

## Three New Species of Gesneriaceae from Kelantan, Malaysia

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### Abstract

During a botanical expedition in 2007 to the Gunung Tera area in Kelantan, NE Peninsular Malaysia, three new species of Gesneriaceae were discovered: *Henckelia kelantanensis* Kiew, *H. pauziana* Kiew, and *Ridleyandra kelantanensis* Kiew.

### Introduction

A botanical expedition to the little known Gunung Tera area in Kelantan, the northeastern state of Peninsular Malaysia, was organised in February 2007 as part of the Flora of Peninsular Malaysia Project. The area lies within the Stong State Forest Park and includes several small peaks of which the highest is Gunung Tera (5°21'N 101°54'E) at 1556 m. The terrain is dissected by steep-sided valleys with torrential rocky streams. Granite cliff faces are common in the area. During the expedition 332 species of vascular plants were collected, of which 21% were species endemic to Peninsular Malaysia and 16% were new records for the state of Kelantan (Chew *et al.*, 2009). Gesneriaceae was well represented with 16 species, only Orchidaceae (29 species), Rubiaceae (27 species), Gramineae (22 species) and Zingiberaceae (17 species) were more speciose. Three species of Gesneriaceae proved new to science and are described below.

#### 1. *Henckelia kelantanensis* Kiew, *sp. nov.*

*Ab* *Henckelia nivea* (Kiew) A. Weber *floribus majoribus* (30 mm longis et distaliter 15 mm latis nec 21 mm longis et 5 mm latis), *paucinervis* (paribus 17-18 nec 20-31) et *capsulis longioribus* (5-8 cm nec 2-3.5 cm longis) differt.

– **Typus:** Peninsular Malaysia, Kelantan, Gunung Stong, 18 May 1988, Kiew RK 2736 (holotype, SING; isotype, KEP).

**Herb**, unbranched or sometimes with a short branch. **Indumentum** of uniseriate, multicellular, eglandular hairs, on the young stem and lower lamina surface and on veins dense and *ca* 1 mm long, on upper lamina surface and calyx *ca* 0.5 mm long; uniseriate, multicellular, glandular hairs on

the pedicels dense and *ca* 0.5 mm long, on the outside of the corolla sparse and *ca* 0.5 mm long, and on the ovary and capsule dense and *ca* 0.5 mm long. **Stem** woody, 30-50 cm tall, 3-4 mm diam. **Leaves** alternate, internodes 1-1.5 cm long, lamina softly hairy, pale beneath, narrowly lanceolate or slightly oblanceolate, 12-15.75 × 2.75-4 cm, base narrowed ultimately to a narrow deeply serrate wing or sometimes with a petiole *ca* 6-8 mm long, margin finely serrate, apex narrowly acute, lateral veins 17-18 pairs. **Flowers** epiphyllous, solitary or in a series of 1-3 flowers, on the midrib and displaced 1-4 mm from the leaf axil; pedicels 5.5-7.75 mm long; calyx divided almost to base, lobes 5, narrowly acute, 2.5-3 mm long; corolla white with 2 yellow nectar guides in the throat, gibbous, *ca* 3 cm long, base narrowly tubular *ca* 1.5 cm long and *ca* 2 mm wide, distal *ca* 1.5 cm dilating to *ca* 1 cm wide across the mouth, lobes 5, rounded, upper two erect, *ca* 7 mm diam., lower 3 spreading, 7-8 × 7-9 mm; ovary purple, slender, narrowing towards the stigma, *ca* 2.5 cm long, stigma peltate, discoid, *ca* 1 mm diam. **Capsules** slender, curved downwards, 5-8 cm long, 1.5 mm thick.

*Habitat*: Hill dipterocarp forest, 740-800 m altitude, very common on banks, slopes and the base of granite rock faces.

*Additional specimen examined*: Kelantan, Gunung Stong Tengah Forest Reserve, Batu Hampar, Yao *et al.* FRI 55768 (KEP).

*Distribution*: Endemic in Peninsular Malaysia, known only from the Gunung Stong area in Kelantan.

*Notes*: *Henckelia kelantanensis* belongs to a group of species [*H. corneri* (Kiew) A. Weber, *H. lilacina* (Ridl.) A. Weber and *H. nivea* (Kiew) A. Weber] that have soft, distantly spaced, alternate leaves and epiphyllous flowers. Among these, it most resembles *H. nivea* in its large, gibbous, white corolla. However, it is distinct from this species in its larger flowers (21 mm long and 5 mm wide in *H. nivea*), fewer-veined leaves (20-31 pairs in *H. nivea*) and longer capsules (2-3.5 cm long in *H. nivea*).

