

Euro+Med-Checklist Notulae, 16

Eckhard von Raab-Straube¹ & Thomas Raus¹ (ed.)

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Abstract: This is the sixteenth of a series of miscellaneous contributions, by various authors, where hitherto unpublished data relevant to both the Med-Checklist and the Euro+Med (or Sisyphus) projects are presented. This instalment deals with the families *Caryophyllaceae*, *Compositae*, *Euphorbiaceae*, *Gramineae*, *Iridaceae*, *Leguminosae*, *Malvaceae*, *Portulacaceae*, *Rosaceae*, *Solanaceae* and *Umbelliferae*. It includes new country and area records and taxonomic and distributional considerations for taxa in *Bromus*, *Datura*, *Daucus*, *Erigeron*, *Euphorbia*, *Iris*, *Minuartia*, *Paspalum*, *Portulaca*, *Sida* and *Vigna*, and a new combination in *Prunus*.

Keywords: distribution, Euro+Med PlantBase, Europe, Med-Checklist, Mediterranean, new combination, new record, taxonomy, vascular plants

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Notice

A succinct description of the Euro+Med project, with a list of recognized territories and their abbreviations, and the conventions used to indicate the status and presence of taxa, can be found in the introduction to the first instalment of the Euro+Med Notulae (Greuter & Raab-Straube 2005: 223–226) and on the Euro+Med PlantBase website (Euro+Med 2006+). For the previous instalment of the Euro+Med-Checklist Notulae, see Raab-Straube & Raus (2022).

Contributors

- G. Barone, University of Palermo, Department of Agricultural, Food and Forest Sciences, viale delle Scienze, bldg. 4, 90128 Palermo, Italy; giulio.barone01@unipa.it
- E. Bulakh, M. G. Kholodny Institute of Botany of NAS of Ukraine, 2 Tereshchenkivska Str., 01601 Kyiv, Ukraine; anemone@ukr.net
- P. Bulakh, M. M. Gryshko National Botanical Garden of NAS of Ukraine, 1, Sadovo-Botanichna Str., 01014 Kyiv, Ukraine; deceased.
- R. El Mokni, Monastir University, Laboratory of Botany, Cryptogamy and Plant Biology, Faculty of Pharmacy

of Monastir, Avenue Avicenna, 5000 Monastir, Tunisia; and Carthage University, IRESA, Laboratory of Forest Ecology, National Research Institute of Rural Engineering, Water and Forests, 2080 Ariana, Tunisia; ridhaelmokni@yahoo.fr

- E. Kashirina, Department of Natural Sciences, Faculty of Geography, Geroyev Sevastopolya str., 299001 Sevastopol, Crimea; and Urban Development Institute of the Sevastopol State University, Kurchatov str. 7, 299011 Sevastopol, Crimea; e_katerina.05@mail.ru
- P. Kosiński, Institute of Dendrology, Polish Academy of Sciences, Parkowa 5, 62-035 Kórnik, Poland; and Faculty of Agriculture, Horticulture and Bioengineering, Poznań University of Life Sciences, Wojska Polskiego 28, 60-637 Poznań, Poland; kosinski@man.poznan.pl
- J. Krause, Jonasstr. 48, 12053 Berlin, Germany; josi.krause@mail.de
- V. Kummer, University of Potsdam, Maulbeerallee 1, 14469 Potsdam, Germany; kummer@uni-potsdam.de
- G. Kunev, Department of Botany, Faculty of Biology, Sofia University, Dragan Tzankov Blvd. 8, 1164 Sofia, Bulgaria; gikunev@uni-sofia.bg
- P. O. Mukhumaeva, Dagestan State University, M. Gadjeiev str. 43a, Makhachkala 367000, Russia; pati.muchumaeva@gmail.com

¹ Botanischer Garten und Botanisches Museum Berlin, Freie Universität Berlin, Königin-Luise-Str. 6–8, 14195 Berlin, Germany. Author for correspondence: Eckhard von Raab-Straube, e.raab-straube@bo.berlin

