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## Taxa endemic to Campania (southern Italy): nomenclatural and taxonomic notes

EMANUELE DEL GUACCHIO<sup>1,5\*</sup>, MICHELE INNANGI<sup>2,6</sup>, ANTONIO GIACÒ<sup>3</sup>, LORENZO PERUZZI<sup>3,7</sup> & PAOLO CAPUTO<sup>1,4,8</sup>

<sup>1</sup>Botanic Garden, University of Naples “Federico II”, via Foria 223, 80139 Naples, Italy.

<sup>2</sup>Department of Environmental, Biological, Pharmaceutical Sciences and Technologies, University of Campania “Luigi Vanvitelli”, Via Vivaldi 43, 81100 Caserta, Italy.

<sup>3</sup>Department of Biology, University of Pisa, via Derna 1, 56126 Pisa, Italy.

<sup>4</sup>Department of Biology, University of Naples “Federico II”, via Foria 223, 80139 Napoli, Italy.

<sup>5</sup>✉ [edelgua@email.it](mailto:edelgua@email.it); <https://orcid.org/0000-0001-9349-1328>

<sup>6</sup>✉ [michele.innangi@unicampania.it](mailto:michele.innangi@unicampania.it); <https://orcid.org/0000-0003-2362-6025>

<sup>7</sup>✉ [lperuzzi@biologia.unipi.it](mailto:lperuzzi@biologia.unipi.it); <https://orcid.org/0000-0001-9008-273X>

<sup>8</sup>✉ [pacaputo@unina.it](mailto:pacaputo@unina.it); <https://orcid.org/0000-0002-0265-2390>

\*Author for correspondence.

### Abstract

The authors briefly discuss about the list of the taxa endemic to Campania (southern Italy) and the typification of their names. The names *Santolina neapolitana* and *Seseli polyphyllum* (and other linked names) are lectotypified on herbarium specimens kept at LY and BOLO. A new combination at subspecific rank is proposed for *Globularia neapolitana*, validating both a previous invalid proposal and an unpublished lectotypification.

**Keywords:** Italy, Mediterranean, Michele Tenore, nomenclature, Sorrento peninsula

### Introduction

Endemic species are increasingly more studied by biologists, aiming to improve the general understanding of the mechanisms which contributed to the uneven distribution of biological diversity on our planet (Roland 2003, Bruchmann & Hobohm 2014), to assess of the conservation status of a geographic area (Treurnicht *et al.* 2017), and to prioritize conservation efforts (Myers *et al.* 2000, Quiroga *et al.* 2019) in the light of deterioration of biodiversity as a consequence of human actions (Kessler 2001), environmental changes (Fordham & Brook 2010, Ahmadi *et al.* 2019), or a combination of both (Fois *et al.* 2017).

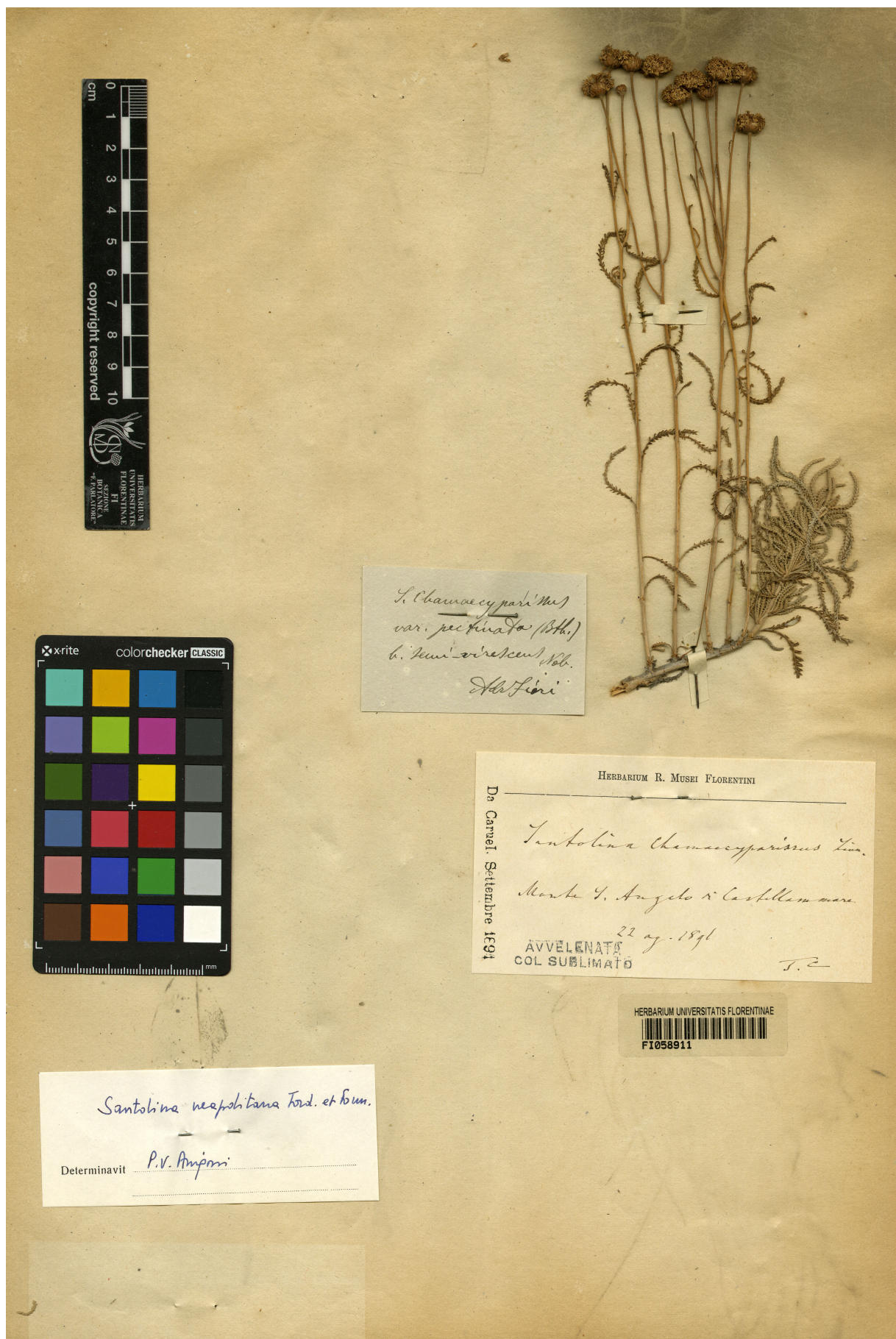
The Mediterranean basin is among the extratropical areas showing the highest richness in endemic vascular plants, approximately 50% of which are narrow endemics (Thomson 2005). In the Mediterranean area, Italy has one of the richest vascular floras, and various taxonomic and systematic studies have been recently dedicated to Italian endemics (e.g., Carlesi & Peruzzi 2012, De Castro *et al.* 2015, 2016, Erben *et al.* 2018, Gargiulo *et al.* 2019) and to their conservation (Brundu *et al.* 2017, Orsenigo *et al.* 2018).

