

# Taxonomy and Distribution of *Spiraea hypericifolia* in Italy and Typification of the Name *S. flabellata* (Rosaceae)

Fabio Conti and Fabrizio Bartolucci \*

Centro Ricerche Floristiche dell'Appennino, Parco Nazionale del Gran Sasso e Monti della Laga – Scuola di Bioscienze e Medicina Veterinaria, Università di Camerino, San Colombo, Barisciano, 67021 L'Aquila, Italy

\* Correspondence: fabrizio.bartolucci@unicam.it

**Abstract:** *Spiraea hypericifolia* is a Eurasiatic species, distributed from SW Europe to C and SW Asia. In Italy, only the alien *S. hypericifolia* subsp. *obovata* was recorded, as naturalized in the Central Apennines. *Spiraea flabellata* was described from Abruzzo (Central Apennines, Italy) by Gussone in 1826 and is currently regarded as a synonym of *S. hypericifolia* subsp. *obovata*. Based on the study of living plants from *locus classicus* and the analysis of the original material traced in BOLO and NAP, *S. flabellata* should be referred instead to *S. hypericifolia* subsp. *hypericifolia*, a taxon reported here for the first time in Italy. The name *S. flabellata* is lectotypified with a specimen kept in NAP. Based on our study, *S. hypericifolia* subsp. *obovata* should be excluded from Italian flora. *Spiraea hypericifolia* subsp. *hypericifolia* should be considered native to Italy and added to the contingent of steppe plants of phytogeographic and conservation interest recorded in the Central Apennines. Finally, the conservation status assessment of *S. hypericifolia* subsp. *hypericifolia* according to IUCN categories and criteria, is proposed and discussed.

**Keywords:** Central Apennines; Eurasiatic species; lectotype; nomenclature; steppe plant

**Citation:** Conti, F.; Bartolucci, F. Taxonomy and Distribution of *Spiraea hypericifolia* in Italy and Typification of the Name *S. flabellata* (Rosaceae). *Plants* **2023**, *12*, 536. <https://doi.org/10.3390/plants12030536>

Academic Editor: Ioannis Bazos

Received: 16 November 2022

Revised: 20 January 2023

Accepted: 22 January 2023

Published: 24 January 2023



**Copyright:** © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

As part of the research on the flora of the Abruzzo, Lazio, and Molise National Park [1–3], we have studied some critical species groups from a systematic and taxonomic point of view [4–7]. One of these is *Spiraea hypericifolia* L., a Eurasiatic species with a native range from SW Europe to C and SW Asia. Within *S. hypericifolia* two subspecies are currently recognized in Europe [8]: subsp. *hypericifolia* occurring from SE Europe, Turkey to Siberia, West and Central Himalaya, introduced to Belarus, and subsp. *obovata* (Waldst. & Kit. ex Willd) H. Huber native in France and Spain, introduced to Belgium and doubtful in Italy and Morocco [9].

*Spiraea flabellata* was described by Gussone [10] from Abruzzo (Central Apennines, Italy) and is currently regarded as a synonym of *S. hypericifolia* subsp. *obovata* [9,11–14]. According to the Italian checklist [14], *S. hypericifolia* subsp. *obovata* was recorded as a naturalized alien in Abruzzo and a casual alien in Umbria. Other authors report this taxon as doubtfully native to Italy [12,13]. In Abruzzo, it is known for S. Demetrio near L'Aquila, for the surroundings of Trasacco and Fucino Lake ([10,15] as *S. flabellata*), L'Aquila and Teramo ([16] as *S. flabellata*), and recently recorded near Ortucchio (Fucino Plain) ([1] as *S. hypericifolia* subsp. *obovata*). It was also recorded in Umbria near Spoleto and not recently confirmed [15,17–19].

The aim of the present work is to clarify the taxonomic identity of *S. flabellata* and to review the taxonomy and distribution of *S. hypericifolia* in Italy.

## 2. Materials and Methods

This study is based mainly on field surveys, on an extensive analysis of the relevant literature, and on careful examination of herbarium specimens (including the original material), kept in APP, AUR, BM, BOLO, H, LINN, LY, NAP, NIM, and TALL (codes follow Thiers [20]).

In order to investigate the morphological variability of *Spiraea hypericifolia*, 87 dried individuals belonging to *S. hypericifolia* subsp. *hypericifolia* (59) and subsp. *obovata* (24) were studied. According to Dostál [8], the diagnostic characters to identify the two taxa are the shape of leaves, the shape and length of petals in relation to the stamens, and the ratio between the length of sepals and the hypanthium. We measured the characters proposed by Dostál (Table 1) except for the shape and length of petals in relation to stamens. Based on our preliminary observations, these characters are difficult to observe on the herbarium specimens and do not seem to discriminate the infraspecific taxa. The variability of the analyzed morphological characters was described by standard statistical parameters (minimum, maximum, 10<sup>th</sup>, and 90<sup>th</sup> percentiles). All morphological characters of herbarium specimens were observed and measured under a Leica MZ16 stereoscopic microscope, using a digital caliper with 0.1 mm precision. The digital images of herbarium specimens were measured with IC Measure version 2.0.0.245.

