

# A new species of *Rhipidoglossum* (Orchidaceae, Angraecinae) from the Western Rift Valley (Africa)

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## Abstract

**Background and aims** – *Rhipidoglossum* is the third most species-rich epiphytic orchid genus in continental Tropical Africa, containing at least 53 species. As part of an ongoing taxonomic revision, a new species endemic to the Western Rift Valley was identified. The novelty was previously confused with *R. adoxum* and *R. globulosocalcaratum*. Here, we aim to clarify the diagnostic traits and geographic distribution of these three species.

**Material and methods** – We applied standard herbarium taxonomic practices to a geographically representative sampling of dry and spirit specimens identified as *R. adoxum* and *R. globulosocalcaratum*, and conducted a thorough review of regional floras and field photographs to compile all available information on the novelty. A synoptic table, distribution map, and the risk of extinction based on IUCN Red List conservation status accompany the description and illustration of this new species.

**Key results** – *Rhipidoglossum fischerianum* sp. nov., *R. globulosocalcaratum*, and *R. adoxum* can be distinguished from each other based on stem size, leaf apex, perianth, and rostellum morphology. *Rhipidoglossum fischerianum* is endemic to the lower montane forests in the Western Rift, whereas *R. globulosocalcaratum* is restricted to the Guineo-Congolian forests, and newly recorded from Cameroon and Uganda. *Rhipidoglossum adoxum* is found in montane forests of Ethiopia, Kenya, and South Sudan. The new species is preliminarily assessed as Vulnerable (VU). The name *R. globulosocalcaratum* is here lectotypified.

**Conclusion** – This new species increases the diversity of *Rhipidoglossum* in the Western Rift to 16 species, of which 10 are endemic or near-endemic to the region. It highlights the relevant role of ongoing taxonomic work and the preservation of the Western Rift forests, which harbour high levels of unique biodiversity.

## Keywords

Afromontane, African biogeography, Afrotropical biodiversity, Albertine Rift, East African Rift Valley, Ethiopian Highlands, IUCN, lectotypification, root gall, Virunga mountains

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## INTRODUCTION

With 53 accepted species, *Rhipidoglossum* Schltr. is the most species-rich angraecoid (Orchidaceae: Vandaeae: Angraecinae) genus in continental Tropical Africa and the Gulf of Guinea Islands. It is also the third most diverse

epiphytic orchid genus in the region after *Bulbophyllum* Thouars and *Polystachya* Hook. (Govaerts 2025). Within the mystacidioid clade of angraecoids (Farminhão et al. 2021), *Rhipidoglossum* is recognised by the undivided lip and a non-papillate rostellum with a prominent midlobe (Farminhão et al. 2018). Lip and rostellum shape are

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remarkably variable in this genus (Summerhayes 1937; Farminhão 2016; Farminhão et al. 2018), flower colour ranges from whitish, greenish to orange and purple-red, and the morphology of the spur is species-specific (Cribb 2014; Farminhão et al. 2018). Over the last 15 years, several new species have been described from East Africa (Fischer et al. 2011; Farminhão and Cribb 2020; Cribb and Hemp 2022), and an ongoing taxonomic revision of the genus has revealed the existence of nine additional undescribed species from Central and East Africa (Farminhão 2016, 2021).

One of these novelties corresponds to plants previously identified as *R. globulosocalcaratum* (De Wild.) Summerh. (Summerhayes 1937: 82) from the Western branch of the Rift Valley, also known as the Albertine Rift (Geerincx 1987, 1992; Fischer et al. 2010, 2024a). This undescribed species was recently recorded multiple times in Rwanda, during fieldwork expeditions led by Eberhard Fischer and the last author, being reported as *R. fischeri* ined. in the Nyungwe forest, and as *R. globulosocalcaratum* in the Cyamudongo forest (Fischer et al. 2024a). The first reference to this undescribed *Rhipidoglossum* appears in a herbarium sheet annotation by Victor Samuel Summerhayes (1897–1974) at Kew, on one specimen collected in 1936 in the Kigezi forest, in Uganda (*W.J. Eggeling* 3238, [K000874506](#)), lacking mature flowers. This specimen was subsequently redetermined as *R. adoxum* (F.N.Rasm.) Senghas (Senghas 1986: 1110) on a tentative basis (Cribb 1989). Later, one additional specimen was collected in the Virunga Mountains, in Rwanda, and flowered in 1986 in cultivation under the care of H. Campbell in Nairobi, who deposited a spirit specimen at Kew, where it was recognised as an undescribed taxon by Phillip J. Cribb, but never formally published.

The new species is most similar to *R. globulosocalcaratum* from the Guineo-Congolian region (Droissart et al. 2006; Szlachetko et al. 2021), and *R. adoxum* from Ethiopia, Kenya, and South Sudan (Cribb 1989; Demissew et al. 2004; Friis and Vollesen 2005). To solve this long-standing confusion, we here describe and illustrate *Rhipidoglossum fischerianum* sp. nov. and review the diagnostic traits and geographical distribution of *R. globulosocalcaratum* and *R. adoxum*.

## MATERIAL AND METHODS

We analysed all specimens of *Rhipidoglossum* morphologically allied to *R. globulosocalcaratum* and *R. adoxum*, including types, housed at B, BR, BRLU, C, COI, G, K, LISC, LISU, LWI, MA, MO, P, PO, UPS, WAG, YA, Z, ZSS, and ZT (acronyms according to Thiers 2025). Dry-preserved specimens, rehydrated in Copenhagen mix, and spirit specimens were analysed under a stereomicroscope (Zeiss Stemi SV11). Except for the two-dimensional shapes, following Radford et al. (1974), the descriptive terminology follows Beentje (2016). Morphologic and geographic distribution were summarised into a synoptic table, deriving from new observations and taxonomic

literature (Summerhayes 1937; Rasmussen 1974; Senghas 1986; Cribb 1989; Szlachetko and Olszewski 2001; Demissew et al. 2004; Friis and Vollesen 2005; Fischer et al. 2010, 2024a; Szlachetko et al. 2021).

Habitat and ecological data were assembled from herbarium labels and fieldwork conducted in Cyamudongo Forest (Rwanda, January 2018) and Kahuzi-Biéga (Democratic Republic of the Congo, June 2018) National Parks, following the protocol described in Stévant et al. (2020). Non-flowering specimens of *R. fischerianum* were put in cultivation at the orchid garden of the research station of the University of Kaiserslautern-Landau in Huye (Rwanda). Flowering specimens in cultivation were photographed in September 2020.