Campania is regarded as a well-known high diversity region in southern Italy, in which, regardless, new endemics may still be discovered (e.g., Carlesi & Peruzzi 2012, Di Gristina *et al.* 2016, Rosati *et al.* 2019). Sadly, however, territories in Campania are largely prone to severe human disturbance as well as to alien invasion (Del Guacchio & La Valva 2018).

With this contribution, we provide information about the typification of the names of Campanian endemics for purposes of nomenclatural stability, and in order to encourage further taxonomic studies. This contribution is part of a long-term research about the nomenclature and taxonomy of the plants endemic to the region (e.g., Del Guacchio 2009, De Castro *et al.* 2013, Del Guacchio & Caputo 2013, Bartolucci *et al.* 2014, Del Guacchio *et al.* 2016, 2019a, 2019b, Vallariello *et al.* 2016, Santangelo *et al.* 2017, Gargiulo *et al.* 2019).



FIGURE 1. Lectotype of the name *Globularia bellidifolia* var. *minor* Ten. (NAP, by permission of the Director).



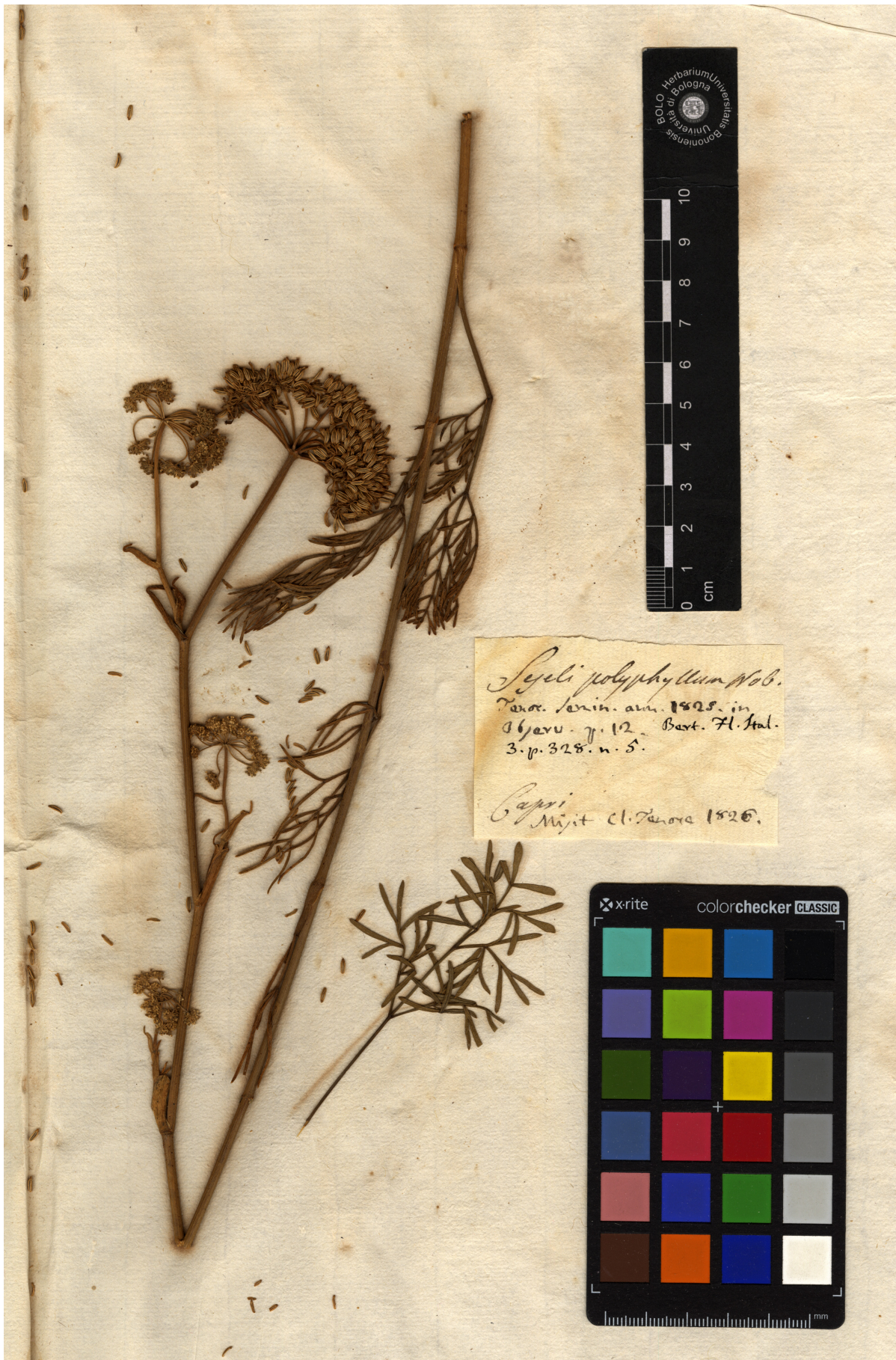
*S. Chamaecyparissias* (L.)  
 var. *pectinata* (Bth.)  
 f. *semi-virens* Fiori  
 Fiori

