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Taxonomical, Morphological and Geobotanical Considerations on *Seseli tortuosum* L. (*Apiaceae*) from Sicily

By

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With 4 Figures

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Summary

BRULLO C., BRULLO S., GIUSSO DEL GALDO G. & SCIANDRELLO S. 2011. Taxonomical, morphological and geobotanical considerations on *Seseli tortuosum* L. (*Apiaceae*) from Sicily. – *Phyton* (Horn, Austria) 51(2): 201–210, with 4 figures.

Seseli tortuosum L. is represented in Sicily by populations occurring in two distinct habitats, i. e. on sandy coasts and inland rocky substrata. In-depth morphological analyses have stressed that these populations differ also in habit, leaves, inflorescences, flowers and fruits. Apart from their morphology and ecology, they show a different chromosome complement, tetraploid ($2n = 44$) and diploid ($2n = 22$), respectively. From the taxonomic judgement, the inland populations can be attributed to the Linnean type, while the psammophilous ones relate to a well distinct taxon, previously described as *S. tortuosum* var. *maritimum* GUSS. Based on these outcomes, the latter populations should be treated at subspecific level, and thus we propose to refer them to *S. tortuosum* L. subsp. *tortuosum* and subsp. *maritimum* (GUSS.) C. BRULLO, S. BRULLO, GIUSSO & SCIANDRELLO stat. nov., respectively.

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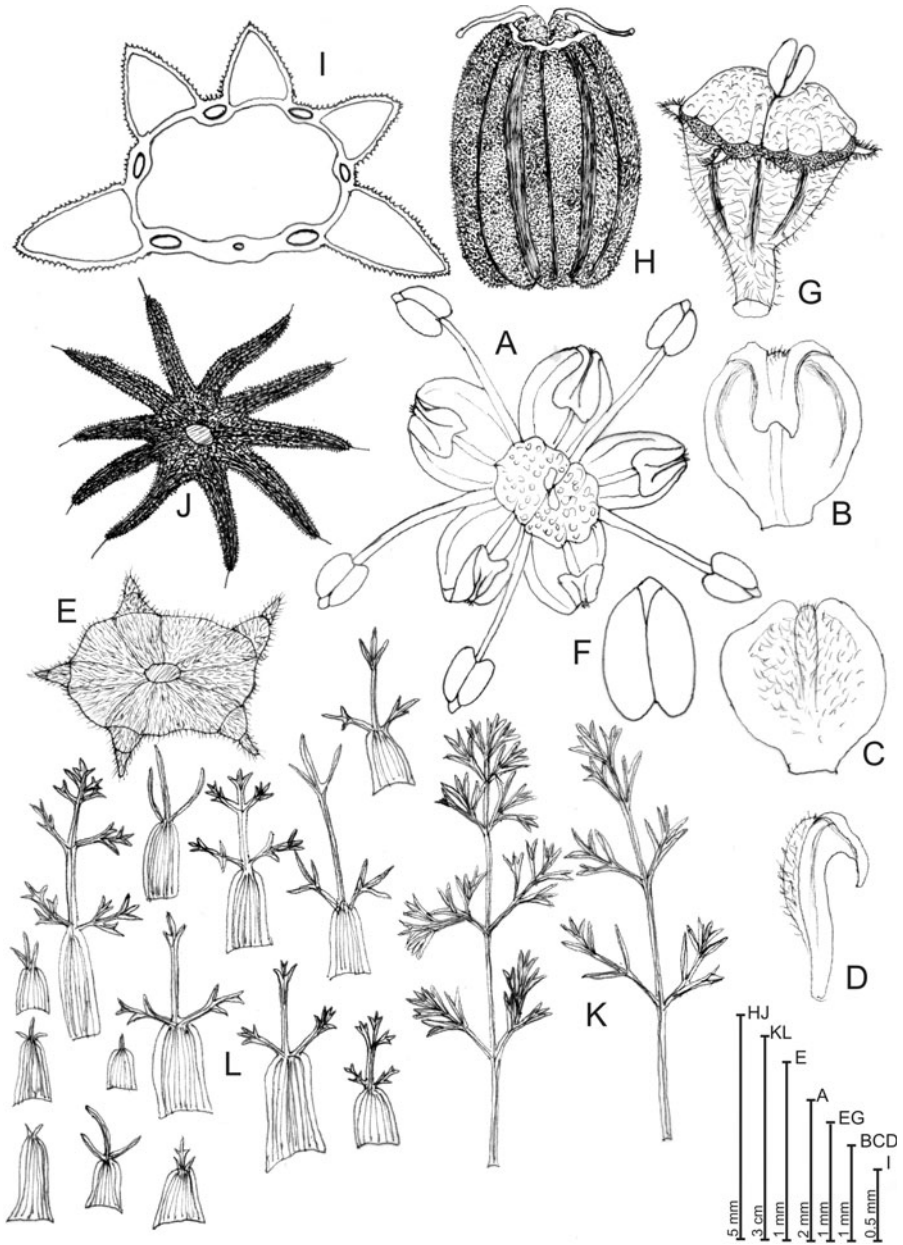