## 2. *Henckelia pauziana* Kiew, *sp. nov.*

*Ab* *Henckelia craspedodroma* (Kiew) A. Weber *foliis paucinervis (paribus 21-29 nec 39-51) et floribus infundibularibus majoribus 25-30 mm longis orificio, 10-15 mm lato (nec tubularibus, ca 12 mm longis orificio, ca 5 mm lato) differt.* –**Typus**: Kelantan, Stong Tengah Forest Reserve, Batu Hampar to Cobra Camp (5° 20.03'N, 101° 55.14'E), 8 Feb 2007, Chew *et al.* FRI 53513 [holotype, KEP (flower); isotypes KEP (fruits), K, L, SAN, SING]. **Fig. 1.**



**Figure 1.** *Henckelia pauziana* Kiew, Gesneriaceae (photo: Chew M.-Y.)

Erect unbranched **herb**. **Indumentum** of dense, pearly, silky, uniseriate hairs, to 1.5 mm long on the upper portion of the stem, on petioles, midrib above and beneath and on lower surface of veins; of dense, white, stalked glandular hairs, *ca* 0.2-0.3 mm long on peduncles; and velvety with short and dense hairs on the ovary, persisting on the capsule. **Stem** woody, 2-12 cm tall, 2-3 mm diam. **Leaves** in a tuft at the top of the stem, lamina glabrous above, slightly bullate, in life dark green and glossy above, beneath white with scintillating hairs, narrowly oblanceolate,  $7.5-11.5 \times 1.75-3$  cm, base narrowed to a narrow deeply serrate wing, margin serrate, glabrous, teeth  $3-4 \times 2-3$  mm, sometimes slightly falcate, apex acute, midrib and lateral veins impressed above, lateral veins 21-29 pairs, parallel to each other, curving towards the margin to between the teeth, prominent beneath; young leaves sessile, petioles lengthening to 2.5 cm long in the older, lower leaves. **Inflorescences** 1-flowered, axillary; **flowers** pendent; peduncles, pedicels, bracts and calyx maroon; peduncles 3.5-10 cm long; bract pair foliose, lanceolate,  $6-8 \times 2-3$  mm, margin wavy, apex acute; pedicels 2-4 mm long; calyx divided to base, slightly hispid, lobes 5, narrowly lanceolate,  $2.5-4 \times ca$  0.7-1 mm, tip acute; corolla funnel-shaped, white tinged pale lilac, lobes deeper pale lilac, throat

with 2 conspicuous yellow nectar guides, 2.5-3 cm long, basal 0.7-1 cm narrowly tubular and c. 2 mm wide, above dilating to 1-1.5 cm wide, lobes 5, upper two erect, rounded, *ca* 6-7 mm diam., lower 3 spreading, broadly oblong with a rounded apex, *ca* 6-8 × 5 mm; nectary forming a broad ring around the base of the ovary, *ca* 0.5 mm high; ovary slender, to 15 mm long, style thread-like 8-10 mm long, stigma peltate, *ca* 0.5 mm diam. **Capsules** slender, straight, 3-5 cm long, *ca* 1 mm thick.

*Habitat:* Upper hill dipterocarp forest at *ca* 895 m altitude, locally common, on a steep slope with accumulation of leaf litter.

*Distribution:* Endemic in Peninsular Malaysia, known only from the type locality.

*Notes:* *Henckelia pauziana* resembles *H. craspedodroma* (Kiew) A.Weber in its foliage with short petioles and relatively narrow, glossy laminas with parallel, deeply impressed lateral veins that end between the teeth of the serrate margin and dense shaggy hairs along the upper surface of the midrib. However, it is distinct from this species by a combination of characters shown in Table 1.

**Table 1.** Differences between *Henckelia pauziana* and *H. craspedodroma*

Character	<i>Henckelia pauziana</i>	<i>Henckelia craspedodroma</i>
Stem ht (cm)	to 12	to 100
Lateral veins (pairs)	21-29	39-51
Teeth (mm)	3-4 x 2-3	1-2 x 2-4
Bract shape	foliose	ligulate
length (mm)	6-8	3-3.5
No. flowers	1	1-several
Corolla shape	funnel-shaped	tubular
colour	pale lilac	pale violet cream
length (mm)	25-30	<i>ca</i> 12
width at mouth (mm)	10-15	<i>ca</i> 5

This species is named in honour of Pauzi Husin, eco-guide whose intimate knowledge of the Stong State Forest Park led to the discovery of several new species, including this one.

