Generic Placement of the Former Condaliopsis (Rhamnaceae) species

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Abstract

Condaliopsis is a genus of eight thorny shrub species. Previous morphological research shed doubt on the validity of Condaliopsis as a distinct genus in Rhamnaceae. Condaliopsis species were transferred to one of two genera, Ziziphus or Condalia, but some authors continue to recognize Condaliopsis. A recent phylogenetic study did not support Condaliopsis as monophyletic and placement of Condaliopsis species in either Ziziphus or Condalia was not straightforward. To clarify the generic placement of these eight species, we conducted phylogenetic analyses based on two nuclear loci (nrITS and 26S), two chloroplast loci (trnL-F and trnQ-rps16) and morphological characters. We present evidence that five of the Condaliopsis species should remain in Ziziphus, one should remain in Condalia, and two should be transferred from Ziziphus to Condalia. One of these species had an existing binomial within Condalia, Condalia parryi, and one required a new combination, Condalia celata. Condalia celata is a federally listed endangered species with a limited range in Florida.

Keywords: Ziziphus celata

Introduction

The cosmopolitan mostly woody plant family Rhamnaceae includes 52 genera and roughly 900 species (Stevens 2001, onwards) and includes several economic species including Ziziphus jujuba Miller (1768: sin page no.) (Chinese jujube), Z. mauritiana Lamarc (1789: 319) (Ber), and the weedy Rhamnus cathartica Linnaeus (1753: 193) (Common buckthorn). Three genera, Ziziphus Miller (1754: sin page no.), Condalia Cavanilles (1799: 39), and Condaliopsis (Weberb.) Suessenguth (1953: 134), although not closely related (Richardson et al. 2000a), share morphological similarities that resulted in the back and forth generic placement of several species (Weberbauer 1895, Johnston 1962, 1963).

All three genera are composed of thorny shrubs that occur in sub-tropical to tropical regions with Ziziphus also including tree species with spines or thorns. Condalia is a genus of 18 species in North and South America with the highest diversity in Mexico. The genus Ziziphus is a paraphyletic, pantropical genus with approximately 100 species (Medan & Schirarend 2004) and is split geographically into two distinct lineages (Record 1939, Record & Hess 1943, Johnston 1963, Schirarend 1991, Islam & Simmons 2006). One well-supported lineage of approximately 30 Ziziphus species occurs in the Americas (Islam & Simmons 2006). For evolutionary questions, this group is referred to here as New World (NW) Ziziphus and is considered separately from the Old World (OW) lineage as they are not sister lineages (Islam & Simmons 2006).

Given confusion regarding the placement of a number of species as Condalia, Condaliopsis or Ziziphus, we define Condaliopsis species as those species that were placed in Condaliopsis by Suessenguth (1953), or following his definition of the genus should have been placed within Condaliopsis (Table 1). Under this definition, Condaliopsis includes eight species restricted to North America. Because not all of these species have names under Condaliopsis (discussed more fully below), when referring to species we use the names proposed by Johnston (1962, 1963) (Table 1) with the addition of Z. celata Judd & Hall (1984: 382) named after Johnston’s publications but fitting with Suessenguth’s definition of Condaliopsis.

The history of nomenclature for Ziziphus, Condalia and Condaliopsis is complex, with multiple amendments. In