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ORIGINAL ARTICLE

Synopsis of *Boraginaceae* subfam. *Boraginoideae* tribe *Boragineae* in Italy

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Abstract

A synopsis of the Italian taxa of tribe *Boragineae* (*Boraginaceae*, subfam. *Boraginoideae*) is given as a second contribution to the treatment of the family for the *Flora Critica d'Italia* project. The work is mainly based on the critical study of herbarium material and extensive literature survey. All relevant floristic reports were examined and types of all the accepted (51) and most (37/46) of the synonymized names of taxa, specific and infraspecific, reported from the National territory are indicated. In the light of karyological and morphological evidence, the new combination *Pulmonaria vallarsae* subsp. *apennina* is proposed. As a result, 12 genera and 37 species are recognized, of which 7 are allochthonous and 6, plus two subspecies, are endemic. A synthetic floristic treatment is provided, including analytical keys, hybrids, list of synonyms and short distribution notes. In addition, detailed distribution maps are provided, together with the lists of the selected specimens upon which they are based.

Keywords: *Anchusa s.l.*, *Borago*, *Brunnera*, *Italian flora*, *Nonea s.l.*, *Pulmonaria*, *Symphytum*, *typification*

Within the order “*Boraginales*”, the *Boraginaceae* s.s. (*Boraginaceae* s.l. subfam. *Boraginoideae*) form a well-supported monophyletic clade that can be easily distinguished by the gynobasic style and the cremocarpic fruit (Weigend et al. 2013; Hilger 2014). This clade includes 2/3 of the total amount of genera and species in the *Boraginaceae* s.l. (sensu APG 2009) and consists of four major tribes based on both morphological characters (mainly fruit) and DNA data: *Boragineae*, *Cynoglosseae*, *Echiochileae* and *Lithospermeae* (Långström & Chase 2002; Weigend et al. 2013; Figure 1).

The members of tribe *Boragineae* are characterized by prominent faucal scales (in *Pulmonaria* L. replaced by patches or bands of trichomes), flat gynobase and, usually ovoid nutlets with non-calcified pericarp, provided with a basal thickening and lipidic elaiosome for myrmecochorous dispersal. They are mainly centered in the Old World, with main diversity centers in the Mediterranean and Irano-Turanian regions, but also include as basal groups the members of two genera from the Neotropics, i.e. *Moritzia* DC. ex Meisn. and *Thaumatocaryon* Baill. (Weigend et al. 2010). Follow-

ing the description of new taxa, the appearance of new allochthonous species over the national territory and several taxonomic re-arrangements, the number of genera and species of *Boragineae* reported for Italy (see tab. I in Cecchi & Selvi 2014) has doubled from *Flora Italica* by Bertoloni (1835–1836; five genera with 18 species) to the most recent report in the *Checklist* by Conti et al. (2005; 12 genera with 35 species).

Following our first contribution dealing with the “atypical”, basal groups of *Boraginaceae* s.l. (members of subfamilies *Hydrophyllloideae* and *Heliotropioideae*; Cecchi & Selvi 2014), we present here the first of three synopses dedicated to the *Boraginaceae* s.s. (i.e. *Boraginaceae* subfam. *Boraginoideae* sensu APG 2009), one for each tribe. As in the case of the previous one, our work is mainly based on a detailed literature survey and on the study of the herbarium material conserved in the great majority of the Italian collections, both public and private. Observations on natural populations made during numerous field excursions have provided additional elements to evaluate the extent and patterns of infraspecific variation in a number of taxa. All the relevant floristic

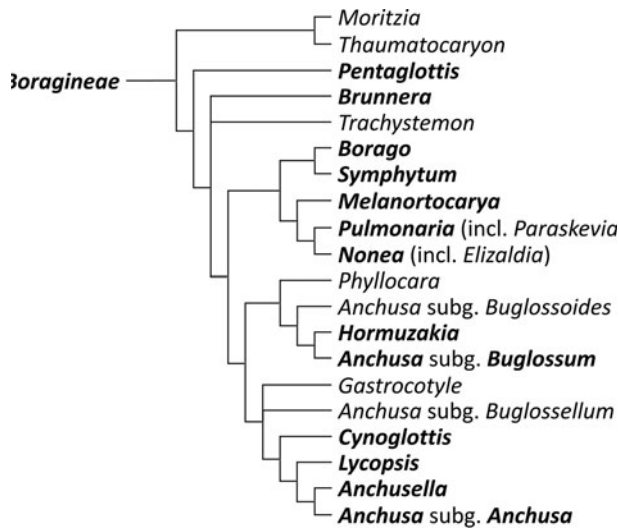


Figure 1. Phylogenetic relationships among genera in *Boraginaceae* tribe *Boragineae* (simplified, after Hilger et al. 2004; Weigend et al. 2010). Taxa represented in the Italian flora are in bold.

reports have been examined and most of specific and infraspecific names reported from Italy have been typified.

Materials and methods

This work includes all the taxa of tribe *Boragineae* growing spontaneously over the National territory, both native and non-native; their treatment follows the same concept used by Cecchi & Selvi (2014), to which we refer for more details. While avoiding here to include the whole, extensive taxonomic treatment, that will form the bulk of our contribution for the *Flora*, we provide a complete synopsis of taxa, synonyms, types and syntethic distributional notes for Italy together with lists of selected specimens.

Essential chorological information is based on both extensive survey of floristic literature and critical revision of *exsiccata* kept in the following 26 public Italian herbaria and 7 private collections: AO, APP, BI, BOLO, CAG, CAT, CLU, FER, FI, GE, MFU, MNAV, MOD, MSNM, NAP, PAD, PAL, PAV, PESA, PI, PIAGR, TO, UTV, UVV, VER, Herb. Bicknell (Istituto Internazionale di Studi Liguri, Bordighera), Herb. Argenti (Belluno), Herb. Bovio (Aosta), Herb. Cecchi (Firenze), Herb. Lasen (Belluno), Herb. Peccenini (Genova), Herb. Poldini (Trieste), Herb. Stinca (Napoli). In addition, a selection of specimens kept in 26 foreign herbaria (ADMONT, B, BM, BP, BR, ER, FR, G, GJO, GZU, H, HAL, KFTA, KR, KW, LE, M, MEL, MW, OXF, P, REG, S, UPS, W, WU) were examined when searching for type material. Finally, digital images from www.actaplantarum.org were occasionally considered to obtain additional information on the distribution of some taxa.

Results and discussion

Tribe *Boragineae* is represented in Italy by 12 genera and 37 species, among which seven are allochthonous and six endemics. Two species are only represented by non-typical subspecies (*Anchusa undulata* L. subsp. *hybrida* (Ten.) Bég. and *Syphytum tuberosum* L. subsp. *angustifolium* (A.Kern.) Nyman), while three other include the typical subspecies plus an additional one, bringing the total number of taxa to 40. In addition, four putative hybrid taxa are treated.

Apart from the designation of new types, mainly at the infrageneric rank, no relevant novelties with respect to the Italian *Checklist* by Conti et al. (2005) are provided for the genera which have been the object of recent monographic papers, i.e. *Borago* L. (Selvi et al. 2006b), *Symphytum* L. (Bottega & Garbari 2003), and the genera in the traditional “*Anchusa* L. s.l.” circumscription (*Anchusa*, *Anchusella* Bigazzi, E.Nardi & Selvi, *Cynoglossis* (Guşul.) Vural & Kit Tan, *Hormuzakia* Guşul., *Lycopsis* L. and *Pentaglottis* Tausch; Selvi & Bigazzi 1998). In addition, more recent literature accounts for the inclusion of *Brunnera macrophylla* (Adams) I.M.Johnst. in the Italian flora (Frignani et al. 2006; Iamónico et al. 2014) and for the placement of the allochthonous *Nonea obtusifolia* (Willd.) DC. in the newly described, monotypic genus *Melanortocarya* Selvi, Bigazzi, Hilger & Papini (Selvi et al. 2006a).

Within *Pulmonaria*, both karyological (Vosa & Pistolesi 2004) and morphological (Kerner 1878; Puppi & Cristofolini 1996; G. Cristofolini, pers. comm.) evidence led us to propose the reduction of *Pulmonaria apennina* Cristof. & Puppi at the subspecific rank within the traditional, wider circumscription of *P. vallarsae* A.Kern. Moreover, despite further investigation is needed to define their distribution, a few isolated populations of typical *Pulmonaria angustifolia* L. are confirmed for the Italian territory based on both karyological reports ($2n=14$) and weak diagnostic traits with respect to the closely related *P. australis* (Murr) W. Sauer ($2n=20$; Sauer 1975).

The regional distribution in Italy of each taxon can be seen from the list of the selected specimens given in Appendix 1.

Taxonomic synopsis

A357. *Boraginaceae* Juss., *Gen. Pl.*: 128. 1789, *nom. cons*

Subfamily *Boraginoideae* – Tribe *Boragineae*

Key to genera

- (1) Flowers on long pedicels (up to 3 cm); anthers mucronate, filament with appendix at apex ... 3. ***Borago***
 - Flowers sessile or on short pedicels (up to 1 cm); anthers not mucronate, filaments without appendix ... 2

- (2) Corolla cylindric-campanulate with very short lobes; style exerted; faucal scales long, lanceolate, acute ... 4. **Symphytum** –Corolla hypocrateriform, infundibular or rotate, with limb more or less broadened and lobes at least 3–4 mm long; style included; faucal scales short, more or less rounded ... 3
- (3) Nutlet shortly and eccentrically stalked, with inconspicuous basal ring... 1. **Pentaglottis** –Nutlets not stalked, with thick basal ring ... 4
- (4) Corolla rotate with short tube (ca. 2 mm); faucal scales papillose ... 5–Corolla hypocrateriform or infundibular with long tube (≥ 5 mm); faucal scales with long trichomes ... 6
- (5) Plant rhizomatous; cymes without bracts ... 2. **Brunnera**–Rhizom absent; cymes with bracts ... 9. **Cynoglottis**
- (6) Corolla zygomorphic with oblique limb ... 7–Corolla actinomorphic with straight limb... 8
- (7) Inflorescence simple, reddish; corolla tube straight; fertil stamens 2; stigma bifid ... 11. **Anchusella** –Inflorescence branched, never reddish; corolla tube S shaped; fertil stamens 5; stigma bilobed ... 10. **Lycopsis**
- (8) Inflorescence capitate–aggregate, with sessile flowers, contracted even after anthesis; nutlets helm-shaped, with lateral cleft and basal ring toothed ... 8. **Hormuzakia** –Inflorescence not contracted, with flowers at least shortly pedunculated, strongly elongating during and after anthesis; nutlets not helm-shaped, without lateral cleft and with rounded basal ring, sometimes ribbed but never toothed ... 9
- (9) Faucal scales at least as long as broad, usually closing throat and exerted ... 12. **Anchusa** –Faucal scales absent or very short, more or less hairy but neither closing throat nor clearly exerted ... 10
- (10) Faucal scales longitudinally extended inside the tube as hairy bands; stamens inserted at base of corolla tube; style ca. 1 mm ... 5. **Melanortocarya**–Faucal scales not extended inside the corolla tube; stamens inserted at or above the half of corolla tube; style at least 4 mm long ... 11
- (11) Nutlets greysh to dark brown, rugose-reticulate, transversally ovoid with a lateral beak (erect-oblong in *N. lutea*); faucal scales present, more or less hairy ... 7. **Nonea** –Nutlets black, initially hairy, then smooth and shining, erect-ovoid; faucal scales absent, replaced by a more or less continuous ring of hairs ... 6. **Pulmonaria**

1. *Pentaglottis Tausch Flora 12(2): 643. 1829.*

≡ *Caryolopha* Fisch. & Trautv., Ind. Sem. Hort. Petrop. 3: 31. 1837.

Type (see Tausch 1829: 643, Fischer & Trautvetter in Fisher *et al.* 1837: 32): *Anchusa sempervirens* L., Sp. Pl. 1: 134. 1753 (*Pentaglottis sempervirens* (L.) Tausch).

Pentaglottis sempervirens (L.) Tausch in *Flora 12* (2): 643. 1829.

≡ *Anchusa sempervirens* L., Sp. Pl. 1: 134. 1753 ≡ *Caryolopha sempervirens* (L.) Fisch. & Trautv., Ind. Sem. Hort. Petrop. 3: 32. 1837 ≡ *Buglossum sempervirens* (L.) All., Fl. Pedem. 1: 48. 1785.

Locus classicus: “in Anglia, Hispania”. Lectotype (Selvi & Bigazzi 1998: 129): [cultivated in Germany or France] “Lipsiae in horto Deurlingi Lutetiae in horto Medico”, Herb. Burser Vol. XIV(2): 21 (UPS-BURSER 174538). Other original material: [cultivated in The Netherlands] Herb. Clifford 47.1 (BM 557915).

Italian distribution – A native of W Europe, very rare in synanthropic habitats of N Italy (historical collections from the Euganei Hills, Padova Province; recently found in Mozzate, Como Province). Literature indications from other regions are erroneous (see also Celesti-Grapow *et al.* 2010) – [Figure 2](#).

2. *Brunnera Steven in Bull. Soc. Imp. Naturalistes Moscou 24(1): 582. 1851.*

Type (here designated): *Myosotis macrophylla* Adams in Beitr. Naturk. [Weber & Mohr] 1: 46. 1805.

Brunnera macrophylla (Adams) I.M. Johnst. in *Contr. Gray Herb.* 73: 54 1924.

≡ *Myosotis macrophylla* Adams in Beitr. Naturk. (Weber & Mohr) 1: 46. 1805 ≡ *Anchusa myosotidiflora* Lehm., Pl. Asperif. Nucif. 234. 1818 ≡ *B. myosotidiflora* (Lehm.) Steven in Bull. Soc. Imp. Naturalistes Moscou 1: 582. 1851, *nom illeg.*

Locus classicus: [Georgia] “in Iberiae sylvaticis, umbrosis”. Lectotype (here designated): [Georgia] “ex Iberia”, s.d., *s.coll.* (MW). Other original material: [Georgia] “in valle Ananuriae Iberiae”, s.d., Adams (B-W 3274).

Note. The basionym *Anchusa myosotidiflora* was introduced by Lehmann (1818) when transferring the species described by Adams from *Myosotis* to *Anchusa*, in order to avoid a conflict with *A. macrophylla* Desf. from Morocco. It was illegitimately used by Steven (1851) under *Brunnera*, since *Brunnera macrophylla* has priority. The specimen collected “In Aragvithah bei Ananur” in H (H 1066138) could be also part of the original material, but it lacks both collector’s name and date.

Italian distribution –Native to the Caucasus and Pontic Alps, very recently naturalized in two isolated stands in E Tuscany (Badia Prataglia, Arezzo Province) and C Latium (Tivoli, Roma Province) – [Figure 3](#).



Figure 2. Italian distribution of *Pentaglottis sempervirens*.

3. *Borago* L., *Sp. Pl.* 1: 137. 1753 \equiv *Gen. Pl.*, ed. 5: 67. 1754.

Type (Britton & Brown 1913: 92–93, confirmed by Hitchcock in Hitchcock & Green 1929: 128): *B. officinalis* L., *Sp. Pl.* 1: 137. 1753.

= *Buglossites* Moris, *Index Seminum* [Turin]: 32. 1845.

Type (see Moris 1845: 32): *Anchusa laxiflora* DC. in DC. & Lam., *Fl. Franç.*, ed. 3, 3: 631. 1805.

Key to species

(1) Annual herb with erect, robust stems; corolla hypocrateriform with prominent, trapezoidal faulcal scales, rotate limb and lobes 6×13 mm;

nutlets 6–10 mm (subgen. *Borago*) ... ***B. officinalis***—Perennial herb with slender, procumbent to ascendent stems; corolla campanulate to almost cylindrical without prominent faulcal scales and with lobes 1–3 mm long; nutlets 2–4 mm (subgen. *Buglossites*) ... 2

(2) Corolla campanulate, pale blue, ca. 2 times longer than calyx (9–11 mm); filament appendage three-toothed at apex; nutlets 2–3.5 mm ... ***B. pygmaea***—Corolla narrowly campanulate to almost cylindrical, white or rarely tinged with blue, only slightly longer than calyx (3–4 mm); filament appendage with simple apex; nutlets 1.7–2 mm ... ***B. morisiana***



Figure 3. Italian distribution of *Brunnera macrophylla*.

Borago morisiana Bigazzi & Ricceri in *Webbia* 46 (2): 192. 1992.

Locus classicus: [Italy, Sardinia] “Isola di San Pietro (Sardegna sud-occidentale); Calavinagra. Fosso umido con fondo sabbioso a circa 50–100 m dal mare [...] Flumini major [...] in irriguis montium”. Holotype (Bigazzi & Ricceri 1992: 194): [Italy, Sardinia] “Isola di San Pietro (Sardegna sud-occidentale); Calavinagra. Fosso umido con fondo sabbioso a circa 50–100 m dal mare”, 28.08.1988, Bigazzi (FI 2373; iso-B 10 0365357, 10 0360070, FI 2374, 2375, MA 525451). Paratypes (see Bigazzi & Ricceri 1992: 194–196): [Italy,

Sardinia] “Flumini major”, s.d., *s.coll.* (Herb. Moris, TO); “in irriguis montium”, s.d., *s.coll.* (FI).

= *Buglossites laxiflora* (DC.) Moris var. *parviflora* Moris, Fl. Sardoia 3: 137. 1859.

Locus classicus: [Italy, Sardinia] “In humentibus irriguisve montanis”. Lectotype (Bigazzi & Ricceri 1992: 192): [Italy, Sardinia] “Flumini major”, s.d., *s.coll.* (Herb. Moris, TO).

= *B. laxiflora* (DC.) Fisch. var. *micranthos* Guşul. in Bul. Fac. St. Cernauti 2: 440. 1928.

Locus classicus: [Italy, Sardinia] “Sardinia”. Lectotype (Bigazzi & Ricceri 1992: 192): [Italy, Sardinia] “Sardinia” 1836, Moris (K).



Figure 4. Italian distribution of *Borago morisiana**.

