

Peucedanum obtusifolium (Apiaceae), a new record for the Bulgarian flora

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Abstract. *Peucedanum obtusifolium* is reported for the first time for the Bulgarian flora. So far it has been known only from the maritime sands of the southwestern coastline of the Black Sea in NW Turkey. *Peucedanum obtusifolium* from the seashore of Bulgaria has been misidentified as *P. arenarium* subsp. *arenarium*. Comparison of the important morphological characters of *P. arenarium* subsp. *arenarium* and *P. obtusifolium*, map of the distribution of the latter species and some comments are presented in this article.

Key words: Black Sea coast, Bulgarian flora, *Peucedanum*, taxonomy, *Umbelliferae*

Introduction

In all editions of the Flora of Bulgaria, *Peucedanum arenarium* Waldst. & Kit. (specifically *P. a.* subsp. *arenarium* or var. *arenarium* in some of them) was indicated as inhabiting the coastal sands of the Black Sea (Stojanov & Stefanov 1925, 1933, 1948; Stojanov & al. 1967; Kuzmanov & Andreev 1982). Furthermore, it was stated that this species occurs also on dry grasslands in North and Southeast Bulgaria. A comparison of the specimens collected from the dry grasslands with those of the dune habitats has shown that they are not identical and have clear and tangible morphological differences that cannot be considered as infraspecific variation. With its habit, leaf segments and fruits, *P. arenarium* from the sands of the Black Sea coast is well distinguished from the inland species of Bulgaria, and in fact belongs to *P. obtusifolium* Sm., which so far has remained unrecog-

nized. The purpose of this article is to report this species for the Bulgarian flora.

Material and methods

The study comprises a comprehensive revision of the *P. arenarium* subsp. *arenarium* specimens kept in the Bulgarian herbaria SO, SOA, SOM, and the Herbarium of the Regional Natural History Museum of Plovdiv (the latter is unregistered in the *Index Herbariorum* and is informally abbreviated below as Herb. Mus. Plovdiv). The type of *P. obtusifolium* from OXF and some additional specimens from BP, MW, MHA, LE, ANK, and ISTE were examined too. A field survey of some of the maritime dunes of the Bulgarian Black Sea coast was conducted in the summer of 2015. The geographic distribution of *P. obtusifolium* is illustrated with a map, with 10×10 km UTM squares.

Results and discussion

Peucedanum obtusifolium Sm. in Sibth. & Sm., Fl. Graec. Prodr. 1: 189 (1806).

[*P. arenarium* subsp. *arenarium* pro parte, auct. Fl. Bulg., non Waldst. & Kit.]

In *Flora Reipublicae Popularis Bulgaricae*, Kuzmanov & Andreev (1982) listed *P. arenarium* with two subspecies: *P. a.* subsp. *arenarium* and *P. a.* subsp. *neumayeri* (Vis.) Stoj. & Stef. Collections of subsp. *arenarium* from the Bulgarian coast of the Black Sea substantially differ from *P. arenarium* in *locus classicus* (Budapest, Hungary). We have revisited the sandy dunes in Primorsko, Arkutino (Fig. 1), Sveti Toma, and Duni, studied the herbarium collections in a number of herbaria, and the photographs of type specimen of *P. obtusifolium* from OXF. These data have shown identity of *Peucedanum* from the Bulgarian coastal regions with *P. obtusifolium*.

Examined specimens of *P. obtusifolium* from Bulgaria (sub *P. arenarium*):

Bulgaria: Black Sea Coast (Northern): NE of Shabla town, on coastal sands, 08.2014, S. Stoyanov (obs.); NE of Balchik town, on coastal sands, 21.08.1948, D. Jordanov (SO 55362); ad Varna, in collibus arenosis, 10.09.1889, Bornmüller (SO 55357); Kamchiyski Pyasatsi locality, on coastal sands, 07.2014, Zh. Barzov, pers. comm. (photos); **Black Sea Coast (Southern):** Mesemvria (nowadays Nesebar town), on dunes, 11.08.1914, N. Stojanov (SOA 8302); prope urbem Sozopol, in arenosis maritimis, 27.08.1932, N. Stojanov (SOA 8300); Sozopol town, on coastal sands, 22.08.1956, B. Zólyomi (SOM 98260); between Sozopol town and Kavatsite locality, on the sands, 20.10.1974, A. Mitrev (SOM 131833, 131835); S of Sozopol town, Kavatsite locality, 04.08.1961, B. Kitanov (SO 55358, 55360); S of Sozopol town, Kavatsite locality, on coastal sands, 05.08.1961, N. Vihodtsevski (Herb. Mus. Plovdiv 02360), 06.08.1961, N. Vihodtsevski (SOM 104842); Kavatsite locality, on the sands, 10.08.1972, P. Vassilev (SOM 131432); Kavatsite Camping Site, on coastal sandy dunes, 11.10.1975, N. Andreev (SOM 130856–130858); Arkutino locality, on coastal sands, 07.1920, B. Stefanov (SOA 8301); Arkutino Camping Site, on coastal sandy dunes, 10.10.1975, N. Andreev (SOM 130852–130855); ad Arkutino, in arenosis maritimis, 17.10.1977, B. Kuzmanov & N.