The lectotype designation herein follows the Shenzhen Code ([21], hereafter ICN).

## 3. Results

### 3.1. Typification of the Name *S. flabellata*

*Spiraea flabellata* Bertol. ex Guss., Pl. Rar. (Gussone): 205 (1826).

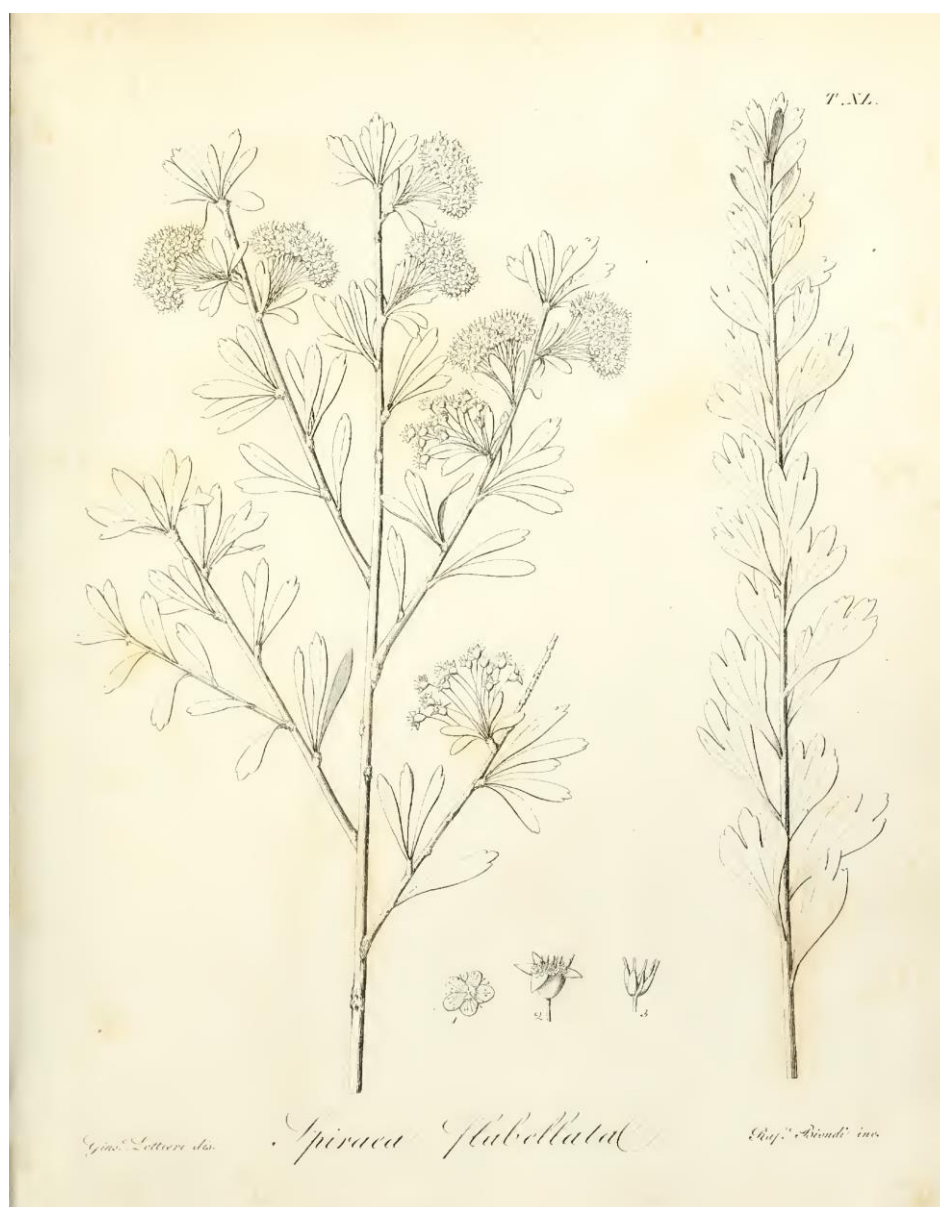
Protologue citation: [Italy, Abruzzo] “*In collibus glareosis calcareis Aprutii; S. Demetrio presso Aquila, e presso Trasacco sul Lago Fucino*”.

Lectotype (designated here): [ITALY] S. Demetrio presso Aquila, Agosto 1823, Gussone s.n. (NAP barcode NAP0000370 [digital photo!], Figure 1).