Italian distribution – A Sardinian endemic, only known from few localities in S. Pietro island and central Sardinia (historical collection in Fluminimaggiore; more recently found around Laconi) – **Figure 4**.

Borago officinalis L., *Sp. Pl.* 1: 137. 1753.

Locus classicus: “hodiae in Normannia ad Colbeck et alibi in Europa; venit olim ex Aleppo”. Lectotype (Edmondson in Jarvis et al. 1993: 25): s.loc, s.d., s.coll. (Herb. Linnaeus 188.1, LINN!). Other original material: [cultivated in the Netherlands] “*Borago floribus coeruleis*”, s.d., Herb. Clifford 44.1.1 (BM 557895); *ibidem*, “*Borago floribus albis*”, s.d., Herb. Clifford 44.1.2 (BM 557896).

Italian distribution – A very common Mediterranean weed, sometimes cultivated for forage or food, widespread in peninsular and insular Italy, becoming rarer and scattered to the north – **Figure 5**.

Borago pygmaea (Lam. ex DC.) Chater & Greuter in *Bot. J. Linn. Soc.* 65: 261. 1972.

≡ *Campanula pygmaea* Lam. ex DC., *Fl. France*, ed. 3, 3: 705. 1805.

Locus classicus: [France] “originaire de l’isle de Corse”. Holotype (see Chater & Greuter in Heywood 1972: 261): [France] “isle de Corse”, s.d., s.coll., Herb. Lamarck 53.95 (P-LA 356218).

= *Anchusa laxiflora* DC. in DC. & Lam., *Fl. Franç.*, ed. 3, 3: 631. 1805 ≡ *B. laxiflora* (DC.)

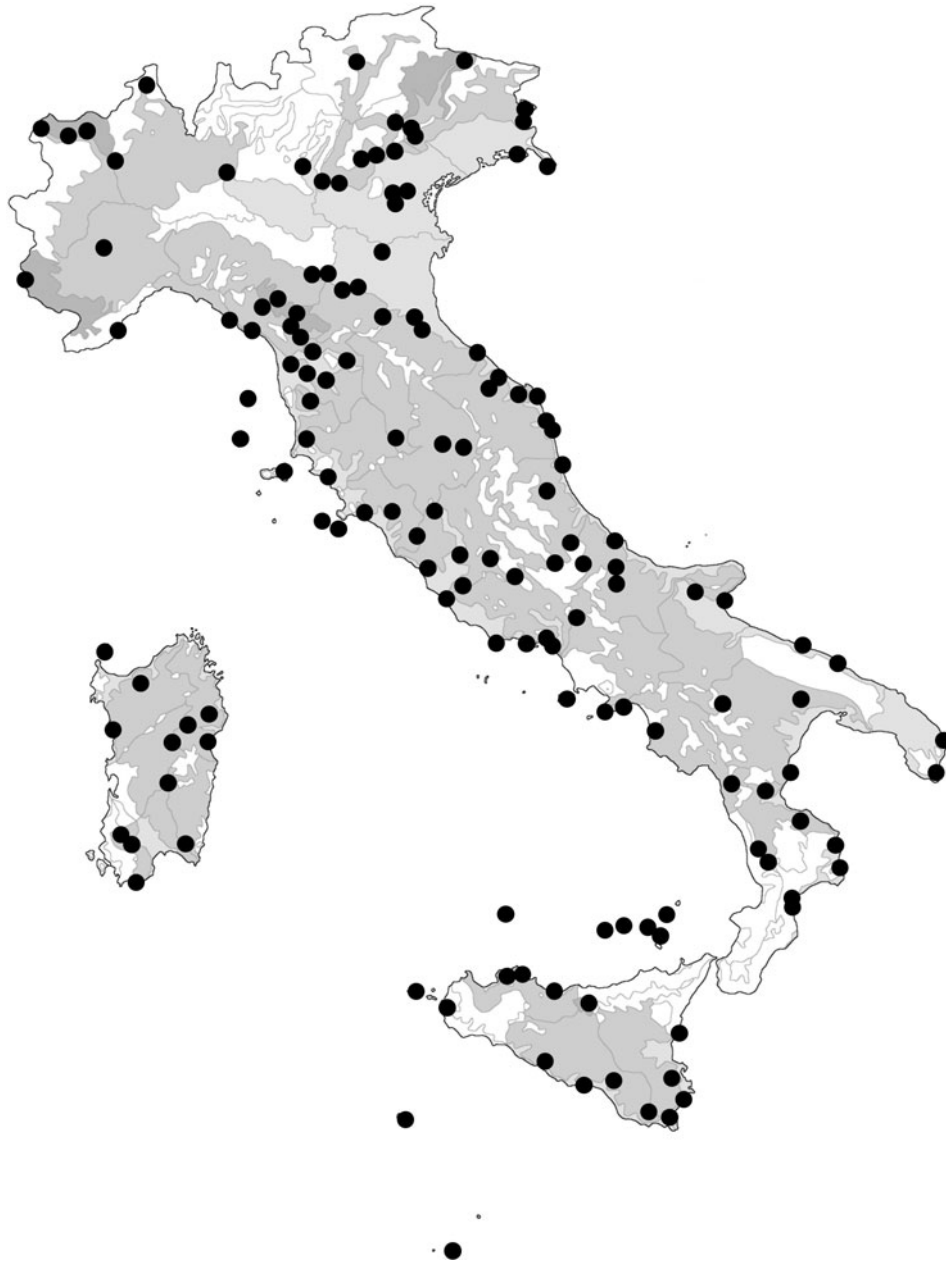


Figure 5. Italian distribution of *Borago officinalis*.

Fisch. Cat. Jard. Pl. Gorenki, ed. 2: 27. 1812, nom. illeg., non. Poir. in Lam, Encycl. Suppl. 1: 693. 1811 \equiv *Buglossites laxiflora* (DC.) Moris, Index Seminum [Turin]: 32. 1845.

Locus classicus: [France] “isle de Corse”. Lectotype (here designated): [France] “Corse“, s.d., Labillardière, Herb. Desfontaines (FI-W 129105).

Italian distribution – A Tyrrhenian, insular endemic, quite common in inland Sardinia (and Corsica), with few, isolated populations on Capraia Island (Tuscan Archipelago) – [Figure 6](#).

4. *Symphytum* L., *Sp. Pl.* 1: 136. 1753 \equiv *Gen. Pl.*, ed. 5: 66. 1754.

Type (Britton & Brown 1913: 92, confirmed by Hitchcock in Hitchcock & Green 1929: 128): *S. officinale* L., *Sp. Pl.* 1: 136. 1753.

Key to species

- (1) Plant more than 50 cm high, with a fusiform, obliquous or vertical rhizome; corolla white, red-purple, pink or pale blue ... 2–Plant less than 35 m high, with a horizontal, tuberous rhizome, more or less uniformly thickened or thin with spaced bulb-like thickenings; corolla pale yellow ... 5

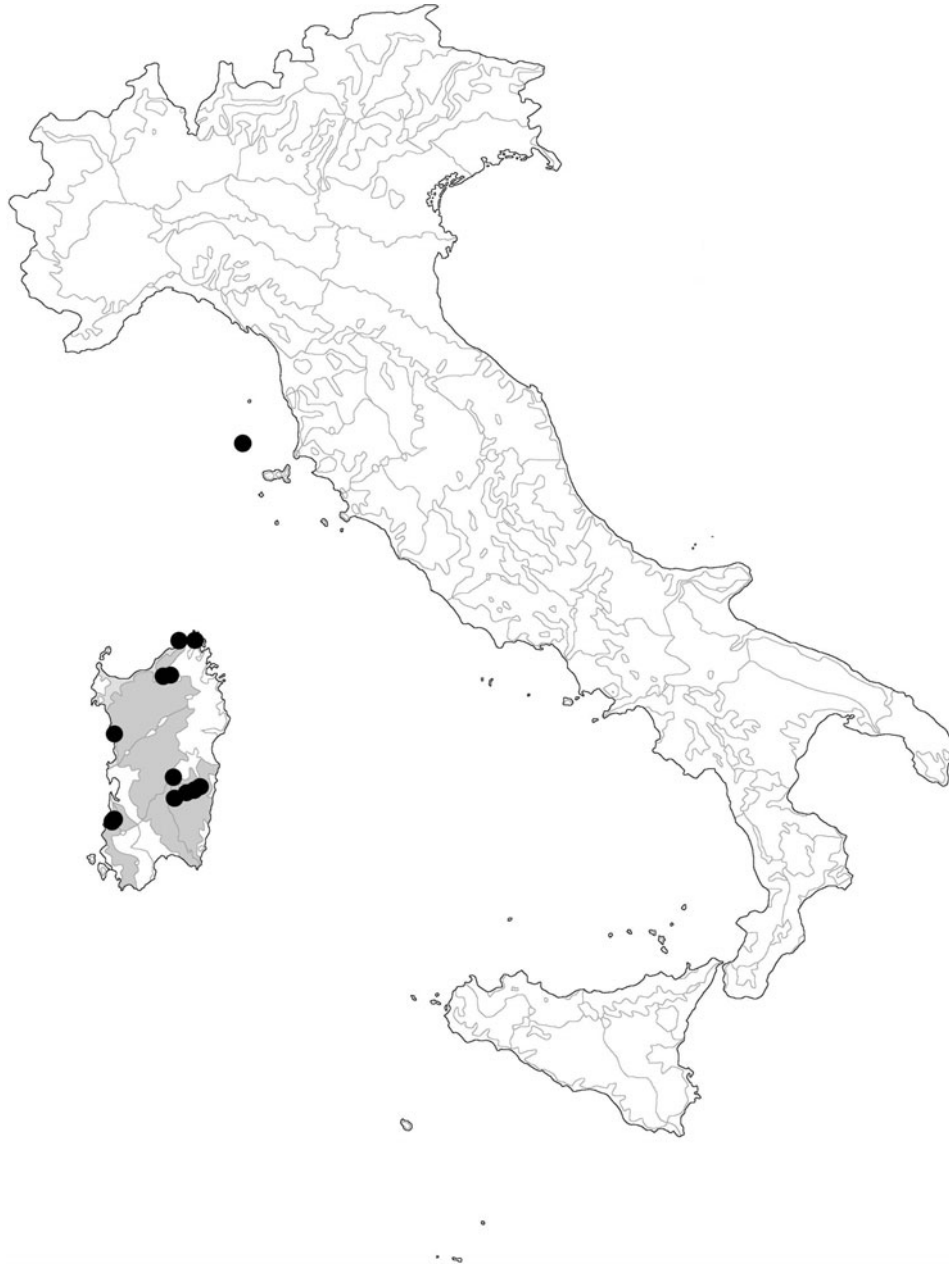


Figure 6. Italian distribution of *Borago pygmaea*.

- (2) Leaf blade largely ovate; corolla infundibuliform ... *S. orientale*—Leaf blade elliptic-lanceolate; corolla clavate, the limb campanulate or urceolate ... 3
- (3) Stem at least partially winged; calyx 6–10 mm long; nutlets smooth... 4—Stem unwinged; calyx less than 4–5 mm long; nutlets rugose... *S. asperum*
- (4) Stem winged throughout, with wings 2–8 mm broad; corolla limb campanulate... *S. officinale*—Stem only partially winged, with wings less than 2 mm broad; corolla limb urceolate ... *S. tanaicense*
- (5) Corolla 10–15 mm long; faucal scale distinctly exerted ... *S. bulbosum*—Corolla 15–20 mm long; faucal scales included ... (6)
- (6) Rhizome slender, with distinctly spaced, tuberous thickenings; leaf blade contracted or attenuate at base, never decurrent; filament as long as the anther ... *S. gussonei*—Rhizome stout, more or less uniformly enlarged; leaf blade decurrent on stem, sometimes prolonged in short wings; filament less than 1/2 of the anther length ... *S. tuberosum*

Symphytum asperum Lepech. in *Nova Acta Acad. Sci. Imp. Petrop. Hist. Acad.* 14: 442, t. 7. 1798.

Locus classicus: [cultivated in Russia Federation] “in horto Academico [St. Petersburg]”, from seed collected “in jugo montium Caucasi Rossici”.



Figure 7. Italian distribution of *Symphytum asperum*.

Lectotype (here designated): drawing (Lepechin 1798: t. 7).

Note. Lepechin's protologue is based on plants grown in the Botanical Garden of the St. Petersburg Academy of Science from seeds collected by Marshall von Bieberstein on Caucasus Mts. Despite an indication by Gadella (1984: 1064), none original specimen from these cultivated stocks was found in LE. As a consequence, the drawing in the protologue seems to be the only suitable element to be designated as lectotype.

Italian distribution – Native to the Caucasus area and Pontic Alps, sometimes cultivated as a forage and naturalized in a few sites of N Italy – Figure 7.

Symphytum bulbosum K.F.Schimp. in *Flora* 8(1): 17. 1825.

≡ *S. tuberosum* L. subsp. *bulbosum* (K.F. Schimp.) P.Fourn., *Quatre Fl. France*: 747. 1937 ≡ *S. tuberosum* L. var. *bulbosum* (K.F.Schimp.) Fiori in Fiori & Bég., *Fl. Italia Nicotra, Syll. Fl. Sic.*: 39. 1893.

Locus classicus: [Germany] “in ipsis vineis Heidelbergae et forsan aliis Germaniae et Galliae locis”. Lectotype (Bottega & Garbari 2003: 254): [Germany] “Heidelberg”, s.d., Schimper (REG 79480; iso-M 188158, 188159). Other original material: [Germany] “in vineis Heidelbergae”, 4.5.1824, Schimper (M 188163).

= *S. clusii* C.C.Gmel., *Fl. Bad.* 4: 144. 1826.

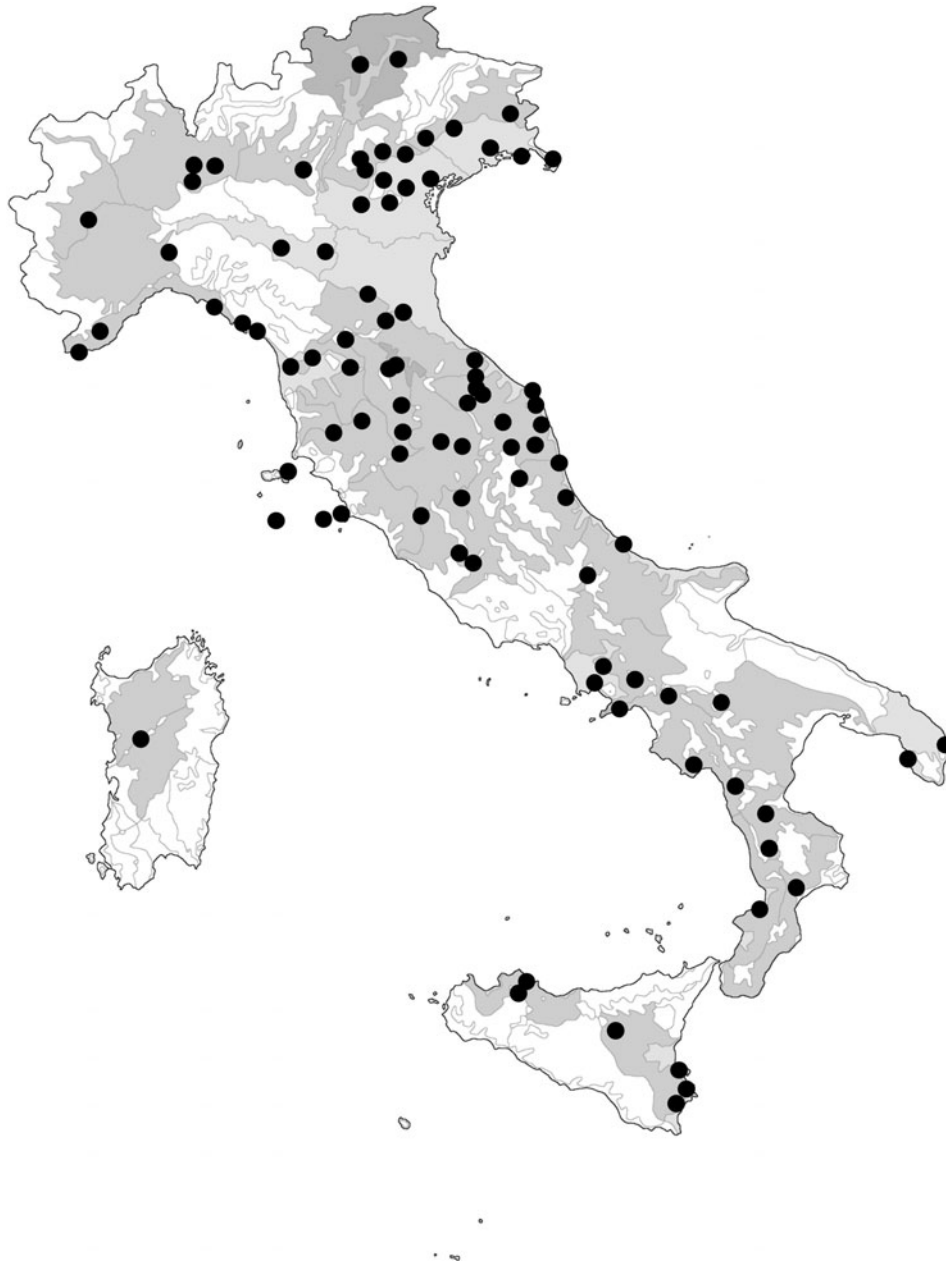


Figure 8. Italian distribution of *Symphytum bulbosum*.

Locus classicus: [Germany] “Circa Heidelberg in vineis”. Lectotype (here designated): [Germany] “prope Heidelberg in vineis passim”, 1823, *Gmelin* (KR). Other original material: [Germany] “ex vineis prope Heidelberg”, s.d., *Gmelin* (KR).

= *S. punctatum* Gaud., *Fl. Helv.* 2: 41. 1828.

Locus classicus: [Swiss] “in Helvetia transalpina”. Type not traced.

= *S. zeyheri* F.K.Schimp. in *Flora* 12(2): 418. 1829 ≡ *S. bulbosum* K.F.Schimp. var. *zeyheri* (K.F.Schimp.) Nicotra, *Syll. Fl. Sic.*: 39. 1893.

