Erasanthe (Orchidaceae, Epidendroideae, Vandeae, Aerangidinae), a new endemic orchid genus from Madagascar

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ABSTRACT
A new genus, *Erasanthe* P.J.Cribb, Hermans & D.L.Roberts, is erected for *Aeranthes henrici* (Schltr.) P.J.Cribb, Hermans & D.L.Roberts, an aberrant species in *Aeranthes* Lindl. This new genus is morphologically distinct from *Aeranthes*, having stout roots, oblanceolate leaves with undulate margins and stout inflorescence axes, bearing simultaneously several white to pale green flowers, rather than fibrous roots, linear leaves with flat margins, and wiry inflorescences bearing translucent flowers, usually borne in succession. Its large flower is also distinct for its lacerate lip and very long slender spur, neither feature being present in other *Aeranthes*. Recent DNA studies, based upon ITS and *MatK* gene sequences, have indicated that *Erasanthe* is sister to a clade comprising *Beclardia*, *Cryptopus* and *Oeonia*, that is quite distant from the clade containing the other *Aeranthes* species which form a clade sister to *Jumellea*, another predominantly Madagascan genus.

KEY WORDS
Orchidaceae,
Aeranthes,
Aeranthes henrici,
Erasanthe,
endemic,
Madagascar,
conservation status,
new genus.

RÉSUMÉ
Erasanthe *(Orchidaceae, Epidendroideae,Vandeae, Aerangidinae), un nouveau genre endémique d'orchidées de Madagascar.*
Un nouveau genre, *Erasanthe* P.J.Cribb, Hermans & D.L.Roberts, est établi pour *Aeranthes henrici* (Schltr.) P.J.Cribb, Hermans & D.L.Roberts, une espèce aberrante d'*Aeranthes* Lindl. Il se distingue morphologiquement d'*Aeranthes* par ses racines robustes, ses feuilles oblancéolées à marges ondulées et ses axes d'inflorescences vigoureux, portant simultanément plusieurs fleurs blanches à vert pâle, au lieu de racines fibreuses, feuilles linéaires avec marges plates, et des inflorescences raides portant des fleurs translucides, habituellement portées en succession. Sa grande fleur se distingue aussi par sa lèvre lacérée et son éperon très long et fin, traits que l'on ne trouve pas chez les autres *Aeranthes*. Des études récentes de l'ADN basées sur les séquences des gènes ITS et *MatK* ont indiqué qu'*Erasanthe* est le groupe-frère d'un clade comprenant *Beclardia*, *Cryptopus* et *Oeonia*, c'est-à-dire relativement distant du clade contenant les autres espèces d'*Aeranthes* qui forment un groupe-frère de *Jumellea*, autre genre prédominant à Madagascar.

MOTS CLÉS
Orchidaceae,
Aeranthes,
Aeranthes henrici,
Erasanthe,
endémique,
Madagascar,
statut de conservation,
nouveau genre.

INTRODUCTION

The recent work of Carlsward *et al.* (2006) has confirmed the view of many recent morphological assessments that widely used generic attribution of African and Madagascan angraecoid orchids by Schlechter (1918) needs to be critically reassessed. Their analyses did not include many species of the predominantly Madagascan genus *Aeranthes* Lindl. However, recent DNA analyses by Micheneau (2005) suggest strongly that *Aeranthes*, as currently understood, is paraphyletic.

The genus *Aeranthes*, comprising some 48 species, is well represented in Madagascar and the adjacent islands where all but two of the species are found, the exceptions being *Aeranthes africana* J.Stewart (1978) and *A. parkesii* G.Will. (Williamson 1990), both from Zimbabwe. The genus is characterised by its wiry branching roots, short to long stems with distichous, more or less linear, leathery leaves and translucent greenish, yellowish or white flowers, an inflated and shortly spurred hypochile and a trullate to ovate epichile to the lip and pollinia, each attached to its own viscidium.

Of all the *Aeranthes* species in Madagascar, the Mascarenes, Comoros and Africa, the large-flowered Madagascan endemic orchid *Aeranthes henrici* does not fit particularly well in the genus on morphological criteria. It was described by Rudolf Schlechter (1925), who named it in honour of the French botanist Henri Perrier de la Bâthie who collected extensively in the island and was author of the orchid account for the *Flore de Madagascar* (1939, 1941). It is morphologically distinct from other species of *Aeranthes*, having stout roots, oblanceolate leaves with undulate margins and stout inflorescence axes, bearing simultaneously several large white flowers marked with green on the lip, rather than fibrous roots and wiry inflorescences and smaller translucent flowers. Its large flower is also distinct for its lacerate lip and very long slender spur, neither feature being present in other *Aeranthes*. In its roots, inflorescence and long slender spur it is morphologically closer to *Aerangis* than to *Aeranthes*. Recent DNA studies, based upon ITS and *MatK* gene sequences, by Micheneau (2005) have indicated that *A. henrici* is sister to a clade comprising *Beclardia*, *Cryptopus* and *Oeonia*, that is quite distant from the clade containing the other *Aeranthes* species which form a clade which is sister to *Jumellea*, another predominantly Madagascan genus.