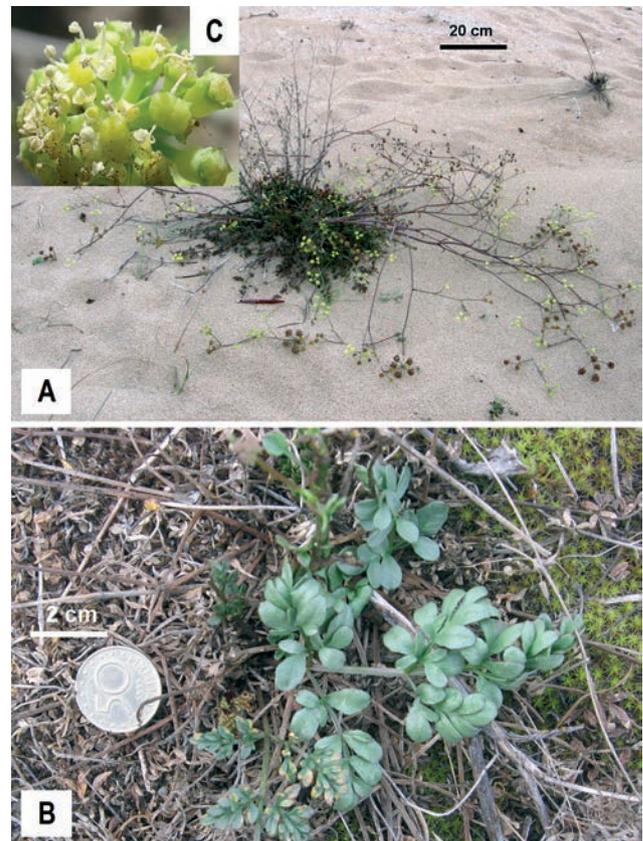


Fig. 1. *P. obtusifolium* on sandy dunes in the Arkutino locality, 08.09.2015. A – habit; B – basal leaves (photos T. Ostroumova); C – umbellule (photo Zh. Barzov).

Andreev (SOM 139298), (SO 89617), (SOA 46602); Arkutino locality, on dunes, 29.08.1984, S. Tsoneva (SOM 144745); Arkutino locality, Burgas district, 03.10.2005, Ch. Gussev, T. Stoeva & Y. Bosseva (SOM 162267); at the mouth of Ropotamo river, on coastal sands, 13.11.1963, N. Vihodtsevski (SO 55359); near Kyupria (nowadays Primorsko town), Burgas district, on coastal dunes, 06.08.1929, D. Jordanov (SO 55354); Primorsko town, on coastal dunes, 07.1955, N. Vihodtsevski (SOM 98259); Primorsko town, Burgas district, the Southern Beach, on the sands, 28.08.1964, I. Cheshmedzhiev (SOA 15305, 15307, 15308); Primorsko town, on the sands, 25.08.1977, S. Stanev (Herb. Mus. Plovdiv 09584); Lozenets village, on the sands, 06.1970, S. Vassileva (SO 55361); Michurin (nowadays Tsarevo town), Chayka locality, on the sands, 20.09.1974, A. Mitrev (SOM 131840).

Distinguishing characters of the two taxa are given in Table 1. *Peucedanum obtusifolium* is a rather variable species in relation to leaf segments (Fig. 2) and fruits (Fig. 3), the largest fruits were collected in Turkey.

Table 1. Distinguishing characters of *P. arenarium* subsp. *arenarium* and *P. obtusifolium*.

Characters	<i>P. arenarium</i> subsp. <i>arenarium</i>	<i>P. obtusifolium</i>
Life form	Monocarpic herbs with taproot; plants erect, branched above the middle; 30–200 cm tall	Polycarpic herbs, large individuals with branched rootstock; plants usually with prostrate stems; up to 60 cm high
Leaf structure	Leaves 3–5-pinnate; first and second order segments petiolulate, second order petiolules 5–40 mm long	Leaves 2–3-pinnate; first order segments petiolulate, second order segments sessile or with petiolules up to 5 mm
Ultimate segments	Entire or bifid, linear, oblong or narrowly elliptic, obtuse or acute, usually >10 mm long	Pinnatifid, bifid or entire, elliptic to lanceolate, obtuse, entire segments and lobes usually 5–10 mm long
Fruits	Elliptic or obovate, 5–9 mm long, 4–6 mm wide; marginal ribs <i>ca.</i> 4 times narrower than seed; apical notch absent	Broadly elliptic, broadly obovate, elliptic, obovate, 8–15 mm long, 7–11 mm wide; marginal ribs <i>ca.</i> 2 times narrower than seed; stylopodium situated in apical notch between marginal ribs