HERBARIUM R. MUSEI FLORENTINI  
 De Carnel. Settembre 1891  
*Santolina Chamaecyparissias* Linn.  
 Monte S. Angelo di Caspelle mare  
 22 ag. 1891  
 AVVELENATA  
 COL SUBLIMATO  
 J.C.

HERBARIUM UNIVERSITATIS FLORENTINAE  
 F1058911

*Santolina neapolitana* Ford. et Bun.  
 Determinavit P.V. Anjoni

FIGURE 2. Lectotype of the name *Santolina chamaecyparissias* var. *pectinata* f. *semi-virens* Fiori (FI, by permission of the Curator).



**FIGURE 3.** Lectotype of the name *Seseli polyphyllum* Ten. (BOLO, Sistema Museale di Ateneo – Alma Mater Studiorum Università' di Bologna).

## Materials and methods

The list of Campanian endemics has been obtained from Bartolucci *et al.* (2018) and PFI (2020), and critically revised according to previous literature (protologues included) and herbarium researches.

The articles cited throughout text follow Shenzhen Code (Turland *et al.* 2018), ICN hereafter. Relevant specimens were searched in the following herbaria: BOLO, CAT, FI, G, LY, NAP, P, PI, and Z (herbarium codes follow Thiers 2020+). We also employed Euro+Med (2006+), The Plant List (2013+), and IPNI (2020) to check for possible synonyms. Accepted names are listed in bold and in alphabetical order.

**TABLE 1.** Lectotypified names of taxa endemic to Campania. Notes: [1] For the choice of this reference, instead of the presumed contemporary one in Linnaeus (1767b), see Del Guacchio *et al.* (2018: 225). [2] This name was published as a nomen novum, since the name *Centaurea maritima* was already preoccupied at the specific rank. [3] In Iamónico *et al.* (2017), the reference to the combination by Pignatti is erroneous. [4] The authorship of the name, in the protologue, is indicated as “Guss., ined. [in his herbarium] et Pasq.” (Pasquale 1875), and it must be retained because the description and the diagnosis by Pasquale are based on the unpublished diagnosis by Gussone, occurring on the lectotype’s label (Art. 46.5 of ICN). [5] Indicated as the “holotype” by Guarino *et al.* (1997) (Art. 9.10). [6] The alternative name *Stachys tenoreana* Bornmüller (1934: 81) was published simultaneously (Art. 36.3 of ICN).

Taxon	Basionym	Typification
<i>Asperula crassifolia</i> <u>Linnaeus (1767a: 37)</u> (Rubiaceae) [1]		<u>Peruzzi <i>et al.</i> (2013: 827)</u>
<i>Centaurea lacaitae</i> <u>Peruzzi (2008: 114)</u> (Asteraceae) [2]	<i>C. dissecta</i> var. <i>maritima</i> Lacaita ex <u>Fiori (1904: 335)</u>	<u>Santangelo <i>et al.</i> (2017: 124)</u>
<i>Centaurea montaltensis</i> ( <u>Fiori 1907: 187</u> ) <u>Peruzzi (2008: 114)</u> (Asteraceae)	<i>C. dissecta</i> var. <i>maritima</i> f. <i>montaltensis</i> Fiori	<u>Santangelo <i>et al.</i> (2017: 128)</u>
<i>Centaurea tenorei</i> Guss. ex <u>Lacaita (1922: 174)</u> (Asteraceae)		<u>Santangelo <i>et al.</i> (2017: 121)</u>
<i>Cirsium lacaitae</i> <u>Petrak (1914: 456)</u> (Asteraceae)		<u>Del Guacchio <i>et al.</i> (2019a: 273)</u>
<i>Limonium cumanum</i> ( <u>Tenore 1829: 351</u> ) <u>Kuntze (1891: 395)</u> (Plumbaginaceae)	<i>Statice cumana</i> Ten.	<u>Vallariello <i>et al.</i> (2016: 133)</u>
<i>Limonium inarimense</i> ( <u>Gussone 1855: 267</u> ) Pignatti (1955: 84) (Plumbaginaceae)	<i>Statice inarimensis</i> Guss.	<u>Vallariello <i>et al.</i> (2016: 133)</u>
<i>Limonium tenoreanum</i> ( <u>Gussone 1855: 268</u> ) Pignatti (1971: 365) (Plumbaginaceae)	<i>Statice tenoreana</i> Guss.	<u>Iamónico <i>et al.</i> (2017: 447)</u> [3]
<i>Lonicera stabiana</i> Guss. & Pasq. in <u>Pasquale (1875: 142)</u> (Caprifoliaceae) [4]		<u>Guarino <i>et al.</i> (1997: 48)</u> [5]
<i>Stachys recta</i> <u>Linnaeus (1767a: 82)</u> [1] subsp. <i>tenoreana</i> <u>Bornmüller (1934: 81)</u> [6] (Lamiaceae)		<u>Stinca &amp; Esposito (2019: 110)</u>

## The species endemic to Campania

The taxa endemic to Campania (southern Italy) are 27 (Bartolucci *et al.* 2018). However, *Centaurea corensis* Valsecchi & Filigheddu (1991: 235) should be also considered, because it is native to Procida island and only naturalized in Sardinia, where there is the *locus classicus* of this species (Hilpold 2015, Del Guacchio *et al.* 2019b).