For the assessment of the conservation status, 18 occurrences based on georeferenced herbarium samples and photographic records (Suppl. material 1) were imported into GeoCAT tool (Bachman et al. 2011) to calculate the extent of occurrence (EOO) and area of occupancy (AOO) with a 2 km<sup>2</sup> cell size, as suggested by IUCN (2024). A survey using Google Earth Pro software (Google 2025) was performed to identify potential threats, such as landscape changes, the presence of buildings and roads, and the preservation of buffer and border areas in preservation units to support our conservation assessment. A geographic distribution map was produced using the software QGIS v.3.40 (QGIS Development Team 2024).

## RESULTS

An in-depth herbarium taxonomy analysis supports the identification of a new taxon historically misidentified as *R. globulosocalcaratum* or *R. adoxum*. These misidentifications are due to the similar linear leaves, short and pendulous inflorescences, small whitish-greenish flowers, and the short spur of the three species. However, the morphological analysis revealed that the three species can be diagnosed based on stem size, leaf apex shape, sepals, petals, lip and spur shape, and rostellum morphology (Table 1).

The geographic distribution of these three taxa is also well-delimited (Fig. 1). While *R. fischerianum* sp. nov. is restricted to the lower montane forests in the Western Rift, *R. globulosocalcaratum* is confined to the Congolian and Lower Guinean forests, and here is first reported for Cameroon and Uganda. In turn, *R. adoxum* is restricted to the montane forests in the Eastern Rift system, in southwestern Ethiopia, South Sudan, and Kenya.

## TAXONOMIC TREATMENT

*Rhipidoglossum adoxum* (F.N.Rasm.) Senghas (Senghas 1986: 1110)

Fig. 1, Table 1

*Diaphananthe adoxa* F.N.Rasm. (Rasmussen 1974: 229)

**Table 1.** Diagnostic traits of *Rhipidoglossum fischerianum* and the morphologically similar *R. globulosocaratum* and *R. adoxum*.

	<i>R. fischerianum</i> sp. nov.	<i>R. globulosocaratum</i>	<i>R. adoxum</i>
<b>Maximum stem size</b>	300 × 15–20 mm	125 × 15–20 mm	235 × 20–30 mm
<b>Leaves</b>	up to 46, linear-falcate, apex acute, dark green, 13–82 × 1–4.5 mm	up to 14, narrowly oblong, apex unequally bilobed, light green, 28–75 × 3–10 mm	up to 30, linear-falcate, apex unequally bilobed, dark green, 23–122 × 2.7–3.2 mm
<b>Inflorescence</b>	3–5-flowered, up to 12 mm long	4–9-flowered, up to 12 mm long	8–11-flowered, up to 43 mm long
<b>Flower colour</b>	perianth white, anther cap lemon, column bright green	perianth white, anther cap pale yellow, column green	perianth green to tawny, anther cap pale yellow, column green to tawny
<b>Dorsal sepal</b>	widely elliptic to widely ovate, 3–3.1 × 2–2.2 mm	elliptic to widely elliptic, 2.5–2.6 × 1.7–1.8 mm	triangular to widely deltate, 1.5–1.7 × 0.7–0.8 mm
<b>Lateral sepals</b>	widely ovate, 3–3.3 × 1.5–1.7 mm	widely elliptic to subcircular, 2.1–2.2 × 1.7–1.8	triangular to widely deltate, 2.3–2.5 × 0.8–0.9 mm
<b>Petals</b>	widely elliptic, slightly concave, 2.3–2.5 × 1.7–1.8 mm	subcircular, concave, 1.9–2 × 1.7–1.8 mm	triangular to widely deltate, 2–2.1 × 1–1.2 mm
<b>Lip</b>	subcircular, markedly concave, bowl-shaped, spreading, apex shortly acuminate, 2.1–2.2 × 2.4–2.5 mm	transversally elliptic, convex, decurved, apex rounded, 1.7–1.8 × 2.7–2.8 mm	ovate, concave, decurved, apex acuminate, 2.1–2.3 × 1.7–1.9 mm
<b>Spur</b>	cupuliform, 1.4–2 × 0.8–1.1 mm	saccate, constricted at the base, 2–2.2 × 1.5–1.6 mm	cupuliform, 1–1.2 × 0.7–0.9 mm
<b>Anther cap</b>	pointed, with a small zenithal projection	rounded at the zenith	rounded at the zenith
<b>Viscidia</b>	oblong, extremities acute, enclosed onto the sides of the rostellum	elliptic, extremities rounded, enclosed onto the sides of the rostellum	subcircular, exposed laterally to the rostellum midlobe
<b>Rostellum midlobe</b>	nose-shaped, 0.7 × 0.7 mm	nose-shaped, 0.5 × 0.5 mm	oblong with subtriangular extremity, 0.3–0.4 × 0.1 mm

*Angraecopsis adoxa* (F.N. Rasm.) R.Rice (Rice 2005: 20)

**Type.** ETHIOPIA • Keffa Province: Bonga, near the catholic mission, on the path to the waterfall; 2000 m; s.d.; DELB 73–52; holotype: C n.v.

**Distribution.** Ethiopia, Kenya, and South Sudan (Fig. 1).

**Additional specimens examined.** ETHIOPIA – **Oromiya**

• East Wellega, ca 20 km along the road from Fincha to Shambu; 2750 m; 28 Oct. 1982; fl. in cult. in 1983; *B. Pettersson* 252; UPS-V [UPSV035695], ETH • ca 22 km W of Nekempto [Nekemte]; 2100 m; 18 Sep. 1975; fl.; *MG Gilbert & M Thulin* 837; UPS-V [UPSV818878], K • Arsri, between Ginir and Awash; 2060 m; 18 Apr. 1910; fl.; *Drake-Brockman* 212; K • Ilubabor, 3 km NE of Ghion, or 114 km SW of Addis-Ababa on the Jimma road; 2350 m; 26 Aug. 1970; fl. in cult. in Addis-Ababa, in Aug. 1971/3 Sep. 1971; *J. Ash* 280; K spirit [Spirit:35555.000] • ca 37 km N of Dembi; 1700 m; 4 Nov. 1982; fl. in cult. in Dec. 1985; *B. Pettersson* 284; UPS-V [UPSV35737] • Jima, State Forest 17 km from Jimma; 2000 m; 1 Sep. 1974; fl.; *J.J. Bos* 8546; BR [BR0000021550577], MO [MO6469113], WAG [WAG.0027799] • on road to Agaro, 17 km from Jimma; 2125 m; 30 Aug. 1972; fl.; *C.J.P. Seeger* 2554A; BR [BR0000021550584], MO [MO6469116], WAG [WAG.1140106, WAG.1140107] • in Badda Bunna forest, 10 km N of Jimma; 1800 m; 19 Dec. 1961; fl.; *G. Meyer* 7760; K • forest station Beleta (40 km to WSW from Jimma), near the road Jimma-Gojeb river, 0.6 km