Note. Other original specimens by Zeyher in KR were most probably destroyed (Adam Hölzer, pers. comm.).

Italian distribution – Widespread in all peninsular regions, mainly on Tyrrhenian side, and Sicily; apparently lacking from the NW alpine region; very rare in Sardinia – **Figure 8**.

Symphytum gussonei F.W.Schultz in *Arch. Fl.*: 27. 1874, in *Flora* 58: 218. 1875.

≡ *S. tuberosum* L. var. *gussonei* (F.W.Schultz) Fiori in Fiori & Bég., *Fl. Italia* 2(3): 378. 1902.

Locus classicus: [Italy, Sicily] not specified. Lectotype (Bottega & Garbari 2003: 251): [Italy, Sicily] “In nemoribus”, s.d., *Gussone* (“*Symphytum mediterraneum* Koch.”, *Herb. Gussone*, NAP!).

S. tuberosum L. var. *australe* Strobl in *Flora* 67: 624. 1884.



Figure 9. Italian distribution of *Symphytum gussonei*.

Locus classicus: [Italy, Sicily] “in Hainen der tieferen Waldregion stellenweise häufig am liebsten auf feuchten, felsigen, Plätzchen: Sehr häufig in den Kastanienhainen von S. Guglielmo ob Castelbuono und am monte S. Angelo ob Cefalù, im Valle del Sapone... im Waldern unterhalb Gibilmanna und in den Nebroden... auch noch an einigen anderen punkten Siziliens”. Lectotype (here designated): [Italy, Sicily] “in nemoribus – Mirto”, s.d., *Todaro Fl. Sic. 1393* (ADMONT; iso-FI, P 529278, 529279, 529280, 529281, TO).

Italian distribution – Endemic to Sicily – **Figure 9.**

Symphytum officinale L., *Sp. Pl. 1: 136. 1753.*

Locus classicus: “in Europae umbrosis subhumidis”. Lectotype (Gadella 1984: 1063): s.loc, s.d., s.coll. (Herb. Linnaeus 185.1, LINN!).

Note. Other four specimens belonging to the original material in Clifford’s herbarium (cultivated in the Netherlands: BM 557926, 557927, 557928, 557929) differ in the color of the corolla and could represent different cytotypes.

= *S. patens* Sibth., *Fl. Oxon.*: 70. 1794; *S. officinale* L. var. *purpureum* Pers., *Syn. Pl. 1: 161. 1805* = *S. officinale* var. *patens* (Sibth.) Nyman, *Consp. Fl. Eur.*: 509. 1881.

Locus classicus: [United Kingdom] “Banks of the Thames by Caversham”. Lectotype (here designated): [United Kingdom] s.d., s.coll. (Herb. Sherard 321a, OXF!).

= *S. bohemicum* F.W.Schmidt, *Fl. Boëm. 3: 13. 1794* = *S. officinale* var. *bohemicum* (F.W.Schmidt) Nyman, *Consp. Fl. Eur.*: 509. 1881 = *S. officinale* L.

subsp. *bohemicum* (F.K.Schmidt.) Čelak. in Sitzungsber. Königl. Böhm. Ges. Wiss., Math.-Naturwiss. Cl. 1891(1): 29. 1891 ≡ *S. officinale* L. var. *typicum* f. *bohemicum* (F.W.Schmidt) Fiori in Fiori & Bég., Fl. Italia 2(3): 377. 1902.

Locus classicus: [Czech Republic] “in pratis paludosis ad Albim fluvium [Labe river] non procul Melnik in der Auen; etiam bei der Stephansüberfuhr [Štěpánský Přívov]”. Lectotype (Kirschner *et al.* 2007: 351): [Czech Republic] “De pratis udis Bohemiae ad Melnik”, s.d., Schmidt (PRC).

= *S. officinale* L. var. *ochroleucum* DC., Prodr. 10: 37. 1846.

Locus classicus: not indicated. Lectotype (here designated): drawing (Müller 1777: t. 664).

Note. The formulation “v.v.sp.” in the protologue means that the variety was described by Candolle based on a living specimen. The lectotype is a drawing from Oeder’s *Flora danica*, which is cited in the protologue together with other drawings congruent with Candolle’s diagnosis (Curtis’s *Flora Londinensis* 4: tab. 18; Sowerby *English Botany*: tab. 817), while we could not trace a fourth reference, “n° 212” of Schmidt’s *S. bohemicum*, which does not fit with the *Flora Boëmica* numbering for this name (i.e. p. 13–14, table n 263; Schmidt 1794).

Italian distribution – Very common in N Italy, southward to central Tuscany and Marche; relatively rare and scattered in S Italy and Sicily; also indicated from Sardinia (Conti *et al.* 2005, Arrigoni 2011) but to be confirmed – Figure 10.

Symphytum orientale L., *Sp. Pl.* 1: 136. 1753.

Locus classicus: [Turkey] “juxta Constantinopoli rivulos”. Lectotype (Kurtto 1985: 330): “*Symphytum Constantinopolitanum*, Borriginis folio & facie, flore albo”, drawing (Buxbaum 1740: 36, t. 68).

Italian distribution – A native of Turkey, locally naturalized in central Italy – Figure 11.

Symphytum tanaicense Steven in *Bull. Soc. Imp. Nat. Moscou* 24: 1851.

= *S. officinale* L. subsp. *tanaicense* (Steven) Soó in Bot. Közlem. 28: 127. 1931. *Locus classicus*: Russia “ad Tanain inferiorem”. Holotype (see Bottega & Garbari 2003: 258): [Russia] “ad Tanain inferiorem”, 06.1817, Steven (H 1535841).

= *S. uliginosum* A.Kern. in Oesterr. Bot. Z. 13: 227. 1863 ≡ *S. officinale* L. subsp. *uliginosum* Nyman, *Consp. Fl. Eur.*: 509. 1881 ≡ *S. officinale* L. f. *uliginosum* Fiori in Fiori & Bég., Fl. Italia 2(3): 377. 1902.

Locus classicus: [Hungary] “In pratis uliginosis prope Pest”. Lectotype (here designated): [Hungary] “Sumpfwiesen am Rakos bei Pest”, s.d., Kerner (WU 69901; iso-WU 69902, 69904; “Sumpfige Wiesen längs d. Rakosbrache bei Pest”, WU 69903).

Note. A label by W. Gutermann on specimen WU 69901 already indicated it as “holotype”, but there is

no evidence the author did not use the other material to compile the protologue. Despite less complete than specimen WU 69902, which also includes ripe nutlets, we select it as the lectotype because the protologue does not mention fruits.

Italian distribution – A rare species in Italy, found near Pisa in Tuscany. It is only doubtfully recorded from a few other localities in C Friuli Venezia-Giulia, S Latium and Campania (Bottega & Garbari 2003), but further studies are needed to ascertain the real distinctiveness of these populations from common *S. officinale* – Figure 12.

Symphytum tuberosum L., *Sp. Pl.* 1: 136. 1753.

Locus classicus: [Germany] “in Germania australi”. Lectotype (Stearn 1985: 177): s.loc, s.d., s.coll. (Herb. Linnaeus 185.3, LINN!).

Symphytum tuberosum L. subsp. *angustifolium* (A.Kern.) Nyman, *Consp. Fl. Eur.*: 510. 1881.

= *S. angustifolium* A.Kern. in Öst. Bot. Z. 13: 227. 1863.

Locus classicus: [Hungary] “in silvis frondosis Hungariae. In circulo pilisiensi ad pedem montis Slanitzka prope Csabam”. Lectotype (Bottega & Garbari 2003: 247, 249): [Hungary] “Slanitzka bei Csaba”, s.d., Kerner (WU 69897; iso-WU 69896, 69898, 69899).

= *S. mediterraneum* W.D.J.Koch, *Syn. Fl. Germ. Helv.* 1: 500. 1837 ≡ *S. tuberosum* L. var. *mediterraneum* (W.D.J.Koch) Fiori in Fiori & Bég., Fl. Italia 2 (3): 378. 1902.

Locus classicus: [Francia] “prope Telonem”. Neotype (here designated): [France] “Var – Toulon”, 28.3.1846, *Puiseux* (P 529286; iso-P 529265).

Note. The holotype was a single original specimen collected by Ziz near Toulon, which has been searched for in vain in the last centuries (Bucknall 1913, Kurtto 1981). Indeed, we could not find any original material neither in B, nor in H, HAL. It is probable that at least a fragment of this collection was included in a smallfolder from Koch’s original herbarium (Koch 3776, no. 248–249: “stimmt nich ganz mit Jacq. Beschreibung und Abbildung [not fitting with the description and illustration by Jacquin], Toulon – Ziz Touloner Exemplar”), which is now empty; this is actually included in specimen no. 30349 in the Erlangen herbarium (ER). The same sheet also includes a well-preserved specimen of *S. bulbosum* but, since this does not correspond to the protologue, it was very likely added later to Koch’s material and can not be considered as original material. Because of the likely loss of the holotype, a neotype is selected here which is fully congruent with the reliable interpretation of the protologue given by Bucknall (1913). Furthermore, by this choice we definitively resolve the potential misinterpretation of another taxon which has been often confused with *S. mediterraneum* by

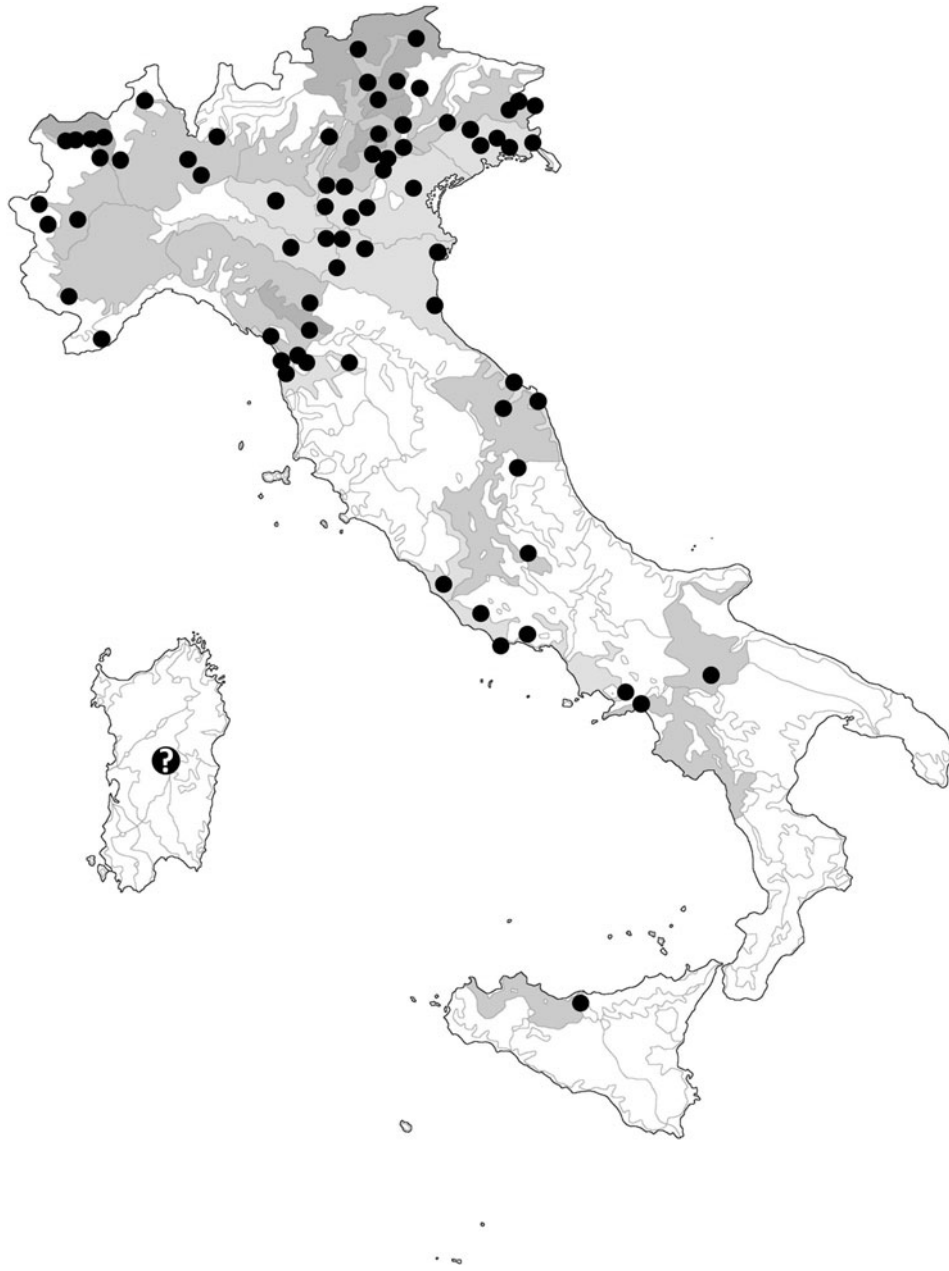


Figure 10. Italian distribution of *Symphytum officinale*. A doubtful record is shown with question mark.

past authors (*S. x ferrariense* C.Massal.), and whose correct name was only published in 1913.

= *S. nodosum* Schur, Enum. Pl. Transsilvaniae: 468. 1866, *S. tuberosum* L. subsp. *nodosum* (Schur) Soó in Acta Geobot. Hung. 4: 192. 1941.

Locus classicus: [Romania] “In Felsenspalten der Glimmerschiefer-Gebirge: Surul, Götzenberg”. Type not traced.

= *S. tuberosum* L. f. *miniatum* Fiori in Fiori & Bég., Fl. Italia 2(3): 378. 1902.

Locus classicus: [Italy, Lombardy] “a Cava Carbonara nel Pavese”, [Italy, Veneto] “al Cansiglio”. Neotype (here designated): [Italy, Lombardy] “locis

arenosis aridis subumbrosis prope Carbonara (PV) non longe a Ticino flumine, solo siliceo”, 4.1905, Traverso, Fl. It. Exs. 945 (as “*Symphytum tuberosum* L.”, FI; iso- GE, MOD).

Note. The original specimens for the description of this form with corolla tinged with reddish at the top were collected by Otto Penzig (1856–1929) and likely included in the main body of his collections in the Genoa herbarium (GE), which was almost completely destroyed during II World War bombings. No other original material was found in Modena (MOD), Padova (PAD) and Pavia (PV), where Penzig spent part of his life. The selected neotype fits



Figure 11. Italian distribution of *Symphytum orientale*.

with one of the two type localities and also shows some slightly reddish corollas.

Italian distribution – Common in continental and peninsular Italy, mainly on hills and low mountains, absent from the islands – [Figure 13](#).

Symphytum hybrids

Symphytum × *bicknelli* *Buckn. in f. Linn. Soc., Bot. 41: 552. 1913.*

Locus classicus: [Italy, Liguria] “Val Borghetto, Bordighera [...] Vallecrosia, Bordighera”. Lectotype (here designated): [Italy, Liguria] “Piani di Vallecrosia, sotto gli ulivi”, 17.4.1895, *Bicknell* (Herb. Bicknell,

Istituto Internazionale di Studi Liguri, Bordighera!). Other original material: [Italy, Liguria] “Val Borghetto, presso Bordighera”, 12.3.1889, *Bicknell* (Herb. Bicknell, Istituto Internazionale di Studi Liguri, Bordighera!). = ? *S. bulbosum* F.W. Schimp. x *S. tuberosum* L.

Italian distribution – Only known from the type collection.

Symphytum × *ferrariense* *C.Massal. in Boll. Soc. Bot. Ital. 1913(6): 78. 1913.*

Locus classicus: [Italy, Emilia Romagna] “Orto botanico dell’Università di Ferrara”. Holotype (Kurtto 1981: 19): [Italy, Emilia Romagna] “Cultum Hort. Bot. Ferraræ”, s.d., *Massalongo* (FER).



Figure 12. Italian distribution of *Symphytum tanaiense*. Doubtful records are shown with question marks.

Paratype (here designated): [Italy, Emilia Romagna], “cresciuto nell’Orto Botanico di Ferrara”, 1.5.1913, *Massalongo* (FI 7136).

Note. We maintain here the rank of holotype for the specimen kept in FER, as proposed by Kurtto (1981), in spite of the discovery of a second original specimen in FI. The latter was sent by Caro Massalongo to his colleague Stephén Sommier in Florence, together with a letter which already qualified it as a duplicate of a new nothotaxon grown in the botanical garden of Ferrara among parental species, although some relevant details differ in respect to the the holotype label. Both the provisional name “*Symphytum intermedium*” and

the date on the paratype label were written by Sommier.

= *S. floribundum* Shuttlew. ex Buckn. in J. Linn. Soc., Bot. 41: 531. 1913.

Locus classicus: [France] “Var [...] Hyères [...] Dans le propriété de Mme. la Comtesse de Beauregard à Hyères (Var, France) [...] Lieux herbeaux, bord des fossés, Hyères [...] Hyères. Le Long d’un conduit d’eau dans le jardin même de Chateau Beauregard à Hyères [...] Aups, Var. Lieux humides le long des prairies”. Lectotype (Kurtto 1981: 19): [France] “Le Long d’un conduit d’eau dans le jardin même de Chateau Beauregard à Hyères”, 8–30.05.1871, Shuttleworth (K).

