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TYPIFICATION OF *ADESMIA ARBOREA* (FABACEAE): NOT A *NOMEN NUDUM* AFTER ALL AND ITS RELEVANCE TO *A. MICROPHYLLA* AND *A. CONFUSA*

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Abstract: The name *Adesmia arborea* Bertero has been considered a *nomen nudum* since Colla's assertion that all new names in Bertero's publication detailing his Chilean collections of 1828 were *nomina nuda*. Subsequent authors seeking to validate the name *A. arborea* have provided conflicting descriptions adding confusion about the identity of the species. These problems arose from equating this name with other new names published by Bertero in the same work and because material collected and annotated by Bertero as *A. arborea* represents two different taxa. Here I show that *A. arborea* was, in fact, validly published by Bertero, provide evidence as to the collection number from which type must be chosen, and designate a Lectotype and Isolectotypes.

Keywords: Bertero, *El Mercurio Chileno*, lectotype, nomenclature

In 1829 the name *Adesmia arborea* was published for a Chilean species in an article by Carlo Guiseppe Bertero in *El Mercurio Chileno*. Since the writings of Luigi Aloysius Colla (1832), this name, like all of Bertero's new names in *El Mercurio Chileno*, has been dismissed as a *nomen nudum* (cf., Delprete et al., 2002; Seigler et al., 2013). The name *A. arborea* appeared in a paragraph (Bertero, 1829) that also listed seven additional *Adesmia* species, some of which had been previously described by other authors and three of which Bertero considered new and for which he provided names. Two of these, like most of the new taxa Bertero proposed in this work, were simply names with no descriptive comments, and, as such, were indeed *nomina nuda* (Turland et al., 2018, Article 38.1). For *Adesmia arborea*, however, Bertero (1829 p. 557) provided a description that adequately characterizes the species [in translation]: "The *Palhuen* which I have named *Adesmia arborea*, is a beautiful shrub found in rocky and arid areas in the hills and is similar to *Zuccagnia punctata* Cavanilles. Its foliage, the number and color of its flowers, and above all its fruits, covered with very large and differently colored hairs, make it interesting for English gardens. The other species are herbaceous . . ."

Bertero thus explicitly stated that *A. arborea* differed from the other *Adesmia* species he included because they were all herbs. The description and diagnosis (cf. Article 38.1, 38.2 of the ICBN, Turland et al., 2018) with its designation as a shrub, its habitat, its particular similarities to *Zuccagnia punctata* Cav., and its explicit difference in habit from other species mentioned adequately describe and distinguish the taxon, especially in light of descriptions common at the time.

Bertero, who made extensive collections, apparently left some specimens in Santiago but sent most of his Chilean material to Benjamin Delessert in Paris (Stafleu & Cowan, 1976) who distributed specimens to Balbis at Turin (TO-HG, Bertero's home institution) and to Geneva (Delprete et al., 2002). Unfortunately, Bertero died before ever returning to Europe. The two specimens that are now at Turin (TO - viewed as photos kindly sent by Laura Guglielmono) and annotated as *Adesmia arborea* unfortunately do not have labels in Bertero's handwriting. Many specimens retained at Paris were eventually sold by Delessert's heirs to the travel company Esslingen Unio Itineraria (Botanische Reiseverein) that subsequently marketed sets to various herbaria (Delprete et al., 2002). Some of these

specimens are labeled as *Adesmia arborea* in Bertero's handwriting (see Delprete et al., 2002 for a sample of Bertero's handwriting) with additional Bertero material labeled by others as *A. arborea* housed in an array of European herbaria (i.e., E, FI, HAL, JE, M, P, TO - none were found on the Geneva website), and Chile (SGO). Bertero's collection numbers of *Adesmia arborea* are *Bertero 5*, collected at Rancagua [Chile, Region VI, O'Higgins near the Cachapoal River] and *Bertero 762* from Quillota [Chile, Region V, Valparaiso near the Aconcagua River]. Some sheets have two or more sprigs with both collection numbers (*Bertero 5* and *762*) written on the same sheet (usually without designating which sprig corresponds to which number). Delprete et al. (2002) listed Bertero's collection forays in the two Chilean localities as May-June 1828 for Rancagua and March-May 1829(30) for Quillota (the dates differ somewhat between the text on p. 633 and Table 2 on p. 635 in Delprete et al.'s 2002 article).

TYPIFICATION

Adesmia arborea Bertero, *Mercurio Chileno*, 12: 557. 1829. Lectotype, designated here: P02936569 (Paris); Isolectotypes SGO050390 (Santiago); M-0010713 righthand sprig (Munich).