to W from the station; 2050 m; 31 Mar. 1998; fl., fr.; VN *Pavlov* 133; MW [MW0585829] • Bale, ca 35 km north of Dolo Menna (Masslo), on road to Goba; 1950 m; 27 Oct. 1984; fr.; *I. Friis, M.G. Gilbert, K. Vollesen* 3560; K • 40 km NW of Kebre Mengist, along the road to Agere Selam; 2300 m; 19 Jul. 1970; fl.; *J.J.F.E. De Wilde* 6697; BR [BR0000021829406], MO [MO2693397], WAG [WAG.1140103, WAG.1140104]. – **South West Ethiopia** • Keffa, Bonga, near Wash-Wash, about 20 km NW of Bonga; 1800 m; 16 Aug. 1965; fl.; *WJJO De Wilde & BEE De Wilde-Duyffjes* 7743; BR [BR000005868230], MO [MO2263803], WAG [WAG.1140105] • forest area around small river behind the R.C. mission; 1740 m; 20 Jul. 1975; fl.; *P.C.M. Jansen* 2140; BR [BR000005689644], MO [MO6469122], WAG [WAG.1140110] • Wash-Wash (small village near Bonga), near tea plantation of H.V.A.; 22 Mar. 1976; fr.; *P.C.M. Jansen* 5428; MO [MO6469130], WAG [WAG.1140108]. – **Sidama** • Sidama; 2200 m; s.d.; fl.; *T. Hauger* 1597; K drawing.

**KENYA** • Nyeri, Mweiga; 8 May 1954; fl.; *P.G. Archer* 29787; K spirit • Mount Kenya; s.d.; fl. in cult. in Kew 14 Apr. 1972; *J. Stewart* 1498; K spirit [Spirit:28814.000] and drawing • Nairobi, Duke of York School [now Lenana School]; 15 May 1963; fl.; *Start* 175/63; EA, K.

**SOUTH SUDAN** – **Eastern Equatoria** • Ikotos, Valley between Gilo and Mt. Konoro; 1700 m; 16 Mar. 1982; fl.; *I. Friis & K. Vollesen* 1223; C, K.

***Rhipidoglossum globulosocaratum*** (De Wild.)

Summerh. (Summerhayes 1937: 82)

Figs 1–2, Table 1

*Diaphananthe globulosocarata* (De Wild.) Summerh.  
(Summerhayes: 1960: 142)

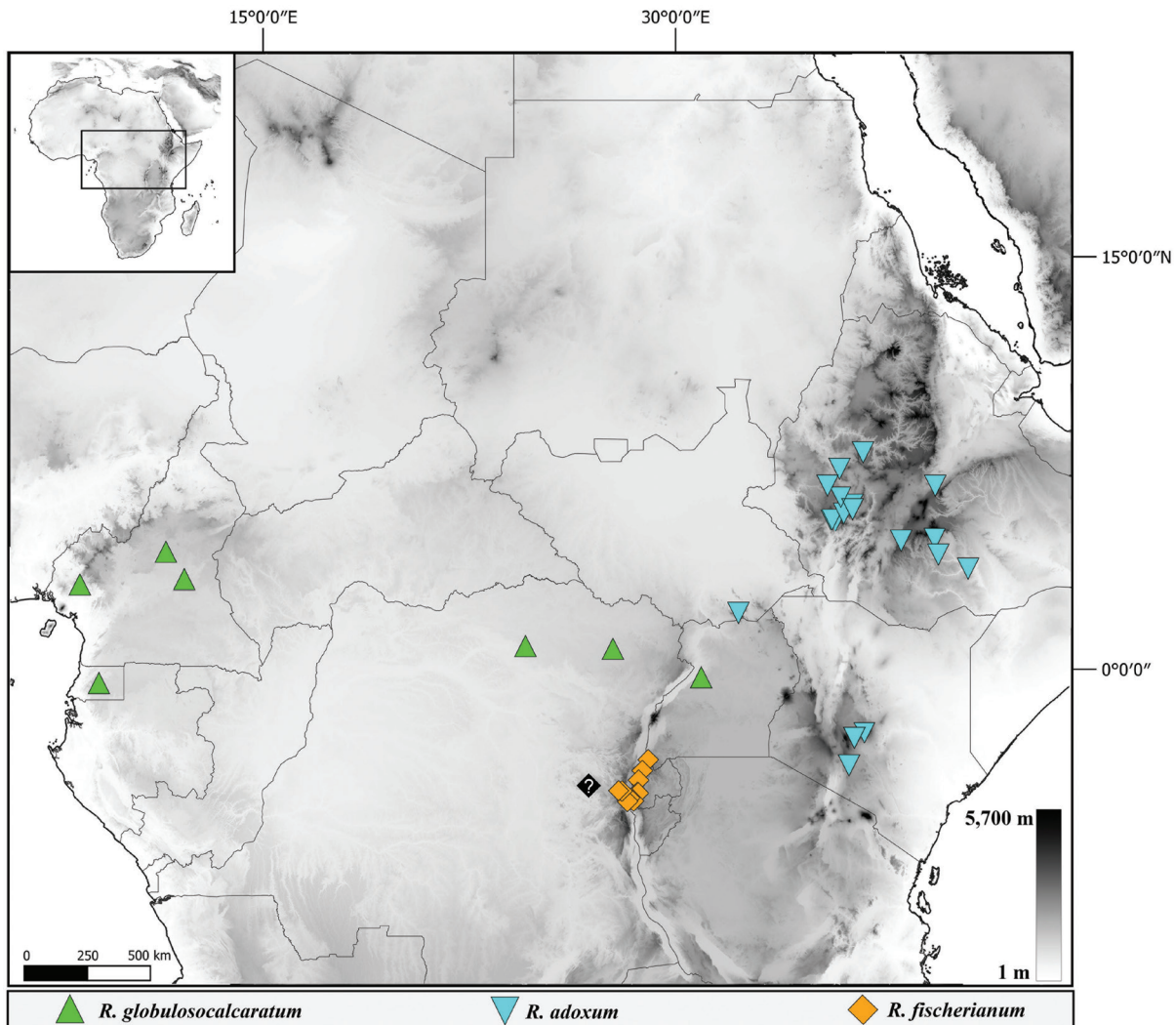
*Angraecum globulosocaratum* De Wild. (De Wildeman  
1916: 186)

**Type.** DEMOCRATIC REPUBLIC OF THE CONGO –  
**Bas-Uele Province** • Buta, [route] Zobia–Buta; 12 May  
1907; fl.; *F. Seret 871*; lectotype (**designated here**): BR  
[BR000008810670]; isolectotypes: BM [BM000539994],  
K [K000306286], P [P00388674].

