A new species of *Ceropegia* (Apocynaceae) from Klein Elandsfontein, Waterberg region, South Africa

Ralph Peckover

A new species of Apocynaceae, *Ceropegia aquamontana* from South Africa, is described. Photographs by the author except where otherwise indicated.

Introduction

Ceropegia was a genus of around 200 recognised species. Recently Bruyns et al (2017) have included the genus *Brachystelma* under *Ceropegia* and together with the stapeliads and some miscellaneous genera, it now consists of around 760 species. The genus is confined mostly to Africa with the rest into Madagascar and then eastward to India, Thailand, China and Australia. They are even found on the Canary Islands. The following refers to the species that were known as *Ceropegia* prior to Bruyns's revision. All species have a swollen underground caudex or fusiform to filiform roots. The stems are permanent or deciduous at the end of the growing season. Members of *Ceropegia* are characterised by leaves that are opposite, linear to elongated, almost absent in some species with wavy, sinuate to entire straight margins. These are bright green to greyish and glabrous to very hairy. They may be non-succulent to succulent and may be very reduced in size. The stems may be short or very long, thin or succulent. The flowers are borne in the axils of the leaves or terminal in panicles. Each flower has five corolla lobes which can be united at their tips or free. There is a corolla tube which may be present or reduced as well as thin to broad in diameter. The corona contains the pollinia in the gynostegium. Pollination is by various species of flies, ranging from extremely small to large, around 0.5mm up to 10mm in size. There may be downward-facing hairs/cilia at the entrance of those species with a long corolla tube, to prevent the flies leaving the flower before pollination occurs. The paired seed follicles develop

Fig. 1 ***Ceropegia aquamontana*** **depicting the green corolla lobes and white cilia**

Fig. 2 ***C. fortuita*** **with multiple flowers per peduncle, Ulundi**

Fig. 3 ***C. fortuita*** **flowering without leaves, Babanango**

Fig. 4 ***C. fortuita*** **plant and flower from near Ezingolweni**

after fertilisation and may be upright, decumbent, thin or fattish with a smooth or warty surface. When mature these fruits split longitudinally to release the tufted seeds which are dispersed by the wind. There may be from a few seeds to many in each follicle.

The tubers of some species of *Ceropegia* have, according to the literature, been used as a food plant and especially the Bushmen community utilise these as a food source. The town of Serowe in Botswana is named after the local name for *Ceropegia* (serowa), which is eaten by the populace (Dyer, 1983).

A new species, *Ceropegia aquamontana* is described from South Africa. This is a rare species presently known only from my farm at Klein Elandsfontein in the Waterberg. Its nearest relative is probably *C. fortuita* (also from South Africa) from which it is distinguished by its differing staminal column structure. Morphologically these two species' flowers are somewhat similar although the plant morphology also differs. *C. aquamontana* is included in a comparative table to distinguish it from the other three species that have affinities to it.

Taxonomic treatment

Ceropegia aquamontana Peckover **sp. nov** resembles *C. fortuita* in having a similar underground caudex, but is easily distinguished from that species by the inflorescence having up to three flowers as against multiple flowers per inflorescence; a corolla bulb with a yellowish green background and fine lineate lines on the inside versus a corolla bulb which has purple vertical ridges and purple bumps; corona outer lobes of nectar pouch being incised to half their length as against a nectar pouch wall ascending to form an incurved rim; corona inner lobes rising to form a column as against recurved lobes with club shaped tips. TYPE: South Africa, Waterberg region, Limpopo province, Klein Elandsfontein 2428(cc), February 2006, *Peckover* 292 (holotype: PRU).

Fig. 5 *C. aquamontana* showing the incised outer wall of the nectar pouch and the columnar inner lobes

Fig. 6 The yellowish green inner wall of *C. aquamontana*

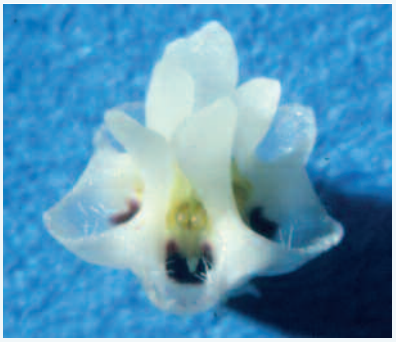

Fig. 9 *C. decidua* subsp. *pretoriensis* corona with divergent inner corona lobes (subsp. *decidua* is similar) Meintjieskop, Pretoria (Photo: Roger Dixon)

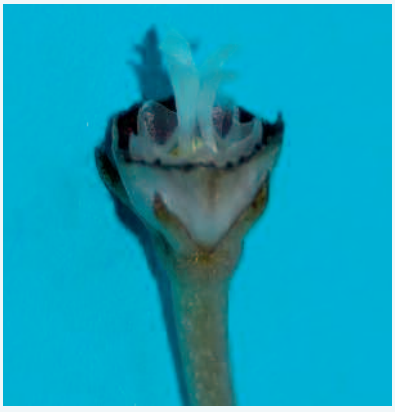

Fig. 7 *C. fortuita* corona showing the incurved outer wall of the nectar pouch and recurved inner lobes