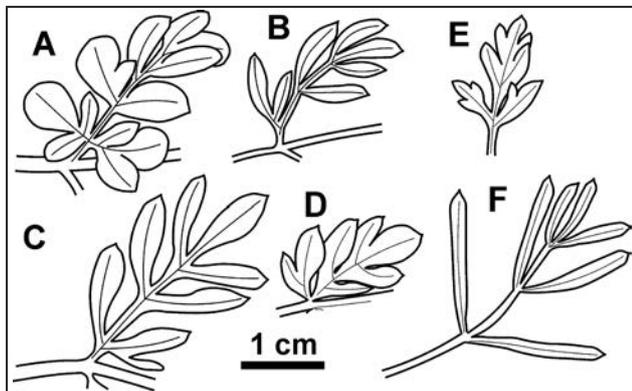


Fig. 2. Leaf segments. A-E – *Peucedanum obtusifolium*; A – Bulgaria, Arkutino locality, 08.09.2015, T. Ostroumova, B – Bulgaria, Kavatsite Camping Site, 11.10.1975, N. Andreev (SOM 130856); C – Turkey, A2(E) Istanbul, 09.10.1967, A. Baytop (ISTE 12161); D – Turkey, A2(E) Istanbul, 18.07.2007, M. Pimenov & E. Kljuykov 134 (MW); E – holotype specimen of *P. obtusifolium*, Sibthorp (OXF); F – *Peucedanum arenarium*, Hungary, 16.08.2001, Z. Barina (BP).

Phenology. Flowering July–August, fruiting October.

Distribution and habitat

Peucedanum obtusifolium is strongly attached to the open dune habitats and takes part in the communities of psammophytic vegetation. This fact defines its fragmented distribution which is further affected by the expansion of construction in the seaside resorts. According to Chamberlain (1972), *P. obtusifolium* was known from a few localities in the European and Asiatic Black Sea coastline of Turkey in the Provinces of Kırklareli, Istanbul and Sakarya, while Özhatay

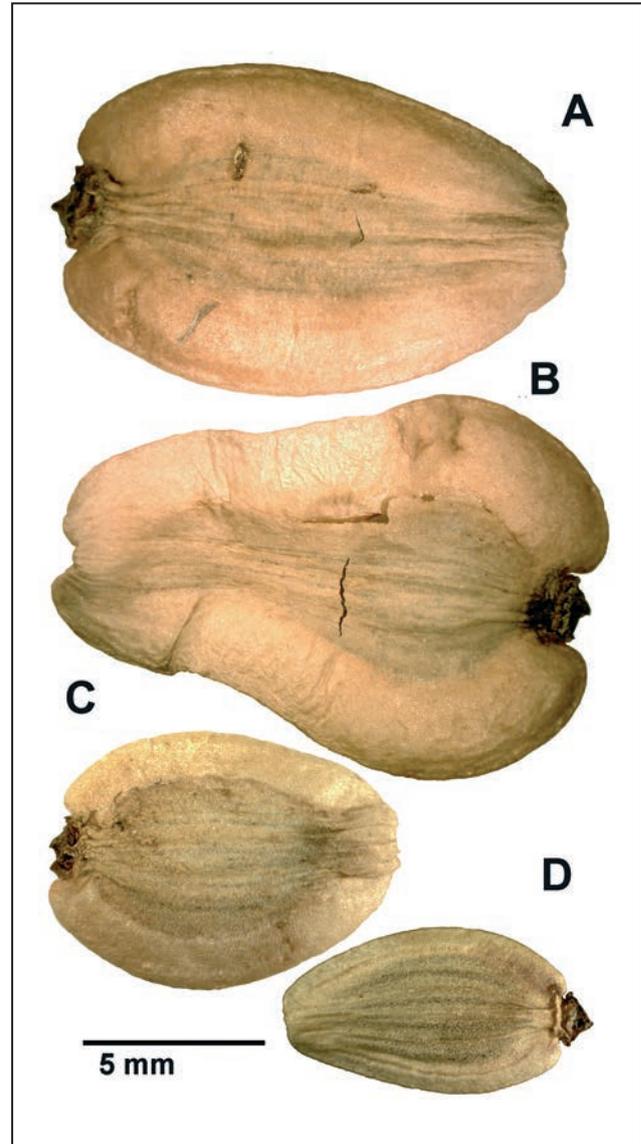


Fig. 3. Fruits. A-C *Peucedanum obtusifolium*, A & B – Turkey, 09.10.1967, A. Baytop (ISTE 12161), C – Bulgaria, Kavatsite Camping Site, 11.10.1975, N. Andreev (SOM 130858); D – *Peucedanum arenarium*, Hungary, 25.08.1923, S. Javorka (BP).