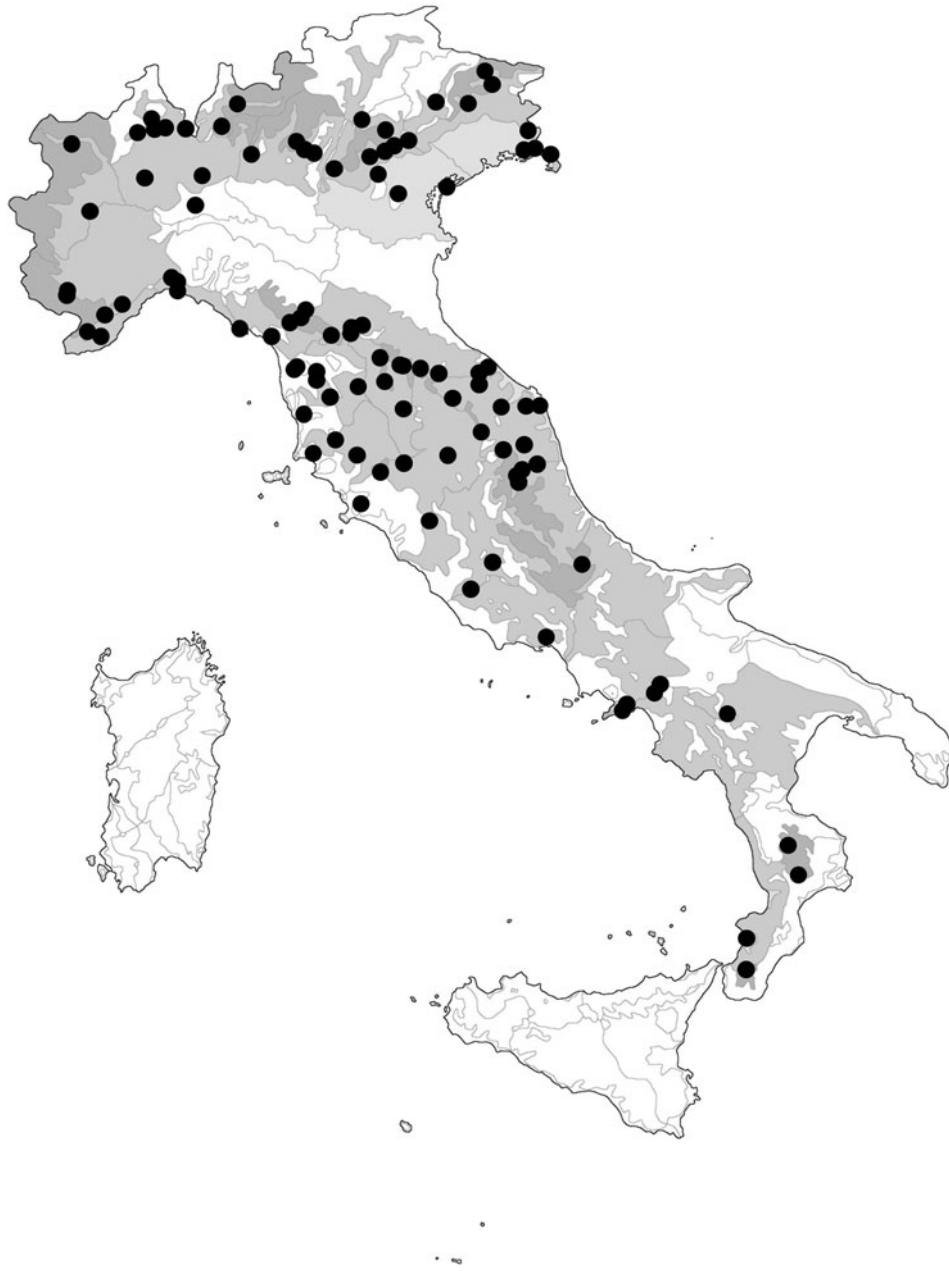


Figure 13. Italian distribution of *Symphytum tuberosum* subsp. *angustifolium*.

Note. The name of Shuttleworth had already been cited by Nyman (1881) and several other authors as a synonym of *S. mediterraneum* W.D.J.Koch, and is therefore considered as a *nomen superfluum*, not validly published until its revaluation by Bucknall (1913). Many duplicates of the original material cited by Bucknall are kept in several herbaria, including P and FI, which could be designated as iso- or treated as original material; following Kurtto (1981), however, we avoid such designation because typical material is here mixed together with second generation hybrids (*Symphytum floribundum* x, i.e. *Symphytum* x *hyerense* Pawł., *nom. illeg.*).

= *S. officinale* L. x *orientale* L.

Italian distribution – Only known in Italy from the type collection.

Symphytum x *uplandicum* Nyman, *Syll. Fl. Eur.*: 80. 1855.

Locus classicus: [Sweden] “Upland”. Lectotype (here designated): [Sweden] “Upsalia”, s.d., Ångström (as “*Symphytum asperrimum*”, S 14–32982).

= *S. asperum* Lepechin. x *S. officinale* L.
Note. There is no specimen marked as “*Symphytum uplandicum*” by Nyman himself in Stockholm (S). The lectotype is selected among three others belonging to Nyman’s herbarium which are compa-



Figure 14. Italian distribution of *Melanortocarya obtusifolia* based on historical herbarium collections.

tible with the protologue, and is likely to be collected by Johan Ångström (1813–1879) before its publication date. = *S. asperum* Lepechin. x *S. officinale* L.

Italian distribution – Only known from a recent record near Piacenza.

5. *Melanortocarya Selvi*, Bigazzi, Hilger & Papini in *Taxon* 55: 915. 2006.

Type (see Selvi et al. 2006a: 915): *Lycopsis obtusifolia* Willd., Sp. Pl. 1: 780. 1798.

Melanortocarya obtusifolia (Willd.) Selvi, Bigazzi, Hilger & Papini in *Taxon* 55: 915. 2006.

≡ *Lycopsis obtusifolia* Willd., Sp. Pl. 1: 780. 1798, *Nonea obtusifolia* (Willd.) DC. in DC. & Lam., Fl. Franç. ed. 3, 3: 626. 1805.

Locus classicus: [Greece] “in Chio [...] in Lesbo”. Lectotype (Selvi et al. 2006: 915): [Greece] “in Chio”, s.d., *Tournefort 1701* (B-W 3389).

Italian distribution – The only known Italian specimens of this E Mediterranean species are from allochthonous populations established near Rome between 1876 and 1897. Also based on Celesti-Grapow et al. (2010), who considered it as a neophyte not observed after 1950, *M. obtusifolia* is most probably to be excluded from the Italian flora – Figure 14.

6. *Pulmonaria L.*, Sp. Pl. 1: 135. 1753 ≡ *Gen. Pl.*, ed. 5: 65. 1754.

Type (Jarvis et al. 1993: 80): *P. officinalis L.*, Sp. Pl. 1: 135. 1753.

Key to species

Note. One of the most important character for correct identification is the composition of indumentum on the adaxial surface of adult (summer or autumn) basal leaves, which has to be observed at ca. 1 cm from the middle vein.

- (1) Leaf blade lanceolate, at least four times longer than broad, with base decurrent on indistinct petiole; upper surface without a distinctly dimorphous indumentum (sometimes mixed trichomes of several, different length) ... 2–Blade ovate-acuminate, less than three times longer than broad, distinctly petiolate; upper surface with long bristles mixed with distinctly shorter trichomes or aculeoles ... 4
- (2) Rhizome thin, 2–6 mm in diameter, with long innovations; blade with small, regular, sharp, whitish spots and several sessile or stipitate glands ... ***P. striaca***–Rhizome stout, 5–10 mm in diameter, with very short innovations; blade usually without spots and glands, sometimes with very sparse, shortly stipitate glands ... 3
- (3) Blade narrowly lanceolate, 6–9 times longer than broad; cauline leaves linear to broadly lanceolate with cuneate base; indumentum consisting of homogeneous bristles (ca. 0,6 mm), without glands; corolla blue, smooth under faucal trichomes ring ... ***P. angustifolia***–Blade broadly lanceolate, 4–6 (7) times longer than broad; cauline leaves ovate-lanceolate with truncate-cordate base; indumentum consisting of heterogeneous bristles (0.5–1.5 mm), mixed to very sparse glands; corolla purple, glabrescent to sparsely pubescent under faucal trichomes ring ... ***P. australis***
- (4) Blade with cordate base; indumentum of sparse, long bristles mixed with sparse glandular hairs and often (subsp. *officinalis*) dense conical aculeoles ($\leq 0,2$ mm); corolla smooth below the ring faucal of trichomes ... ***P. officinalis***–Blade truncate to cuneate-attenuate; upper surface without aculeoles, with bristles mixed with short trichomes longer than 0.3 mm; corolla sparsely to densely pubescent below the ring of faucal trichomes ... 5
- (5) Basal leaves with undulate margin and sparse, faint, greenish spots; bristles on upper surface mixed with dense, short trichomes (25–70 per mm^2) ... ***P. vallsarcae***–Basal leaves with flat margin and abundant, usually sharp whitish spots; bristles on upper surface mixed with sparse, short trichomes (less than 25 per mm^2) ... ***P. hirta***

Pulmonaria angustifolia L., *Sp. Pl.* 1: 135. 1753.

≡ *Lithospermum graminifolium* Viv., *Elench. Pl.*: 23. 1802, non *Ann. Bot.* 1(2): 163, 1804 ≡ *P. officinalis*

L. var. *angustifolia* (L.) Fiori, *Nuov. Fl. Ital.* 2(2): 278. 1926.

Locus classicus: “in Pannonia, Helvetia, Suecia”.

Lectotype (Selvi in Cafferty & Jarvis 2004: 803): [Svezia] “Gotland, Skara”, s.d., *s.coll.* (Herb. Linnaeus 184.1, LINN!).

= *P. azurea* Besser, *Prim. Fl. Galiciae Austriac.* 1: 150. 1809 ≡ *P. officinalis* var. *azurea* (Besser) Fiori in Fiori & Bég., *Fl. Italia* 2(3): 372. 1902.

Locus classicus: [Poland] “in scopolis vallis Oycow”. Type not traced. Original material from the Besser’s collections from Ukraine is kept in FI-W and in P (“In sylvaticis Volhyn”, s.d., Besser, *Herb. Besser*, FI-W 129553!, the bottom right flowering specimen; iso-P 505793; “in pratis sylvaticis Volhyn”, P 505800).

Note. No original specimen from “Oycow” (Ojców, in southern Poland, historical region of Galicia) was found in the main Besser’s collection in the Kiev herbarium (KW) but could be kept in one of the other, several herbaria including Besser’s duplicates.

Italian distribution – A mainly C and E European species, morphologically very similar to *P. australis*, but with different chromosome complement ($2n = 14$ vs. $2n = 20$); its presence in Italy is to be confirmed, but is currently supported by at least three records from populations of the W and C Alps with $2n = 14$ (Sauer 1975) – Figure 15.

Pulmonaria australis (Murr) W.Sauer in *Biblioth. Bot.* 131: 56. 1975.

≡ *P. angustifolia* L. var. *australis* Murr in Dörf., *Herb. Norm., Sched. Cent.* XLV: 138, no. 4480. 1903 ≡ *P. australis* (Murr) W.Sauer in *Biblioth. Bot.* 131: 56. 1975.

Locus classicus: [Italy, Trentino Alto Adige] “Tirolia australis. In collibus et montibus circa “Trient.” 450 m. s. m.”. Lectotype (Sauer 1975: 56): [Italy, Trentino Alto Adige] “Tirol, Trient, Chegul”, 19.5.1869, Lièvre (IBF). Other original material: [Italy, Trentino Alto Adige] “Tirolia australis. In collibus et montibus circa “Trient.” 450 m. s. m.”, 4.1901, Murr, Dörf., *Herb. Norm.* 4480 (B 10 0365437; iso-KFTA 1858, P 505742, 505743, 505744, 505745).

Note. Unfortunately, the lectotype designated by Sauer, together with the entire botanical collection of the Natural History of Tiroler Landesmuseum Ferdinandeum (IBF) “went under water” in 1985 and the material “is now deep frozen for possible restoration” (<http://sweetgum.nybg.org/ih/>). If seriously damaged, anyone of the several duplicates of Dörf., *Herb. Norm.* 4480 collected by Murr could serve as a new lectotype.

– *P. visianii* auct. non Degen & Lengyel, *Fl. Veleb.* 2: 569. 1937.



Figure 15. Italian distribution of the two species in the *Pulmonaria angustifolia* complex. Empty dots: *P. angustifolia* s.s. ($2n = 14$). Black dots: *P. australis* ($2n = 20$); the black star indicates the type locality of this taxon.

Locus classicus: [Croatia] Velebit Mts. (unspecified localities) and “in Mont. Velebit, Promina, Beljak”.

Lectotype (here designated): [Croatia] “Dalmatia, montes Velebit, inter Zrmanja et Čengić“, 9.5.1910, Lengyel (BP 502198). Other original material: [Croatia] “in Promina”, s.d., Visiani (PAD HD05760); “Dalmatia, montes Velebit, in lapidosis Velika Rujna supra Tribanj“, 14.5.1909, Lengyel (BP 502199); “Dalmatia, montes Velebit, inter Krupa et Kaludjerski dol“, 8.5.1910, Lengyel (BP 502196); “Dalmatia, in m. Orlovica supra Štrmics prope Knin“, 11.5.1910, Lengyel (BP 502197).

Italian distribution – Endemic to the S Alps, mainly in the Italian territory, where it probably represents the southern, vicariant race of the *P. angustifolia* s.l. complex, with the characteristic chromosome number $2n = 20$; its actual taxonomic status and distribution range should be further investigated with an extensive karyological survey – [Figure 15](#).

Pulmonaria hirta L., Sp. Pl., ed. 2, 2: 1667. 1763.

Locus classicus: [Italy, Tuscany] “in Etruriae montibus”. Lectotype (Selvi & Cristofolini in Cafferty & Jarvis 2004: 803): “*Pulmonaria Fragariae odore*” drawing (Boccone 1697: t. 105). Epitypes



Figure 16. Italian distribution of *Pulmonaria hirta*; “the black star indicates the type locality”.

(Selvi in Cafferty & Jarvis 2004: 803): [Italy, Tuscany] “Prov. Arezzo: montane Abies-Fagus woods close around the walls of Eremo di Camaldoli, 1100 m”, 26.03.2002, Selvi (FI 2356; iso-BM); ibidem, 31.05.2002, Cristofolini (FI 2366; iso-BM).

= *P. picta* Rouy, Fl. Fr. 10: 297. 1908.

Locus classicus: [Italy] “Italie surtout centrale”. Neotype (Puppi & Cristofolini 1996: 15): [Italy, Tuscany] “Cerbaie, nel bosco di Valle Lupitana” 06.05.1951, Contardo (FI).

– *P. saccharata* auct. non Mill., Gard. Dict., ed. 8. n. 3. 1768.

Locus classicus: [cultivated in United Kingdom] “grows naturally upon the Helvetian Mountains”.

Lectotype (Puppi & Cristofolini 1991: 233): [cultivated in United Kingdom] “*Pulmonaria maxima*, foliis quasi saccharo incrustatis”, s.d., *s.coll.* (BM).

Italian distribution – A species of the “*P. saccharata* complex”, endemic of the thyrrenian area of NW Italy and SE France, extending from the Maritime Alps to C Latium – **Figure 16**.

Pulmonaria officinalis L., Sp. Pl. 1: 135. 1753.

≡ *P. vulgaris* Merat, Nouv. Fl. Env. Paris: 70. 1812, *nom. illeg.*

Locus classicus: “in Europae nemoribus”. Lectotype (Selvi in Cafferty & Jarvis 2004: 804): “Florentiae, Monspelii in horto Regio”, Herb.

Bursler XIV(2): 51, the specimen on the left (UPS-BURSER 174570!).

Key to subspecies

1. Basal leaves blade sharply spotted (spots white, dense, often confluent), with dense aculeoles below bristles ... subsp. ***officinalis***

Blade only slightly spotted (spots greenish, sparse), without aculeole below bristles ... 1. subsp. ***marzolae***

Pulmonaria officinalis subsp. *officinalis*

= *P. maculata* F.Dietr., Vollst. Lex. Gartn. 7: 657. 1807 = *P. maculosa* Rchb., Fl. Germ. Excurs. 1: 338. 1831, *nom illeg.* = *P. officinalis* L. f. *maculata* (F. Dietr.) Fiori in Fiori & Beg., Fl. Italia 2(3): 371. 1902.

Locus classicus: [Germany] “im hiesigen Garten [in local gardens]”. Type not traced.

Italian distribution – Restricted to the northern regions, southward to NW Tuscany – **Figure 17**.

Pulmonaria officinalis subsp. *marzolae* G.Astuti, Peruzzi, Cristof. & P.Pupillo in Phytotaxa 186(3): 155. 2014.

Locus classicus: [Italy, Trentino Alto Adige] “Marzola (Trento), lungo il sentiero Bivio II - Sella Marzola, 46°01'32"N, 11°10'50"E, 1640 m [...] Marzola (Trento), lungo il sentiero Bivio II – rifugio Bailoni, 46°01'11"N, 11°10'56"E, 1640 m [...] Marzola (Trento), lungo il sentiero Bivio II - rifugio Bailoni, 1620 m, 46° 01'23"N, 11°10'56"E [...] Marzola (Trento), sopra Bivio I, 1600 m, 46° 02'07"N, 11°11'14"E [...] Marzola (Trento), sotto Bivio I, a sx del sentiero, 46° 02'11"N, 11°11'14"E, 1570 m”. Holotype (see Astuti & al. 2014: 155): [Italy, Trentino Alto Adige] “Marzola (TN), sentiero bivio II, sella Marzola, 1640 m”, 19.6.2013, Pupillo (FI 7164!). Paratypes (see Astuti & al. 2014: 156): [Italy, Trentino Alto Adige] “Marzola (Trento), lungo il sentiero Bivio II – rifugio Bailoni, 46°01'11"N, 11°10'56"E, 1640 m”, 19.06.2013, Pupillo (BOLO, ROV); “Marzola (Trento), lungo il sentiero Bivio II - rifugio Bailoni, 1620 m, 46° 01'23"N, 11°10'56"E”, 08.06.2013, Pupillo (BOLO); “Marzola (Trento), sopra Bivio I, 1600 m, 46° 02'07"N, 11°11'14"E”, 08.06.2013, Pupillo (ROV); “Marzola (TN), dotto bivio I, sinistra del sentiero, 1570 m”, 08.06.2013, Pupillo (FI 7165!).

= ? *P. tridentina* Evers in Verh. Zool.-Bot. Ges. Wien 46: 74. 1896.