Fig. 1. *Seseli tortuosum* subsp. *tortuosum*. A flower. – B petal (ventral view). – C petal (dorsal view). – D petal (lateral view). – E sepals and ovary (basal view). – F anther. – G pistil. – H fruit. – I mericarp cross section. – J bracteoles. – K basal leaves (terminal part). – L cauline leaves.

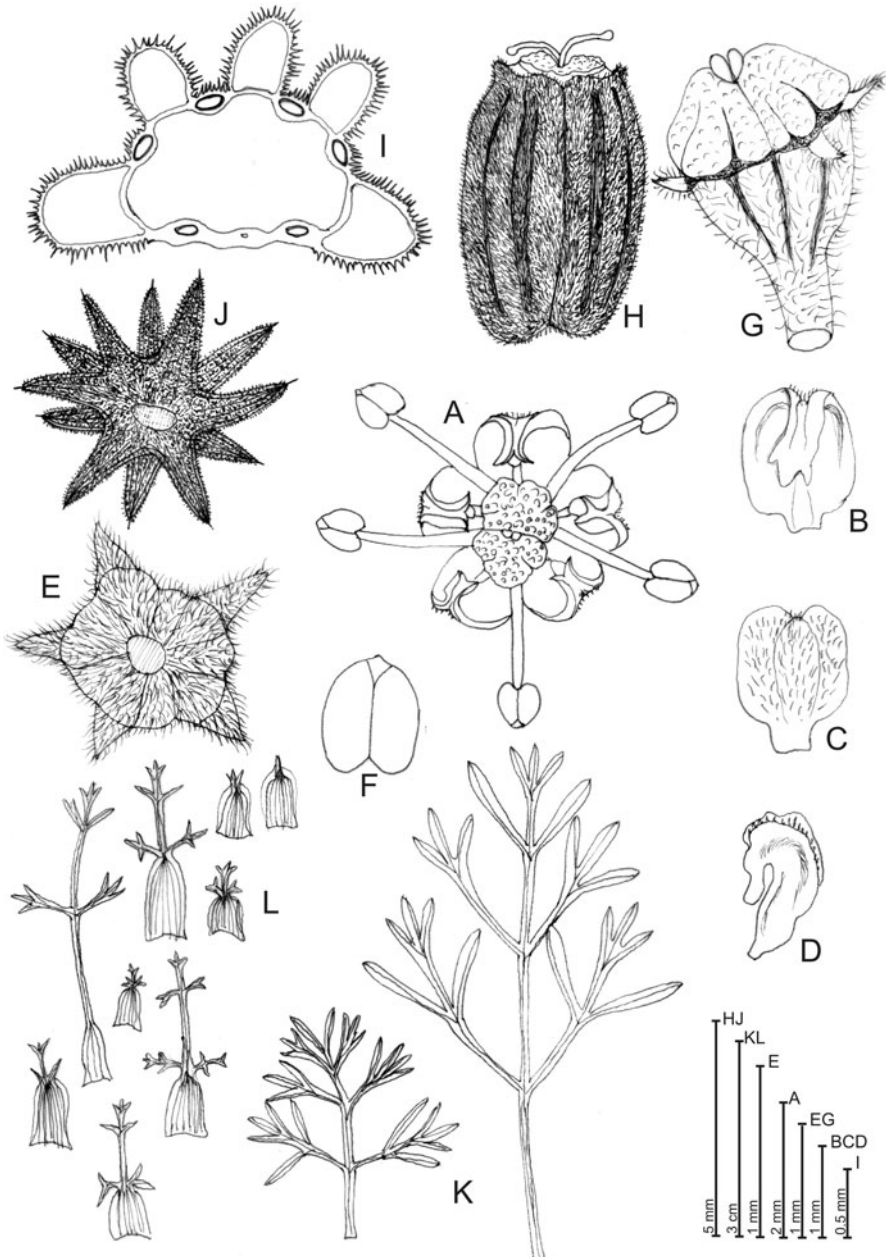


Fig. 2. *Seseli tortuosum* subsp. *maritimum*. A flower. - B petal (ventral view). - C petal (dorsal view). - D petal (lateral view). - E sepals and ovary (basal view). - F anther. - G pistil. - H fruit. - I mericarp cross section. - J bracteoles. - K basal leaves (terminal part). - L cauline leaves.