*Spiraea flabellata* was first described by Gussone [10] from Abruzzo (Central Italy), who provided a detailed description, quoting a precise collection locality and citing an illustration “Ic. nostra t. 40”. We were able to trace some herbarium specimens housed in BOLO and NAP, which can be considered original material (Art. 9.4 of the ICN), as well as the illustration “t. 40” cited in the protologue (Figure 2). In BOLO, we traced one specimen collected by Gussone “Colline presso Aquila a S. Demetrio, misit Gussone 1826”. In the Gussone Herbarium in NAP, we traced four specimens, collected by Gussone: “S. Demetrio presso Aquila, Agosto 1823” (barcode NAP0000370), “S. Demetrio pr. Aquila (barcodes NAP0000371, NAP0000372), “nella Marsica presso il Lago di Fucino a Trasacco, Agosto 1823” (barcode NAP0000373). The herbarium specimen barcoded NAP0000370 is complete, well conserved, agrees with the protologue, and is selected here as lectotype for the name *S. flabellata*.



**Figure 1.** Lectotype of the name *S. flabellata* kept in NAP, barcode NAP0000370 (reproduced with permission of the *Herbarium Neapolitanum*, University of Naples Federico II, Italy).



**Figure 2.** Illustration of *S. flabellata* cited in the protologue by Gussone as “t. 40”.

### 3.2. Taxonomic Treatment

#### *Spiraea hypericifolia* L., Sp. Pl. 1: 489 (1753) subsp. *hypericifolia*

Lectotype (designated by Purohit & Panigrahi 1991: 110). Herb. Linn. No. 651.5 (LINN [digital photo!]), the image of the lectotype is available at <https://linnean-online.org/4769/#?s=0&cv=0> (accessed on 10 November 2022).

= *Spiraea flabellata* Bertol. ex Guss., Pl. Rar. (Gussone): 205 (1826).

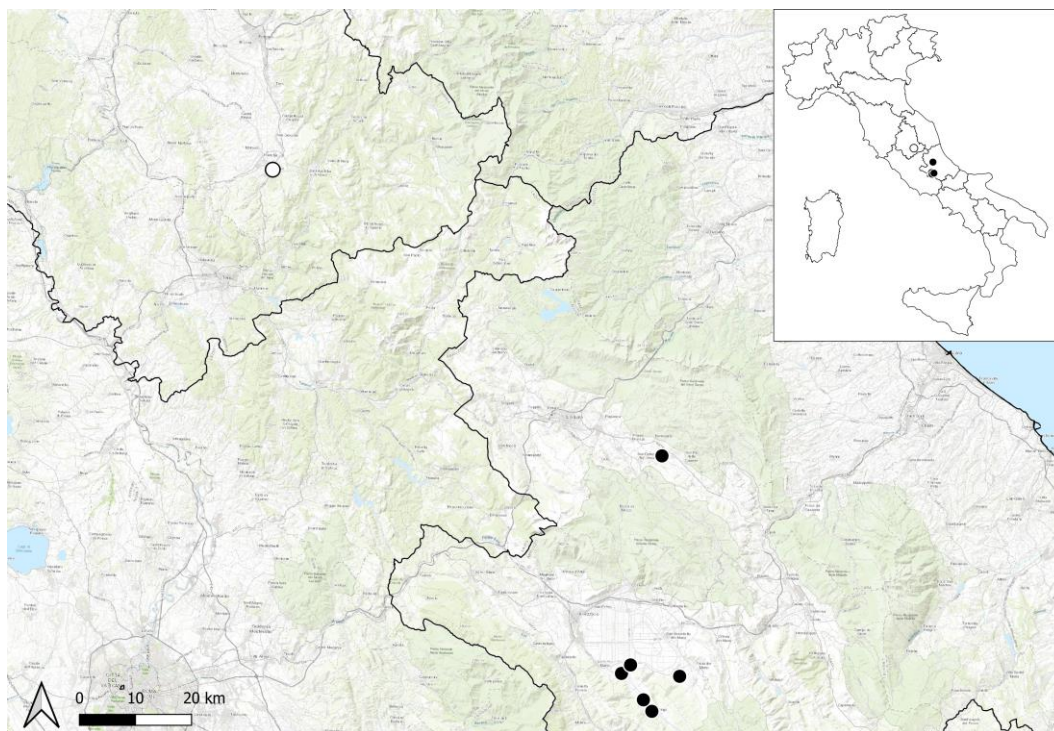
Lectotype (see previous pages): [ITALY] S. Demetrio presso Aquila, Agosto 1823, Gussone s.n. (NAP barcode NAP0000370 [digital photo!], Figure 1).

