



Are seedlings diagnostic in Neotropical *Entada* (Leguminosae)? Seedling morphology supports the reinstatement of *Entada polyphylla*

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Abstract

Entada (Leguminosae) is a pantropical genus encompassing four Neotropical species, *E. gigas* (*E. sect. Entada*), *E. polyphylla*, *E. polystachya* and *E. simplicata* (*E. sect. Entadopsis*). However, the taxonomic status of *E. polyphylla* is still disputed, being treated as a separate species or a variety of *E. polystachya*. This article aims to take a comprehensive view of seedlings of Neotropical *Entada*, addressing the question of whether seedling morphology provide diagnostic characters that support the recognition of *E. polyphylla* at the species level. Seedlings of *E. polyphylla* were described and illustrated, whilst seedling data for the remaining Neotropical species were based on the literature. *Entada polyphylla* has an exclusive set of seedling characters within *E. sect. Entadopsis*, including cryptocotylar, hypogeal, reserve seedlings, long cotyledonary petioles, short cotyledon lobes, cataphylls and alternate, bipinnate eophylls. Therefore, seedling morphology supports the recognition of *E. polyphylla* as a distinct species and its reinstatement is here proposed. In addition, each of the four New World species of *Entada* can be diagnosed by their seedlings, and an identification key is also provided.

Key words: Fabaceae, Mimosoideae, post-seminal development, taxonomy

Introduction

Entada Adanson (1763: 318, 554) is a small mimosoid legume genus belonging to the tribe Mimoseae (Luckow 2005). *Entada* comprises trees, shrubs and lianas and encompasses ca. 28 species distributed in the tropics, especially in tropical Africa (Brenan 1966). In Asia, there are seven species (Luckow 2005), from which three species have been reported in China (Wu & Nielsen 2010).

The New World four taxa of *Entada* belong to two sections (Brenan 1966). *Entada gigas* (Linnaeus 1759: 22) Fawcett & Rendle (1920: 124) occurs in both the Neotropics (Central America, the West Indies, and coastal Colombia) and Africa (Brenan 1966, Forero & Romero 2009), and belongs to *E. sect. Entada* subsect. *Entada* (Brenan 1966). *Entada gigas* can be easily separated from all three taxa of *E. sect. Entadopsis* (Britton in Britton & Rose 1928: 191) Brenan (1966: 365) by having leaves ending in a forked tendril (vs. generally lacking foliar tendrils), woody and non-craspedial fruits (vs. chartaceous and craspedial fruits) and bigger seeds (40 to 55 mm in diam.) with pleurogram lacking (vs. seeds up to 20 mm in diam., pleurogrammatic) (Forero & Romero 2009).

Within *E. sect. Entadopsis*, *E. polystachya* (Linnaeus 1753: 520) De Candolle (1825: 425) and *E. polyphylla* Benth (1840: 133) have traditionally been treated as separated species (e.g. Benth 1876, Macbride 1943, Brenan 1966). However, Barneby (1996) considered that inflorescence and other reproductive organs were uniform in *E. sect. Entadopsis* taxa, treating them as a single polymorphic species. As a consequence, Barneby (1996) proposed *E. polystachya* as comprising three varieties: *E. polystachya* var. *polystachya*, *E. polystachya* var. *polyphylla* (Benth.) Barneby (1996: 175) and *E. polystachya* var. *simplicata* Barneby (1996: 175).

Since then, some authors have followed this expanded circumscription of *E. polystachya* (e.g. Barneby 2011, Lewis & Acevedo-Rodríguez 2012, Lima 2014), whilst others still have considered *E. polyphylla* as a separate species based on leaf morphology. Vegetatively, *E. polyphylla* has been distinguished from *E. polystachya* by having more numerous pinnae and leaflets as well as smaller leaflets (Grimes 2002, Barneby 2001, Forero & Romero 2009). On the other hand, recent herbarium and morphological analyses of the *E. polystachya* complex indicate strong support for recognizing *E. simplicata* (Barneby) Rodrigues & Flores (2012: 47) as a distinct species endemic to Roraima State, Brazil (Rodrigues & Flores 2012, Rodrigues *et al.* 2014).