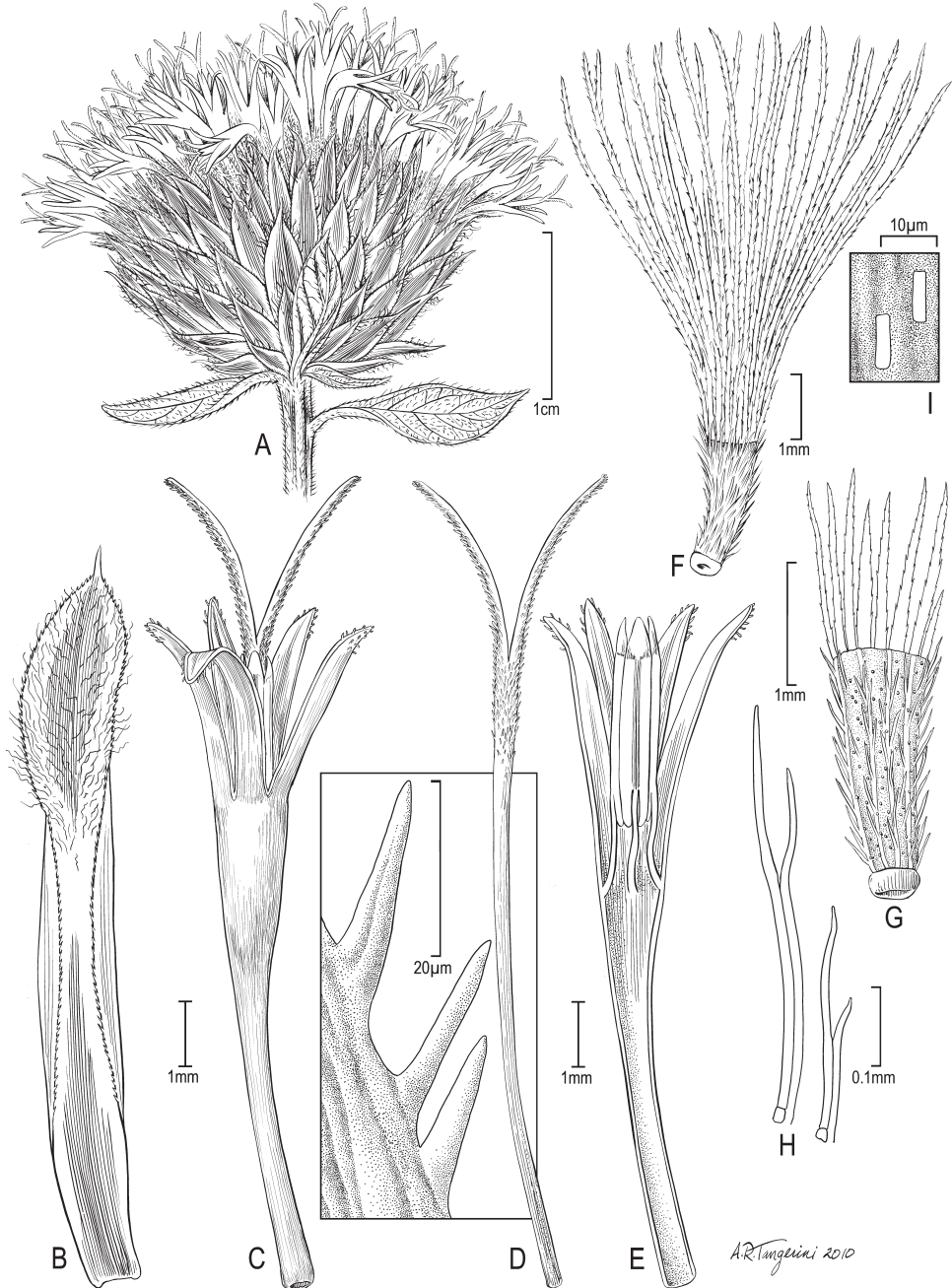


Figure 4. *Nothovernonia purpurea* (Sch.Bip. ex Walp.) H. Rob. and V.A. Funk **A** head **B** involucre bract **C** floret with style branches **D** style branch with detail of sweeping hairs in square **E** longitudinal section of floret showing anthers **F** achene with pappus **G** achene **H** detail of achene setulae **I** examples of raphids from achene wall. [Illustration by Alice Tangerini (US)]

Vernonia kandtii Muschl., Bot. Jahrb. Syst. 46: 87 (1911). Type: Rwanda, Niansa, *Kandt* 69 (holotype B, destroyed, isotype EA).

