



Type designation for *Reseda hookeri* (Resedaceae)

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Abstract

The typification of the name *Reseda hookeri* Guss. (Resedaceae) is discussed. The designation of the corresponding type is based on the consultation of Gussone's original material and the literature cited in the protologue. A specimen at NAP (Herbarium Neapolitanum, University of Naples, Italy) is designated as the lectotype, and a specimen at BOLO (Herbarium of the University of Bologna, Italy) is designated as the epitype.

Key words: Epitype, Gussone, lectotype, nomenclature, Resedaceae, *Reseda hookeri*

Introduction

The genus *Reseda* Linnaeus (1753: 448) is composed of ca. 65 species distributed in temperate areas of the Old World, with a center of diversity around the Mediterranean basin (Martín-Bravo *et al.* 2007). Many of their species grow on basic soils of arid habitats, others are ruderal weeds, and a few are confined to high mountains. The taxonomy of the genus is complex, and fruiting individuals are required to fully identify most taxa. Apart from the numerous treatments in local floras, the most comprehensive taxonomic accounts of the Resedaceae were published by Müller Argoviensis (1857, 1868), and Abdallah & de Wit (1978). In addition, a study of phylogenetic relationships and biogeography of the family based on molecular markers (ITS, trnL–F) was recently published (Martín-Bravo *et al.* 2007).

Reseda hookeri Gussone (1855: 28), a member of *R.* sect. *Leucoreseda* De Candolle in Duby (1828: 67), is distributed in Spain, France, Italy and Algeria, and inhabits sand dunes and cliffs (Aránega 1992, 1994; Valdés Bermejo 1993; Tison *et al.* 2014). Morphologically, this species is well characterized, because it is the only species in the section with non-papillose seeds (Aránega 1992).

Taxonomically, Aránega (1992, 1994) has proposed its re-evaluation at the species rank, but some authors (Valdés Bermejo 1993; Martín-Bravo & Luceño 2007; Tison *et al.* 2014) prefer the subspecific rank given the apparently continuous variation of characters between this plant and *R. alba* Linnaeus (1753: 449).

Reseda hookeri is a threatened species in the Valencian Community (eastern Iberian Peninsula, see Aguilera *et al.* 2009) and also in Spain (VV.AA. 2000; Crespo & Juan 2003). However, from the standpoint of the nomenclature, the name *R. hookeri* still remains untypified (Aránega 1992). The aim of this paper is the designation of a type for this name, on the basis of consultation of Gussone's original material and literature cited in the protologue.

Type designation

Gussone's protologue (1855: 28) of *Reseda hookeri* consisted, among other elements, of a diagnosis “*R. pallide virens glaberrima, caule basi suffruticoso, foliis pinnatis, foliolis decurrentibus undulatis subfalcatis approximatis, in radicalibus alterne minoribus, impari reliquis brevioribus aut vix excedente, calycibus patentibus 5-partitis, capsulis oblong-ellipticis 4-dentatis*”, followed by two references with illustrations of this plant (Reichenbach 1838, fig. CI, n. 4449 “*R. suffruticulosa*”; Barrelier, 1714: ic. 587 [no 583? in reference] “*Reseda minor incisifoliis*”), and the *inductio locotypica* “Inde herbosis rara; Lacco, Punta S. Angelo” as well as phenological data “Aprili, Octobri.” An

extensive description is also included in the protologue: “*Caules* basi vere frutescentes firmi, elati, longis et densis racemis terminati: *foliola* subcanaliculata, subserrulata: *flores* albi: *capsulae*, ut in sequente, angulatae, leves, 5–6 lin. longae, dentibus erectis: *semina* globoso–reniformia, fusca, levia”. The author cited three synonyms in the protologue: “*R. fruticulosa*. b.” (Gussone 1844: 530), “*R. fruticulosa*. Hook. in herb. Lin.” (The Linnaean Herbarium), and “*R. undata*. Ten. Fl. Nap. 4. P. 527 [sic], ex descriptione! (Tenore 1830: 257 [not 527]). The illustrations of Barrelier and Reichenbach are original material and therefore are candidates for lectotype of this name according to the *Melbourne Code* (McNeill *et al.* 2012: Art. 9.2, 9.3 and 9.12).

Barrelier’s illustration of *Reseda minor incisifoliis* (1714: ic. 587) depicts a vegetative plant, lacking inflorescence and flowers. Reichenbach’s illustration of *R. suffruticulosa* shows a plant with flowers and leaves, but neither fruits or seeds are found, they being important characters for secure identification. Therefore, these two illustrations are not suitable material for lectotype designation of Gussone’s name.

On the other hand, Gussone cited in the protologue an identification of presumed Linnaean material at LINN by Hooker as *R. fruticulosa*. In fact, two herbarium sheets of *Reseda fruticulosa* are currently found at the Linnaean herbarium, Herb. Linn no. 629.12 (LINN) (image available at: <http://linnean-online.org/4577/>) and Herb. Linn no. 629.13 (LINN) (image available at: <http://linnean-online.org/4578/>), but no evidence exists that those specimens were used by Gussone for the description of *R. hookeri*.