= *Spiraea italica* Raf., New Fl. [Rafinesque] iii. 72 (1838), nom. alt. (Art. 36.3 of the ICN) = *Spiraea reticulata* Raf., New Fl. [Rafinesque] iii. 72 (1838), nom. alt. (Art. 36.3 of the ICN).

Holotype: [illustration] “*Hyperici Spiraea folio*” in Boccone, Museo di Pianta Rare della Sicilia, Malta, Corsica, Italia, Piemonte e Germania: Figure in the upper-left corner of pl. 96. 1697.

– *Spiraea chamaedryfolia sensu* Tenore, non L., Fl. Neapol. Prodr. App. IV: 24 (1823), Fl. Neapol. 3: IX (1824–1829).

Distribution: in Italy, it is currently present only in Abruzzo in the Fucino plain and in the L’Aquila basin (Figure 3). Its presence in Umbria was based on old bibliographic references [15,17–19] from hills near Spoleto, and not recently confirmed. We were able to trace an old herbarium specimen housed in BOLO collected from Spoleto (see Specimens examined).



**Figure 3.** Distribution map of *Spiraea hypericifolia* subsp. *hypericifolia* in Italy, according to the herbarium material studied. Black symbols indicate the population currently present based on field investigations, and empty symbols refer to the old herbarium specimens seen.

Phenology: flowering from late April to May; fruiting in June and July.

Habitat and ecology: bushes, hedges in arid hemicyptophytic grasslands at an elevation of 670–900 m a.s.l. We have studied some populations of *S. hypericifolia* in the field of Abruzzo “continental valleys” (including the locus classicus of *S. flabellata*), specifically, in the Fucino plain, near Trasacco and Collelongo, and in the L’Aquila basin between Barisciano and San Demetrio ne’ Vestini (Figure 4). In the latter locality, we were able to confirm the presence of *S. hypericifolia*, where the species was known on the basis of an old report by Gussone [10] and never confirmed again. In the investigated populations, *S. hypericifolia* often forms bushes that are monophytic or accompanied by *Prunus spinosa* L. subsp. *spinosa*, *Crataegus monogyna* Jacq., *Rosa subcollina* (Christ) Vuk., and, more rarely, by *Prunus dulcis* (Mill.) D.A.Webb, surrounded by steppe grasslands. In the Fucino plain, *S. hypericifolia* grows in the fluvio-glacial valley of the Rosa torrent between Trasacco and Villavallelonga, on the edge of arid hemicyptophytic grasslands, rich in steppe relict elements, locally dominated by *Stipa capillata* L. and *Festuca valesiaca* Schleich. ex Gaudin subsp. *valesiaca*, and near Trasacco and Ortucchio. These steppe grasslands have recently been attributed to the priority habitat of EU Habitats Directive “6240 Sub-pannonic steppe grasslands” [22]. The population between Barisciano and S. Demetrio ne’ Vestini, grows in the L’Aquila basin with a marked continental character similar to the Fucino basin, where dominate dry grasslands with *Stipa capillata* and *S. dasyvaginata* Martinovský subsp. *apenninicola* Martinovský & Moraldo.



**Figure 4.** *Spiraea hypericifolia* subsp. *hypericifolia* (Abruzzo, Collelongo, photo by F. Conti).

Conservation status: *Spiraea hypericifolia* currently occurs in Central Apennines in Abruzzo, in the L’Aquila basin, and in the Fucino plain. In the latter locality, the population is partly inside the NATURA 2000 network within the SAC IT7110205 “Parco Nazionale d’Abruzzo”. The population in Umbria (Central Italy), confirmed by one old herbarium specimen, has not been observed for over 180 years. The Extent of Occurrence (EOO) is 231.104 km<sup>2</sup>, and the area of occupancy (AOO) is 24 km<sup>2</sup> (cell 2×2 km) calculated with GeoCAT (Geospatial Conservation Assessment Tool) software [23]. The species is present in two locations (six subpopulations), and a decline in the EOO and AOO was inferred, considering the possible extinction of the population in Umbria. A decline of the quality of habitat, due to the presence of the invasive alien *Ailanthus altissima* (Mill.) Swingle, was observed. According to IUCN [24] criterion B2ab(i,ii,iii,iv), the species is assessed as Endangered (EN) at the regional level (Italy).

Taxonomic notes: based on studied and measured herbarium material, *S. hypericifolia* subsp. *hypericifolia* (including *S. flabellata*) showed narrower leaves than in subsp. *obovata* and hypanthium clearly longer than sepals (see Table 1).

**Table 1.** Comparison of diagnostic morphological characters based on studied herbarium material between *S. hypericifolia* subsp. *hypericifolia* and *S. hypericifolia* subsp. *obovata*. Characters are reported as 10–90 percentiles (extreme values in brackets).