Vernonia exasperata H. Wild, *Kirkia* 11: 12 (1978), nom. nov. for *V. pratensis* Hiern.

Distribution. The species is known from Angola, Malawi, Rwanda and Tanzania.

Specimens Examined. Malawi. Zomba District: Zomba Plateau, top of hillside above KuChawe Inn, on grassy slope, 15°20'S, 35°18'E, 5500 ft., 14 Apr 1984, Christenson 1461 (US). Zomba District: Zomba Plateau, on upper road from KuChawe Inn downward to Zomba, near horse paddock, 15°20'S, 35°18'E, 5000 ft., 25 Apr 1984, Christenson and Lipende 1488 (US). **Uganda.** Buhweju County: District West Ankole, Nyarwambu River, 0°22'S, 30°28'E, 1550 m, 23 Aug 1982, Rwaburindora 919 (MO, US).

Unrecognized taxa. Jeffrey (1988) treated *V. kandtii* as a separate species that included *V. pratensis* Hiern and *V. exasperata* H. Wild in its synonymy. *Vernonia kandtii* is separated by Jeffrey (1988), with some doubt, by his couplet 106 as follows:

Inflorescence copious, with a number of branches arising from the uppermost leaf-axils; ultimate peduncles short, so that the capitula appear to be in clusters.....**62. *V. amblyolepis***

Inflorescence strictly terminal, few-headed, lax, the ultimate peduncles longer, so that the capitula do not appear to be in clusters**61. *V. kandtii***

The specimens from Malawi and Uganda that were examined for this study show variation in the structure of the inflorescence and therefore, do not support a separate species status for *V. kandtii*.

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Robinson H, Skvarla JJ (2010) The restoration of the genus *Vernonella* Sond. (Vernonieae: Asteraceae). Proceedings of the Biological Society of Washington 123(3): 181–192. doi: 10.2988/09-28.1

A new name and a new synonym in *Miconia* (Melastomataceae)

Susanne S. Renner¹, Renato Goldenberg²

1 Herbaria and University of Munich, Menzingerstr. 67, Munich, Germany **2** Departamento de Botânica, Universidade Federal do Paraná, 81531-970, Curitiba, Paraná, Brazil

Corresponding author: Susanne Renner (renner@lrz.uni-muenchen.de)

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Abstract

The name *Miconia densiflora* Cogn. (1886) is a later homonym of *M. densiflora* (Gardner) Naudin (1851), but since we propose it as a taxonomic synonym of *M. caudata* (Bonpl.) DC. (1828), we do not provide a new name. The name *Miconia longicuspis* Herzog (1909) is a later homonym of *M. longicuspis* Cogn. (1891) and we here propose its replacement by *M. longicuspidata* S.S. Renner & R. Goldenb.

Keywords

Bolivia, Colombia, Melastomataceae, *Miconia*, homonyms, synonyms, taxonomy

Introduction

The site Melastomataceae.net provides a portal to open-access databases dealing with Melastomataceae, a pan-tropical family of about 3500 species. Among the databases that can be accessed at this site is “MEL names,” which deals with the ca. 13,278 names of Melastomataceae and Memecylaceae (= Melastomataceae subfamily Olisbeoideae) and provides information on recognized species, synonyms, and relevant literature. In the course of dealing with the 1497 names available for *Miconia* Ruiz & Pav., a genus of at least 1061 accepted species, we discovered two homonymy problems, resolved here. Since one of the homonyms is actually a heterotypic synonym of another species, a replacement name is only needed for one of these species. A comprehensive taxonomic treatment of *Miconia* is currently in preparation, as part of the PBI Miconieae project (sweetgum.nybg.org/melastomataceae/).