Among the Campanian endemic taxa, *Hieracium ramosissimum* Schleicher ex Hegetschweiler (1831: 365) subsp. *garibaldianum* (Fries 1862: 111) Zahn (1921: 846) is “almost unique and prodigious as the person to whom it is dedicated [the Italian military leader Giuseppe Garibaldi]” (Fries 1862). However, it was described on plants collected

in the Kingdom of Naples, which at that time included a large part of central-southern Italy (and sometimes Sicily as well). The specimens were collected by Schlanbusch (otherwise unknown to us) and preserved in the Museum of the Botanical Garden of St. Petersburg. The collections of this institution are now kept at LE, where, however, there is no trace of the syntypes (V. Dorofeyev, pers. comm.). Zahn (1921), in proposing the combination at subspecific rank, did not add any useful detail. Probably, neither he nor later authors (e.g., Fiori 1928) ever studied any original material. At this point, it is impossible to establish if this *Hieracium* was collected in Campania. For this reason, this name has been excluded from the present study.

Based on these data, if we do not take into account taxa described after 1 January 1958, i.e. the starting point after which a taxonomic novelty cannot be validly published without the simultaneous indication of a holotype (Art. 40.1 of ICN), we find 10 typified names (see Table 1). Three names are not yet typified (Peruzzi *et al.* 2015): *Globularia neapolitana* Schwarz (1938: 348) (Plantaginaceae), *Santolina neapolitana* Jordan & Fourreau (1869: 10) (Asteraceae) and *Seseli polyphyllum* Tenore (1825: 12) (Apiaceae).

## Typification of the names

***Globularia cordifolia*** Linnaeus (1753: 96) subsp. ***neapolitana*** (O.Schwarz) Milletti ex Del Guacchio, Innangi & P.Caputo, **comb. et stat. nov.** ≡ *G. neapolitana* Schwarz, Bot. Jahrb. Syst. 69(3): 348. 1938 (basion.)

Type (lectotype here designated by Del Guacchio, Innangi & Caputo):—ITALY. Campania, “Castellammare, in rupium fissuris montis S. Angelo, alt. 1220 m., solo calcareo”, 8 July 1910, *Pellanda - Fl. Ital. Exsicc. n. 1951* [FI, barcode FI002565 (digital image!, available at <http://parlatore.msn.unifi.it/types/search.php>); isolectotypes: FI002564 (digital image!), FI002566 (digital image!), P [barcode P03806270 (digital image!, available at <http://mediaphoto.mnhn.fr/media/>) (a), PI-GUAD [(digital image!, available at <http://jacq.org/detail.php?ID=1562027>), Z [barcode Z000017884 (digital image!, available at <https://www.herbarien.uzh.ch/en/belegsuche.html>), and elsewhere (e.g., CAT, G).

= *Globularia bellidifolia* Tenore (1811: XI), nom. illeg. (Art. 53.1 of ICN), non Salisbury (1796: 52)<sup>1</sup> var. *minor* Tenore (1831: 59), excl. type by Persoon.

Type (lectotype here designated by Del Guacchio & Caputo):—ITALY. Campania, “Castellammare = Matese”, *s.d.*, *s.c.* *s.n.* (NAP – Collection “Tenore”!, for an image of the lectotype, see Fig. 1).

– *Globularia nana* sensu Ten., non Lamarck (1788: 731) (for further misapplied names, see Guadagno 1932).

– “*Globularia cordifolia* subsp. *neapolitana* (O.Schwarz) Milletti (1987: 116)”, comb. inval. (Art. 30.9 of ICN).

**Lectotypification:**—According to Milletti (1987), the “holotype” presumably was once preserved at B, but became destroyed, so that she indicated a duplicate kept at FI as the lectotype. Actually, three compatible duplicates are present at FI: barcodes FI002564, FI002565, FI002566 (while FI002567 is not original material, even if filed as “type” at FI). In the protologue, Schwarz (1938) cited as type “In Monte San Angelo prope Neapolitanam (Pellanda – Typus)”. According to Arts. 9.6 and 40 Note 1 of ICN, these specimens collected by Pellanda (i.e., *Flora Italica Exsiccata n. 1951*) are syntypes. Other original material cited by Schwarz (1938) is represented by several further specimens reported among the examined material from Capri island (Mt. Solaro) and kept in the herbaria of Haussknecht and Bornmüller: these specimens are paratypes (Art. 9.7 Note 5). The selected specimen at FI (barcode FI002565) consists of several pieces (from different individuals?), some of which showing flowering scapes, the remaining ones sterile shoots. The label matches the protologue and the plants show the typical features of this species, namely about the presence of stolons, the minute leaves with rotundate-cuneate and leaves with crenate margins, and the bracts more or less abruptly contracted to an awn in the distal half. It is the richest specimen among the original material in FI.