Characters	<i>S. hypericifolia</i> subsp. <i>hypericifolia</i>	<i>S. hypericifolia</i> subsp. <i>obovata</i>
Leaf length (mm)	(8.91)12.21–24.12(28.33)	(9.57)12.59–20.96(23.69)
Leaf width (mm)	(2.86)3.21–5.00(6.43)	(3.96)4.98–9.04(9.69)
Leaf length/leaf width (LL/LW)	(2.86)3.21–5.00(6.43)	(1.69)2.05–2.74(2.90)
Hypanthium length (mm)	(0.86)0.97–2.00(2.46)	(0.86)1.06–1.60(1.74)
Sepal length (mm)	(0.44)0.54–1.40(2.29)	(1.00)1.11–1.58(1.97)
Hypanthium length/sepals length (HL/SL)	(1.07)1.21–1.98(2.02)	(0.75)0.76–1.15(1.19)

Specimens examined: *Spiraea hypericifolia* subsp. *hypericifolia*. Europe, Asie et Amerique, 26 December 1900, herb. R. Bonaparte s.n. (LY barcode LY0211680, under the name of *S. hypericifolia* var. *acutifolia*); **China**. Westwen Hupe, expedition to China 1907–09, March 1908, E.H. Wilson 2754 (BM barcode BM001124584, under the name of *S. hypericifolia* var. *hupehensis*); **Uzbekistan**. Usbeki NSV, Taškendi obl., Bostandōki raj., Bilder-Sai, 2500 m, 25 August 1981, J. Elliku s.n. (TALL barcode TALLA007377); Taškendi oblast, Bostandōki rajoon, Hudoidot-Sai jõe ääres, 2 September 1981, J. Elliku s.n. (TALL barcode TALLA007376); Taškendi oblast, Bostandōki rajoon, Bilder-Sai, ~ 1600 m., 27 August 1981,

*J. Elliku* s.n. (TALL barcode TALLA007375); the village of Aktash, 70–80 km NE of Tashkent, above pioneer camp in Karzhantau Ridge of Tien-Shan Mountains, along a stream bank in a rocky canyon, 1700–2000 m, small shrub 1 m. high growing on rocks, 22 July 1986, T.S. Elias, D. Murray et L. Newcombe 9786 (H barcode H1237319); Taškendi oblast, Abdukarim-Sai, Akbulaki jõe ääres, 2 May 1982, A. Päivel s.n. (TALL barcode TALLA007378); **Kyrgyzstan**. Talas region, Talas district, S macroslope of Talas Ala-Too, It-Agar river (left tributary of Chychkan river), gravelly river side deciduous forest, 42.15°N 72.83°E, alt. 1800 m a.s.l., 26 July 2009, H. Väre 18682 (H QR code C543595); **Russia**. Prov. Samara, distr. Nowo-Usen., in steppes, locis demissioribus, circa p. Walujka, 14–18 May (fl.), 3 June (fr.) 1900, W. Bogdan s.n. (H QR code C120069); ibidem, May–June 1900, W. Bogdan s.n. (H QR code C120071); Mägi-Altai AO, Ulagani rajoon, Aktaši ümbrus, 6 September 1986, *J. Elliku* s.n. (TALL barcode A007379); regio Volgae inferioris, ripa dextra fluvii Don prope oppidum Surovikino (Russia, pars Europaea, prov. Volgograd), fruticetum stepposum, 6 May 1991, V. Saġaläev s.n. (H QR code C120078); Estonia. Viljandi maa-kond, Öisu, 8 May 1990, *J. Elliku* s.n. (TALL barcode A007384); **Italy**. Spoleto in Umbria, 1834, *Roma Manni* s.n. (BOLO); Ortucchio (L’Aquila), rupi e prati aridi, 680 m, 25 April 1992, F. Conti s.n. (APP No. 25542); tra Collesongo e Trasacco (Vallelunga) (Lecce nei Marsi, L’Aquila), mandorleto, prati aridi, 765 m, 19 April 2001, F. Conti s.n. (APP Nos. 32699, 32700); Trasacco (L’Aquila), 8 October 2000, F. Conti s.n. (APP No. 35199); presso il cimitero di Trasacco (Lecce nei Marsi, L’Aquila), cespuglieti, 700 m, 9 May 2022, F. Conti, F. Bartolucci s.n. (APP Nos. 66190–66198, MSMN); ibidem, 28 June 2022 F. Conti, F. Bartolucci s.n. (APP Nos. 66199, 66200); presso Collesongo (L’Aquila), cespuglieti, 888 m, 9 May 2022, F. Bartolucci, F. Conti s.n. (APP Nos. 66201, 66202); Colle Cicogna (Barisciano, L’Aquila), cespuglieti, 845 m, 21 May 2022, F. Conti s.n. (APP Nos. 66203–66207). **Spiraea hypericifolia** subsp. *obovata*. **France**. Bois de Sauzay à Saint-Loup (Cher), 14 May 1894, A. Martin s.n. (LY barcode LY0211200); Rhône: Saint Symphorien-sur-Coise, haies, 15 May 1884, *Anthelme* s.n. (LY barcodes LY0211186, LY0211193; AUR barcode AUR03686); Lagrange (Cher), 18 June 1857, ... [?] s.n. (LY barcode LY0211211); hab. in sylvis petrosis (Berri, Cevennes, Parisiensis), Horti Rhedonensis, s.c., s.n. (LY barcode LYJB057021); coteaux calcaires des environs d’Angoulême, 24 April–10 June 1902, A. Guillon s.n. (NIM barcode NIME0006457); près Angoulême (Charente), May 1853, A. Guillon s.n. (LY barcode LY0211681); chaumes de la Tourette près Angoulême, Charente, 19 April 1859, A. de Rochebrune s.n. (LY barcode LY0211677); Le Larzac, à l’Hospitalet (Aveyron), 10 July 1888, H. Coste s.n. (AUR barcode AUR03687). **Spain**. Zigoitia, Ondategi, cerro de las Larras (España, prov. Álava), UTM 30 TWN 2154, alt. 580–600 m, orla y claros de quejigal (*Quercus faginea*) terreno margoso, 25 April 1997, P.M. Uribe-Echebarría VIT 51413 (H QR code C120115); Berberana (Espagne, prov. Burgos), per après le Puerto de Orduna, au début de la descente vers Berberana, alt. 800 m, platière arbustive, 25 May 1982, B. De Retz 82984 (H QR code C120116); Barrundia, Urizar. Cerro Arbulo (España, prov. Álava), UTM 30 TWN 3649, alt. 590 m, cerro margoso en zona de quejigal, 9 May 1993, A. and P.M. Uribe-Echebarría VIT 14989 (H QR code C120118); Lumbier (Espagne, Navarra), Foz de Arbayún, bord supérieur de la falaise, coord. 30T XN 5030, alt. 690 m, sur calcaire sec, communautés entre les Ononidetalia et les Rosmarinetalia, endroit fortement venteux, 3 June 1970, P. Montserrat 1808/70 (H QR code C120117).

