



Magnolia vargasiana (Magnoliaceae), a new Andean species and a key to Ecuadorian species of subsection *Talauma*, with notes on its pollination biology

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Introduction

Magnoliaceae Jussieu (1789: 280) consist of ca. 330 species worldwide, nearly half of them in the New World (Vázquez-García *et al.* 2014). There is no agreement on the internal classification, including the number of sections (0–11), genera (1–13), subgenera (0–9) and subfamilies (0–2) (Figlar & Nootboom 2004; Xia *et al.* 2008, Romanov & Dilcher 2013) and despite various phylogenetic studies of Magnoliaceae in the last two decades, classification of the family has not reached a consensus (Qiu *et al.* 1993, 1995; Kim *et al.* 2001; Azuma *et al.* 2001, Li & Conran 2003, Nie *et al.* 2008, Kim & Suh 2013). Here we follow the classification of Figlar & Nootboom (2004).

Neotropical Magnoliaceae Jussieu are represented by a single genus, *Magnolia* Linnaeus (1753: 535), and 129 recognized species (Vázquez-García *et al.* 2014), comprising three sections: 1) sect. *Macrophylla* Figlar & Nootboom (2004: 92; three species south of the Tropic of Cancer in México); 2) sect. *Magnolia* (23 species in México and Central America, two in eastern United States and one in the Caribbean); and 3) sect. *Talauma* (Jussieu 1789: 281) Baillon (1866: 66; 103 species), which is further subdivided in three subsections: a) subsect. *Cubenses* Imkhanitskaya (1991: 60; ten species confined to the Caribbean region); b) subsect. *Dugandiodendron* (Lozano, 1975: 33) Figlar & Nootboom (2004: 90; 21 species confined to northern South America in the Andes and the Guyana Shield, seven of them occurring in Ecuador); and c) subsection *Talauma* (72 species distributed from 20 degrees of northern latitude in western and eastern México to 24 degrees southern latitude, just south of the Tropic of Capricorn, in Paraná, Brazil and elevations from near sea level to 2800 m) the largest subsection in the family. Lozano-Contreras's work included 31 Neotropical species in subsect. *Talauma*, 20 of which he described (Lozano-Contreras 1983, 1994), but the number of species has more than doubled in the last five years (Serna *et al.* 2009; Dillon & Sánchez-Vega 2009, Vázquez-García *et al.* 2012a, 2012b, 2013a, 2013b, 2013c, 2013d, 2014; Marcelo-Peña & Arroyo 2013, Arroyo & Pérez 2013, Arroyo *et al.* 2013, Arroyo 2014). Additional (ca. 28) undetermined Neotropical species of *Magnolia* are currently under study by various authors.

Magnoliaceae in Ecuador display a high level of endemism (78%), particularly in the Cordillera del Condor and Amazonia, and to a lesser extent in the Andes and northern coast. It is noteworthy that the Zamora Chinchipe Province currently with seven species of *Magnolia* is the richest Neotropical area for *Magnolia*, and possibly worldwide too, and therefore the area should be considered a *Magnolia* hotspot for conservation (Vázquez-García *et al.* 2014).

There are 18 recognized species of *Magnolia* in Ecuador (Table 1), all belonging to sect. *Talauma* (authors of all species names provided in Table 1): six belong to subsect. *Dugandiodendron* (five from Cordillera del Condor: *M. bankardiorum*, *M. lozanoi*, *M. jaenensis*, *M. shuarorum* and *M. yantzazana*; and one from the Chocó region: *M. striatifolium*); and twelve species from subsect. *Talauma* (five from the Amazonian lowlands: *M. equatorialis*, *M. kichuana*, *M. neillii*, *M. pastazaensis*, and *M. rimachii*; two from the Chocó region: *M. canandeana* and *M. dixonii*; two from the southern Cordillera Oriental: *M. palandana*, *M. zamorana*; one from Cordillera del Cóndor, *M. crassifolia*; and two from the central Cordillera Oriental: *M. llanganatensis* and *M. vargasiana*, here proposed as new). There are five other undetermined Ecuadorian species of *Magnolia* subsection *Talauma* currently under study (Table 1).

During vegetation sampling of several 0.25 ha plots in May 2014 with students from the University of Alabama,