Tenore (1831: 59) published the name *Globularia bellidifolia* var. *minor* providing a succinct Latin description: “scapo pollicari; foliis parvis” (transl.: “with scape about 2.5 cm long; small leaves”), and localities (“Monte di Castellammare: all’Acqua Santa; Capri: al Monte Solaro”). Tenore’s concept of *G. bellidifolia* var. *minor* is problematic. In fact, after several misapplications, he finally decided to include this within *G. bellidifolia* Tenore (1811: XI) (= *G.*

<sup>1</sup> Salisbury (1796: 52) wrote only: “GLOBULARIA [...] *Bellidifolia* 2. *G. spinosa*. Linn. *Sp. pl. ed. 2 p.* 139?”. Curiously, on one hand, the name by Salisbury is not invalid, even if lacking any description, because of the reference to the previous diagnosis of *G. spinosa* by Linnaeus (1762: 139) (Art. 38.13 of ICN); on the other hand, this latter citation does not make the name by Salisbury as superfluous and then illegitimate, because of the question mark (Art. 52.2 Note 1 of ICN).

*meridionalis*) as a distinct variety (Tenore 1831). However, in his opinion, this taxon should correspond to a plant gathered in France and labelled as *G. nana* by Persoon: “*G. nana*. Persoon plantae exsicc. ex Gallia merid., non DC.” (Tenore 1831). This specimen gathering is automatically a syntype (Art. 9.6 of ICN). We were not able to locate and study this material. We therefore choose another specimen at NAP, in the Tenore’s collection (Fig. 1), which, even if lacking date and not reporting the combination *G. bellidifolia* var. *minor*, recounts on the label all the afterthoughts of the author in time. The label attests that the specimen was handled by Tenore since the adoption of the first name in the label, i.e. *G. nana*, already published in Tenore (1829: 118) and then corrected later. The label is written by more than one hand, and reports the name “*Globularia nana*”, in what we think being the cursive of an early Tenore. Subsequently, the adjective “*nana*” was corrected, in Tenore’s usual handwriting, into “*bellidifolia*”, later into “*nana*”, and finally into “*bellidifolia* var.  $\beta$  *nana* Pers. pl. exsicc. ex Tenore”. Even if fragmented, there is only one individual on the sheet. At the bottom of the label several localities are reported: the first gathering locality, i. e. “Castellammare” (which is to be regarded as the origin of the single individual on the sheet), the sign “=” (which indicates further localities where the plant was observed or collected), a scribbled out and almost illegible name (presumably “Monti del Regno”, i.e. “Mounts of the Kingdom of Naples”), replaced by “Matese” (a massif between central and southern Italy), another equal sign, and finally the locality “Majella” (a massif in central Italy), later barred as well. The localities were all clearly handwritten by Gussone, who was almost certainly the first collector of the plant on the mounts of Castellammare (*locus classicus*), possibly already in 1811 (cf. Gussone & Casale 1811). For his part, Tenore provided the identifications. The specimen is referable to *Globularia neapolitana*, on account of the small rotundate-crenate leaves, the presence of stolons and the shape of the bracts. A label by M. Ricciardi confirms this identification.

**Taxonomy:**—The distinctiveness of this taxon with respect to *Globularia cordifolia*, occurring in Campania as well (PFI 2020), has been debated since long time (see e.g., Milletti 1987, Salerno *et al.* 2007, Bartolucci *et al.* 2018). According to literature, the most useful characters to distinguish *G. neapolitana* are the presence of stolons, the very small leaves, mostly rhomboidal-ovate or obcordate at the apex, the involucre bracts abruptly contracted into an awn, and the calyx with tube shorter than teeth (Schwarz 1938, Pignatti 1982, 2018, Pignatti *et al.* 2019). However, many authors pointed out the difficulty to discriminate them in several cases, especially on some mountains of inner Campania, e.g. Mt. Garofalo and Mt. Terminio (Moraldo *et al.* 1988), where actually intermediate populations can be observed (pers. obs.). A molecular study would be desirable, even if preliminary results suggest that *G. cordifolia* and *G. neapolitana* (with other taxa) belong to a monophyletic group (Comes & Kadereit 2001). A recent morphometric study, based on some of the most relevant characters on Italian and Croatian populations, concludes that the morphological variability within *G. cordifolia* species complex could be explained by environmental variables (Innangi *et al.*, 2020). These authors, however, refrain from definitive taxonomic implications. Similar conclusions were already stated by Milletti (1987), who observed that, in the Italian populations of *G. cordifolia* species complex, the putative diagnostic features segregate independently. In particular, no correlation can be highlighted between floral and vegetative characters, the variation of bract shape is continuous without taxonomic correlation, and the ratio between teeth and tube of the calyx is not useful to discriminate taxa. Finally, Milletti (l.c.) observed a remarkable uniformity from a karyological point of view [but see Milletti & Moro (1988) for *G. neapolitana*]. Therefore, Milletti (1987) concluded that no taxonomic separation between *G. cordifolia* and *G. meridionalis* (Podpěra 1902: 668) Schwarz (1938: 345) can be successfully granted, only recognizing *G. neapolitana* as a weakly distinct taxon, lacking autapomorphies, but constantly characterized by a pattern of morphological features referable to an adaptation to xeromorphic habitats. More importantly, she verified that these features persist in cultivation. Namely, she proposed a subspecific rank (and we agree on this choice), but unfortunately her monographic study remained unpublished (Bechi *et al.* 1996). Later, Milletti & Moro (1988) used again this combination, but without validating it with a direct reference to the basionym (Art. 41.8).