#### 4. Discussion and Conclusions

On the basis of our study, *Spiraea flabellata* should be considered as a synonym of *S. hypericifolia* subsp. *hypericifolia*, and not a synonym of *S. hypericifolia* subsp. *obovata*, as previously reported [9,11,14]. Accordingly, *Spiraea hypericifolia* subsp. *obovata* should be excluded from Italian flora, while subsp. *hypericifolia* has been reported for the first time in Italy. *Spiraea hypericifolia* subsp. *hypericifolia* is a plant growing in the steppe zone of Europe and Asia. In Italy, it grows in the Central Apennines (Abruzzo, although not confirmed in Umbria) in the internal continental valleys of the Fucino and L’Aquila basins, where the priority habitat of “6240 Sub-pannonic steppic grasslands” has recently been

found and a rich contingent of steppic plants of considerable scientific and phytogeographic interest, such as the disjunction with E Europe, was recorded, e.g., *Adonis vernalis* L., *Alyssum desertorum* Stapf., *Androsace maxima* L., *Astragalus exscapus* L. subsp. *exscapus*, *Festuca valesiaca* Schleich. ex Gaudin subsp. *valesiaca*, *Salvia aethiopsis* L., and *Stipa capillata* L. [25–28]. Moreover, some Italian endemics, living in the same areas, must be considered of steppic origin, such as *Goniolimon tataricum* (L.) Boiss. subsp. *italicum* (Tammaro, Pignatti & Frizzi) Buzurović, *Astragalus aquilanus* Anzal. [29,30] and *Adonis fucensis* (F.Conti & Bartolucci) [31]. The populations of *S. hypericifolia* studied on the field in Abruzzo, characterize communities of shrubs on the edge of fields, pastures, and arid hemicryptophytic grasslands, rich in steppic relict elements, locally dominated by *Stipa capillata*, *S. dasyvaginata* subsp. *apenninica* and *Festuca valesiaca* subsp. *valesiaca*. Our observations and ecological considerations suggest that *S. hypericifolia*, a typical steppic plant, can be considered native to the Central Apennines. The occurrence of many species of steppe origin and the recently discovered sub-pannonic steppic grasslands confirm the hypothesis that the inner continental valleys of the Central Apennines performed as refugia throughout the Holocene for the late-Pleistocene steppic flora [27].

**Author Contributions:** Conceptualization and methodology, F.C. and F.B.; field investigations, F.C. and F.B.; writing—original draft preparation, F.C.; nomenclature, F.B.; writing—review and editing, F.C. and F.B. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Data Availability Statement:** The data presented in the current study are available within the article.