Zusammenfassung

BRULLO C., BRULLO S., GIUSSO DEL GALDO G. & SCIANDRELLO S. 2011. Taxonomical, morphological and geobotanical considerations on *Seseli tortuosum* L. (*Apiaceae*) from Sicily. [Taxonomische, morphologische und geobotanische Überlegungen zu *Seseli tortuosum* L. (*Apiaceae*) von Sizilien.] – *Phyton* (Horn, Austria) 51(2): 201–210, mit 4 Abbildungen.

Populationen von *Seseli tortuosum* finden sich in Sizilien einerseits an Sandküsten, andererseits an felsigen Inland-Standorten. Genaue morphologische Untersuchungen haben ergeben, daß die Pflanzen der beiden Standortstypen auch durch einige morphologische Merkmale verschieden sind, vor allem in Habitus, Blatt, Infloreszenz, Blüte und Frucht. Weiters unterscheiden sie sich in der Chromosomenzahl: die Sandküsten-Populationen sind tetraploid mit $2n = 44$, die anderen diploid mit $2n = 22$. Taxonomisch können die Inland-Populationen dem linneischen Typus zugeordnet werden, während die Sandküsten-Populationen schon früh als *S. tortuosum* var. *maritimum* GUSS. beschrieben worden sind. Aufgrund der vorgelegten Ergebnisse erscheint der Rang der Subspecies eher gerechtfertigt, also *S. tortuosum* L. subsp. *tortuosum* und *S. tortuosum* L. subsp. *maritimum* (GUSS.) C. BRULLO, S. BRULLO, GIUSSO & SCIANDRELLO stat. nov.

1. Introduction

In the frame of taxonomical investigations on the Sicilian flora (cf. for e. g. BRULLO C. & al. 2009, 2011), the populations of *Seseli tortuosum* L. occurring in this territory were examined. This species, having a wide Mediterranean-Pontic-Irano-Turanian distribution, is represented in Sicily by clearly well distinct ecotypes, one growing on inland rocky substrata and the other occurring in coastal sandy places. From the morphological viewpoint, the plants growing in these habitats are well differentiated in respect to habit, stem branching, leaves, inflorescences, and bracteoles. Such morphological differences were already emphasized by GUSSONE 1827, who described the psammophilous populations as *S. tortuosum* var. *maritimum*, which are differentiated from the type for the reduced and branched stems, leaflets shorter but larger and denser, bracteoles twice as much shorter than the umbel rays. GUSSONE quoted this taxon from Trapani to Capo Passero, Catania, Messina, Oliveri, Cefalù, Levanzo and Favignana. This treatment was also followed by LOJACONO-POIERO 1891, PAOLETTI 1900, FIORI 1925 and, more recently, by GIARDINA & al. 2007. In order to clarify the systematic position of the plants at issue, field and herbarium investigations, literature researches, and in-depth morphological analyses were carried out. The results show clearly that the Sicilian populations found on coastal sands are well differentiated from those ones occurring in the inland rocky stands, especially in their morphology, karyology, ecology, and chorology.

2. Results

Based on field investigations and in-depth morphological and anatomical analyses, the psammophilous plants are rather diverging from those ones occurring on inland rocky substrata. The differences in morphological features allow to distinguish them very well.

2.1. Psammophilous Populations

The psammophilous populations are characterized by a pulvinate hemispheric habit due to the occurrence of many prostrate-ascending and branched stems. Leaves thickened, gradually shorter upwards, the basal ones with segments 1.5–2.5 mm wide, bracteoles 10–12, usually arranged in two whorls, 1–1.3 mm wide at base, abruptly ending in a short arista, sepals 0.5–1 mm long, petals 1.2–1.3 mm long with apex ventrally curved up to half of the limb, anthers 0.5–0.6 mm long, styles 0.1–0.2 mm long, 1–1.2 mm long in fruit, not exceeding the stylopodium, mericarps with hairs 0.1–0.2 mm long. The fruits show in section ridges subrounded and densely hairy.