& al. (2013) pointed out that it occurs only on the European coast of the Black Sea. In Bulgaria (Fig. 4), the species was found almost along the entire coastal area of the Black Sea, more often in the southern parts. Özhatay & Yüzbaşıoğlu (2014) have assumed occurrence of *P. obtusifolium* in Bulgaria without reference to herbarium specimens. Its distribution in Greece (Tutin 1968; Hand 2011) was deemed doubtful and erroneous (Webb 1966; Dimopoulos & al. 2013). Therefore, *P. obtusifolium* should be considered as an endemic species to the western and southwestern shore of the Black Sea.

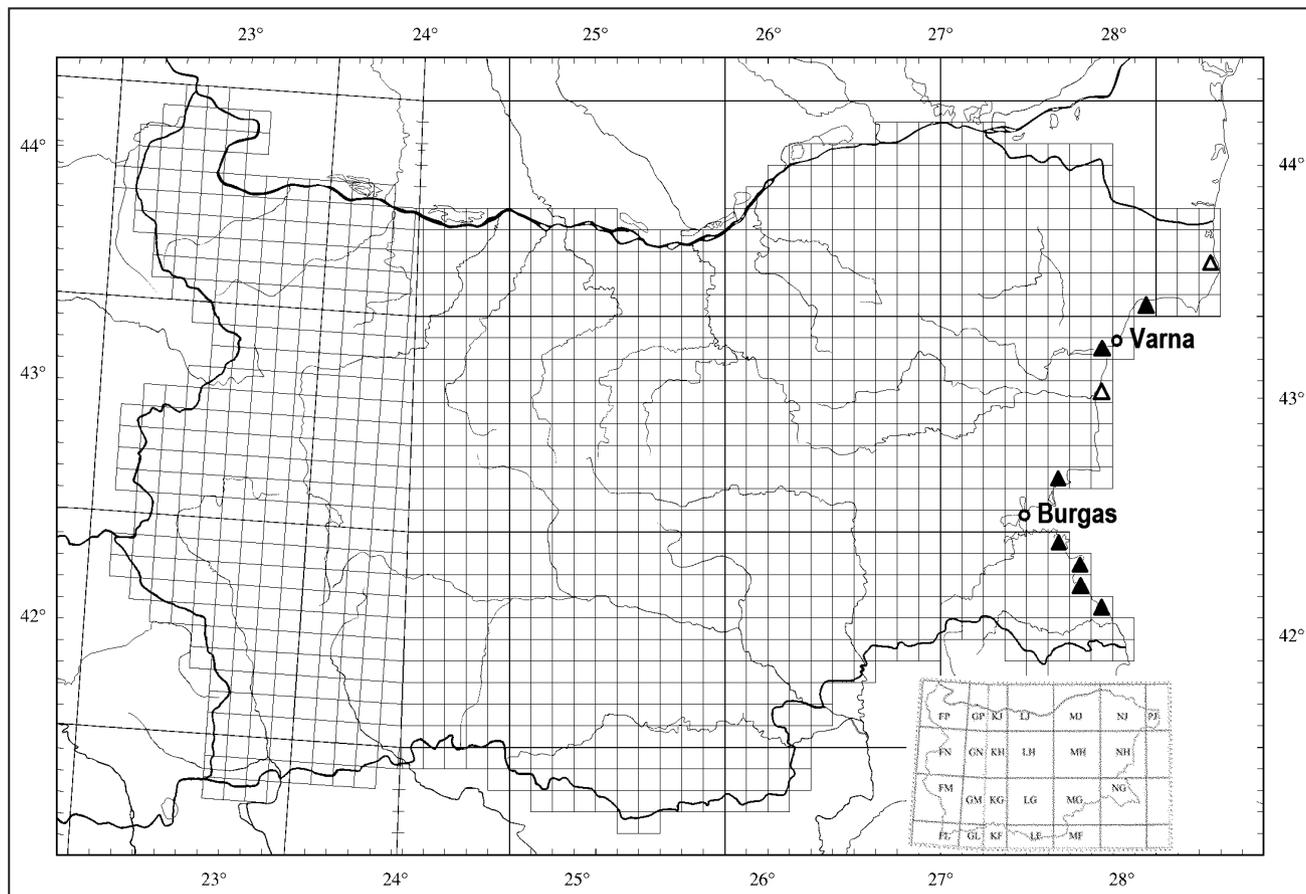


Fig. 4. Distribution map of *P. obtusifolium* in Bulgaria (▲ – according to revised specimens; △ – only observed).

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