**3. *Ridleyandra kelantanensis* Kiew, *sp. nov.***

*Ab* *Ridleyandra longisepala* (Ridl.) A.Weber *laminis foliorum brevioribus*

usque 14 x 4.5 cm (nec 15-30 x 4-7 cm), pedunculis usque 7 cm longis (nec 8-12 cm), sepalis usque 5 mm longis (nec 10-15 mm) et corollis ca 3 cm longis (nec usque 5 cm) differt. – **Typus:** Malaysia, Kelantan, Stong Tengah Forest Reserve, path to Camp Cobra (5° 20.07'N, 101° 55.16'E), 8 Feb 2007, Chew et al. FRI 53518 (holotype, KEP; iso E, L). **Fig. 2.**



**Figure 2.** *Ridleyandra kelantanensis* Kiew, Gesneriaceae (photo: Chew M.-Y.).

Unbranched **herb**. **Stem** woody, becoming decumbent, erect portion 15-19(-30) cm tall, ca 4 mm diam. **Indumentum** of reddish brown, dense, uniseriate, multicellular hairs, ca 0.5 mm long, dense and hispid on upper portion of stem, petioles, lower surface of midrib, peduncles, pedicels and sepals. **Leaves** in pairs, clustered in a rosette at the top of the stem, above up to 3-4 mm apart, below to 4.5 cm apart; petioles 1-1.75 cm long; lamina mid-green above, slightly paler beneath, glabrous, slightly bullate, oblanceolate, 8.5-14 x 3-4.5 cm, narrowed to base, margin dentate, teeth falcate, 4-5 x 3-5 mm and 2-6 mm apart, apex acute; midrib and veins slightly impressed above, prominent beneath, lateral veins 14-20 pairs. **Flowers** solitary; peduncles, pedicels and sepals maroon and covered in fine white hairs, peduncles 4.75-7 cm long; bract pair broadly lanceolate, 2-3 x 1-1.5 mm, pedicels (4-) 7-8 mm; sepals free, lanceolate, ca 5 x 3 mm, tip acute; corolla funnel-shaped, tube ca 2 cm long, ca 4 mm wide at base, dilating to 10-12 mm wide at the mouth, upper lobes deep blue and recurved, rounded, ca 10-11 x 9-10 mm,



lower lobes white with 3 major and a few minor blue stripes, oblong, 8-12 x 9-10 mm, apex rounded; stamens 4 in 2 pairs; ovary 1.75-2 cm long, stigma slightly bilobed, 2 mm across. **Capsules** slightly curved downwards, glabrous, 4-4.5 cm long, *ca* 1.5 mm thick; sepals caducous.

*Habitat*: Locally common in upper hill dipterocarp forest on steep banks with peaty soil at 900-1000 m altitude.

*Distribution*: Endemic in Peninsular Malaysia, Kelantan, known only from the type collections.

*Notes*: In flower colour and pattern it resembles *Ridleyandra longisepala* (Ridl.) A. Weber but it differs in its overall smaller size: *R. longisepala* grows to 1 m tall, has laminae 15-30 x 4-7 cm long, peduncles 8-12 cm long, sepals 10-15 mm long and a corolla *ca* 5 cm long. It is also different in its leaf margin (*R. longisepala* has a margin that is doubly serrate) and in the presence of a distinct pedicel (absent in *R. longisepala*). Weber (1998, '1997') used this last as a key character in separating *Ridleyandra* species, that is, whether the bracts were immediately below the sepals (pedicel not discernable) or were some distant below the sepals (i.e., the flower has a distinct pedicel).

The resemblance of the corolla markings to those of *Ridleyandra longisepala* is remarkable. Weber has drawn attention to several unrelated species of *Ridleyandra* having the same corolla coloration, namely deep purple with an almost black throat, and suggested that this be due to having the same pollinator. This is likely to be the case with *Ridleyandra kelantanensis* and *R. longisepala* although, as in the case of all *Ridleyandra* species, the pollinators remain unknown.

The two species also have different habitats and distributions: *Ridleyandra longisepala*, is known only from the Main Range at Cameron Highlands, Pahang, and grows in upper montane forest at 1700 m, whereas *R. kelantanensis* grows in upper hill dipterocarp forest to 1000 m.

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