**Acknowledgments:** The authors wish to thank Umberto Mossetti (BOLO) and Roberta Vallariello (NAP) for their help with searching for the original material of *Spiraea flabellata* and for providing digital images of herbarium specimens. For the digital photos studied on virtual herbaria, we gratefully acknowledge AUR, BM, H, LINN, LY, NIM, and TALL. We also thank our friend Bruno Santucci who provided us with distributive data, and Valeria Giacanelli for the linguistic revision.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

- Conti, F. Prodrómo della Flora del Parco Nazionale d’Abruzzo. In *Progetto Biodiversità. Ente Autonomo del Parco Nazionale d’Abruzzo*; Tassi, F., Ed.; Almadue srl: Roma, Italy, 1995; p. 127.
- Conti, F.; Bartolucci, F. *The Vascular Flora of the National Park of Abruzzo, Lazio and Molise (Central Italy): An Annotated Checklist*; Geobotany Studies; Springer: Cham, Switzerland, 2015; p. 254.
- Conti, F.; Bartolucci, F. *La Flora Vascolare del Parco Nazionale d’Abruzzo, Lazio e Molise*; FastEdit: Acquaviva Picena, Ascoli Piceno, 2022; p. 957.
- Conti, F.; Peruzzi, L. *Pinguicula* (Lentibulariaceae) in central Italy: Taxonomic study. *Ann. Bot. Fennici* **2006**, *43*, 321–337.
- Conti, F.; Bartolucci, F. *Anthyllis apennina* (Fabaceae), a new species from central Apennine (Italy). *PhytoKeys* **2021**, *176*, 111–129. <https://doi.org/10.3897/phytokeys.176.62774>.
- Conti, F.; Bracchetti, L.; Uzunov, D.; Bartolucci, F. A new subspecies of *Corydalis densiflora* (Papaveraceae) from the Apennines (Italy). *Willdenowia* **2019**, *49*, 53–64. <https://doi.org/10.3372/wi.49.49107>.
- Conti, F.; Bartolucci, F.; Bacchetta, G.; Pennesi, R.; Lakušić, D.; Niketić, M. A taxonomic revision of the *Siler montanum* group (Apiaceae) in Italy and the Balkan Peninsula. *Willdenowia* **2021**, *51*, 321–347.
- Dostál, J.; Spiraea, L. In *Flora Europaea*; Tutin, T.G.H.V.H., Burges, N.A., Moore, D.M., Valentine, D.H., Walters, S.M., Webb, D.A., Eds.; Cambridge University Press: Cambridge, UK, 1968; Volume 2, pp. 4–6.
- POWO. Plants of the World Online, Facilitated by the Royal Botanic Gardens, Kew. Available online: <http://www.plantsoftheworldonline.org/> (accessed on 10 October 2022).
- Gussone, G. *Plantae Rariores quas in Itinere per oras jonii ac Adriatici Maris et per Regiones Samnii et Aprutii collegit G. Gussone*; Ex Regia Typographia: Neapoli [Napoli], Italy, 1826; Volume 1, p. 401.
- Pignatti, S. *Flora d’Italia*; Edagricole: Bologna, Italy, 1982; Volume 1, p. 790.
- Kurtto, A. Rosaceae (pro parte majore). In: Euro+Med Plantbase—the information resource for Euro-Mediterranean Plant Diversity. Available online: [https://europlusmed.org/cdm\\_dataportal/taxon/5dfb83e7-d6d7-4ce3-a1bd-5d79ba4fa1f2](https://europlusmed.org/cdm_dataportal/taxon/5dfb83e7-d6d7-4ce3-a1bd-5d79ba4fa1f2) (accessed on 10 October 2022).
- Pignatti, S.G.R.; La Rosa, M. *Flora d’Italia*, 2nd ed.; New Business Media: Milano, Italy, 2017; Volume 2, p. 1178.