Locus classicus: [Italy, Trentino Alto Adige] “Trient, Schlucht des Salebaches, Goccia d'Oro, Mori, Monte Brugino; Val di Ledro, Malga Dromae in dumetis”. Lectotype (here designated) [Italy, Trentino Alto Adige] “Tirolia australis: Mori, Monte Brugino, in dumetis; Tridentum in faucibus torrentis Sale; Goccia d'Oro”, [25.04, 25.05, 15.12] 1893, Evers 8648 (GZU 272989, photo!). Other original material: [Italy, Trentino Alto Adige] ibidem, [25.04,

25.05, 15.12] 1893, Evers 8648 (GZU 272986, photo!; 272987, photo!; 272988, photo!); “In angustiis torrentis Sale; Goccia d'Oro - Val di Ledro, Biacesa, in dumetis Malgae Dromae”, [03.1891, 05.1895], Evers (GZU 272990, photo!; 272991, photo!).

Note. The specimens in the original collections were gathered several times in different localities and years, but the duplicates in both series bear a single label, not allowing to define a univocal correspondence between each specimen and its own collection datum. The lectotype here designated consists of a sheet bearing a single specimen that perfectly fits with the description in the protologue; it was collected in 1893 in southern Trentino, but neither the exact locality nor the date can be ascertained. Original material of *P. tridentina* also includes specimens collected on the NW side of Mt. Marzola (“in faucibus torrentis Salè”). All them represent a weakly distinguished morphotype in respect to typical *P. officinalis*, which is mainly characterized by autumn basal leaves with non-chordate base, paler spots and apparently smooth upper surface below scattered bristles. These characters account for its tentative placement here within the circumscription of subsp. *marzolae*. Nevertheless, due to the wide polymorphism of *P. officinalis* s.l. over its wide distribution range, the taxonomic recognition of local morphotypes (especially when sympatric with the typical form as in the present case) should be based on more extensive studies including a wider population sampling and possibly also molecular tools.

Italian distribution – Endemic to Mt. Marzola and possibly to a few other localities in the Trento Province – **Figure 17**.

Pulmonaria stiriaca A.Kern., Monogr. Pulmon.: 36. 1878.

Locus classicus: [Austria] “inter Kapfenberg et Aflenz in Stiria superiore”. Lectotype (Sauer 1973: 6): [Austria] “Im Thörlgraben bei Aflenz“, 1849, Kerner (WU 69918). Other original material: [Italy, Friuli Venezia Giulia] “waldige Stellen auf Sanstein boden westlich von Görz“, 1869, Krašan, Herb. Kerner (WU 77331; iso-WU 77332).

Note. We reported here as “locus classicus” only the sentence directly referring to the original author’s collections. The protologue also reports several additional collection localities, among which other original material could be found:

... in Stiria inferiore et in Carniolia... ex ditone Lubacensi et ex Stiria inferiore... auf dem Golanzberge bei Laibach... in Stiria inferiore... Area geographica [...] longus et angustus tractus est, qui a septentrione in meridiem per partes orientales Alpium extenditur. Statio maxime

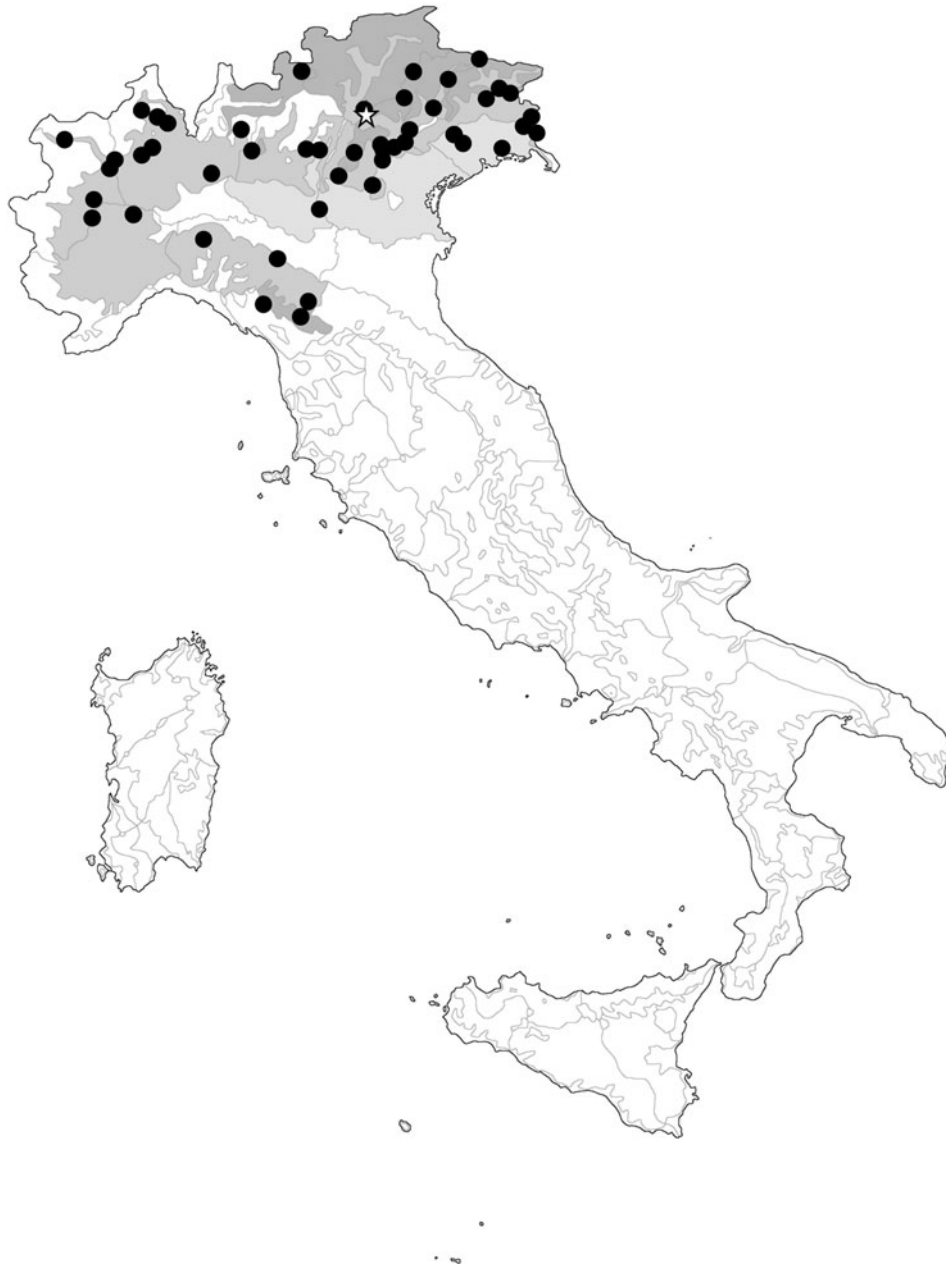


Figure 17. Italian distribution of *Pulmonaria officinalis*. Black dots: subsp. *officinalis*. Empty dots: subsp. *marzolae*; the star indicates the type locality of this taxon.

septentrionalis est inter Aflenz et Kapfenberg in Stiria superiore, maxime meridionalis vallis fluvii Isonzo prope Goritiam. Intra hos fines [...] invenitur in Stiria sup: Rennfeld, Gösting, m. Plabutsch, m. Schöckel, Gradwein pr. Graz; in Stiria inf.: Wildon, Trifail, Cilli, inter Eibiswald et Kumpitsch; in Carniola: prope Lubiicum (Ziskaberg ad Rosenbach, Golanzberg, Stadtwald).

Italian distribution – Only known from a few collections from E Friuli Venezia Giulia (Isonzo and Natisone valleys) – [Figure 18](#).

Pulmonaria vallarsae A.Kern., Monogr. Pulmon.: 33. 1878.

≡ *P. officinalis* L. var. *vallarsae* (A.Kern.) Fiori in Fiori & Bég., Fl. Italia [Fiori, Béguinot & Paoletti] 2(3): 371.

Locus classicus: [Italy, Trentino Alto Adige] “in Tirolia australi [...] in ripa fluvii Leno in superiore parte Vallarsae”. Lectotype (Puppi & Cristofolini 1996: 16): [Italy, Trentino Alto Adige] “Tirolia australis, Vallarsa”, ca. 1870, Kerner (WU 69919; iso-WU 71728, 71729, 71730, 71731, 71732, 71733, 71734, 71735, 71736, 71737, 71738, 71739, 71740, 71741, 71742, 71743, 71744, 71745, 71746, 71747, 71748, 71749, 71750,



Figure 18. Italian distribution of *Pulmonaria stiriaca*.

71751, 71752, 71753, 71754, 71755). Other original material: [Italy, Trentino Alto Adige] “Unter Al’ometo in Vallarsa, jenseits der kleinen über den Leno führenden Brücke”, 1868, Kerner (WU 69920; iso-, “Im Gebüsch nächst der kleinen Brücke, welche über den Leno führt am Wege von Rauschi nach Al’ometo”, WU 69921, 69922).

Note. We reported here as “locus classicus” the sole sentence which directly refers to the original author’s collections. The protologue also reports several additional collection localities

[...] prope Bononiam [...] ad Jola et alle Grotte prope Bononiam et Sarzanae et Trebbiano [...] in

Aprutio... prope Valle et Castel di Sangro... Area geographica [...] patet ab Alpibus meridionalibus per montes Apenninos et Aprutios in Italiam inferiorem. Statio maxime septentrionalis Vallarsa in Tirolia australi est, maxime occidentalis colles inter Augusta Taurinorum et Alexandriam, qui Monti d’olta Po ab incolis nominatur, maxime orientalis simulque meridionalis Castell di Sangro inter Solmonam et Piedimonte in Aprutio. Intra hos fines [...] ex his locis [...]: Val Ronchi, decliv. merid. M. Baldi, Cabanne di Ciarlata, Roncorio, Jola, alle Grotte pr. Bononiam, Sarzanae, in colle Serzianelli, Trebbiano, Aprut. Morrone, Majella,

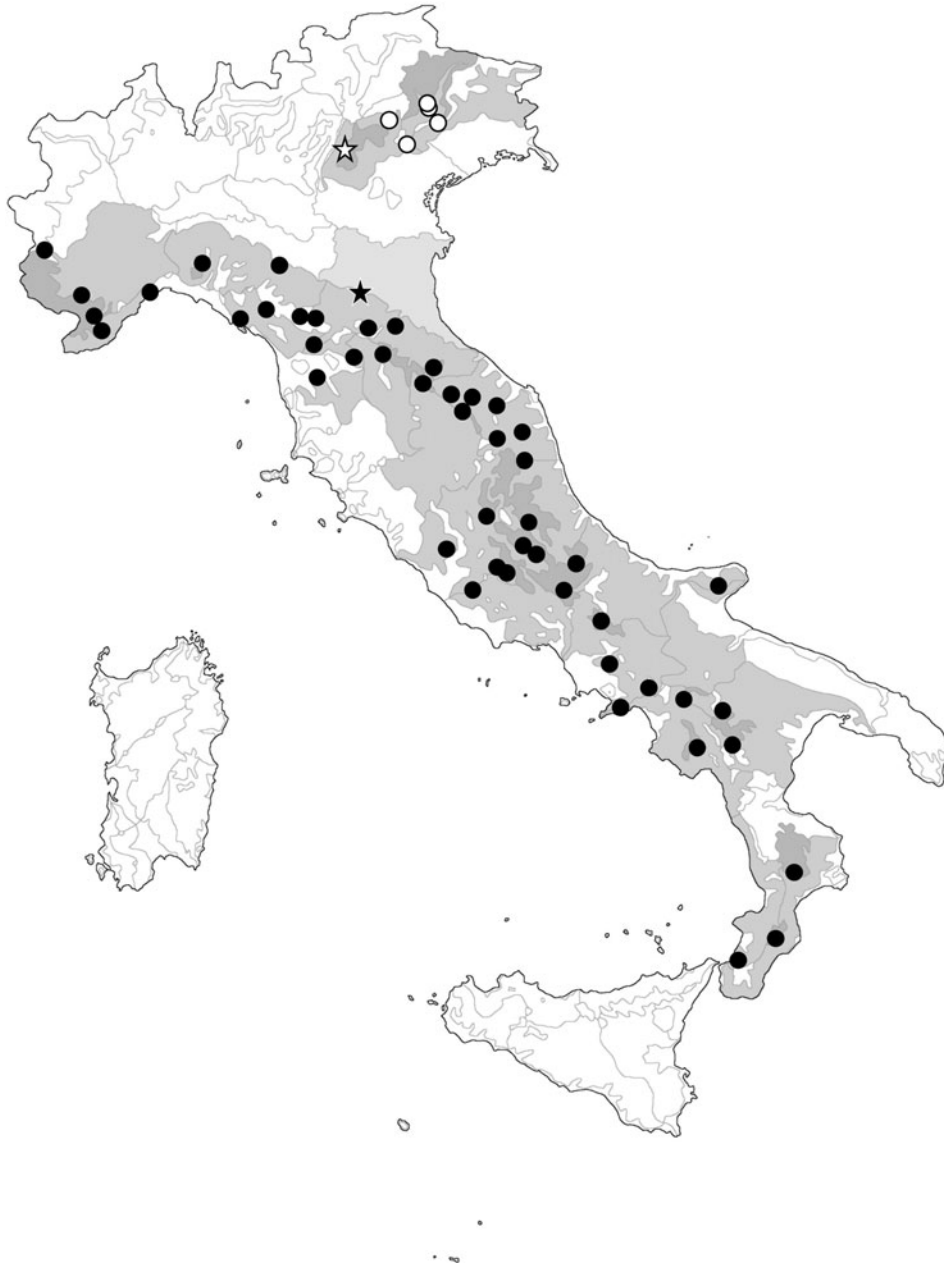


Figure 19. Italian distribution of *Pulmonaria vallarsae*. Empty dots: subsp. *vallarsae*; the type locality is indicated by the white star. Black dots: subsp. *apennina*; the type locality is indicated by the black star.

Valle di Alberona prope Biccari. [...] ripa fluvii
Leno prope Piano di Fugazza in Tirolia australi

most of which should be referred to *P. vallarsae* subsp. *apennina*, and thus excluded from the original material suitable for type designation.

greenish, with wings less than 1 mm broad ...
subsp. **apennina**—Upper surface of adult basal leaves with pluricellular (ca. as long as bristles) glandular hairs 2–3 times more abundant than unicellular (shortly stipitate or sessile) ones; petiole green, with wings usually 2 mm broad ...
subsp. **vallarsae**

Key to subspecies

- (1) Upper surface of adult basal leaves with pluricellular (ca. as long as bristles) glandular hairs 2–3 times less abundant than unicellular (shortly stipitate or sessile) ones; petiole purple-

Pulmonaria vallarsae L. subsp. *vallarsae*
Italian distribution— An endemic mainly restricted to N Veneto, extending westwards to the border with Trentino Alto Adige (type locality) – Figure 19. ***Pulmonaria vallarsae*** L.

subsp. **apennina** (Cristofolini & Puppi) L. Cecchi & Selvi, **comb. et stat. nov.**

≡ *P. apennina* Cristofolini & Puppi in Webbia 51(1): 17. 1996 ≡ *P. hirta* L. subsp. *apennina* (Cristofolini & Puppi) Peruzzi in Inform. Bot. Ital 42(2): 531. 2010.

Locus classicus: [Italy, Emilia Romagna] “Parco Talon, Casalecchio di Reno”. Holotype (see Puppi & Cristofolini 1996: 18): [Italy, Emilia Romagna] “Parco Talon, Casalecchio di Reno”, 26.04.1996, Puppi (FI 7200; iso-BOLO). Paratypes: see Puppi & Cristofolini (1996: 18–20).

Note. The potential interfertility between the taxa of the *P. hirta* – *P. vallarsae* complex was shown by Puppi & Cristofolini (1996), and *P. apennina* – *P. hirta* hybrid populations were occasionally found in their contact zone in Tuscany (Vosa & Pistolesi 2004); this led Peruzzi (2010) to treat *P. apennina* as a subspecies of *P. hirta*, while no rank change was proposed for *P. vallarsae* s.s. Nevertheless, the clear affinity between the latter and *P. apennina*, which explains why Kerner (1878) himself considered them as a single species, perfectly fits with karyological evidence, since the two taxa share the same chromosome number ($2n = 22$ vs. $2n = 28$ of typical *P. hirta*) underscoring their conspecific status.

Italian distribution – Endemic to Italy and widespread from the Maritime Alps along the entire Apennine range to Aspromonte in S Calabria. It is usually considered a vicariant of *P. hirta* on the Adriatic side, but large overlapping areas are known, especially in northern Tuscany, where hybrid individuals with intermediate chromosome number ($2n = 25, 26, 27$) have been found (Puppi & Cristofolini 1996) – Figure 19.

A357.017.006.001. *Pulmonaria vallarsae* L. subsp. *vallarsae*

Italian distribution – An endemic mainly restricted to N Veneto, extending westwards to the border with Trentino Alto Adige (type locality) – Figure 19.

Pulmonaria hybrids

Pulmonaria x hybrida A. Kern., *Monogr. Pulmon.*: 31. 1878.

Locus classicus: [Italy, Trentino Alto Adige] “prope Brixinam in Tirolia”. Lectotype (here designated): [Italy, Trentino Alto Adige] “Brixen”, 1863, Kerner, ex Herb. Shuttleworth (BM 752603).

= ?*P. australis* (Murr) W. Sauer x *P. officinalis* L.

Note. No original specimen collected by Kerner was found in W and WU. Due to weakly defined morphological boundaries, the correct identity of several *Pulmonaria* taxa, especially hybrids, should be determined by means of karyological or molecular

analyses. As a consequence, the hybridogenous nature of several (notho)taxa and their parental relationships, based on typical dry material, are only putative. Here, we can only suggest that “*P. angustifolia*”, indicated by Kerner himself (1878) as one of the two parental species, is to be intended as *P. australis*, the only species of the “*P. angustifolia* complex” growing in the type locality, as far as we know.

Italian distribution – Only known from the type collection.

7. *Nonea* Medik., *Philos. Bot.* 1: 31. 1789.