As for the name *Globularia bellidifolia* var. *minor*, even if it was published under the homonym and illegitimate *G. bellidifolia* by Tenore, it is nevertheless valid and legitimate (Art. 55.2 of ICN): it is not available for use, but might serve as a basionym for another combination (Art. 55.2, Note 1 of ICN). As it has not priority outside the varietal rank (Art. 11.2 of ICN), we prefer to employ the combination informally proposed by Milletti, for the following reasons: the name by Schwarz is unequivocal and largely accepted, and abundant type material is available for it.

**Distribution and conservation:**—*Globularia cordifolia* subsp. *neapolitana* is reported for cliffs, ridges, niches, and rocky slopes, from (150–)400 to 1400(–1800) m a.s.l., on limestones and dolomites in the Peninsula of Sorrento on mounts Lattari, Capri island, mounts Picentini (Mt. Terminio and Mt. Garofalo) (Salerno *et al.* 2007, Moraldo *et al.* 1988), and Mt. Camposauro (Corazzi 2008). The distribution of this subspecies should be regarded as provisional. This taxon is protected by a regional law (L.R. 40/94), but on account of its debated distribution and taxonomy, it has been

variously categorized by different authors (Conti *et al.* 1992, 1997, Pignatti *et al.* 2001, Innangi *et al.* 2011, Orsenigo *et al.* 2018).

*Santolina neapolitana* Jordan & Fourreau (1869: 10) ≡ *S. chamaecyparissus* (Linnaeus 1753: 842) var. *neapolitana* (Jord. & Fourr.) Fiori (1927: 660) ≡ *S. pinnata* Viviani (1802: 31) subsp. *neapolitana* (Jord. & Fourr.) Guinea ex Jeffrey (1980: 322).

Type (lectotype here designated by Giacobbe, Del Guacchio & Peruzzi):—ITALY. Campania, “Mt. St. Angelo, près Castellammare”, 12 July 1846, *Cosson s.n.* [LY, Herb. Jordan, barcode LY0826374 (digital image!, for an image of the lectotype, see <https://explore.recolnat.org/occurrence/FD4C754E51EE4945A4443F0E9EEE2BC2>)].

= *Santolina chamaecyparissus* Linnaeus (1753: 842) var. *pectinata* Fiori (1903: 270) f. *semi-virescens* Fiori (1903: 270), *syn. nov.* ≡ *S. neapolitana* Jord. & Fourr. f. *semi-virescens* (Fiori) Lacaita (1925: 219) ≡ *S. chamaecyparissus* L. var. *neapolitana* Jord. & Fourr. f. *semi-virescens* (Fiori) Fiori (1927: 660).

Type (lectotype here designated by Del Guacchio & Caputo):—ITALY. Campania, Monte S. Angelo di Castellammare, 22 August 1891, *Caruel s.n.* [FI, barcode FI058911, under the name *S. chamaecyparissus* (digital image!, for an image of the lectotype, see Fig. 2)]. – see Lacaita (1925) and Jeffrey (1980) for a list of misapplied names.

**Lectotypification:**—Jordan & Fourreau (1869) published this name with a detailed Latin description, indicating the locality (“Ital. austr. *Castellammare*, prope Neapolim” [“In southern Italy in Castellammare di Stabia, near Naples”]), and providing a coloured illustration (plate CCXXVIII), which is original material for the name. Before that time, this taxon was included in the variability of *Santolina pectinata* Benth (1826: 117), *nom. illeg.*, non *S. pectinata* Lagasca (1816: 25) (Art. 53.1 of ICN) [= *S. benthamiana* Jordan & Fourreau (1869: 10)]. We traced in LY, where material by Jordan is preserved in a special collection, a specimen collected by Cosson in 1846, which is conserved in Jordan’s herbarium. Claude Alexis Jordan (1814–1897) was in contact with a great number of other botanists, and was in the habit of exchanging material with them in order to enrich his herbarium and the collections in his garden (Vicente *et al.* 2015). A large collection of exsiccata collected in Africa, and several other Cosson’s specimens, are conserved at LY in Jordan’s herbarium (Roux & Coulomb 1907). The specimen in LY is the only pertinent (M. Thiébaud, pers. comm.), and we were not able to trace further material at BM, G, K, MPU, and P, i.e. the other herbaria for which relevant Jordan collections are known (Stafleu & Cowan 1979). The specimen in LY is well preserved and consists of two flowering branches. On the label, apparently handwritten by Jordan himself, we find a previous identification as *Santolina “chamaecyparissias”*, later amended into “*neapolitana* J. et F.”. The gathering predates the protologue, and then it can be considered as original material. The material (also revised by A.O. Rivero-Guerra) clearly shows the diagnostic features of this taxon in its current circumscription (Arrigoni 1982, 2018). Therefore, as a specimen is generally to be preferred over an illustration (Jarvis 2007: 21–22), we designate the specimen in LY as the lectotype of the name *S. neapolitana*.

The name *Santolina chamaecyparissias* var. *pectinata* f. *semi-virescens* was published by Fiori (1903) with a diagnosis in Italian (as allowed at that time, see Art. 39.1 of ICN), and with a dubitative synonymy (“= *S. neapolitana* Jord. et Fourr.?”). Fiori (1903) proposed the combination “*S. chamaecyparissias* var. *pectinata* (Benth.) Fiori”. As the name *Santolina pectinata* (Benth 1826: 117) is illegitimate because it is a later homonym of *S. pectinata* Lag. (Art. 53.1 of ICN), the correct citation at varietal rank is *S. chamaecyparissus* var. *pectinata* Fiori (Art. 58.1 of ICN). At FI (where most of Fiori’s collections are preserved), a pertinent specimen is available (barcode FI058911; Fig. 2). It is represented by a branch with several flowering stems and by a sterile shoot, collected by Teodoro Caruel on Mt. S. Angelo in 1891. It bears a label handwritten by Fiori with his complete form’s name, and a further label by P.V. Arrigoni, who identified it with *S. neapolitana*. This specimen clearly shows the above-mentioned diagnostic feature of this form, and it is obvious original material. After our lectotypification, this name represents a new heterotypic synonym of *S. neapolitana*.