**Notes.** Two gatherings are cited in the protologue of *R. globulosocaratum*: *Seret 871* and *Seret 582*. The latter is an unicate associated with *Angraecum globulosocaratum* var. *angustifolium*, considered here as a nomen nudum due to the absence of a description or diagnosis, following Art. 38.1 of the Shenzhen Code (Turland et al. 2018). Szlachetko et al. (2021) cited *Seret 871* in BR as the lectotype. However,

they did not include the expression “here designated” or similar, so this attempt of lectotypification is ineffective according to Art. 7.11 of the Shenzhen Code (Turland et al. 2018). As there are duplicates of *Seret 871* at BM, K, and P, we recognise the need to indicate a lectotype according to Art. 9.3 (Turland et al. 2018). The specimen kept at BR (BR000008810670), where Émile De Wildeman was based, is here selected as the lectotype (Suppl. material 2), and includes line drawings by H el ene Durand, which were used for the species description. Another specimen, by *Seret* with no field collector number (BR000008810663) nor original annotations by De Wildeman, was found in the same type folder of *R. globulosocaratum*, but the collection year (1906) is in conflict with *Seret 871*, and thus cannot be confidently regarded as belonging to the type gathering.

**Distribution.** Cameroon, Equatorial Guinea (Rio Muni), Democratic Republic of the Congo, and Uganda. Cameroon and Uganda represent new country records. All known occurrences from Rwanda correspond to *R.*



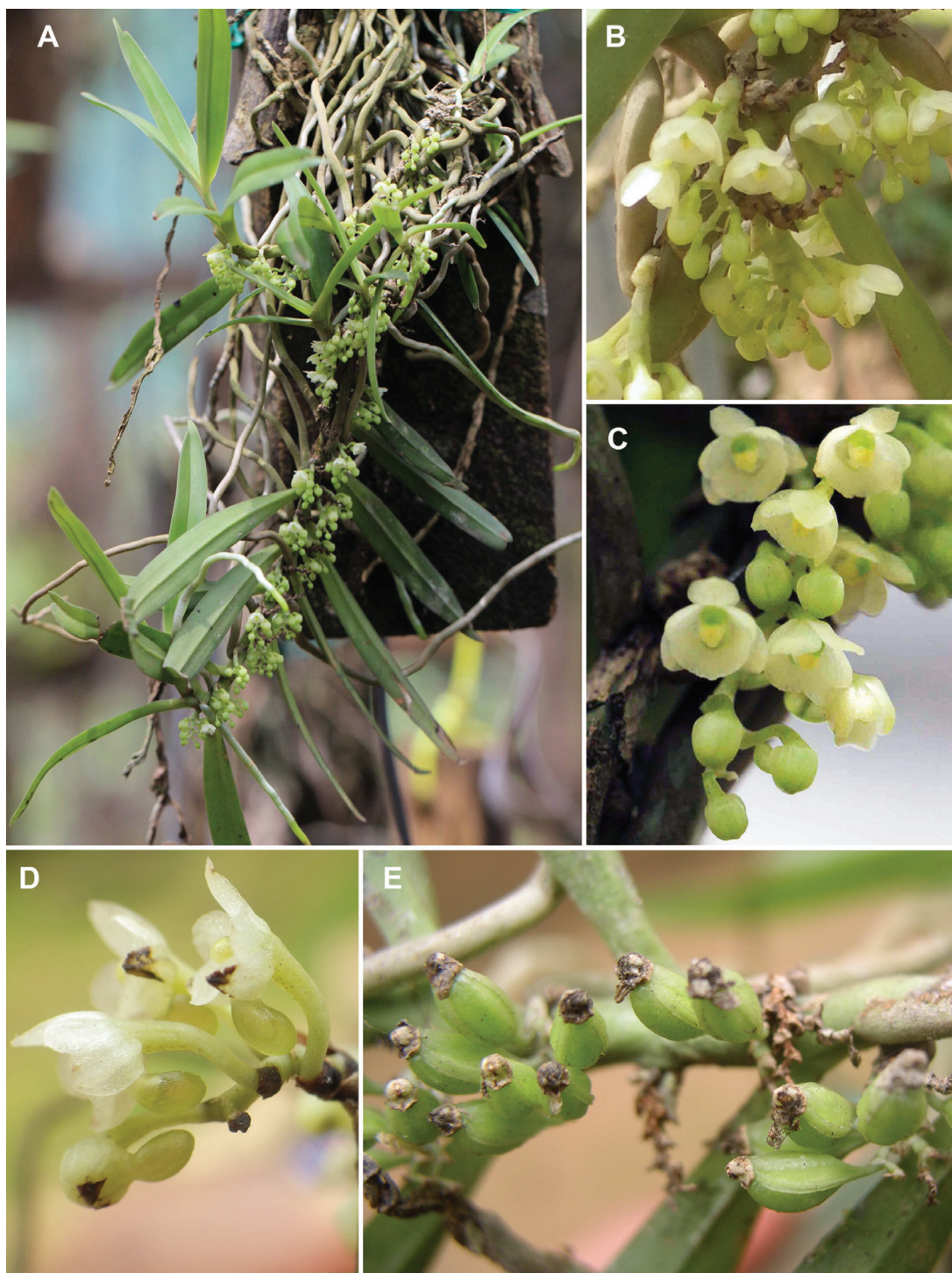
**Figure 1.** Distribution map of *Rhipidoglossum globulosocaratum*, *R. fischerianum*, and *R. adoxum* in continental Tropical Africa. The question mark indicates the location of Irangi (Democratic Republic of the Congo), a point occurrence of *R. globulosocaratum* (Biedinger and Fischer 1996) yet to be confirmed.