We erect a new genus for this unusual species which is represented in Madagascar by the typical subspecies from the north and a subspecies *isaloensis* from the south-west of the island. The relationship of these taxa needs further investigation.

SYSTEMATICS

Genus *Erasanthe*
P.J.Cribb, Hermans & D.L.Roberts, gen. nov.

Madagascariensi endemico affinis Aeranthi Lindl. *sed radicibus grossis, foliis oblanceolatis, pedunculo rachidique grossis, floribus majoribus albis viridibusque aliquot per inflorescentia, simultaneis florentibus, labello lacerato ad marginem et calcare gracile elongato satis differt.*

TYPE. — *Aeranthes henrici* Schltr.

DISTRIBUTION. — Endemic to Madagascar.

REMARKS

Erasanthe is established here to accommodate the aberrant *Aeranthes henrici* which differs from other species of *Aeranthes* in having stout roots, stout inflorescences with several white flowers borne simultaneously, and flowers with a lacerate lip and elongate slender spur much longer than the lip. The generic name *Erasanthe* is derived from an anagram of *Aeranthes*. It is a monotypic genus endemic to Madagascar. The following new combinations are required.

Erasanthe henrici (Schltr.)
P.J.Cribb, Hermans & D.L.Roberts, comb. nov.
(Fig. 1)

Aeranthes henrici Schltr., *Fedde, Repertorium Specierum Novarum Regni Vegetabilium* 33: 278 (1925). — Type: Madagascar, Sambirano Mts., Manongarivo Massif, *H. Perrier de la Bâthie 8128* (holo-, P!).