**Taxonomy:**—*Santolina neapolitana* can be distinguished from other Italian taxa on account of the following features: golden-yellow flowers, yellow anthers, leaves whitish- or greyish-tomentose with segments up to 6 mm long and distant, flowering stems branched and not enlarged above the (usually) cup-shaped heads<sup>2</sup>, these latter 7–12 mm in diameter (Arrigoni 1982, 2018). The distinct geographical range supports the distinction at specific rank as well: this species is the only *Santolina* native to Campania (PFI 2020). In a recent molecular study on the genus based on sequences from four non-coding regions of cpDNA (Carbajal *et al.* 2017), *S. neapolitana* falls within the clade of *S. chamaecyparissus* aggregate, but it is not strictly related neither to *S. etrusca* nor to any other Italian endemic species. 2 Pignatti *et al.* (2019) report as diagnostic the shape of the heads. They are normally cup-shaped, but they can be, or become, hemispheric even in the same plant (see also the keys and descriptions in Arrigoni 1982, 2018).



Concerning the name *S. chamaecyparissus* var. *pectinata* f. *semi-virescens*, Fiori (1903) described plants covered by whitish tomentum only on not-flowering shoots, and otherwise glabrescent and greenish. As already clarified by Lacaita (1925), who included this form in *S. neapolitana*, this variant occurs among typical individuals of *S. neapolitana*. Fiori (1927) himself accepted the inclusion of this form in *S. chamaecyparissus* var. *neapolitana*. In our opinion, this variation does not deserve any formal taxonomic recognition in a modern treatment, because it seems a morph linked to shady places. Moreover, we noticed that flowering shoots are normally less hairy than sterile shoots (pers. obs.).

**Distribution and conservation:**—This species is more common on hills and mountains from (100–)200 to 1100(–1450) m a.s.l., and it grows on rocky slopes, especially landslides, and garigues, more often in open and dry places, less frequently on cliffs and in open woods (only found on calcareous or calcareous-marl substratum). It is known only for the peninsula of Sorrento (including the mounts of Cava de’ Tirreni), Picentini Mounts (Mt. Terminio and Mt. Vernacolo) (Moraldo *et al.* 1988, Salerno *et al.* 2007), and the hills of Salerno (Mt. Stella) (Herb. *E. Del Guacchio*). It is incidentally indicated also for Capri island (La Valva 1992: 136), but presumably by mistake. On the contrary, the reports for Central and North-western Italy (e.g., Lacaita 1925, Fiori 1927) refer to other species (Arrigoni 1982). *Santolina neapolitana* was previously reported as at Lower Risk (LR) (Conti *et al.* 1992, 1997, Pignatti *et al.* 2001), but it is nowadays assessed as Endangered (EN) (Rossi *et al.* 2013, Orsenigo *et al.* 2018). Actually, its distribution is rather fragmented outside the peninsula of Sorrento, but the plant is locally abundant. It is protected by local laws (L.R. 40/94).

***Seseli polyphyllum*** Tenore (1825: 12) ≡ *S. montanum* Linnaeus (1753: 259) var. *typicum* Paoletti, nom. inval. (Art. 24.3 of ICN) f. *polyphyllum* (Ten.) Paoletti (1900: 167) ≡ *S. montanum* L. var. *polyphyllum* (Ten.) Fiori (1925: 53) ≡ *S. montanum* subsp. *polyphyllum* (Ten.) P.W.Ball in Heywood (1968: 64).

Type (lectotype here designated by Del Guacchio & Caputo):—ITALY. Campania, “Capri”, s.d., s. coll. s.n. (BOLO [digital image!], Fig. 3).

= *Seseli polyphyllum* Ten. f. *puberulum* Gamisans (1972: 60 [in note]).

Type:—ITALY. Campania, “Prov. di Salerno: in rupestribus calcareis prope Majori, alt. 100 m. circ.”, September 1908, *A. Di Palma* – *Fl. Ital. Exsicc. n. 1093* (holotype G, herb. Burnat, barcode G00832001); isolectotypes at LY [barcode LY0257612 (digital image!, available at <https://explore.recolnat.org/occurrence/50B00C5F06A948E78E3164AADE68CAA3>), LY0257613 (digital image!, available at <https://api.gbif.org/v1/image/unsafe/http%3A%2F%2Fherbarium.univie.ac.at%2Fdatabase%2Fimage.php%3Ffilename%3D1426784%26method%3Deuropeana>)], PI-GUAD [digital image!, available at <https://api.gbif.org/v1/image/unsafe/http%3A%2F%2Fherbarium.univie.ac.at%2Fdatabase%2Fimage.php%3Ffilename%3D1426784%26method%3Deuropeana>], and elsewhere (CAT, FI, etc.).

– “*Seseli polyphyllum* Ten. f. *nanum* Lacaita”, in herb. [FI, barcode FI001496 (digital image!, available at <http://parlatore.msn.unifi.it/types/search.php>)].