Fig. 8 The purple corolla bulb of *C. fortuita* near Ezingolweni

Fig. 10 Corona of *C. linearis*, Oribi

Description

Plant a perennial herb with deciduous stem up to 30cm long, the basal organ a below ground caudex, 20–30mm diameter and 12mm thick, with numerous fusiform roots from the bottom surface. *Leaves* fleshy up to 20mm long, 3–10mm wide lanceolate to cordate, glabrous. *Flowers* 20mm purplish green; *corolla bulb* 3–4×3mm light purple, inside yellowish green; *corolla tube* 11×1.5mm light purple; *corolla apex* 5×4mm green through to grey forming a cage structure; *corona* 2–3mm diameter white with yellow pollinia; *inner lobes* upright, white and forming a column, tips divergent; *outer lobes* white; *nectar pouch* white, outside wall incised to form a shallow structure.

Ceropegia aquamontana appears to be most closely related to *C. fortuita* (Figs. 2–4). Both species have a swollen below ground caudex and fusiform roots. However, the two species differ in several floral features (Figs. 1–8). The flowers of *C. aquamontana* are on first observation a purplish green colour (Fig. 1) whilst those of *C. fortuita* are predominantly light purplish grey (Fig 2–4). The inside of the corolla bulb for *C. aquamontana* is smooth with yellowish green fine lineate lines (Fig. 6). In *C. fortuita* the inside of the corolla bulb has prominent lineate purple ridges with bumps on a purple background (Fig. 8). Diagnostic features to distinguish between *C. aquamontana* and *C. fortuita* are provided in Table 1. Another two species in this Table are included for further comparison against *C. aquamontana* as these have some similarities with this new species.

Ceropegia aquamontana is known only from the type locality at Klein Elandsfontein on the author's nature farm in the Waterberg in South Africa. From observations at the site, the plants grow in an area where rainfall is around 800mm per year, mostly from October to April. The plants grow in between rocks in the leaf litter and then creep up the stems of mostly perennial grasses (Fig. 15). Plants are well disguised in between the grass clumps as are the seed follicles (Fig. 16). These remain on the plants for around four months and then shed their seed (Fig. 17).

From observations of *C. fortuita* at three habitats in KwaZulu Natal, it was noted that plants of this species were growing in sparse grassland and in sandy soils. They did not show the typical creeping tendency of *C. aquamontana* and remained small, around 7cm tall and also flowered from almost ground level. After observations in the field of the mode of growth as well as from the floral characteristics *C. aquamontana* plants were now seen to be distinctly different from this species.

From the general habitat where this species grows as well as the difficulty in finding plants, there cannot be a determination of its conservation status without further investigations.

ACKNOWLEDGEMENT:
My sincere thanks are extended to Prof A E van Wyk for providing the correct Latin name, time to edit the figures and comments on the manuscript.

LITERATURE:

Bruyns, P V, Klak, C & Hanáček, P (2017) A revised, phylogenetically-based concept of *Ceropegia* (Apocynaceae). *South African Journal of Botany* **112**: 399–436.

R Allen Dyer (1983) *Ceropegia, Brachystelma and Riocreuxia in Southern Africa.* AA Balkema, Rotterdam.