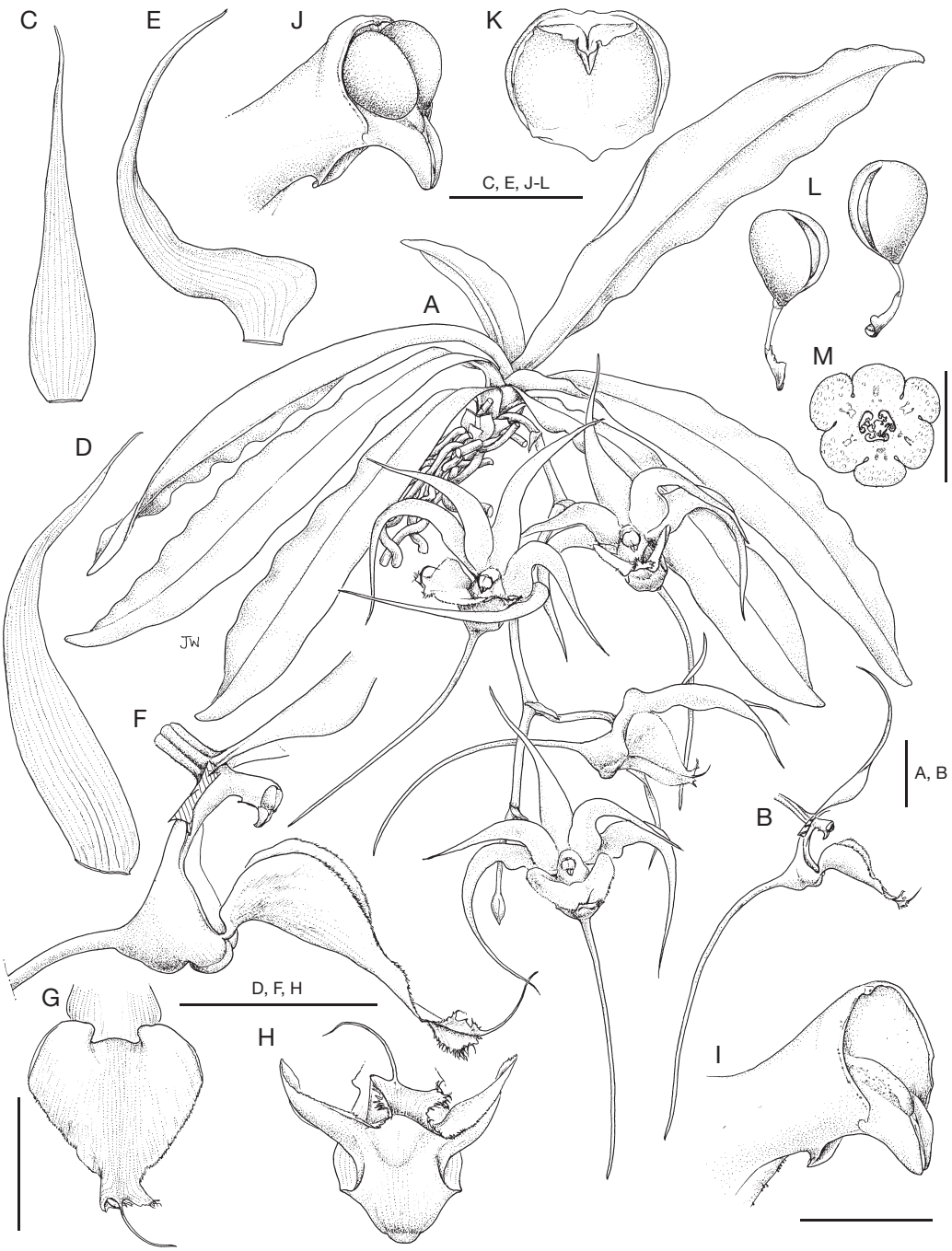

FIG. 1. — *Erasanthe henrici* (Schltr.) P.J.Cribb, Hermans & D.L.Roberts: **A**, habit; **B**, flower, side view with lateral sepals and petals removed; **C**, dorsal sepal; **D**, lateral sepal; **E**, petal; **F**, flower, side view with lateral sepals and petals removed; **G**, lip, dorsal view; **H**, lip ventral view; **I**, column, side view with anther-cap removed; **J**, column, side view with pollinarium removed; **K**, anther-cap; **L**, pollinia; **M**, ovary, transverse section. A, *Perrier de la Bâthie 8128*; B-M, *J. Hermans 374* (Kew spirit collection no. 63582). Drawings by Juliet Beentje. Scale bars: A-H, 30 mm; I-M, 5 mm.

Erasanthe henrici (Schltr.)
P.J.Cribb, Hermans & D.L.Roberts
subsp. ***isaloensis*** H.Perrier
ex P.J.Cribb, Hermans & D.L.Roberts, subsp. nov.

Aeranthes henrici Schltr. var. *isaloensis* H.Perrier, *Flore de Madagascar, Orchidées* 2: 138 (1941), *nomen nudum*.

A subspecie typica bracteis triangularibus acutis, floribus minoribus, lamina tranverse elliptica et columna longiore differt.

TYPUS. — **Madagascar.** Isalo, X.1924, *H. Perrier de la Bâthie 16895* (holo-, P!).

REMARKS

The sole species *E. henrici* is represented by two subspecies: the typical one is found north of Antananarivo to Tsaratanana Madagascar whereas subsp. *isaloensis* is confined to gorges in the Isalo Massif and remnant forests to the south-west towards Toliara. It differs from the typical subspecies in its triangular, acute floral bracts and smaller flowers which have a lip with an elliptic-transversal basal lamina extending into a square blade and a shorter acuminate apex, a shorter spur, shorter pedicel and ovary, and a column that is longer and distinct in structure.

The typical subspecies is found in the humid forests of the plateau to the north and north-east at between 800 and 1000 m. These are disappearing as the land is cleared for agriculture or through accidental forest fires when the surrounding grassland is burnt by a rapidly increasing population. Subspecies *isaloensis* grows low down on the trunks and branches of trees near water-courses in the deep canyons of the sandstone Isalo Massif and also further west on small trees and shrubs at 750 m in the Sakaraha-Zombitsy dry forest, the latter being rather badly burnt and logged especially in easily accessible areas. More recently the subspecies was found during a brief expedition to the unusual wet forest fragment on Analavelona.

Erasanthe henrici is one of the most beautiful of Madagascan orchids although difficult to flower in cultivation, as a result it has been widely over-collected from the forest remnants. At one location over 1000 individuals of the subspecies *isaloensis* were stripped in 1993, more than 10 years later the population has failed to recover. Such over-collecting of both subspecies still continues. Due to habitat destruction and over-collecting, both subspecies are considered to be threatened with extinction (*henrici* VU D2; *isaloensis* EN B1ab (iii, v) B2ab (iii, v)) (IUCN 2001). However, efforts are underway in Madagascar to produce a supply for the horticultural industry using micro-propagation techniques which should reduce the necessity of further collection from the wild.

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