– “*Seseli polyphyllum* Ten. var. *nanum* Lacaita”, in herb. [FI, barcodes FI001495 and FI001497 (digital images!, available at <http://parlatore.msn.unifi.it/types/search.php>)].

– see Tenore (1831) for a list of misapplied names.

**Lectotypification:**—Tenore (1825: 12) described this species by Latin description and diagnosis, and also providing localities (“in Capri island and in other places”). At NAP, a specimen with mixed and presumably heterogeneous material occurs. Together with fruiting stems attributable to *Seseli polyphyllum*, we found atypical fragments with very long bracts, exceeding the raylets, and possibly related to *S. montanum*. In fact, while the first label reports “Castellammare Capri”, the other one reports “in tutti i monti del Regno” (= “on every mount of the Kingdom [of Naples]”). This material, even if concurring with the protologue, lacks any date and includes material from different gatherings, without chance of associating reliably a part of it to a single label. It is therefore not suitable for lectotypification purposes. Fortunately, Tenore usually sent several specimens of his taxa to other botanist, such as Antonio Bertoloni (Del Guacchio & Caputo 2008). This is true also for *S. polyphyllum*: a specimen sent to J. Gay in 1830 is still preserved at K (barcode K000695777), for instance. More interestingly, at BOLO, it can be found a specimen sent to A. Bertoloni in 1826, and collected in Capri island. However, Tenore did not visit Capri island neither in 1825 nor in 1826, so that the specimen was almost certainly gathered previously (Tenore 1832), and can be therefore regarded as original material. It includes a flowering and fruiting stem, and clearly shows the diagnostic features of this taxon, among which the generally wide leaf lobes, the umbrella with many (13–16) angulate rays, raylets shorter than peduncles, and

the costae of fruit narrower than vittae. This specimen, supporting the current use of the name, is therefore a suitable choice for a lectotype.

Concerning the holotype of the form described by Gamisans (1972), we have to note that the pertinent number 1093 of *Flora Italica exsiccata* apparently refers to two different gatherings, i.e. in September and November 1908, respectively, for providing flowering and fruiting plants (Art. 40.1, Ex. 1 of ICN). However, in our opinion, as Gamisans designated a single specimen in G-BU, its holotype indication (and its combination) can be accepted, if intended as limited to the flowering individual, in which the single diagnostic character can be observed.

**Taxonomy:**—The specific distinction of *Seseli polyphyllum* has been debated within the *S. montanum* aggregate (e.g., Lacaita 1909, 1911, Fiori 1925, Ball 1968). *S. polyphyllum* can be readily distinguished from the almost sympatric *S. tommasinii* (Reichenbach 1863: 34) for the obovate fruits, with acutely angled ridges (vs. fruits ovate with rounded ridges in *S. tommasinii*), the shape of umbrella (hemispheric because of more or less equalling rays in *S. polyphyllum* vs. flattened because of very unequal rays in *S. tommasinii*), the ray number (10–20 vs. less than 10 in *S. tommasinii*), the segments of basal leaves (linear-obovate in *S. polyphyllum* vs. linear or linear-lanceolate, longer in *S. tommasinii*) and, at a lesser extent, the usually reduced height (up to 1 m in *S. tommasinii*), and the stem not branched at the base. Indeed, morphologically *S. polyphyllum* resembles more closely *S. montanum* (Gamisans 1972), to which it is very close also by a molecular standpoint (Lyskov *et al.* 2018). The most useful characters to distinguish the latter species pair are again the number or rays (10–20 in *S. polyphyllum* vs. 6–12 in *S. montanum*), the width of the leaf lobes (1–2 mm wide in *S. polyphyllum* vs. 0.5–1 mm in *S. montanum*), and the raylet bracts, which, as a rule, in *S. polyphyllum* are clearly shorter than pedicels, while in *S. montanum* they can reach the base of fruits. On the contrary, the leaf segments of *S. polyphyllum* are not shorter than those of *S. montanum* in well-developed individuals (Ball 1968). Finally, the leaves of *S. polyphyllum* are normally glaucous, and somehow fleshy, especially near the sea. We provisionally accept the separation of these two taxa at specific level, although it must be noted that outside Capri island and the Peninsula of Sorrento, such a separation is sometimes critical (pers. obs.), as documented by numerous misidentifications (see the paragraph “Distribution and conservation”). No taxonomic recognition can be granted for *S. polyphyllum* f. *puberulum* (Gamisans 1972), a name applying to individuals with adaxially hairy petals, but otherwise typical. Both *G. cordifolia* subsp. *neapolitana* and *S. polyphyllum* may have segregated after that Pleistocene glacial cycles drove isolation to marginal reliefs of Campania, as already hypothesized by Guadagno (1932). In fact, the closest taxa, i.e. *G. cordifolia* subsp. *cordifolia* and *S. montanum* respectively, usually grow at higher altitudes.

**Distribution and conservation:**—*Seseli polyphyllum* can be found on calcareous cliffs and rocky slopes, rarely walls, up to 900(–1400) m a.s.l. in Capri island, Peninsula of Sorrento, Partenio mounts (Moraldo & La Valva 1989), and Cilento (Corbetta *et al.* 2000, Aronne *et al.* 2014). In our opinion, the distribution of this species, often difficult to identify, still requires further study (Terracciano 1878, Lacaita 1909, 1921, Pignatti 1982), and it was erroneously reported for several other regions (PFI 2020). This species is protected by a regional law (L.R. 40/94), and it was former listed as LR (Lower Risk) by Conti *et al.* (1992, 1997), or more recently as LC (Least Concern) by Orsenigo *et al.* (2018).

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