*fischerianum*. The occurrence of *R. globulosocaratum* at Irangi, DRC (Biedinger and Fischer 1996) must be confirmed (Fig. 1).

**Additional specimens examined.** CAMEROON – **Central Province** • Mbam-et-Kim, Parc National du Mbam et Djérem, à 6,6 km de Myéré; 753 m; 2 Jun. 2011; fl.; *Yaoundé shadehouse series* 2837; BRLU spirit. – **Southwest Province** • Koupé-Manengouba, Crête

NW Muetan Aku, 9 km SW Bangem; 2 Jun. 1982; fl.; *J.F. Villiers 1404*; P [P00383748], YA [YA47310]. – **Eastern Province** • Lom-et-Djérem, Parc National de Deng Deng; 708 m; 4 Jun. 2015; fl.; *Yaoundé shadehouse series* 6102; BRLU spirit.

EQUATORIAL GUINEA (RIO MUNI) – **South-Centre Province** • Bicurga; 680 m; 22 May 2002; fl.; *T. Stévert 1514*; BRLU spirit • Bicurga; 643 m; s.d.; fl.; *T. Stévert 285*;



**Figure 2.** *Rhipidoglossum globulosocaratum*. A. Habit. B. Inflorescences with buds and flowers. C. Inflorescence with open flowers in frontal view. D. Flowers (lateral view). E. Fruits. Photographs by Vincent Droissart (Cameroon, *Yaoundé shadehouse series* YA6102, BRLU).

BRLU spirit • Bicurga; 623 m; 12 Jul. 2001; fl.; *T. Stévert* 956; BRLU spirit • Bicurga; 730 m; 20 May 2002; fl.; *I. Parmentier* & *P. Esono* 3189; BRLU spirit.

DEMOCRATIC REPUBLIC OF THE CONGO – **Ituri** • Mambasa, Village Magbagba; 22 May 1906; fl.; *F. Seret* 582; BR [BR0000006800758]. – **Without locality** • 1906; *F. Seret s.n.*; BR [BR0000008810663].

UGANDA – **Western Region** • Buliisa, Budongo Forest; s.d.; fl.; *C.L.A. Leakey* 33027; K spirit [Spirit:33027.000] • *ibid.*; 1010 m; Feb. 1996; st.; *D.L.N. Hafashimana* 0024; K.

*Rhipidoglossum fischerianum* A.R.Macedo & Farminhão, **sp. nov.**

Figs 3–5, Table 1

urn:lsid:ipni.org:names:77366888-1

**Type.** RWANDA – **Western Province** • Rusizi district, Cyamudongo Forest (Nyungwe National Park), Kaboza; 2°33'06.94"S, 28°59'19.68"E; ca 1900 m; 23 Oct. 2019; fl.; *B. Dumbo* 17; holotype: BRLU; isotype: K.

**Diagnosis.** *Rhipidoglossum fischerianum* is most similar to *R. globulosocalcaratum* and *R. adoxum*, but can be distinguished by the following characteristics: leaves dark green, linear-falcate with acute apex (vs light green, narrowly oblong with unequally bilobed apex in *R. globulosocalcaratum*; vs dark green, linear-falcate with unequally bilobed apex in *R. adoxum*); inflorescences with fewer flowers, 3–5 (vs 4–9 in *R. globulosocalcaratum*; vs 8–11 in *R. adoxum*); larger lateral sepals, widely ovate, 3–3.3 × 1.5–1.7 mm (vs widely elliptic to subcircular, 2.1–2.2 × 1.7–1.8 mm in *R. globulosocalcaratum*; vs triangular to widely deltate, 2.3–2.5 × 0.8–0.9 mm in *R. adoxum*); lip subcircular, markedly concave and bowl-shaped, spreading (vs transversally elliptic, convex, decurved in *R. globulosocalcaratum*; vs ovate, concave, decurved in *R. adoxum*); a lemon anther cap with a small pointed zenithal projection (vs pale yellow anther cap rounded at the zenith in both species); oblong viscidia with acute extremities, enclosed onto the sides of the rostellum (vs ellipsoid viscidia and rounded extremities, enclosed onto the sides of the rostellum in *R. globulosocalcaratum*; vs subcircular, exposed laterally to the rostellum midlobe in *R. adoxum*).

**Description.** Epiphytic, pendent herb, up to 300 mm tall. Roots slender, basal and axillary, usually 2(–4) per node, distributed all along the stem, greenish–whitish, 15–90 × 7–15 mm. Stem spreading to pendent, elongate, rarely branched, up to 300 × 1.5–2 mm, internodes 2–6.5 mm long. Leaves usually 20–30 (46), distichous, dark green, concolourous, linear-falcate, entire, apex acute, base attenuate, 13–82 × 1–4.5 mm. Inflorescences up to 2 per node, axillary, much shorter than the leaves, 3–5-flowered, 9–12 mm long; peduncle glabrous, 4.5–6.5 mm long; rachis glabrous, 4.5–5.5 mm long; bracts deltate, 1 × 0.7–1.3 mm. Pedicel and ovary cylindrical, glabrous, 3.5–5.3 × 0.7 mm; dorsal sepal widely elliptic to widely ovate, apex obtuse, white to ivory, margin entire, 3 × 2–2.2 mm, lateral sepals widely ovate, apex acute, white to ivory, margin entire, 3–3.3 × 1.5–1.7