Type (Janchen 1953: 210): *Lycopsis pulla* L. in Loeffling, *Iter Hispan.*: 302. 1758, *nom. cons. prop.*

= *Onochilis* Mart. in *Denkschr. Königl. Akad. Wiss. München* 5e: 177. 1817.

Type (see Martius 1817: 177): *Onochilis pulla* Mart. [*N. vesicaria* (L.) Medik.].

Key to species

- (1) Perennial; corolla deep purple to blackish, with slightly zygomorphic (obliquous) limb ... **N. pulla** – Annual; corolla white, yellow or purple, with actinomorphic (flat) limb ... 2
- (2) Glandular hairs absent; corolla white; nutlets reniform ... **N. echioides** – Plants hispid-glutinous due to abundant glandular hairs; corolla yellow or purple; nutlets horizontally ovoid ... 3
- (3) Corolla purple, with limb 3–5 mm in diameter; nutlets obliquely ovoid, broader than long ... **N. vesicaria** – Corolla yellow, with limb 8–12 mm in diameter; nutlets erect-oblong, longer than broad ... **N. lutea**

Nonea echioides (L.) Roem. & Schult., *Syst. Veg.*, ed. 15 bis, 4: 71. 1819.

≡ *Lycopsis echioides* L., *Sp. Pl.*, ed. 4, 1: 781. 1762 ≡ *Anchusa ventricosa* Sm. in Sibth. & Sm., *Fl. Graec.* 2: 58. 1836 ≡ *Nonea ventricosa* (Sm.) Griseb., *Spic. Fl. Rumel.* 2(4): 98. 1844. ≡ *Aipyanthus echioides* (L.) Steven in *Bull. Soc. Imp. Naturalistes Moscou* 1: 600. 1851 ≡ *N. alba* subsp. *ventricosa* (Sm.) Nyman, *Consp. Fl. Europ.*: 512. 1881.

Locus classicus: [Armenia] “in America [lege Armenia]”. Lectotype (Edmondson 1977: 29): [Spain] 14.5.1753, Loeffling, 71/7, ex Herb. Alströmer (S-LINN). Other original material: [Spain] “Ex Hispania”, s.d., Loeffling 146, 71/9, ex Herb. Calsström (S-LINN 09-35911); s.loc, s.d., *s.coll.* (Herb. Linnaeus 190.6, LINN!).

Note. The intricate nomenclatural issue regarding the identity of this taxon, including several misapplications of the epithet “*echioides*” to different entities, was discussed in detail by



Figure 20. Italian distribution of *Nonea echioides*.

Edmonson (1977, 1978), who also showed why the Spanish material was erroneously reported as coming from “Armenia”, then further changed in “America”.

= *N. alba* DC. in DC. & Lam., Fl. Franc., ed. 3., 6: 420. 1815 = *N. ventricosa* (Sm.) Griseb. f. *alba* (DC.) Fiori in Fiori & Bég., Fl. Italia 2(3): 373. 1902.

Locus classicus: [France] “dans les blés sur les deux rives du Rhône audessous d’Avignon, à Tarascon et à Aramon”. Lectotype (here designated): [France] “Tarascon et Aramon, 2 rives du Rhone”, 1810, *Requien* (Herb. Candolle 4542, G 137568).

Italian distribution – Only known from a few, old records from Apulia where this plant was likely

native, but not observed since more than a century – Figure 20.

Nonea lutea (Desr. ex Lam.) DC. in DC. & Lam., Fl. Franç., ed. 3, 3: 626. 1805.

≡ *Lycopsis lutea* Desr. ex Lam., Encycl. [J. Lamarck et al.] 3: 657. 1792.

Locus classicus: [cultivated in France] “cultivée au Jardin du Roy”. Lectotype (here designated): s.-loc., s.d., *s.coll.*, Herb. Lamarck 59.179 (P-LA 357408).

= *Lycopsis setosa* Lehm., Pl. Asperif. Nucif.: 269. 1818; *N. setosa* (Lehm.) Roem. & Schult., Syst. Veg., ed. 15 bis, 4: 754. 1819.

Locus classicus: [Armenia] “In Iberia”. Holotype: “ad Caucasum”, s.d., Adams (MEL 1010645).



Figure 21. Italian distribution of *Nonea lutea*.

= *Anchusa dubia* Nocca, Ticin. Hort. Pl. 1: 5, t. 3. 1800.

Locus classicus: [cultivated in Italy, Lombardy] [Hortus ticinensis]. Lectotype (here designated): tavola (Nocca 1800: t. 3!).

Italian distribution – Native to the Caucasus and Pontic region, naturalized in a few localities in C and N Italy – Figure 21.

Nonea pulla (Loefl.) DC. in DC. & Lam., Fl. Franç. ed. 3, 3: 626. 1805.

≡ *Lycopsis pulla* L. in Loefl., Iter Hisp.: 66–67, 81, 302. 1758, *nom. cons. prop.* (Cecchi et al. 2014) ≡ *N. erecta* Bernh., Syst. Verz. 127. 1800.

Locus classicus: [Spain] “Váxer hár j Madrid och nog i St. Fernando”. Lectotype (Kazmi 1971: 676,

confirmed by Cecchi et al. 2014): s.loc, s.d., s.coll. (Herb. Linnaeus 190.2, LINN!), *typ. cons. prop.*

Note. The name *Lycopsis pulla* was originally used in Loefling’s (1758) *Iter hispanicum* referring to the annual, white-flowered species which is now currently known as *Nonea echioides*, as correctly showed with its first lectotypification by López González & Jarvis (1984: 343). On the contrary, the epithet “pulla” (both as *Lycopsis* and as *Nonea*) has been largely referred by later botanists to another basionym, the “*Lycopsis pulla*” sensu Linnaeus (1759: 916), despite its formally illegitimate status. This is why the above mentioned type locality does not fit with the geographical range of this CE European species. To conserve the current usage of



Figure 22. Italian distribution of *Nonea pulla*.

the name *Nonea pulla* and avoid a misleading renaming for *Nonea echioides* as a consequence of priority of the neglected Loeffling's name, Cecchi et al. (2014) have proposed to reject the lectotypification by López González & Jarvis (1984) and to merge the two "*Lycopsis pulla*" into one, by designating a single specimen as the conserved type for the 1758 basionym, against the original intention of the author.

Italian distribution – Very rare in the W Alps, currently known only for a small population in the Aosta Valley near Champlong (Bovio 2014) – Figure 22.

Nonea vesicaria (L.) Medik., Philos. Bot. 1: 31. 1789.

≡ *Lycopsis vesicaria* L., Sp. Pl. 1: 138. 1753; *N. decumbens* Moench, Methodus: 422. 1794, nom. illeg.

Locus classicus: "in Europae australi". Lectotype (Qaiser in Jafri & El-Gadi 1979: 26): [cultivated in Sweden] "H.U. [Hortus Uppsaliensis]", s.d., s.coll. (Herb. Linnaeus 190.1, LINN!). Other original material: [cultivated in the Netherlands] Herb. Clifford 47.1 (BM 557889).

= *Lycopsis nigricans* Desr. in Lam., Encycl. 3: 655. 1792.

Locus classicus: [cultivated in France] "au Jardin du Roi". Lectotype (here designated): s.loc., s.d., s.coll., Herb. Lamarck 59.178 (P-LA 357407).

= *Echioides nigricans* Desf., Fl. Atlant. 1: 163. 1798; *N. nigricans* (Desf.) DC. in DC. & Lam.,



Figure 23. Italian distribution of *Nonea vesicaria*.

Fl. Franç., ed. 3, 3: 626. 1805 ≡ *Onochilis pulla* Mart. in Denkschr. Königl. Akad. Wiss. München 5e: 177. 1817.

Locus classicus: [Morocco] “in arenis prope Tozzer”. Lectotype (here designated): drawing (Zanoni 1742: t. 38).

Note. No original specimens are kept in the Desfontaines collections in P and FI-W. The lectotype was selected among the several iconographies cited in the protologue.

Italian distribution – Restricted to a few coastal and subcoastal localities in Sicily, mainly in the S part – Figure 23.

8. Hormuzakia Guşul. in Publ. Soc. Nat. Roman. 6: 8. 1923.

≡ *Anchusa* subg. *Hormuzakia* (Guşul.) Chamb., Notes Roy. Bot. Gard. Edinb. 35: 298. 1977.

Type (see Guşuleac 1923: 8): *Anchusa aggregata* Lehm., Pl. Asperif. Nucif. 1: 219. 1818.

Hormuzakia aggregata (Lehm.) Guşul. in Publ. Soc. Nat. Roman. 6: 8. 1923.

≡ *Anchusa aggregata* Lehm., Pl. Asperif. Nucif. 1: 219. 1818.

Locus classicus: [Greece] “prope Athenas”. Lectotype (Selvi & Bigazzi 1998: 128): “*Anchusa parviflora*” drawing (Sibthorp & Smith 1813: t. 167).

– *Anchusa parviflora* Willd., Sp. Pl., ed., 1: 759. 1797.

Locus classicus: “in Oriente”. Holotype (here designated): “in Oriente”, s.d., s.coll. (B-W 3313).



Figure 24. Italian distribution of *Hormuzakia aggregata*.

– *Echium humile* auct. non Desf., Fl. Atlant. 1: 165. 1798.

Locus classicus: [Tunisia] “in arenis deserti prope Cafsam”. Holotype [Tunisia] “Desert de Cafsa, Barbarie”, s.d., s.coll. (P 561300).

Italian distribution – Restricted to a few localities along the southern coast of Sicily – **Figure 24**.

9. *Cynoglottis* (Guşul.) Vural & Kit Tan in Notes Roy. Bot. Gard. Edinburgh 41: 71. 1983.

≡ *Anchusa* subg. *Cynoglottis* Guşul., in Publ. Soc. Nat. Roman. 6: 11. 1923. Type (see Guşuleac 1923: 11); *Buglossum barrelieri* All., Fl. Pedem. 1: 48. 1785.

Cynoglottis barrelieri (All.) Vural & Kit Tan in Notes Roy. Bot. Gard. Edinburgh 41(1): 71. 1983.

≡ *Buglossum barrelieri* All., Fl. Pedem. 1: 48. 1785 ≡ *Anchusa barrelieri* (All.) Vitm., Summa Pl. 1: 388. 1790.

Locus classicus: [Italy, Piedmont] “inter Rocavion, & Robilant, & in valle Sturæ prope Demont”. Lectotype (Selvi & Bigazzi 1998: 127): [Italy, Piedmont] “a Rocavion ad Robilant secus viam, et in valle Sturæ secus viam demontis”, s.d., Bellardi, Herb. Bellardi (TO).

= *Anchusa longifolia* Lam., Encycl. 1: 504. 1785.



Figure 25. Italian distribution of *Cynoglossis barrelieri* subsp. *barrelieri*; the black star indicates the type locality.

Locus classicus: [Italy?] “Nous présumons que cette plante [...] croît naturellement en Italie”. Lectotype (here designated): [Italy] “Buglossum Alpinum, perenne Italicum, caeruleum minus foliis angustioribus, bullis minutissimis exasperatis”, s.d., *s.coll.* (P 680159; iso-, “Buglossum cynoglossi vulgaris folio, flore amoene coeruleo. D.Sherard “, P 680160).

Note. Both type specimens bear the label with “Buglossum alpinum...” in Sébastien Vaillant handwriting; the isotype also bear the second label “Buglossum cynoglossi vulgaris...” written by Tristan Danty d’Isnard, which is also directly referred to in the protologue. Despite the identity of *A. longifolia* is here shown for the first time, there is no priority

conflict with the current name of this taxon, since the basionym by Allioni was published at least one month before (between April and July 1785) than that by Lamarck (August 1785).

Cynoglossis barrelieri (All.) Vural & Kit Tan subsp. *barrelieri*

Italian distribution – In most mountain massifs of peninsular Italy, extending from the Maritime and Cottian Alps border at the north to Mt. Pollino at the south – [Figure 25](#).

10. *Lycopsis* L., Sp. Pl. 1: 138. 1753 ≡ Gen. Pl., ed. 5: 68. 1754.

≡ *Anchusa* subg. *Lycopsis* (L.) Guşul., Bul. Fac. Sti. Cernauti 1: 77. 1927. Type (Britton &

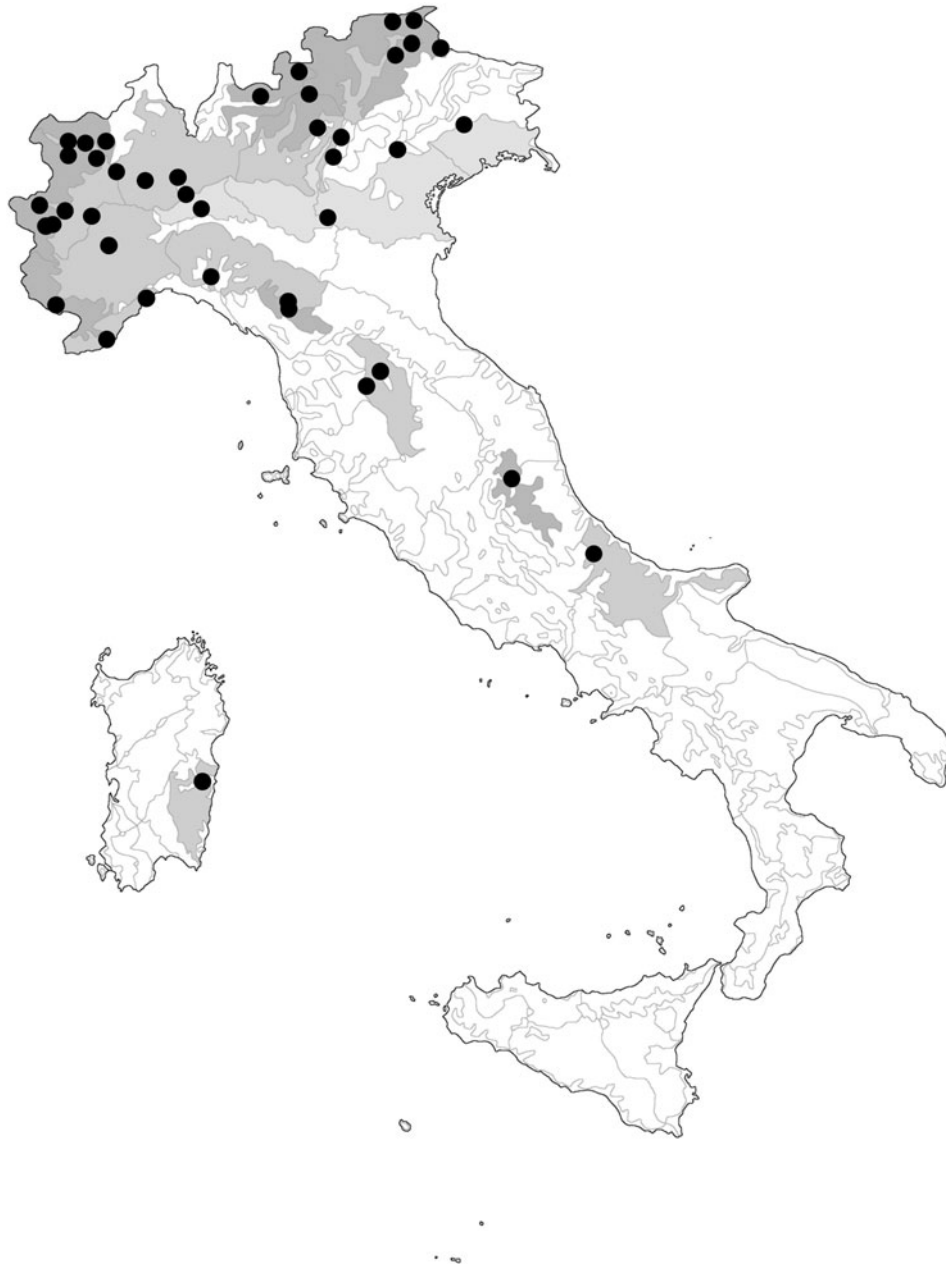


Figure 26. Italian distribution of *Lycopsis arvensis*.

Brown 1913: 93, confirmed by Hitchcock in Hitchcock & Green 1929: 128): *L. arvensis* L., Sp. Pl. 1: 130. 1753.

Key to species

- (1) Cymes contracted, with sessile flowers; bracts about as long as calyx; corolla tube 5–7 mm, curved in the middle; fruiting calyx closed, inflated ... ***L. arvensis***—Cymes lax, with flowers spaced on pedicels of 1.5–2 mm; bracts longer than flowers; corolla tube 4–5 mm, curved in the lower part; fruiting calyx stellate-spreading ... ***L. orientalis***

Lycopsis arvensis L., Sp. Pl. 1: 139. 1753.

≡ *Anchusa arvensis* (L.) M.Bieb., Fl. Taur.-Cauc. 1: 123. 1808.

Locus classicus: “in Europae agris”. Lectotype (Selvi et al. 1996: 306): “In Misnia, Helvetia, Dania”, Herb. Burser XIV(2): 26 (UPS-BURSER 174544).

Italian distribution – Based on herbarium collections, *L. arvensis* was a common weed until the last century, especially in N Italy, but seems rarer today maybe due to changes in agricultural practices. Old records from Tuscany need confirmation since more than a century, while the species has recently been collected in Abruzzo (near Palombaro, Chieti



Figure 27. Italian distribution of *Lycopsis orientalis*. Doubtful records are shown with question marks.

Province), Sardinia (Gennargentu massif) and Umbria (Sibillini Mts.; Falcinelli et al. 2015, in press) **Figure 26**.

Lycopsis orientalis L., Sp. Pl.: 139. 1753.

≡ *Anchusa ovata* Lehm., Pl. Asperif. Nucif. 1: 222. 1818 ≡ *Anchusa orientalis* (L.) Rchb., Icon. Fl. Germ. Helv. 18: 63 1858, nom. illeg., non L., Sp. Pl. 1: 133. 1753 ≡ *L. arvensis* L. subsp. *orientalis* (L.) Kuntze in Trudy Imp. S.-Peterburgsk. Bot. Sada 10: 216. 1887; *Anchusa arvensis* (L.) M.Bieb. subsp. *orientalis* Nordh. in Norsk Fl. 526. 1940.