The chromosome complement is tetraploid with $2n = 4x = 44$ (see BRULLO & al. 1978).

2.2. Inland Populations

The inland populations of *S. tortuosum* are characterized by loose habit, stems simple, erect, branched below, leaves well spaced, basal ones with segments 0.7–1.5 mm wide, bracteoles 7–9 in a single whorl, 0.5–0.8 mm wide at base, gradually ending in a long arista, sepals 0.2–0.5 mm long, petals 1.5–1.8 mm long with apex ventrally curved up to 1/4 distal of the limb, anthers 0.7–1 mm long, styles 0.3–0.4 mm long, 1.5–2 mm long in fruit, much longer than the stylopodium, mericarps with hairs 0.5–1 mm long. The fruits have ridges ovate-subtriangular and minutely pubescent, all characters already highlighted in the original water-coloured iconography published by REICHENBACH 1867.

The inland plants differ also karyologically, they are diploid with $2n = 2x = 22$ (see GARDÉ & MALHEIROS-GARDÉ 1949, CAUWET 1967, 1968, PARDO 1982).

3. Taxonomic Treatment

Due to these morphological and karyological differences, as well as to the different ecological requirements, the population groups should be treated as two distinct taxa, that are adequately ranked at subspecific level.

3.1 *Seseli tortuosum* L., Sp. Pl. 1: 260, 1753, subsp. *tortuosum* (Fig. 1, 3)

Lectotypus: Herb. Clifford: 99. Oenanthe 6 (BM-000558323), designated by REDURON & JARVIS in JARVIS & al. 1993.



Fig. 3. Habit of *Seseli tortuosum* subsp. *tortuosum* in the wild (Sicily, S. Cono, near Caltagirone).



Fig. 4. Habit of *Seseli tortuosum* subsp. *maritimum* in the wild (Sicily, Foce del Simeto).

Iconography: REICHENBACH, Icon. Fl. Germ. Helv.21, Tab. MCMVI, 1867; FIORI, Fl. Ital. Ill., Tav. 2288, 1933; h. l. Fig. 1, 3.

Distribution: It is widely spread in the Mediterranean territories, with penetration into the Pontic and Irano-Turanian territories.

Ecology: in Sicily *S. t.* subsp. *tortuosum* grows on many different substrata (limestone, marl, schist, gneiss, etc.), especially on stands characterized by rocky outcrops with eroded and initial soils. This plant is quite rare, and it chiefly occurs within thermo-xerophilous grasslands dominated by *Ampelodesmos mauritanicus* (POIR.) DUR. & SCH., belonging to the class Lygeo-Stipetea RIVAS-MARTINEZ 1978 (see BRULLO & al. 2010).

Specimens examined: Sicily. Troina, 05.07.1983, BRULLO, CAT. – Santo Pietro, 16.10.1983, BRULLO, CAT. – Castelmola (ME), 19.10.1985, SPAMPINATO, CAT. – Cerami, Nebrodi, 29.09.1985, SPAMPINATO, CAT. – Portella Salici, Messina, 25.10.1980, BRULLO, CAT. – Troina, 23.10.1993, SIRACUSA, CAT. – Capizzi, 18.09.2010, BRULLO, SCIANDRELLO, CAT. – Troina, 18.09.2010, BRULLO, SCIANDRELLO, CAT. – Presso S. Cono, Caltagirone, 23.11.1993, SIRACUSA, CAT. – Portella di Castanea, Messina, 13.10.2010, C. BRULLO, GIUSSO, SCIANDRELLO, CAT. – Etna, Aironi, 7.1894, BACCARINI, CAT-TORN. – Zafferana, 7.1894, BACCARINI, CAT-TORN. – Cefalù, s.d., s.l., CAT-TORN. – Priolo, 10, GUSSONE, NAP-GUSS. – S. Filippo d'Argerò, 10, GUSSONE, NAP-GUSS. – in collibus aridis Trapani, s.d., TODARO, FI. – in rupibus calacareis reg. infer. Taormina, fl. 12.1904, fr. 1.1905, ROSS 537, FI. – all'Etna, verso Cassone, 7.1894, CANNARELLA, FI. – Messina, pascoli a Freschia di Castanea, 29.10.1883, CARUEL, FI.