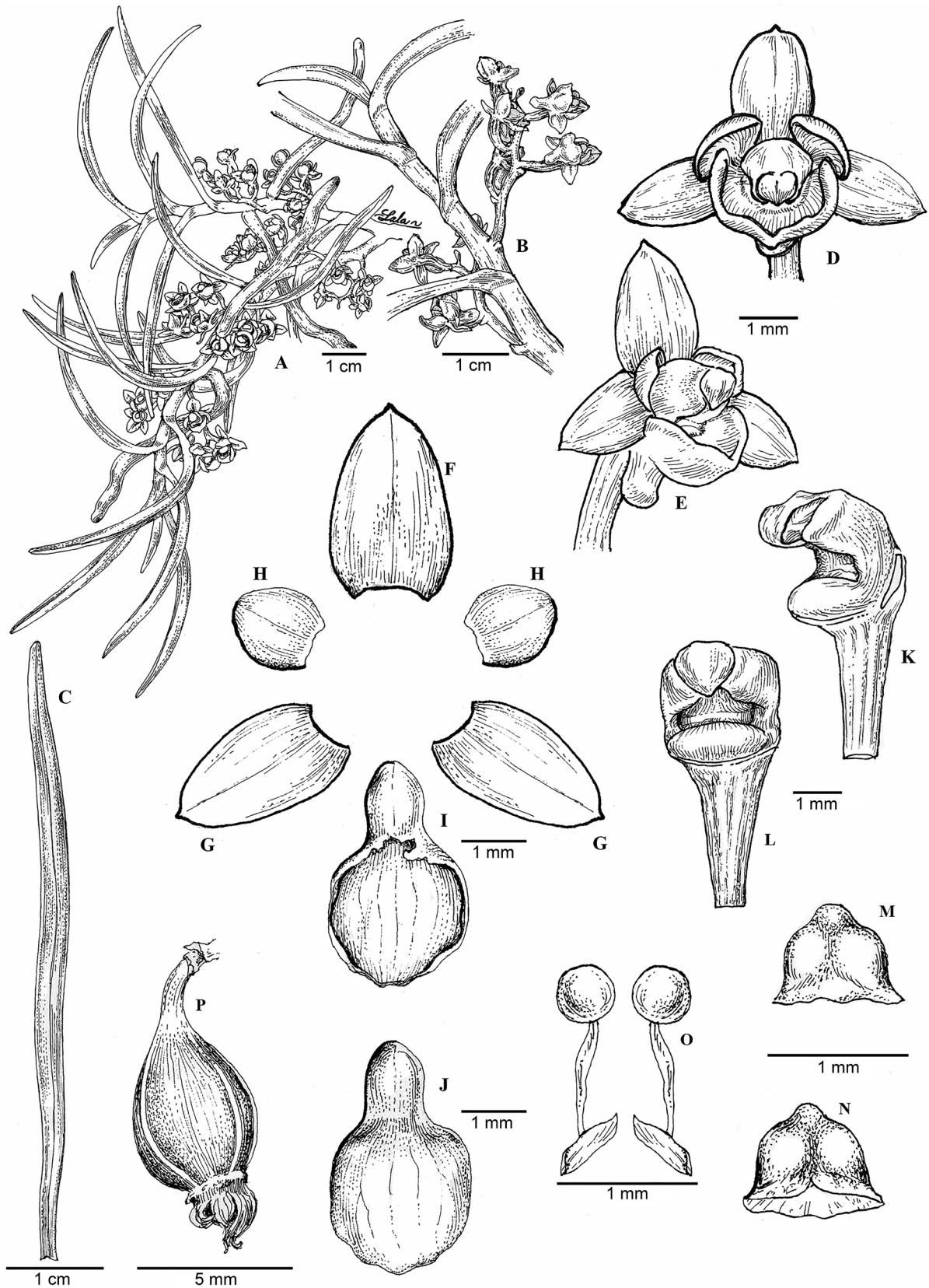
mm; petals widely elliptic, apex acute, slightly concave, white to ivory, margin entire, 2.3–2.5 × 1.7–1.8 mm, lip subcircular, markedly concave, bowl-shaped, spreading, white to ivory, margin slightly involute, lacking a callus, 2.1 × 2.4–2.5 mm; spur cupuliform, straight, greenish–whitish, 1.4–2 × 1 mm; column bright green, decurved, ca 1.5 mm long; anther cap with a small pointed zenithal projection, frontal margin rounded, lemon-coloured, 0.8 × 0.8 mm; stipes two, obclavate, viscidia two, oblong, acute extremities, translucent, enclosed in the viscidium; pollinia two, globose, 0.5 × 0.5 mm; rostellum trilobate, lateral lobes reduced, triangular, midlobe nose-shaped, with prominent lateral viscidial cavities, slightly recurved, ca 0.7 × 0.7 mm. Fruit, a capsule, globose, ribbed, 6 × 3.8–4 mm.

**Distribution.** *Rhipidoglossum fischerianum* is endemic to the Western Rift Valley in Central and Eastern Africa, occurring in the Democratic Republic of the Congo, Uganda, and Rwanda, between 1900 and 2605 m a.s.l. (Fig. 1).

**Habitat and ecology.** *Rhipidoglossum fischerianum* is an epiphytic herb occurring in primary and secondary lower montane forests. In Nyungwe and Kahuzi-Biéga National Parks, it was observed growing on trunks and large branches at 2.5–4 m above the ground, in full sun and partly shaded areas, in forests dominated by *Carapa wollebenii* Eb.Fisch., Killmann, Leh & S.B.Janssens, and *Newtonia buchananii* (Baker) G.C.C.Gilbert & Boutique, with *Myrianthus holstii* Engl., *Polyscias fulva* (Hiern) Harms, *Entandrophragma excelsum* (Dawe & Sprague) Sprague, and *Symphonia globulifera* L.f.; as well as in swamp forest with *Syzygium parvifolium*, (Engl.) Mildbr., *Carapa wollebenii*, *Anthocleista grandiflora* Gilg, and *Afrocarpus usambarensis* (Gilg) C.N.Page. It can also be found in heath swamp. Recorded phorophytes include *Erica* sp., *Ficus* sp., *Millettia dura* Dunn, *Myrianthus holstii*, and *Xymalos monospora* (Harv.) Baill. A root gall was observed in one specimen (*J. Farminhão* & *B. Dumbo* 233), collected in Cyamudongo Forest (Fig. 5).

**Column morphology.** *Rhipidoglossum fischerianum* presents a bulging rostellum midlobe with two prominent lateral cavities enclosing the viscidia. This morphology, shared with *R. globulosocalcaratum*, vaguely resembles a human nose: the “nostrils” are the viscidial cavities; the “columella” the midlobe apex. This ‘nose-shaped rostellum’, as first coined herein, is conspicuously different from the slender, axe-shaped, midlobe of *R. adoxum* (see Rasmussen 1974: 230), in which the viscidia are laterally exposed, immediately before the auricles of the apex. Dissected flowers revealed an unusual column morphology, characterised by an inward curvature and slight inflation. These traits may reflect post-pollination modifications. Further investigations to confirm the prevalence of this phenomenon within the genus are still required.

**Phenology.** Flowers between (July) late August and December (March). Fruits were observed in March, September, and December.