Systematics

***Miconia longicuspida* S.S.Renner & R.Goldenb., nom. nov.**

urn:lsid:ipni.org:names:77111574-1

http://species-id.net/wiki/Miconia_longicuspida

Replaced name: *Miconia longicuspis* Herzog, Feddes Repert. Nov. Sp. 7: 64. 1909.

TYPE: BOLIVIA. Cordillera de Santa Cruz: Cerro Amboró, Cuñucú, 600–1400 m, Oct 1907, T.Herzog 326 (holotype: Z!). Not *Miconia longicuspis* Cogn. in A.DC. & C.DC, Monog. Phan. 7: 850. 1891.

Comments. *Miconia longicuspis* Herzog is a later homonym of *Miconia longicuspis* Cogn., a treelet from eastern Brazil (Goldenberg and Reginato 2006). *Miconia longicuspida* is known only from the holotype at Z, a collection by Theodor Herzog (1880–1961) in the mountains of Cuñucú, Bolivia, in 1907. We have found no isotypes or type photos in G, JE, L, U, W, or WAG. This species most closely matches *M. abbreviata* Markgr., a widespread shrub that ranges from Bolivia throughout the Amazon basin to the Guianas, but differs in the much denser secondary venation. In *M. abbreviata* the secondaries are spaced at about 0.5–0.7 mm apart, in *M. longicuspida*, only 2–3 mm apart. Theodor Herzog was an expert mountaineer and collector, who explored widely in Bolivia. During his two expeditions to that country in 1907/08 and 1910/11, he collected about 600 species of vascular plants. In 1910, Herzog not only explored the Cordillera Santa Cruz, where *M. longicuspida* appears to be endemic, but also surveyed the Cordillera de Cocapata, a range of peaks near Cochabamba extending northwest for about 100 kilometers. A description of the flora of the Cordillera de Santa Cruz is given in Herzog (1910). A color photograph of the type is available at <http://www.zuerich-herbarien.uzh.ch>.

***Miconia caudata* (Bonpl.) DC., Prodr. 3: 187. 1828.**

http://species-id.net/wiki/Miconia_caudata

Basionym: *Melastoma caudata* Bonpl., Monogr. Melast. 1: 13. t. 7. 1807.

New synonym: *Miconia densiflora* Cogn., Bot. Jahrb. 8(1): 22, 1887 [1886]; et in A. DC. & C. DC. Monog. Phan. 7: 744, 1891, *syn. nov.* TYPE: COLOMBIA. Cauca: Popayan, Apr 1883, Lehmann 2798 (Isotype: US!). Non *Miconia densiflora* (Gardner) Naudin, Ann. Sc. Nat. Ser. 3, 16: 245, 1851, basionym *Chaenopleura densiflora* Gardner, Hook. Lond. Journ. Bot. 2: 349, 1843.

Comments. *Miconia densiflora* Cogn. is a later homonym of *Miconia densiflora* (Gardner) Naudin, which in turn is a taxonomic synonym of *Miconia pusilliflora* (DC.) Triana, a shrub from eastern Brazil (Cogniaux 1891; Goldenberg 2000). By contrast, Cogniaux' *M. densiflora* is based on a collection made by Lehmann near Popayán, in

the State of Cauca, Colombia, in 1883. The name is undoubtedly a taxonomic synonym of the common and frequently collected *Miconia caudata* (Bonpl.) DC. Cogniaux (1891: 736, 739) erroneously states that *M. caudata* has glandular-pubescent filaments, while *M. densiflora* has glabrous ones. However, all 15 specimens of *M. caudata* that we checked had completely glabrous filaments. A color photograph of *M. densiflora*'s type is available at <http://www.botany.si.edu/types>.

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