



## A new species of *Crepidorhopalon* (Linderniaceae) from the Mutinondo Wilderness, Zambia

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### Abstract

The new species *Crepidorhopalon mutinondoensis* from Zambia is described and illustrated. It is closely related to *Crepidorhopalon latibracteatus* and *C. parviflorus* from which it differs in the glabrous calyx and bracts except for the minute hairs along the margins of each, and the smaller calyx and corolla. It differs from *Crepidorhopalon symoensii* in the entire bracts and the long peduncle. A key to the species of *Crepidorhopalon* with capitate inflorescence is provided.

**Key words:** *Crepidorhopalon*, Linderniaceae, Zambia, endemism

### Introduction

The delimitation of *Torenia* and the African genus *Craterostigma* Hochstetter (1841: 668) has long been controversial. Bentham (1846: 411) treated *Craterostigma* as a section of *Torenia*. Following authors, e.g. Wettstein (1891), Engler (1897), Fischer (1986) and Hepper (1987a, 1987b, 2008) treated them as separate, but with varying circumscriptions. *Craterostigma* s. str. includes rosulate plants with truncate inflorescences and bothrospermous seeds (Fischer 1986, Hepper 1987a). Several African species not fitting these characters, e.g. *Craterostigma schweinfurthii* (Oliver 1878: t. 1251). Engler (1897: 501) had been included in *Craterostigma* since Engler (1897) and, following their exclusion from this genus, were transferred to *Torenia* (Hepper 1987b). This position was followed by Philcox (1987; 1990) when describing new species from this group, and later by Hepper (2008). However, *Torenia* in this delimitation was a heterogeneous and highly unnatural generic concept.

Fischer (1989a: 443) solved this problem by creating the new genus *Crepidorhopalon* Eb.Fischer, uniting all former African species of *Craterostigma* with aulacospermous seeds, non-rosulate habit and anatomically highly complex clavate hairs on the lower corolla-lip comprising a distinct multicellular socle. Some species formerly placed in *Lindernia*, *Torenia* or even *Stemodiopsis* also showed the above mentioned characters and were subsequently transferred to *Crepidorhopalon* (Fischer 1992; Fischer 1995; Fischer 1997; Fischer 1999b; Fischer 1999a). Molecular studies (Rahmanzadeh *et al.* 2005) have confirmed that *Crepidorhopalon* and *Torenia* represent different clades.

*Crepidorhopalon* has been recorded in tropical Africa (28 species) and Madagascar (1 species) with a diversity center in the Haut Katanga area of the Democratic Republic of Congo where 19 species are found (Fischer 1999b). During botanical research in Zambia in 2005, Mike Bingham discovered a species with capitate inflorescences growing in a wet seepage area on a granite outcrop in the Mutinondo Wilderness area in the northeast of the country. This was subsequently matched to two specimens from the same area collected in 2003 but misidentified as *Craterostigma crassifolium* Engl. (= *Lindernia crassifolia* (Engl.) Eb. Fischer). These collections represent a new species of *Crepidorhopalon* which is described below.

Mutinondo is a privately owned nature concession (see [www.mutinondozeambia.com](http://www.mutinondozeambia.com)). It covers c. 10,000 ha in total and has a number of granite inselbergs which may support further populations of this species. Since the site is protected (the main activity in this remote area being small-scale ecotourism), the populations are unlikely to be threatened by human influence and no other threats are known. The lack of an apparent threat disqualifies the application of IUCN criterion C and so this species is best assessed as VU D1 under IUCN (2001) at the present time, it being the very small and restricted population that renders it inherently vulnerable to extinction. Future discoveries of further populations around some of the more remote granite inselbergs in the area would likely result in the downgrading of this threat status.

**Additional specimens examined**—ZAMBIA. Northern Province, Mpika District: Mutinondo Wilderness Area, base camp, 1476 m, 12° 27.157' S 31° 17.329' E, fr. 6 April 2003, *C. Chishala & P. Smith* 2 (K, Mutinondo) & *P. Smith & C. Chishala* 1822 (K); Mutinondo Wilderness, fr., April 2010, *L. & M. Merrett* s.n. (K).

## Discussion

*Crepidorhopalon mutinondoensis* is the second species of Linderniaceae endemic to Zambia. Hitherto only *Crepidorhopalon involucratus*, known only from Kabompo Gorge in Mwinilinga District and Solwezi (Fischer 1992) was considered as Zambian endemic. The dambo vegetation on rock outcrops in Zambia harbours 12 species of *Crepidorhopalon* and thus constitutes a second diversity center besides Katanga in D.R.Congo with 19 species.

The new taxon had first been misidentified as *Lindernia crassifolia* (Engler) Eb.Fischer (1992: 256) (*Craterostigma crassifolium* Engl. 1897: 500), which also has a capitate inflorescence and thus superficially resembles *Crepidorhopalon mutinondoensis*. *Lindernia crassifolia* is at present only known from Angola and can be distinguished by its perennial and poikilohydric habit, the dense indumentum of stem and leaves, the thick and obtuse leaves, the hairy calyx with obtuse lobes, the whitish corolla, the clavate hairs on lower lip, and the zig-zag-shaped anterior (abaxial) stamens.

*Crepidorhopalon mutinondoensis* is related to *C. latibracteatus* and *C. parviflorus* from which it differs in the glabrous calyx and bracts except for the minute hairs along the margins of each, and the smaller calyx and corolla. *Crepidorhopalon latibracteatus* (Fig. 3) has an entirely hairy calyx, and the bracts bear a pubescent margin. The calyx is 7 mm long and the corolla tube 7–8 mm. *C. parviflorus* has also a calyx with densely wooly base and glabrous lobes, and bracts with irregularly dentate and pubescent margin. The calyx is 5 mm and the corolla tube 5.5 mm long. *Crepidorhopalon mutinondoensis* differs from *C. symoensii* in the entire bracts, and the long peduncle. *Crepidorhopalon symoensii* has coarsely dentate orbicular bracts, broadly ovate to orbicular and coarsely dentate leaves, and a 8–12 mm long peduncle. Other species of *Crepidorhopalon* with capitate inflorescence, e.g. *C. tenuifolius* (Fig. 3), *C. schweinfurthii* (Fig. 3), and *C. gracilis* differ in the lanceolate bracts. In *C. chironioides* the bracts are very large and ovate-orbicular at base but with long and acuminate apex.

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