**Figure 3.** *Rhipidoglossum fischerianum*. A. Habit. B. Stem apex with two inflorescences. C. Leaf. D. Flower: frontal view. E. Flower: lateral view. F. Dorsal sepal. G. Lateral sepals. H. Petals. I. Lip: superior view. J. Lip: inferior view. K. Column: lateral view. L. Column: frontal view. M. Anther cap: frontal view. N. Anther cap: posterior view. O. Pollinaria. P. Fruit. Illustration from B. Dumbo 17 (holotype, BRLU). Drawn by Roger Andriamiarisoa.

**Etymology.** The epithet celebrates Eberhard Fischer, PhD, Professor at the University of Kaiserslautern-Landau (formerly University of Koblenz-Landau) for his outstanding contributions to the floristics and taxonomy of the orchids of the Western Rift region.

**Preliminary IUCN conservation assessment.**

*Rhipidoglossum fischerianum* is known from 12 herbarium and spirit samples and six observations representing 18 existing occurrences, the most recent made in 2021. Except for one observation in (Gisenyi, Rwanda), all occurrences were made inside or associated with official protected areas (Bwindi Impenetrable Forest National Park, Uganda; Volcanoes National Park, Gishwati Forest (Gishwati-Mukura National Park), and Nyungwe National Park (Rwanda); and Kahuzi-Biéga National Park (Democratic Republic of the Congo). The 18 existing occurrences represent a total of seven subpopulations corresponding to each protected area or forest block (Bwindi Impenetrable Forest National Park, Volcanoes National Park, Gisenyi, Gishwati Forest, Nyungwe National Park, Cyamudongo Forest, and Kahuzi-Biega National Park). The occurrence area is considered severely fragmented due to urban and agroforestry encroachment

for tea plantations, and 8 locations with respect to the most serious plausible threat, habitat degradation due to the combined effects of forestry (tea and pine plantations), urban expansion and mining exploration. Habitat degradation driven by urban expansion, subsistence agriculture, tea and *Pinus patula* Schiede ex Schltdl. & Cham. plantations are the main threat over the Gisenyi subpopulation (Chao et al. 2011; Plumptre et al. 2016, 2020), the only unprotected subpopulation, recorded once in 2009. Virtually no native forest was left around Gisenyi city, where this subpopulation is likely near or completely extinct. Evidence of direct human impact on the vegetation, logging, buildings, and landscape degradation is notable within Kahuzi-Biéga National Park. In contrast, the largest population, located within Nyungwe National Park, appears to be in a relatively stable conservation unit. The extent of occurrence (EOO) is calculated as 6,850 km<sup>2</sup> (falling within the limits for Vulnerable status under criterion B1), whereas its area of occupancy (AOO) is estimated at 52 km<sup>2</sup> (within the limits for Endangered status under criterion B2), and the number of locations being equal to 8, within the limits for Vulnerable status under criterion

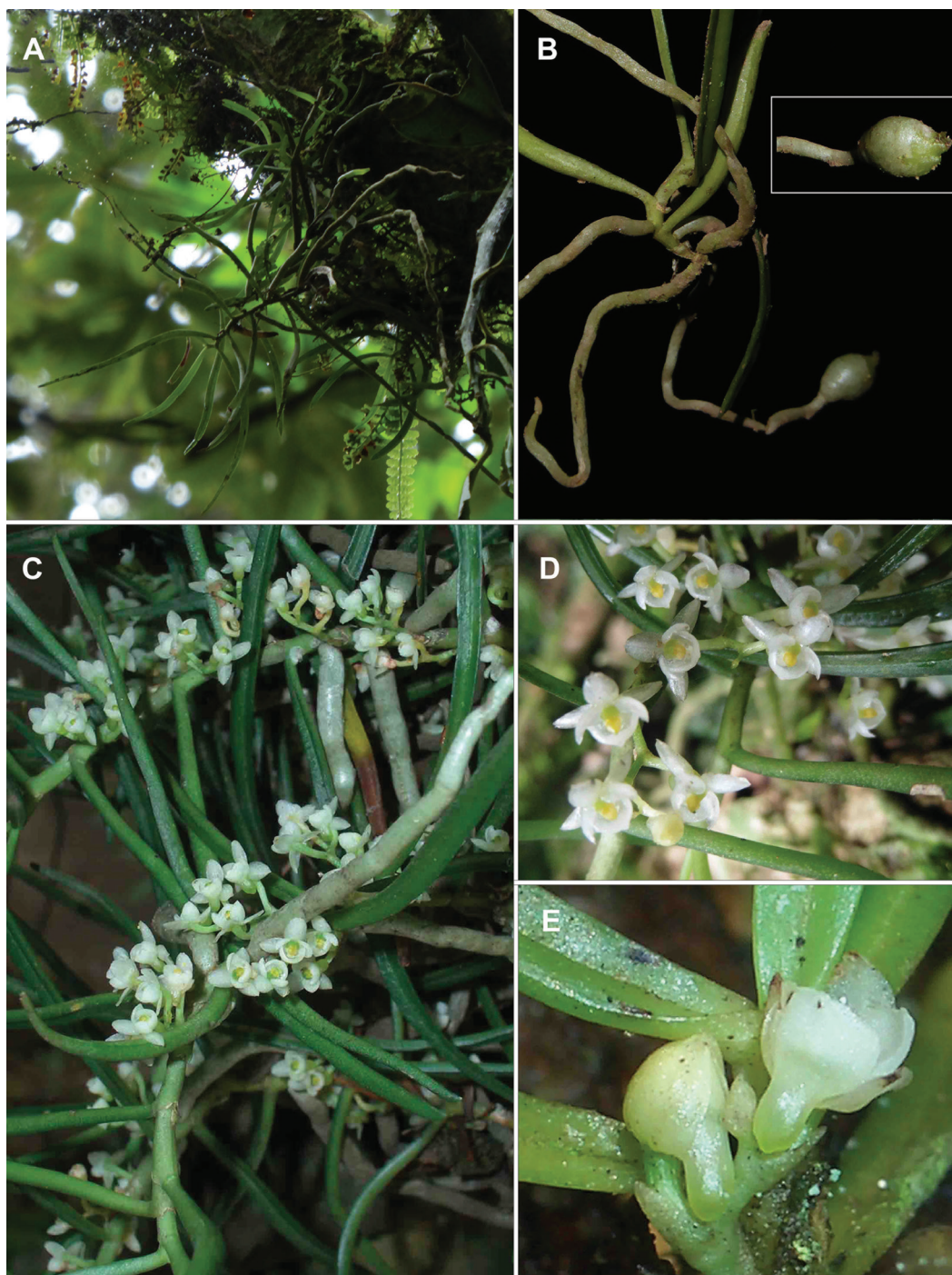


**Figure 4.** Watercolour of *Rhipidoglossum fischerianum* [BR000006800420]. Prepared by Gilbert Delepierre, December 1991.