Fig. 11 Flower of *C. decidua* subsp. *pretoriensis*

Fig. 12 Flower of *C. linearis*, Oribi Gorge

Fig. 13 *C. decidua* subsp. *decidua* flower with distinctive corolla lobes

	C. aquamontana	*C. fortuita*	*C. decidua* subsp. *decidua*	*C. decidua* subsp. *pretoriensis*	*C. linearis*
Distribution	Limpopo, S Africa.	KwaZulu Natal, Limpopo, Mpumalanga, S Africa.	Limpopo, S Africa.	Gauteng, S Africa.	KwaZulu Natal, E Cape, Mpumalanga, S Africa.
Plant form	Disc-shaped caudex 20–30×12mm, fusiform roots below.	Disc-shaped caudex 30–50×20mm, fusiform roots below.	Disc-shaped caudex 30–50×25mm, fusiform roots below.	Disc-shaped caudex 20–30×12mm, fusiform roots below.	Disc-shaped caudex 30–50×20mm, fusiform roots below.
Stem	Single, upright up to 30cm, lower part with leaves which become smaller up the stem and often absent from the flowering part.	Mostly single, upright up to 7cm tall, lower part with leaves which become smaller up the stem and can be absent from the flowering part.	Mostly single, upright up to 20cm, lower part with leaves which become smaller up the stem and absent from the flowering part.	Mostly single, upright up to 20cm. Lower part with leaves which become smaller up the stem and absent from the flowering part.	Mostly multiple and decumbent up to 60cm, producing multiple caudexes where stems touch the ground. Leaves remain the same size along the decumbent stems.
Leaves	Petiole 3mm. Blade up to 20×3–10mm. Lanceolate to cordate, entire, glabrous on upper and lower surface, deciduous.	Petiole sessile. Blade up to 15×3mm. Linear, ovate or elliptical, glabrous on both surfaces, deciduous.	Petiole 1–3mm. Blade up to 10–15×2–5mm. Elliptical, ovate or linear, glabrous on upper and lower surface, deciduous.	Petiole sessile. Blade up to 40×1mm. Linear or ovate, entire, glabrous on the upper and lower surfaces, deciduous.	Petiole 1–3mm. Blade up to 10–15×2-10mm. Elliptical, cordate or linear, variegated or deep green, glabrous on both surfaces, perennial.
Inflorescence	A single peduncle per leaf axil 15mm long, at right angle to stem, two/three pedicels of 3–10mm long, upright above the peduncle, flower 20×4mm purplish green.	A single peduncle sometimes directly from the leafless stem, upright, leaf axil 4–7mm long, multiple pedicels from this up to 10 of 3–5mm long above the peduncle, flower 25×4mm light purple.	A single peduncle per leaf axil, axillary to stem, upright, up to 15mm long, two/three pedicels of 5–10mm long, upright above the peduncle, flower 20×4mm pinkish.	A single peduncle per leaf axil, axillary to the stem, upright up to 20mm long, two/three pedicels of 5–10mm long, upright above the peduncle, 20×5mm light purple.	A single peduncle per leaf axil 10mm long, two pedicels of 2mm long, flower 20×4mm pinkish.
Corolla bulb	3–4mm×3mm, elliptic-shaped, on inside, fine lineate lines yellowish green, outside purplish white.	4–5mm×3mm, elliptic-shaped, purple in inside with lineate ridges and on these purple bumps.	Up to 4mm×3mm, elliptic-shaped, greyish brown on outside.	4–5mm×3mm, elliptic-shaped, on inside, yellowish green with fine to marked red lines, outside purplish white.	3–4mm×2-3mm, elliptic-shaped, on inside purplish, outside greenish grey.
Corolla lobes	Long, narrow, up to 5mm connected at tips to form a cage green or purple, white cilia along the margins.	Long, narrow up to 10mm, connected at tips to form a cage, purple black cilia along the margins.	Long thick, up to 5mm connected at tips to form a distinct parachute-shaped cage, few purple cilia at the apex opening.	Long, narrow, up to 5mm connected at tips to form a small parachute-shaped cage, yellowish to green, reflexed with blackish cilia along margins.	Long, narrow, up to 10mm connected at tips to form a cage, yellowish to green, reflexed with blackish cilia along margins.
Corona	2–3mm; outer lobes 2mm tall, erect and nectar pouches incised to form a V-shaped shallow nectar structure; inner lobes around 2mm long and 0.3mm broad and narrowing towards the tip, and rising together to form a column above the gynostegium, tips at apex recurved.	2–3mm; outer lobes 2mm tall, erect and nectar pouches ascending to form an incurved rim, shallowly notched at apex; inner lobes around 2mm and 0.3mm broad and narrowing towards the tip, recurved already from above the gynostegium with thickened tips.	2–3mm; outer lobes 2mm tall, erect and nectar pouches ascending to form a raised arch on the outside with inward-pointing cilia; inner lobes around 2mm and 0.3mm broad and narrowing towards the tip, recurved already from above the gynostegium with thickened tips.	2–3mm; outer lobes 2mm tall, erect and nectar pouches ascending to form a raised arch on the outside with inward-pointing cilia; inner lobes around 2mm and 0.3mm broad and narrowing towards the tip, recurved already from above the gynostegium with thickened tips.	2–3mm; outer lobes 2mm tall, erect and nectar pouches incised to form a V-shaped shallow nectar structure; inner lobes around 2mm long and 0.3mm broad and widening towards the tip, recurved already above the gynostegium with thickened tips.
Seed follicles and seed	Upright, light green at maturity, marked with purple flecks 80×3mm. Seed black with a lighter margin 6×2mm, 10–14 seeds per follicle.	Upright, greyish, up to 70×3mm. Seed dark brown with a lighter margin, 10–12 seeds per follicle.	Upright, yellow green turning to reddish yellow, 70×3mm. Seed dark brown with a lighter margin, 10–12 seeds per follicle.	Upright, greyish 40-50×2-3mm. Seed greyish brown with brown mottles on lighter background 6×1mm, 10–15 seeds per follicle.	More spreading, greenish 60-80×3mm. Seed dark brown with a dark margin 8×1mm, 10–15 seeds per follicle.

Table 1 Diagnostic features of *C. aquamontana* and related *Ceropegia* taxa

Fig. 14 *C. linearis* typical growth form, Oribi Gorge

Fig. 15 Typical habitat between rocks. *C. aquamontana* can be seen twining up the grass stems. Perfectly camouflaged set of seed follicles are visible next to the twining stem

Fig. 16 (left) The thin seed follicles of *C. aquamontana* in habitat

Fig. 17 (above) Seed follicles as well as the seed of *C. aquamontana*

Email: brachy@vodamail.co.za

Layout by Phil Crewe