



## A taxonomic revision of *Zamia montana* and *Zamia oligodonta*, with notes on their conservation status

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### Abstract

The taxonomy of *Zamia montana* and *Z. oligodonta*, two poorly understood species occurring at high elevations in the Western Cordillera of Colombia, is discussed. *Zamia oligodonta* was recently synonymized under *Z. montana*, but information derived from recent field studies is provided showing the two species are quite distinct. A treatment of both species is presented, including discussion of the major morphological differences between them and also between other South American species with prominently-veined leaflets. The conservation status of both species is evaluated.

**Key words:** Antioquia, Cycadales, Risaralda, Zamiaceae

### Introduction

*Zamia montana* Braun (1875: 376) was described in 1875 by German botanist Alexander Braun from material collected by German plant collector Gustav Wallis in Colombia (then 'New Grenada') in 1873 and cultivated by James Veitch & Son nursery in London. Braun received dried materials of *Z. montana* from Wallis which he returned to Wallis with the exception of a single leaflet (Eichler 1881). This leaflet, which could have been considered the holotype for the species, was likely destroyed in the bombing of the Berlin herbarium in 1943. However, an illustration of this leaflet was sent in 1881 by then Director of the Berlin Herbarium August Eichler to William Thiselton Dyer at Kew and is still extant (Fig. 1).

While under the employment of The Veitch Nurseries in England, German plant collector Guillermo Kalbreyer recollected *Zamia montana* in 1880 in an area called 'Paramillo', believed to be the highest point of a mule trail in Murri, within the present day municipality of Frontino, Antioquia (Bernal *et al.* 1989). Harry James Veitch requested and received only dried material of the cycads collected by Kalbreyer in Colombia [*Z. montana* and *Z. wallisii* Braun (1875: 376)] as in his opinion the demand for material of these species did not justify the expense of introducing live material (Veitch 1880). Veitch sent this material to German Botanist Hermann Wendland at the Herrenhausen herbarium who, then, forwarded some of this material to William Thiselton-Dyer at Kew (Thiselton-Dyer 1882).

In 1882, live plants of *Z. montana* were imported from Antioquia by English plant dealers Shuttleworth, Carder & Co. Edward Shuttleworth sent vegetative material and live plants to William Thiselton-Dyer at Kew, who then prepared a description of the species for inclusion in the Gardeners' Chronicle by combining the notes and material from Wallis, Kalbreyer and Shuttleworth Carder, & Co. into his description (Thiselton-Dyer 1882), reproduced below:

*Stem tuberous, 4–5 feet high, ¾ foot thick (probably in very old plants); leaves forming an erect terminal tuft, 4–5 feet long; petioles at the base fusco-tomentose flattened above and ¾ inch in diameter, beset throughout with minute scattered prickles, leaflets numerous (eight to ten pairs), the lower more distant, 1 foot or more long, 2–4 inches wide, chartaceous, oblanceolate to linear-oblanceolate, slightly unsymmetrical, narrowing into a very short petiolule, apex abruptly acuminate, with usually one prominent and a few obscure teeth; nerves twenty to thirty-five, marked by strong furrows above, scarcely prominent except in dried specimens below. Inflorescence unknown. New Grenada. Moderately shady places in the upper mountain region, 7000–8000 feet.*

B1ab(i-v)+2ab(i-v); C1. Specific locality information has been purposefully withheld from this paper to minimize the risk of illegal harvesting of this threatened species.

**Historical notes:**—The original description for *Z. oligodonta* was based on a few plants cultivated by Eduardo Calderón Sáenz. *In situ* observations carried out during this study confirmed that wild plants attained much larger dimensions than the cultivated plants upon which the original description was based.

**Additional specimens examined:**— COLOMBIA. Cultivated by E. Calderón Sáenz, originally collected in Risaralda, *Calderón Sáenz 175* (JAUM!), *182* (COL!), *183* (FMB!, NY!). Live plants cultivated by E. Calderón Sáenz also studied. **Risaralda:** 1750–1800 m, 9 July 2014, *Roldán et al. 4276* (HUA!).

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