3.2. *Seseli tortuosum* subsp. *maritimum* (GUSS.) C. BRULLO, S. BRULLO, GIUSSO & SCIANDRELLO stat. novus (Fig. 2, 4).

Basionym: *Seseli tortuosum* L. var. *maritimum* GUSS., Fl. Sic. Prodr. 1: 342, 1827.

Lectotypus: Trapani, Novembre, manu GUSSONE, (NAP-GUSS!), here designated. – *S. tortuosum* L. var. *maritimum* GUSS. was still not lectotypified. Among the syntypes kept in the Sicilian GUSSONE Herbarium (NAP-GUSS) we have chosen the specimen collected by GUSSONE at Trapani. Unfortunately, all the original material (syntypes) is badly preserved, and therefore, according to art. 9.7, 9.18 of the ICBN (MCNEILL & al. 2006), it is advisable to designate an epitype. For this reason, we refer to a specimen coming from the same locality of the lectotype whose vegetative and floral parts are well preserved.

Epitype: Sicilia, litorale sabbioso presso Trapani, 20.10.1993, S. BRULLO s.n. (CAT!), here designated.

Iconography: CUPANI, Panph. Sic.3, T.101, sub Foeniculum tortuosum, glaucius, latiori folio, 1713; h. l. Fig. 2, 4.

Distribution: It is distributed along the sandy coast of Sicily, Calabria (Marina di Pizzo), and northern Sardinia (Tavolara and Olbia).

Ecology: It is linked to sandy habitats, where it colonizes the inner stabilized dunes. In Sicily this psammophyte is a member of perennial

communities occurring along the coast, even far from the sea, on quite mature sandy soils. From the phytosociological viewpoint, it characterizes many associations of the *Ononidion ramosissimae* PIGNATTI 1952, alliance of the *Ammophiletea* WESTHOFF & al. 1946 class (BRULLO & al. 2002).

Specimens examined: Sicily. Capo Bianco (Eraclea Minoa, AG), 27.08.1985, SPAMPINATO, CAT. – Manfria, Gela, 23.11.1980, BRULLO, CAT. – Foce del Pantano Gariffi, Pozzallo, 24.09.1974, BRULLO, CAT. – Punta Lunga, Pozzallo, 07.08.1969, BRULLO, CAT. – Foce del Simeto, 22.10.1988, SPAMPINATO, CAT. – Lidi Plaia (CT), 23.10.1993, SIRACUSA, CAT. – Lido di Catania, Foce Simeto, 23.10.1993, SIRACUSA, CAT. – S. Lucia, Macconi di Gela, 19.09.2010, SCIANDRELLO, CAT. – Caligola, Gela, 23.11.2003, SCIANDRELLO, CAT. – Macchitella, Gela, 02.11.2003, SCIANDRELLO, CAT. – Gela, presso Macchitella, 15.10.2004, SCIANDRELLO, CAT. – Capo Tindari, 27.10.1987, MINISSALE, SPAMPINATO, CAT. – Tindari, 27.06.1999, SPAMPINATO, CAT. – Foce Fiume Simeto, 18.01.2003, GALESÌ, CAT. – Vendicari, spiaggia Eoro, 15.01.2011, MINISSALE, SCIANDRELLO, CAT. – Messina, 08, GUSSONE, NAP-GUSS. – Catania, 5, GUSSONE, NAP-GUSS. – in *arvensis maritimis*, Avola, 9–11, BIANCA, FI. – Messina, in *maritimis*, 30.10.1840, PARLATORE, FI. – in *arenosis Balestrate*, 9, TODARO 1524, FI. – in *arenosis maritimis*, Sicilia, Trapani, 10.1836, PARLATORE, FI. – Sardinia, Isola di Tavolara, 12.9.1994, BRULLO, DE MARCO, CAT. – Olbia, Costa del Sole, 21.6.1996, BRULLO, DE MARCO, CAT. – Calabria, Marina di Pizzo, 19.6.1982, BRULLO & al., CAT.

3.3. Note

According to literature, two other subspecies have been recently described within *S. tortuosum*; they are subsp. *kiabii* AKHANI from Iran, replacing the type in the Irano-Turanian territories (see AKHANI 1999), and subsp. *thracicum* DELIP. from Bulgaria, which can be considered a Pontic vicariant (see DELIPAVLOV 2000).

4. Acknowledgments

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