



# PHYTOTAXA

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## Taxonomic Revision of *Cuphea* sect. *Euandra* subsect. *Oidemation* (Lythraceae)

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## Abstract

*Cuphea* sect. *Euandra* subsect. *Oidemation* comprises a non-monophyletic group of species defined by possession of a fire-resistant xylopodium. The xylopodium is a frequent feature of plants occurring in the seasonally and ecologically dry cerrados and savannas of South America. Subsect. *Oidemation* has diversified particularly in these habitats in eastern Brazil and adjacent Paraguay. Twenty species and five varieties are recognised: eleven species are endemic to Brazil; one each is endemic to Paraguay and Florida, USA; and seven are distributed in Brazil and adjacent areas of Bolivia, Paraguay, Uruguay and/or Argentina. Their morphology, including pollen and seed morphology, and chromosome numbers are reviewed. The presence of at least three major pollen types and two base chromosome numbers suggests the subsection is para- or polyphyletic; phylogenetic information based on molecular data for species of the subsection is limited. Diverse diploid, tetraploid, and hexaploid chromosome numbers point to polyploidy as an important mechanism of speciation in this group. A key to the species is accompanied by descriptions, illustrations and distribution maps. The subsection is lectotypified by *C. retrorsicapilla* and lectotypes are designated for *C. acicularis*, *C. aspera*, *C. confertiflora*, *C. crulsiana*, *C. emarginata*, *C. enneanthera*, *C. excoriata*, *C. ferruginea*, *C. ferruginea* var. *acuminata*, *C. hyssopoides*, *C. remotifolia*, *C. retrorsicapilla*, *C. sperguloides*, *C. spermacoce* var. *angustata*, and *C. spermacoce* var. *elongata*. A new combination is made for *C. retrorsicapilla* var. *enneanthera*.

**Key words:** Argentina, Bolivia, Brazil, cerrado, Paraguay, Uruguay, xylopodium

## Introduction

Species of the genus *Cuphea* P. Browne are among the most ubiquitous perennial herbs of the cerrados and savannas of eastern South America and are especially diversified in eastern Brazil where the cerrado biome is one of Brazil's and the world's richest biodiversity hotspots (Forzza *et al.* 2012).

The majority of *Cuphea* in these habitats are classified in subgenus *Bracteolatae* S.A.Graham section *Euandra* Koehne (1903), one of 13 sections in the genus and predominantly comprising Brazilian species. The section includes five subsections and ca. 59 species or a quarter of approximately 240–250 currently recognized species. Four subsections are delimited primarily by differences in seed shape and size. The fifth, subsect. *Oidemation* Koehne, is circumscribed by the presence of a perennial, thickened woody root/stem organ, the xylopodium (Fig. 1). This anatomically complex structure is resistant to the seasonal fires characteristic of cerrados and savannas, and has evolved in numerous plant genera and families occupying these vegetation types (Dusén & Neger 1921, Alonso & Machado 2007).

Since the monographic treatment by Koehne (1903), about 60 species have been added to the genus, with 10 described in subsect. *Oidemation*, bringing the number of species in the subsection to 27 and varieties to seven. Identification of the species in the subsection is difficult in the absence of a comprehensive key and more so because more than half share confusingly similar vegetative morphology as a result of extensive parallel evolution in their ericoid-like, thickened linear leaves, which are adapted to survival in seasonally dry habitats. The subsection consists of herbaceous perennials with varying indumentum and similar floral form. Careful attention to comparative details in the shape of the leaf base and floral spur, types of indumentum, seed and pollen morphology, and microcharacters of the floral tube is required for correct identification.