After consultation of several collections (BOLO, CAT, FI, NAP, PAL, and RO), four relevant herbarium sheets were found including good candidates for typification of *R. hookeri*. In the Herbarium of the University of Bologna at BOLO (Bertoloni herbarium) we found two herbarium sheets and three specimens, sent by Gussone to Bertoloni. The first sheet at BOLO has two fragments, with leaves, flowers, fruits and seeds, which corresponds to *R. hookeri*, and a label, in Gussone’s handwriting, reports the species name “*Reseda suffruticulosa*”. Gussone’s handwriting was identified by comparison with other published samples (Burdet 1975). In the same label, Bertoloni added, personally, the year in which he received the specimen: 1824 and the annotation “*Dedit. Gussone*”, in the label is also annotated “*Reseda suffruticulosa* a L. Bert. Fl. Ital. 5. Ip. 2g. n. 5.” and the collecting place “*Sicilia*” [Sicily, Italy].

The second sheet preserved at BOLO contains two specimens exceptionally complete and they are in good state of conservation, including leaves, flowers, fruits and seeds, and they are accompanied with three Gussone’s original labels annotation. The specimen on the right contains two labels, the first one with the annotation “*Reseda alba* L. Herb. Linn. / *Gussone*”, and in the second one, in Gussone’s handwriting, reports the species name “*Reseda fruticulosa*”. On the same label, Bertoloni added also the year in which he received the specimen: 1828 and the annotation “*Misit. Gussone*”, besides on the same label is annotated “*Reseda suffruticulosa* L. / Bert. Fl. Ital. 5. p. 2g. n. 5” and the collection place “*Salina*” [Italy, Sicily, Aeolian Islands]. The specimen on the left contains two fragments of this species and only one label, in Gussone’s handwriting, reports also the species name “*Reseda fruticulosa (alba)*” and the collection place “*Pantelleria*” [Italy, Sicily], Bertoloni added also on the same label the year in which he received the specimen: 1829 and the annotation “*Misit. Gussone*”, on the label is also annotated “*Reseda suffruticulosa* L. / Bert. Fl. Ital. ob. p. 2g. n. / 5”.

However, no evidence exists that those specimens at BOLO were used for the description of the species, mainly because they were in Bertoloni’s herbarium since 1824 and 1828, and they were not available to Gussone in 1855. Otherwise, probably Gussone would have cited the Sicilian localities in the protologue. However, in the protologue no direct reference is made to Sicily, only to Lacco and Punta S. Angelo, both in Ischia (Naples, Italy). On the other hand, the sheets at BOLO bear no annotations by Gussone referred to *Reseda hookeri*, which we would allow to affirming that they were undoubtedly used for the description of this species (i.e. ‘sp. nov.’, ‘typus’, etc.). Therefore, the Art. 9.3(a) to the *Melbourne Code* does not apply in this case, and this material is not original for *R. hookeri*.

In the Herbarium Neapolitanum at NAP (Naples, Italy) we found two herbarium sheets with original material. The first one has a label and a specimen with leaves and flowers, but lacking fruits and seeds. On the label, Gussone’s handwriting reports the collection place and date “*R. Hookeri* / 26 Aprile 1853 / Ischia—Lacco [Ameno] a S. [Santa] / Restituta”, it being identified as *R. hookeri*. The second sheet contains a label and five fragments with leaves and flowers, but no fruits and seeds. On the label one is annotated “20 Aprile 1852 / Ischia—Lacco [Ameno] a / S. [Santa] Restituta” in Gussone’s handwriting, without any identification epithet. These two sheets were collected in the place cited by Gussone’s protologue “*Lacco*” [Lacco Ameno, Ischia Island, Gulf of Naples, Italy] with collecting data “*Aprile*”, also cited in the protologue. Therefore, both specimens are the only original material as herbarium sheet for *R. hookeri*. They correspond to the sites cited in the protologue, and undoubtedly they were used for the description.



FIGURE 1. Lectotype of *Reseda hookeri* Guss. (NAP). Image reproduced with permission of the Herbarium Neapolitanum, University of Naples, Italy).



FIGURE 2. Epitype of *Reseda hookeri* Guss. (BOLO), the fragment on the left side (marked here with an arrow). Image reproduced with permission of the Herbarium BOL (University of Bologna, Italy).

Among the Gussone's original material of *R. hookeri*: the Barrelier's and Reichenbach's illustrations, and the Gussone's specimens at NAP, we designated as the lectotype of this name the herbarium sheet at NAP with the annotation "R. Hookeri / 26 Aprile 1853 / Ischia—Lacco [Ameno] a S. [Santa] / Restituta". However, because this material is incomplete, due to a lack of some important diagnostic features for distinguishing this species from *R. alba*, concretely fruits or/and seeds, an epitype is designated as recommended in Art. 9.8 of the *Melbourne Code*, in order to avoid any ambiguity in the interpretation of the lectotype specimen.

Reseda hookeri Gussone (1855: 28)

≡ *Reseda alba* subsp. *hookeri* (Guss.) Arcangeli (1882: 66)

≡ *Reseda alba* var. *hookeri* (Guss.) Fiori (1923: 584)

Type:—[Lacco Ameno, Ischia Island, Gulf of Naples, Italy] Ischia, Lacco [Ameno] a S. [Santa] Restituta, 26 Aprile 1853 (NAP!) (**lectotype designated here**; Fig. 1). [Italy, Sicily, Aeolian Islands] Salina, Gussone s.n., 1828 (BOLO!) (**epitype designated here**; Fig. 2, the fragment on the left side of the sheet, marked with an arrow).

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