14. Galasso, G.; Conti, F.; Peruzzi, L.; Ardenghi, N.M.G.; Banfi, E.; Celesti-Grappow, L.; Albano, A.; Alessandrini, A.; Bacchetta, G.; Ballelli, S.; et al. An updated checklist of the vascular flora alien to Italy. *Plant Biosyst.* **2018**, *152*, 556–592. <https://doi.org/10.1080/11263504.2018.1441197>.
15. Bertoloni, A. *Flora Italica Sistens Plantas in Italia et in Insulis Circumstantibus Sponte Nascentes*; R. Masius: Bologna, Italy, 1842; Volume 5, p. 656.
16. Tenore, M. *Sylloge Plantarum Vascularium Florae Neapolitanae Hucusque Detectarum*; Ex Typ. Fibreni: Neapoli [Napoli], Italy, 1831; p. 639.
17. Boccone, P. *Museo di piante rare della Sicilia, Malta, Corsica, Italia, Piemonte, e Germania*; Per io Baptista Zuccato: Venezia, Italy, 1697; p. 196 [+130 pls.].
18. Barrelier, J. *Plantae per Galliam, Hispaniam et Italiam Observatae, Iconibus Aeneis Exhibitae*; Stephanum Ganeau: Paris, France, 1714; p. 140 [+ 334 pls.].
19. Rafinesque, C.S. *New Flora and Botany of North America [part 3, New Sylva]*; Philadelphia [Printed for the author and publisher], 1838; p. 96.
20. Thiers, B. Index Herbariorum: A Global Directory of Public Herbaria and Associated Staff. New York Botanical Garden's Virtual Herbarium. Available online: <http://sweetgum.nybg.org/science/ih/> (accessed on 10 October 2022).
21. Turland, N.J.; Wiersema, J.H.; Barrie, F.R.; Greuter, W.; Hawksworth, D.L.; Herendeen, P.S.; Knapp, S.; Kusber, W.-H.; Li, D.-Z.; Marhold, K.; et al. *International Code of Nomenclature for Algae, Fungi, and Plants (Shenzhen Code) Adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. Regnum Vegetabile 159. Koeltz Botanical Books: Glashütten, Germany, 2018.
22. Filibeck, G.C.L.; Rosati, L. *Carta dei Tipi di Habitat di Interesse Comunitario (Direttiva 92/43/CEE) del Parco Nazionale d'Abruzzo, Lazio e Molise e dei siti Natura 2000: ZSC IT7110205, ZPS IT7120132, ZSC IT6050018, ZSC IT6050020, ZSC IT7212121—Note Illustrative*; Università degli Studi della Tuscia: Viterbo, Italy, 2022; p. 114.
23. Bachman, S.M.J.; Hill, A.W.; de la Torre, J.; Scott, B. Supporting Red List threat assessments with GeoCAT: Geospatial conservation assessment tool. *ZooKeys* **2011**, *150*, 117–126. <https://doi.org/10.3897/zookeys.150.2109>.
24. IUCN. IUCN Guidelines for Using the IUCN Red List Categories and Criteria. Version 15.1. Available online: <https://www.iucnredlist.org/resources/redlistguidelines> (accessed on 23 September 2022).
25. Bartolucci, F.; Conti, F. *Alyssum desertorum* Stapf (Brassicaceae), new for the Italian flora. *Acta Bot. Croat.* **2016**, *75*, 149–152. <https://doi.org/10.1515/botcro-2016-0006>.
26. Conti, F.; Bartolucci, F. The vascular flora of Gran Sasso and Monti della Laga National Park (Central Italy). *Phytotaxa* **2016**, *256*, 1–119. <https://doi.org/10.11646/phytotaxa.256.1.1>.
27. Cancellieri, L.S.M.G.; Filibeck, G. First record of the steppic relict *Astragalus exscapus* L. subsp. *exscapus* in the Apennines (Abruzzo, Italy), and biogeographic implications. *Plant Biosyst.* **2017**, *151*, 944–948. <https://doi.org/10.1080/11263504.2017.1311963>.
28. Filibeck, G.; Cancellieri, L.; Bartolucci, F.; Becker, U.; Conti, F.; Maestri, S.; Mürz, M.; Schommer, E.; Sperandii, M.G.; Becker, T. *Festuca valesiaca* Schleich. ex Gaudin newly discovered in the Central Apennines (Italy): A further example of steppe relict in the Abruzzo “dry valleys”. *Plant Biosyst.* **2020**, *154*, 593–600. <https://doi.org/10.1080/11263504.2019.1651784>.
29. Morretti, F.; Puppi, G.; Giuliani, C.; Conti, F. Heterostyly in *Goniolimon italicum* (Plumbaginaceae), endemic to Abruzzo (central Apennines, Italy). *Anales del Jardín Botánico de Madrid* **2015**, *72*, e014. <https://doi.org/10.3989/ajbm.2365>.
30. Buzurović, U.; Tomović, G.; Niketić, M.; Bogdanović, S.; Aleksić, J.M. Phylogeographic and taxonomic considerations on *Goniolimon tataricum* (Plumbaginaceae) and its relatives from south-eastern Europe and the Apennine Peninsula. *Plant Syst. Evol.* **2020**, *306*, 29. <https://doi.org/10.1007/s00606-020-01636-0>.
31. Conti, F.; Oberprieler, C.; Dorfner, M.; Schabel, E.; Nicoară, R.; Bartolucci, F. *Adonis fucensis* (A. sect. *Adonanthe*, Ranunculaceae), a New Species from the Central Apennines (Italy). *Biology* **2023**, *12*, 118.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.