The description in *El Mercurio Chileno* could refer to either *Bertero 5* or *762* but a number of factors make Rancagua (*Bertero 5*) the correct locality from which to choose the type. First, Bertero's specimens of the two other new *Adesmia* species he named in the same paragraph of *El Mercurio Chileno* (*A. vesicaria* and *A. viscida*) are from Rancagua suggesting that the three new *Adesmia* species all came from the same area. Second, specimens labeled *Bertero 762* usually have *Espinillo* as the only, or additional, common name, whereas specimens of *Bertero 5* usually have only *Palhuen*. Finally, and most importantly, the title of Bertero's 1829 article "*Lista de las plantas que han sido observadas en Chile por el Dr. Bertero en 1828*" specifically states that the plants listed were collected in 1828. His

Quillota collections were made in 1829/1830 (Delprete et al., 2002).

Specimens of *Bertero 5* with labels in his handwriting and specific locality data are at Paris (P), Santiago (SGO), and Munich (M). The specimen at Paris P02936569, has the most unequivocal label data (locality, handwriting) and diagnostic features and is here designated as Lectotype. The specimen at Santiago is obviously an Isolectotype and the righthand sprig on the specimen at Munich (M-0010713) is also here designated an Isolectotype.

DISCUSSION AND ASSOCIATION WITH *ADESMIA MICROPHYLLA* HOOK. & ARN. AND *A. CONFUSA* ULIBARRI

Throughout the years since Bertero's 1829 *El Mercurio Chileno* publication there has long been a confounding of the name *Adesmia arborea* Bertero with *Adesmia microphylla* Hook. & Arn. and more recently with *A. confusa* Ulibarri. Colla (1832), the first botanist to state that all Bertero's new names in *El Mercurio Chileno* were *nomina nuda*, wrote a new description that does not provide enough diagnostic information to determine to what species he was referring and, although he mentioned Quillota (a locality in which Bertero collected after 1828), he listed no specimens. One of the two *A. arborea* specimens at Turin has a label in Colla's handwriting and is equivocal as to the collection date and has no specific locality. The second specimen from Turin has a label in unknown handwriting, lacks a date, and has few diagnostic characters.

Various other interpretations of *Adesmia arborea* Bertero and its identity to *A. microphylla* Hook. & Arn. were given by Steudel (1841), Clos (1847), Reiche (1895), and Skottsberg (1946). Clos (1847) also provided his own description that seem to conform to Bertero's species and he specifically stated that after examining Bertero's specimens, he believed that Colla's *A. arborea* (*A. arborea* Bertero ex Colla) was actually *A. glutinosa* Hook. & Arn. Regardless, names after 1832 attempting to validate

the name *A. arborea*, namely, *A. arborea* Bertero ex Colla and *A. arborea* Bertero ex Clos are all new applications of the name *A. arborea* Bertero. In 1891 Kuntze, and later Reiche (1897), transferred all known *Adesmia* to *Patagonium*, with the new combination of *P. arboreum* (Bertero) Kuntze and later *P. arboreum* (Bertero) Reiche which could be taken to indicate that Kuntze and Reiche (who would have had access to the SGO Rancagua specimen of Bertero 5) accepted Bertero's name and description.

In 1987, Ulibarri published a new species name, *Adesmia confusa* Ulibarri, for Bertero's *A. arborea* because he, following earlier authors, assumed *A. arborea* was a *nomen nudum*. Yet, despite considering it an invalid name, Ulibarri (1987) placed *A. arborea* Bertero ex Colla as a "synonym" of his *A. confusa* Ulibarri. He also (1987) specifically stated that he did not designate a type for his *A. confusa* since he had not examined all of the relevant specimens (although he did provide a section following his description labeled Types). The description and drawing Ulibarri provided for his *A. confusa* Ulibarri (1987, p. 371-372, Fig. 13) correspond to Bertero 5 from Rancagua, which I have designated here as the type collection of *Adesmia arborea* Bertero. *Adesmia confusa* Ulibarri is therefore a superfluous name (ICBN article 52.1, Turland et al. 2018) and *A. arborea* Bertero becomes the correct name for the specimens associated with Ulibarri's name.

Examination of the Bertero 762 specimens often labeled *Adesmia arborea* Bertero from Quillota shows that they usually fall within the variation of *A. microphylla* Hook. & Arn. and are thus referable to that species.

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Bertero specimens at Turin and providing comments as to the authorship of the label data on these collections.

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