Locus classicus: “in Oriente”. Neotype (Güner & Duman in Cafferty & Jarvis 2004: 803): [Turkey] “B5 Nevşehir: Ürgüp, 1.080 m, lake shores, wet

places”, 22.6.1989, Vural 5360 et al. (GAZI; iso-ISTF, AIBU).

Italian distribution – Native to E Europe and W Asia, and collected only twice in Italy from two allochthonous, ephemeral populations in C Piedmont. The species has been probably found again in recent times in Emilia Romagna (near Piacenza) and Veneto (Euganei Hills), but both observations need confirmation – **Figure 27**.

11. *Anchusella* Bigazzi, E.Nardi & Selvi in Pl. Syst. Evol. 205: 253. 1997

≡ *Anchusa* L. subgen. *Rivinia* Greuter in Candollea 20: 202. 1965. Type (Greuter 1965: 202, confirmed by Bigazzi et al. 1997: 253): *Lycopsis*

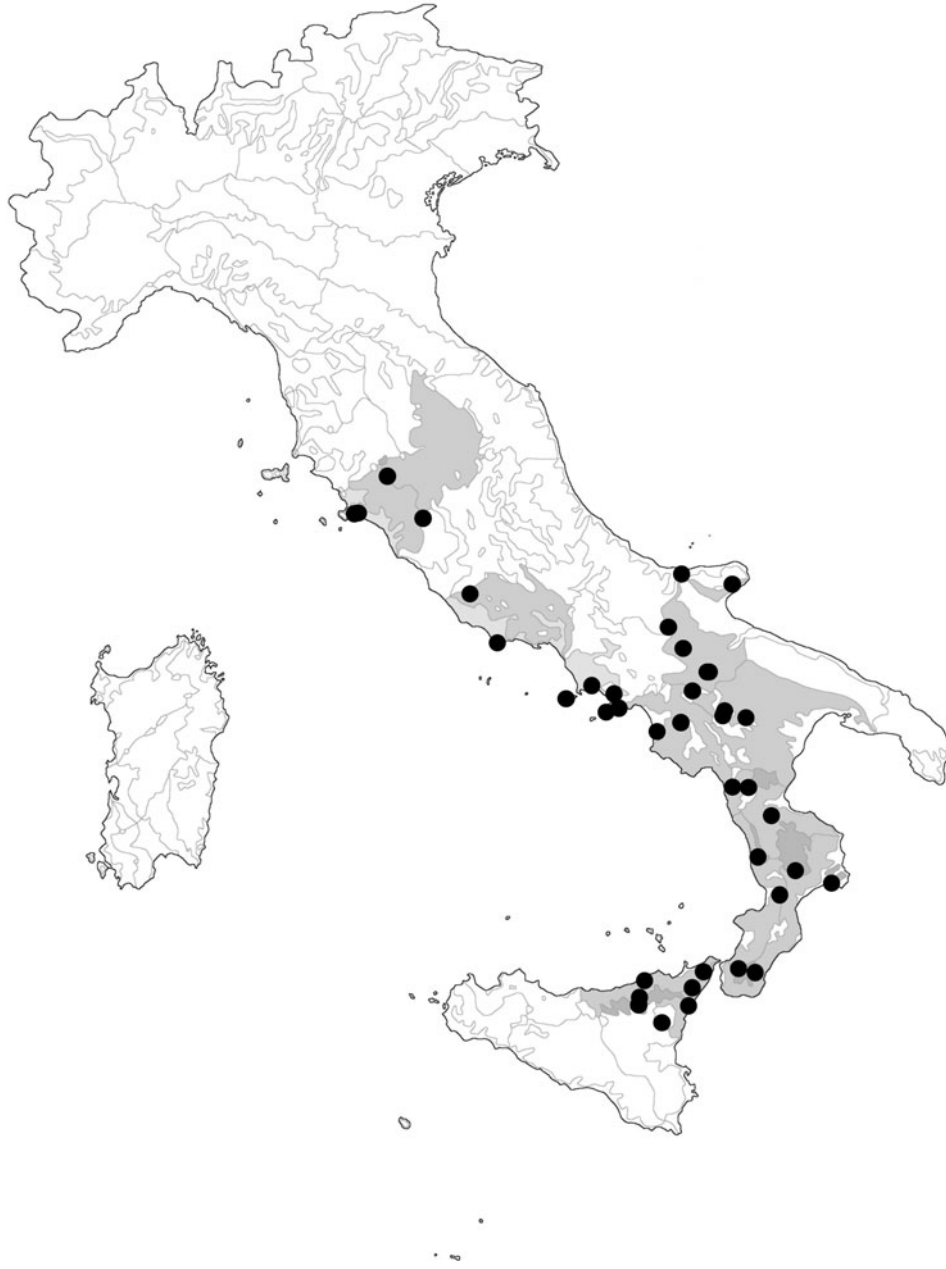


Figure 28. Italian distribution of *Anchusella cretica*.

variegata L., Sp. Pl. 1: 138. 1753 (*Anchusella variegata* (L.) Bigazzi, E. Nardi & Selvi).

Anchusella cretica (Mill.) Bigazzi, E. Nardi & Selvi in Pl. Syst. Evol. 205: 257. 1997.

≡ *Anchusa cretica* Mill., Gard. Dict., ed.8: n° 7. 1768 ≡ *Lycopsis cretica* (Mill.) Holub in Preslia 49: 359.

Locus classicus: [cultivated in France] “H. R. Par. [Parigi]”. Lectotype (Bigazzi et al. 1997: 257): “1 Herbar. Miller”, s.d., s.coll., Herb. Miller (BM).

= *Lycopsis bullata* Cirillo, Pl. Rar. Neap. 1: 34. 1788.

Locus classicus: [Italy, Sicily] “in ruderatis ubique circa urbem”. Lectotype (Selvi & Bigazzi 1998: 124): [Italy, Sicily] tavola (Cirillo 1788: t.11, f. 3).

= *Lycopsis arvensis* L. f. *albiflora* Ten. ex Fiori in Fiori & Bég., Fl. Italia 2(3): 373. 1902.

Locus classicus: not indicated. Type not traced.

= *Lycopsis variegata* L. f. *albiflora* Trott. in Boll. Soc. Bot. Ital. 1905(1): 37. 1905 ≡ *Lycopsis variegata* L. var. *albiflora* (Trott.) Trott. in Boll. Soc. Bot. Ital. 1917(1): 73. 1917.

Locus classicus: [Italy, Campania] “in una siepe presso Avellino”. Type not traced.

≡ *Lycopsis variegata* auct. non L., Sp. Pl. 1: 138. 1753 (≡ *Anchusella variegata* (L.) Bigazzi, E. Nardi & Selvi).

Locus classicus: [Greece] “in Creta”. Lectotype (Greuter 1965: 208): [Greece] “Buglossoides cretica”, drawing (Rivinus 1690: t. 9). Epytype (Bigazzi

et al. 1997: 254): [Greece] “Eparchia Kidhonia: Peninsula Akrotiri, in faucibus prope monasterium dirutum Katholiko, 35°35'30" N, 24°09'50" E, 100 m", 24.4.1976, Greuter & Charpin, Pl. Cret. It. Soc. Nat. Belges 13350, AC 11873, “HB. G. 220388” (G 176878).

Italian distribution – Common on mainly calcareous, arid pastures in most southern regions of C and S Italy, becoming rare northwards to S Tuscany; also in Sicily. A specimen in FI from Lombardy (near Mantova) of unknown origin, probably from cultivated material – Figure 28.

12. *Anchusa* L., Sp. Pl. 1: 133. 1753 ≡ Gen. Pl., ed. 5: 64. 1754.

Type (Britton & Brown 1913: 93, confirmed by Hitchcock in Hitchcock & Greene 1929: 127): *A. officinalis* L., Sp. Pl. 1: 133. 1753.

= ? *Buglossum* Mill., Gard. Dict., ed. 4. 1754. Type not designated.

Key to species

- (1) Inflorescence without bracts or only with few bracts not at pedicel insertions; calyx divided to base in linear lobes, not accrescent; corolla tube closed by long-hairy faucal scales; nutlets oblong-ovoid, erect, 6–9 mm, grey-brownish (subgen. *Buglossum*) ... **A. azurea**—Inflorescence regularly bracteate, rarely with only few isolated bracts; calyx divided to not more than 2/3 in largely triangular lobes, accrescent after anthesis; corolla tube open or closed by shortly pubescent faucal scales; nutlets ovoid, obliquely oriented in respect to floral axis, shorter than 4.5 mm, dark brown to blackish (subgen. *Anchusa*) ... 2
- (2) Erect with dense scorpioid cymes; bracts abruptly reduced with respect to upper cauline leaves, the upper ones much shorter than calyces; corolla tube > 6 mm, longer than calyx; limb campanulate, with deltoid lobes; anthers > 2 mm ... 3—Erect-ascending to procumbent, sometimes with lax, inconspicuous cymes, only obscurely scorpioid; bracts progressively reduced with respect to upper cauline leaves, all ≥ calyx; corolla tube < 5.5 mm, included; limb rotate, with rounded lobes; anthers < 2 mm (Corso-Sardinian endemism complex) ... 5
- (3) Perennial with monomorphic indument of slender trichomes, mostly without basal tubercles; leaves usually with flat margin; calyx divided to about half; corolla limb ca. as broad as tube length; stigma capitate-bilobed ... 4—Biennial with dimorphic indumentum of short, slender hairs mixed with long, stout,

basally tuberculated bristles; leaf margin usually more or less regularly undulate; calyx divided to less than half; diameter of corolla limb ≤ than tube length; stigma oblong-ellipsoidal, often with a sterile tip at the apex ...

A. undulata

- (4) Leaves width < 1 cm; calyx 4–6 mm long; corolla pale yellow ... **A. ochroleuca**, Leaves > 1 cm; calyx 5–7 mm long; corolla purplish, rarely white or pink ... **A. officinalis**
- (5) Basal leaves broadly lanceolate, 15–30 mm broad, cauline ones broadly linear to lanceolate; leaf margins flat to slightly undulate; fruiting calyx > 10 mm (orophytes) ... 6—All leaves linear to narrowly oblanceolate-spathulate, < than 15 mm broad; leaf margin often crispate-undulate; fruiting calyx < 10 mm (psammophytes) ... 8
- (6) Calyx divided to more than half; corolla tube 6.5 mm; limb 10–12 mm in diameter ... **A. capellii**—Calyx divided to less than half; corolla tube 5 mm; limb 7–8 mm in diameter ... 7
- (7) Prickly indumentum with sparse, stiff bristles 3 mm long; leaves up to 3 × 14 cm; cymes shortly branched remaining dense after anthesis; fruiting pedicels usually < 5 mm, patent; fruiting calyx ventricose-urceolate, prominently ribbed along veins, with reflexed teeth... **A. formosa**—Hispid for dense bristles < 2.5 mm, without prickly indumentum; leaves up to 2.5 × 8 cm; cymes branched to the half, with cymes considerably elongating after anthesis; fruiting pedicels up to 7 mm, deflexed; fruiting calyx tubulose-campanulate, without prominent ribs ... **A. montelinasana**
- (8) Annual with slender root; flowers few, well spaced, almost isolated at axil of bracts resembling cauline leaves, often inserted even close to the stem base; limb < 5 mm in diameter; anthers not overlapping faucal scales ... **A. littorea**—Short-lived perennial or biennial, rarely annual, with thick taproot; cymes rich, terminal; bracts progressively reduced with respect to cauline leaves; limb > 5 mm in diameter; anthers overlapping faucal scales ... 9
- (9) Erect-ascending; basal leaves > 1 cm wide; bracts more than two times as long as calyces; calyx pubescent inside, becoming tubulose in fruit, 9–10 mm ... **A. sardoa**—Diffuse-procumbent; basal leaves < 1 cm wide; bracts ≤ than flowers, less than 1. times as long as calyces; calyx glabrous inside, after anthesis globose-urceolate, 6–8 mm ... **A. crispa**

Anchusa azurea Mill., Gard. Dict., ed. 8: n°9. 1768.

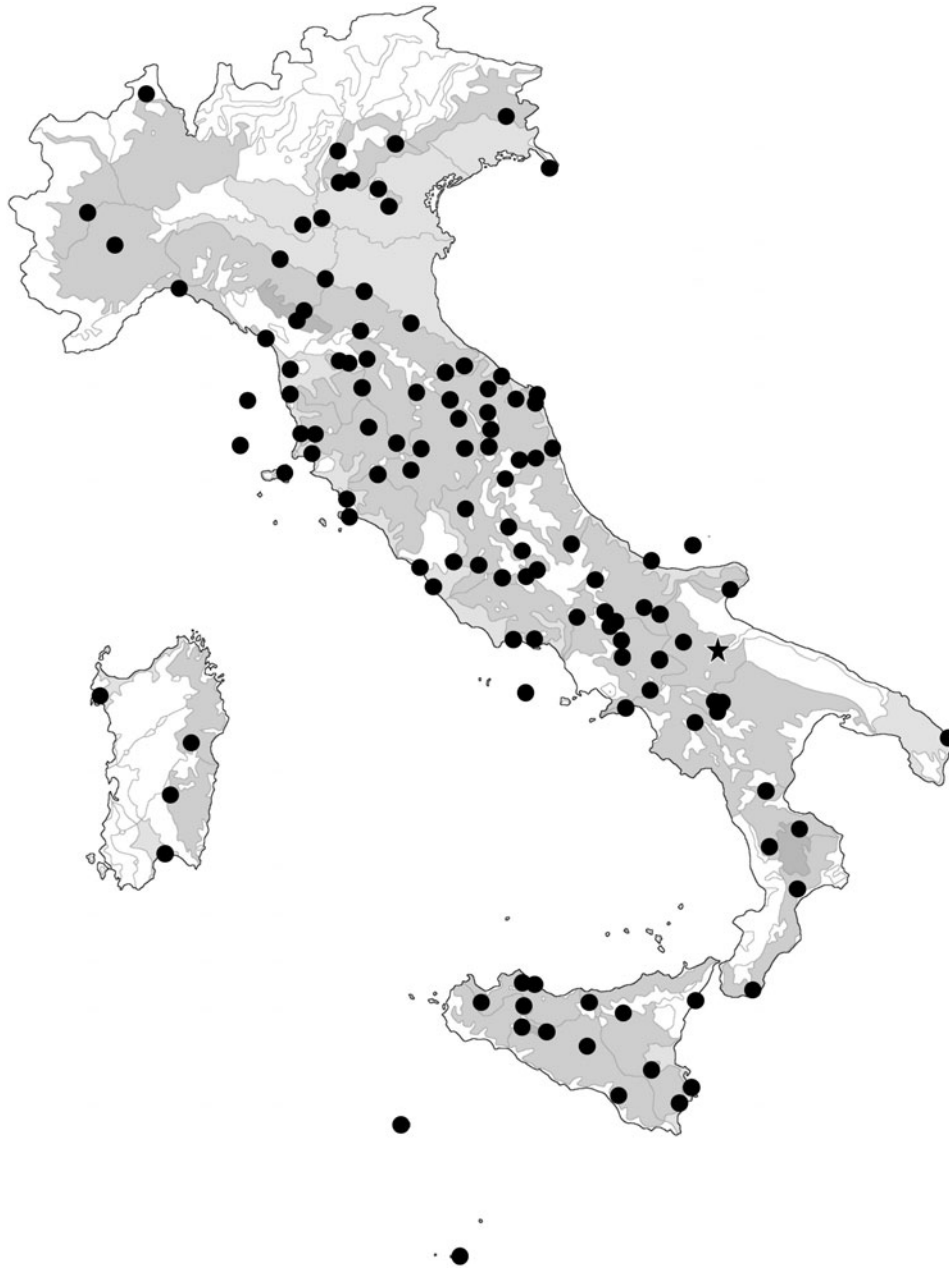


Figure 29. Italian distribution of *Anchusa azurea*; the black star indicates the type locality.

Locus classicus: [cultivated in United Kingdom] not specified. Neotype (Selvi & Bigazzi 1998: 130): [Italy, Apulia] “margini di campi lungo l’autostada Napoli-Bari presso il Lago di Capacciotti all’O-fanto”, 04.05.1995, Bigazzi & Selvi (FI 2358!).

= *A. italica* Retz., *Observ. Bot.* 1: 12. 1779.

Locus classicus: not indicated. Lectotype (selvi & Bigazzi 1998: 130): “*Anchusa besleri* N” (LD).

= *A. italica* var. *angustifolia* Guss., *Fl. Sic. Syn.* 1: 220. 1843 ≡ *A. italica* Retz. f. *angustifolia* (Guss.) Fiori in Fiori & Bég., *Fl. Italia* 2(3): 375. 1902 ≡ *A. azurea* Mill. var. *angustifolia* (Guss.) Fiori, *Nuov. Fl. Ital.* 2(2): 281. 1926.

Locus classicus: [Italy, Sicily] “in Sicilia et in Alicuri, Filicuri, Saline, Lipari”. Lectotype (here designated): [Italy, Sicily] “in arvis, Palermo”, s.d., Gasparrini (Herb. Gussone, NAP!).

= *A. italica* Retz. var. *humilis* Ten., *Syll. Pl. Fl. Neapol.*: 82. 1831 ≡ *A. italica* Retz. f. *humilis* (Ten.) Fiori in Fiori & Bég., *Fl. Italia* 2(3): 375. 1902.

Locus classicus: [Italy, Campania] “in campis argillosis cultis insularum Inarimes et Caprearum”. Lectotype (here designated): drawing of “*Anchusa paniculata*” (Sibthorp & Smith 1813: t. 63). Epitype (here designated): [Italy, Campania] “Principato Ultra”, s.d., Gussone (Herb. Tenore, NAP!).



Figure 30. Italian distribution of *Anchusa capellii*; the black star indicates the type locality.

Note. The epitype is the only original specimen of var. *humilis* in Tenore's herbarium, with the word "humilis" added by Tenore himself on the label by Gussone. Unfortunately, the collection locality does not fit the protologue, explaining why one of the two drawings cited by Tenore is here selected as lectotype.