Ba. The projected loss of the Gisenyi subpopulation, and contraction of the area of occupancy in the Kahuzi-Biega subpopulation, is associated with a continuing decline in EOO, AOO, habitat extent and quality, and mature individuals. *Rhipidoglossum fischerianum* is thus assigned a preliminary risk of extinction status of Vulnerable: VU B1ab(i,ii,iii,iv).

**Additional specimens (paratypes) examined.** UGANDA – **Western Province** • Kigezi; Sep. 1936; fl. bud; *W.J. Eggeling* 3238; K [[K000874506](#)].

RWANDA – **Northern Province** • Musanze, Virunga Mountains; fl. in cult. 20 Aug. 1986; *H. Campbell s.n.*; K. – **Western Province** • Karongi district, Nyungwe, piste Gisovu; s.d.; fl.; *G. Delepiepierre 174*; BR spirit [[BR6102016347583](#)] • Gisakura, cult. in Kigali; 1978; fl. in cult.; *P. De Wanckel in G. Troupin 15949*; BR [[BR0000006802615](#)] • Nyamasheke district, Parc National Nyungwe, Kamiranjovu [Kamiranzovu swamp]; 19 Mar. 1956; *A.R. Christiansen 1452*; BR [[BR0000025200188](#)] • *ibid.*; Jul. 1975; fl. in cult. in Dec. 1975; *G. Troupin*



**Figure 5.** *Rhipidoglossum fischerianum*. A. Habit. B. Habit with close-up of a root gall (*J. Farminhão & B. Dumbo 233*, BRLU). C. Habit (Gisenyi). D. Inflorescences (Cyamudongo Forest, from holotype *B. Dumbo 17*, BRLU). E. Flower: inferior view, showing spur (Gishwati Forest, unvouchered). Photographs by João Farminhão (A, B), Eberhard Fischer (C, E), and Bonny Dumbo (D).

15757; BR [BR000006799762, BR6102008659267 spirit]  
 • Rusizi district, Cyamudongo Forest, Kaboza; 20 Sep. 2021; fl.; cult. in Huye; *E. Fischer s.n.*; BRLU • *ibid.*, cult. in Butare; 02°33'48"S, 28°58'59"E; 2029 m; 30 Jan. 2018; st.; *J. Farminhão* & *B. Dumbo* 233; BRLU, spirit.  
 DEMOCRATIC REPUBLIC OF THE CONGO – **Sud Kivu Province** • Beni, Kabare, Kahuzi Biega National Park; 2°10'48.68"S, 28°39'58.024"E; 2605 m; 15 Jun. 2018; fl. in cult. in Lwiro 21 Oct. 2019 and in Huye 20 Aug. 2020/7 Sep. 2020; *L. Dumbo* & *B. Dumbo* 1; LWI • Beni, Kabare, Kahuzi Biega National Park, Tshibati Sector; 2°11'55.94"S, 28°46'58.70"E; 2125 m; 16 May 2010; *J. de D. Mangambu Mokoso* 2888; BR [BR000005596300].

## DISCUSSION

New angiosperm species continue to be described from the Western Rift Valley on a regular basis (e.g. D'hajjère et al. 2021; Fischer et al. 2021, 2024b), highlighting the need for further exploration in the region. With the description of *R. fischerianum*, the genus now has 16 species in the Western Rift Valley, including 10 endemics or near-endemics to the area (Govaerts 2025). This is near one-third of the total diversity of *Rhipidoglossum*, which now includes 54 species, suggesting that this mountain system is a major diversification centre for the genus and several other taxonomic groups (D'hajjère et al. 2022; Fischer et al. 2021, 2024a). Moreover, this discovery highlights the importance of continued preservation and monitoring of threats in the Afromontane Forest fragments in the Western Rift Valley.

To date, only 15 species of *Rhipidoglossum* have been assessed in the IUCN Red List, with six being endemic or occurring in the Western Rift Valley: *R. arbonnieri* (Geerinck) Eb.Fisch., Killmann, J.-P. Lebel & Delep. (Fischer et al. 2011: 445) (LC), *R. bilobatum* (Summerh.) Szlach. & Olszewski (Szlachetko and Olszewski 2001: 862) (VU), *R. delepierreanum* (J.-P. Lebel & Geerinck) Eb.Fisch., Killmann, J.-P. Lebel & Delep. (Fischer et al. 2011: 445) (LC), *R. globulosocaratum* (EN), *R. ovale* (Summerh.) Garay (Garay 1972: 195) (VU), and *R. ugandense* (Rendle) Garay (Garay 1972: 196) (VU) (IUCN 2024; Govaerts 2025). Another 14 species occurring in the Western Rift are awaiting a conservation status assessment, which should be provided in future monographic work or conservation checklists.

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## SUPPLEMENTARY MATERIALS

### Supplementary material 1

Photographic records of *Rhipidoglossum fischerianum* made in Rwanda, Western Province (A–F) and the Democratic Republic of the Congo, Sud-Kivu (G). Except for G, these are unvouchered records (no existing specimen associated). **A.** Kubavu district, Gisenyi, 3 Oct. 2009. **B.** Karongi district, Piste Gisovu, 25 Mar. 2009. **C.** Rutsiro district, Gishwati Forest, 20 Sep. 2010. **D.** Rusizi district, Cyamudongo Forest, 25 Jan. 2018 (database record: J. Farminhão and B. Dumbo cult. RWA117). **E.** Rusizi district, Cyamudongo Forest, 30 Jan. 2018, (database record: J. Farminhão and B. Dumbo cult. RWA152). **F.** Rusizi district, Cyamudongo Forest, 30 Jan. 2018 (database record: J. Farminhão and B. Dumbo cult. RWA153). **G.** Kabare, Parc National Kahuzi-Biega, 15 Jun. 2018, *L. Dumbo* and *B. Dumbo 1* (LWI). Photographs by Eberhard Fischer (A–C) and Bonny Dumbo (D–G).

<https://doi.org/10.5091/plecevo.155517.suppl1>

### Supplementary material 2

Lectotype of *Rhipidoglossum globulosocaratum* at BR [BR000008810670].

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