Italian distribution – in most Italian regions, very common in Mediterranean areas, on islands and peninsular regions, rarer and scattered to the north, from the Po plain to the lower parts of the Alps – [Figure 29](#).

Anchusa capellii Moris, *Stirp. Sard. El.* 2: 6. 1827.

≡ *A. hybrida* Ten. subsp. *capellii* (Moris) Nyman, *Consp. Fl. Europ.*: 511. 1881 ≡ *A. crispa*

Viv. var. *capellii* (Moris) Illario, *Arch. Bot.* 11: 261. 1935 ≡ *A. undulata* L. subsp. *capellii* (Moris) Vals., *Webbia* 30: 57. 1976.

Locus classicus: [Italy, Sardinia] not specified. Lectotype (Selvi 1998: 267): [Italy, Sardinia] "in Sardiniae montibus", 1825, *Moris*, (Herb. Moris, TO). Other original material: [Italy, Sardinia] "in pascuis summi montis S. Vittoria Esterzili", s.d., *Moris*, (Herb. Moris, TO).

Italian distribution – A very rare endemic restricted to one or two localities in CE Sardinia (Mt. Santa Vittoria d'Esterzili and Taccu di Sadali, here not observed in recent times) – [Figure 30](#).

Anchusa crispa Viv., *App. Fl. Cors. Prodr.* 1: 1. 1825.



Figure 31. Italian distribution of *Anchusa crispa*. Black dots: subsp. *crispa*. White dots: subsp. *maritima*; the star indicates the type locality of this taxon.

≡ *Lycopsis crispa* (Viv.) Bertol., Fl. It. 2: 337. 1835 ≡ *A. hybrida* var. *crispa* (Viv.) Nyman, Consp. Fl. Eur.: 510. 1881 ≡ *Anchusa undulata* L. var. *crispa* (Viv.) Fiori, Nuova Fl. It. 2: 282. 1926 ≡ *A. crispa* Viv. var. *vivianii* Illario, Arch. Bot. 11: 261. 1935, nom. illeg.

Locus classicus: [France] “in Corsicae collibus”. Lectotype (Selvi & Bigazzi 1998: 134): [France] “m. Viviani 1826” (Herb. De Candolle, G 144099!).

- (1) Basal leaves narrowly oblanceolate, > 5 mm wide; flower bract exceeding calyx, the latter divided up to 1/2-1/3 into ovate-lanceolate lobes ... subsp. **crispa**—Basal leaves linear, 3–4 mm wide; flower

bract shorter than calyx, the latter divided ca. 1/3 into ovate-rounded lobes ... subsp. **maritima**

Anchusa crispa Viv. subsp. *crispa*

Italian distribution – A rare Corso-Sardinian endemic, restricted in Italy to few localities along the northern Sardinian coasts – **Figure 31**.

Anchusa crispa Viv. subsp. *maritima* (Vals.) Selvi & Bigazzi in Pl. Biosystems 132(2): 136. 1998.

≡ *A. maritima* Vals., Boll. Soc. Sarda Sci. Nat. 26: 311. 1988.

Locus classicus: [Italy, Sardinia] “Dune della spiaggia di Badesi”. Holotype (see Valsecchi 1988: 311): [Italy, Sardinia] “Dune della spiaggia di



Figure 32. Italian distribution of *Anchusa formosa*; the black star indicates the type locality.

Badesi”, 20.04.1966, Valsecchi (SS). Paratypes (see Valsecchi 1988: 314): [Italy, Sardinia] “San Pietro a mare presso Codaruina”, 05.06.1964, Valsecchi (SS); “Spiaggia Paradiso (Codaruina)”, 20.04.1966, Valsecchi (SS); ibidem, 04.06.1967, Valsecchi (SS); ibidem, 29.05.1970, Valsecchi (SS); “Li Junchi”, 12.05.1965, Valsecchi (SS); “spiaggia di Badesi”, 16.05.1969 (SS, FI 7137!); “Codaruina, in loc. Li Junchi presso la foce del fiume Coghinas”, 16.05.1969, Valsecchi (SS, FI 2357); “Spiaggia Badesi” 06.05.1969, Valsecchi (SS); “Torre di Vignola”, 29.05.1970, Valsecchi (SS); “Spiaggia dell’Isola Rossa”, Maiore, 04.05.1970 (SS); “La Ciaccia, 02.05.1970, Valsecchi (SS); “La Marinedda”, 1974, Dolcher (SS).

Italian distribution – A very rare endemic restricted to few localities along the northern Sardinian coasts – Figure 31.

Anchusa formosa Selvi, Bigazzi & Bacchetta in Pl. Biosystems 131(2): 104. 1997.

Locus classicus: [Italy, Sardinia] “Sulcis Nord-Orientale (Cagliari), versante NE del Monte Lattias, fra le rocce granitiche nell’ alveo secco del Rio Su Fundu, su suolo siliceo sabbioso-detritico, c. 850 m”. Holotype (see Selvi et al. 1997: 104): [Italy, Sardinia] “Sulcis Nord-Orientale (Cagliari), versante NE del Monte Lattias, fra le rocce granitiche nell’ alveo secco del Rio Su Fundu, su suolo siliceo sabbioso-detritico, c. 850 m”, 18.05.1997, Selvi & Bigazzi (FI 2369; iso- CAG, FI 2370, K, SS). Paratypes (see



Figure 33. Italian distribution of *Anchusa litorea*; the black star indicates the type locality.

Selvi et al. 1997: 105): [Italy, Sardinia] “Mt Lattias nell’ alveo del Rio Su Fundu, detrito granitico, c. 780 m”, 18.05.1997, Selvi & Bigazzi (FI); “Mt Lattias (Agro di Uta, CA), nel Canale del Longufresu su suolo siliceo scheletrico, esp. E-SE, c. 720 m”, 13.07.1997, Bacchetta & Mossa (CAG); “Mt Lattias, alla base della cresta nel canale di Sennamanna, detrito granitico, c. 830 m”, 13.07.1997, Bacchetta & Mossa (CAG).

Italian distribution – A very rare orophytic endemic restricted to a few mountain sites in SW Sardinia (Mt. Lattias and Mt. Arcosu) – **Figure 32**.

Anchusa litorea Moris in Atti Congr. Sci. Ital. Genova, 8: 566. 1846.

≡ *A. crispa* Viv. var. *litorea* (Moris) Illario, Arch. Bot. 11: 261. 1935.

Locus classicus: [Italy, Sardinia] “in arena mobilis maris Oristano” (Moris 1827: 32, 1829: 9–10). Lectotype (Valsecchi 1988: 323): [Italy, Sardinia] “in arenosis maritimis circa Oristano”, 1826, *Moris*, (Herb. Moris, “*Anchusa crispa* Moris”; TO). Other original material: [Italy, Sardinia] “in arena mobilis insula St. Pietro”, s.d., *s.coll.*, Herb. Moris (“*Anchusa crispa* / *Lycopsis crispa* Bertol.” / *Anchusa verrucosa*”; TO); “circa * Oristano”, s.d., *s.coll.*, (Herb. Moris, “*Anchusa maritima* Nob.”; TO); “in arenis mobilis maritim. inter Terralba et Oristano, 4.1827, *s.coll.*, Herb. Moris (TO); in arenosis maritimis circa Oristano, s.d., *Moris*, (Herb.



Figure 34. Italian distribution of *Anchusa montelinasana*; the black star indicates the type locality.

Moris, “*Anchusa crispa* Nob.”; TO); s.loc., s.d., *s.coll.*, Herb. Moris (“*Anchusa crispa* non Viv.! nec DC!”; TO); s.loc., s.d., *Moris* (“*Anchusa crispa* Viv.”; FI).

Italian distribution – A very rare endemic restricted to few localities along the south western coasts of Sardinia – [Figure 33](#).

Anchusa montelinasana Angius, Pontec. & Selvi in Syst. Biodivers. 6: 166. 2008.

Locus classicus: [Italy, Sardinia] “Gonnosfanadiga (Cagliari), Monte Linas sotto punta Sa Cabixettas, 1070 m, 39°26.559 N–8°37.598 E”. Holotype (Angius et al. in Bacchetta et al. 2008: 166): [Italy, Sardinia] “Gonnosfanadiga (Cagliari), Monte Linas sotto punta Sa Cabixettas, 1070 m, 39°26.559 N –

8°37.598 E”, 20.05.2005, Angius et al. (CAG; iso-FI 2603, BM).

Italian distribution – A very rare orophytic endemic restricted to the upper slopes of Mt. Linas in SW Sardinia – [Figure 34](#).

Anchusa ochroleuca M.Bieb., *Fl. Taur.-Cauc. 1*: 125, 421.1808

Locus classicus: [Russia] “in campis apricis herbicis caspio-caucasicis, wolgicis circa Zarizyn et ad Tyram prope Bender”. Lectotype (here designated): [Russia] “[ad Sarepta] ad Wolgam et Tanain”, s.d., Bieberstein (B-W 03319-02 0). Other original



Figure 35. Italian distribution of *Anchusa ochroleuca*, based on historical herbarium collections.

material: [Russia] “[ad Sarepta]”, s.d., Bieberstein (B-W 03319-01 0).

Note. No original material was found in the main Bieberstein’s collection in St. Petersburg (LE).

= *A. ochroleuca* var. *rosea* Marches., Fl. Trieste: 382. 1897 ≡ *A. ochroleuca* f. *rosea* (Marches.) Fiori in Fiori & Bég., Fl. Italia 2(3): 375. 1902.

Locus classicus: [Italy] “presso alla stazione di Draga”. Type not traced.

Italian distribution – An E European plant, naturalized in Italy for more than thirty years, between 1893 and 1928, in synanthropic environment near Massa (Tuscany) and near Trieste (Friuli Venezia Giulia) – [Figure 35](#).

Anchusa officinalis L., Sp. Pl. 1: 133. 1753.

Locus classicus: “ad Europae ruderata, vias, agros”.

Lectotype (Selvi et al. 1996: 306): [cultivated in the Netherlands] Herb. Clifford: 46.1A (BM 557910).

= *A. angustifolia* L., Sp. Pl. 1: 133. 1753 ≡ *A. officinalis* subsp. *angustifolia* (L.) Nyman, Consp. Fl. Eur.: 510. 1881 ≡ *A. officinalis* L. f. *angustifolia* (L.) Fiori in Fiori & Bég., Fl. Italia 2(3): 375. 1902.

Locus classicus: “in Italia, Germania”. Lectotype (Selvi in Cafferty & Jarvis 2004: 800): s.loc, s.d., s.coll. (Herb. Linnaeus 182.2, LINN!).

= *A. arvalis* Rchb., Iconogr. Bot. Pl. Crit. 3: 83, t. 297 (470). 1825 ≡ *A. officinalis* var. *arvalis* (Rchb.) Nyman, Consp. Fl. Eur.: 510. 1881.

Figure 36. *Anchusa officinalis* map.

Locus classicus: not specified. Lectotype (here designated): [Germany] “*Anchusa arvalis* Rchb. Tab. 297”, *Schleicher* (Herb. Reichenbach, W 1889-0286076).

Note. Erroneously reported in IPNI (www.ipni.org) as published in “Fl. Germ. Excurs. 1: 343. 1831”. The protologue does not include any annotation on type localities, but only an ecological note: “An Aeckerrändern, Feldrainen” [in cultivated fields and on their margins].

=? *A. biceps* Vest. in *Flora* 4(10): 148. 1821 ≡ *A. italica* var. *biceps* (Vest) Guşul., *Bul. Fac. Sti. Cernauti* 1: 107. 1927.

Locus classicus: [Italy, Lombardy] “in pago Suove non procul a Mantua”. Type not traced.

Italian distribution – Widespread in continental Italy, from the Alps to the Po plain; absent in the islands and peninsular regions, where it is replaced by the Mediterranean vicariant *A. undulata* subsp. *hybrida* – Figure 36.

Anchusa sardoa (Illario) Selvi & Bigazzi in *Pl. Biosystems* 132(2): 136. 1998.

≡ *A. crispa* Viv. var. *sardoa* Illario, *Arch. Bot. Forlì* 11: 261. 1935.

Locus classicus: [Italy, Sardinia] “In arenis maritimis Porto Conte”. Lectotype (Selvi & Bigazzi



Figure 37. Italian distribution of *Anchusa sardoa*; the black star indicates the type locality

1998: 136): [Italy, Sardinia] “Porto Conte”, s.d., s.coll. (Herb. Moris, TO).

Italian distribution – A very rare endemic restricted to the type locality in NW Sardinia (Porto Conte, near Alghero) – **Figure 37**.

Anchusa undulata L., *Sp. Pl.* 1: 133. 1753.

Locus classicus: “in Hispaniae, Lusitaniae pratis”. Lectotype (Valdés 1981: 109): “in Hispaniae, Lusitaniae pratis”, s.d., *Löfning 144a*, (Herb. Linnaeus 182.3, LINN!).

Anchusa undulata L. *subsp. hybrida* (Ten.) Bég. in *Nuovo G. Bot. Ital.* 17(4): 634. 1910.

≡ *A. hybrida* Ten., *Prodr. Fl. Nap.*: XIV. 1811 ≡ *A. undulata* L. var. *hybrida* (Ten.) Fiori, *Nuov. Fl. Ital.* 2(2): 267. 1926

Locus classicus: [Italy] not specified. Lectotype (Selvi 1998: 267): [Italy, Campania] “inter Capua et S. Agata”, 1811 (NAP-Tenore).

= *A. crispata* C.Presl, *Fl. Sicul.* (Presl): XXXIII. 1826 ≡ *A. hybrida* subsp. *capellii* var. *crispata* (C. Presl) Nyman, *Consp. Fl. Europ.*: 511. 1881 ≡ *A. hybrida* var. *crispata* (C.Presl) Nicotra, *Syll. Fl. Sic.*: 39. 1893.

Locus classicus: [Italy, Sicily] not specified. Type not traced.

= *A. hybrida* f. *subintegrifolia* Fiori in Fiori & Bég., *Fl. Italia* 2(3): 376. 1902.

Locus classicus: [Italy] not specified. Lectotype (Selvi & Bigazzi 1998: 134): [Italy] “in arvis”, Tenore (Herb. Tenore, NAP!).



Figure 38. Italian distribution of *Anchusa undulata* subsp. *hybrida*; the black star indicates the type locality of this taxon.

= *A. undulata* f. *angustata* Fiori in Fiori & Bég., Fl. Italia 2(3): 376. 1902.

Locus classicus: [Italy] not specified. Lectotype (here designated): [Italy, Calabria] “S. Maria presso Catanzaro”, 7.5.1883, Andrea Fiori, ex herb. Fiori (FI 7153).

Italian distribution – A common Mediterranean species, widespread in insular and peninsular Italy, but rare in Sardinia and Sicily – Figure 38.

Taxa to be excluded

Anchusa aegyptiaca (L.) DC., Prodr. 10: 48. 1846.
= *Lycopsis aegyptiaca* L., Sp. Pl.: 138. 1753.

Locus classicus: [Egypt] “in Aegypto”. Neotype (Mill in Cafferty & Jarvis 2004: 802): [Jordan] “Petra”, 15.3.1974, Boulos & Al-Eisawi 6290 (E 284765; iso- IABH).

Note. The presence in Italy of this E Mediterranean and W Asiatic species has been supposed in some recent Floras (e.g. Pignatti 1982) but cannot be confirmed based on herbarium material or reliable observations.

Anchusa undulata L. subsp. *undulata*

Note. This taxon is mainly distributed in the western Mediterranean (Iberian peninsula), with some iso-

lated, disjunct populations in Greece (Selvi 1998). In spite of the presence of some intermediate populations, it is replaced in Italy by the vicariant subsp. *hybrida*, from which it can be distinguished by the higher insertion level of staminal filaments in the corolla tube.

Pulmonaria mollis Hornem., *Hort. Bot. Hafn.* 1: 179. 1813.

Locus classicus: “Hab. in Austria?”. Holotype (see Sauer 1974: 245): [Germany] “Bavaria”, s.d., *Vahl* (C 10008768).

= *P. tuberosa* Schmidt ex Mart. in *Denkschr. Königl. Akad. Wiss. München* 5: 175. 1817

Locus classicus: [Germany] “In Bavariae subalpinis prope Rosenheim”. Lectotype (here designated): [Germany?] “albo in sylv.”, 1814, [*Schmidt?*] (BR 8484291).

= *P. tuberosa* Schrank in *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 9: 97. 1818, *nom. illeg.*; *P. officinalis* L. var. *tuberosa* (Schrank) Fiori in Fiori & Bég., *Fl. Italia* 2(3): 372. 1902.

Locus classicus: [Austria] “in Carinthia”, [Germany] “in Bavaria prope Rosenheim [...] in horto”. Lectotype (here designated): [cultivated in Germany] “H. Mon. [Horto Monacense]” (M 158762).

Note. The lectotype, consisting of a cultivated plant, perfectly fits the protologue, where the authors says “Hae observationes ad viva specimina, quae pluribus ad hinc annis in horto creverant, factae sunt” [“These observations were based on living specimens, which grew numerous in the garden during these years”].

? = *P. angustifolia* L. var. *oblongata* Schrad. ex Roem. & Schult., *Syst. Veg.*, ed. 15 bis 4: 744. 1819 = *P. officinalis* L. var. *tuberosa* (Schrank) Fiori f. *oblongata* (Schrad. ex Roem. & Schult.) Fiori in Fiori & Bég., *Fl. Italia* 2(3): 372. 1902.

Locus classicus: not specified. Type not traced.

Note. This species is native to C European Province and does not reach the southern sides of the Alps. It was probably confused in the past with *P. australis*, which usually shares with *P. mollis* the broad leaves, unlike in typical *P. angustifolia*.

Symphytum tuberosum L. subsp. *tuberosum*

Note. A taxon from C and W Europe which is replaced in Italy and E Europe by the weakly differentiated subsp. *angustifolium*; it's characterized by shorter faucal scales and staminal filaments, as well by more numerous flowers (8–16(40) vs. 3–8 (20) per cyme).

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