- R. A. Murtazaliev, Precaspian Institute of Biological Resources of the Dagestan Federal Research Center of the RAS, M. Gadjev str. 45, Makhachkala 367000, Russia; and State Natural Reserve “Dagestansky”, Gagarina str. 120, Makhachkala 367000, Russia; murtazaliev.ra@yandex.ru
- P. Novák, Department of Botany and Zoology, Faculty of Science, Masaryk University, Kotlářská 2, 61137 Brno, Czech Republic; pavenow@seznam.cz
- O. Orlov, State Institution “Institute of Environmental Geochemistry of NAS of Ukraine”, 34A Academician Palladin Ave., 03142 Kyiv, Ukraine; orlov.botany@gmail.com
- K. Pachedjieva, Department of Ecology and Environmental Protection, Sofia University, Dragan Tzankov Blvd. 8, 1164 Sofia, Bulgaria; kalina.pachedjieva@biofac.uni-sofia.bg
- G. Petrova, Department of Botany, Faculty of Biology, Sofia University, Dragan Tzankov Blvd. 8, 1164 Sofia, Bulgaria; gabrielapetrova@biofac.uni-sofia.bg
- Th. Raus, Botanischer Garten und Botanisches Museum Berlin, Freie Universität Berlin, Königin-Luise-Str. 6–8, 14195 Berlin, Germany; t.raus@bo.berlin
- M. Ristow, Plant Ecology & Nature Conservation, University of Potsdam, Am Mühlenberg 3, 14476 Potsdam, Germany; ristow@uni-potsdam.de
- L. E. Ryff, Flora and Vegetation Laboratory, Nikitsky Botanical Garden – National Scientific Centre, Nikita, Yalta, Crimea; ryffljub@ukr.net
- F. Sasse, Im Rübenkamp 7, 38124 Braunschweig, Germany; florenz.sasse@t-online.de
- I. Sasse, Im Rübenkamp 7, 38124 Braunschweig, Germany; florenz.sasse@t-online.de
- M. Shevera, M. G. Kholodny Institute of Botany of NAS of Ukraine, 2 Tereshchenkivska Str., 01601 Kyiv, Ukraine; and Ferenc Rákóczi II Transcarpathian Hungarian College of Higher Education, 6 Koshut sq., 90200 Beregove, Zakarpatska obl., Ukraine; shevera.myroslav@ukr.net
- S. Svirin, Flora and Vegetation Laboratory, Nikitsky Botanical Garden – National Scientific Centre, Nikita, Yalta, Crimea; and Urban Development Institute of the Sevastopol State University, Kornilova Emb. 1, 299011 Sevastopol, Crimea; sapsan7@mail.ru
- D. Szokala, Department of Botany and Zoology, Faculty of Science, Masaryk University, Kotlářská 2, 61137 Brno, Czech Republic; 512772@muni.cz
- G. Tavilla, Department of Biological, Geological and Environmental Sciences, University of Catania, Via A. Longo 19, 95125 Catania, Italy; gianmarco.tavilla@phd.unict.it
- D. Tomaszewski, Institute of Dendrology, Polish Academy of Sciences, Parkowa 5, 62-035 Kórnik, Poland; dominito@man.poznan.pl
- J. Zieliński, Institute of Dendrology, Polish Academy of Sciences, Parkowa 5, 62-035 Kórnik, Poland; jeziel@man.poznan.pl

Caryophyllaceae

Minuartia globulosa (Labill.) Schinz & Thell. – Fig. 1. + **Bu**: Bulgaria: E Rhodope mountains, Kardzhali province, Momchilgrad municipality, Zvezdel village, Debelka hamlet, observed in three adjacent microsites: (1) 41°27'19.4"N, 25°30'13.6"E, (2) 41°27'33.9"N, 25°30'09.8"E, (3) 41°27'59.9"N, 25°30'14.8"E, 520–550 m, open stony and eroded sites, on leaden grey rocks, 14 Sep 2021, completely withered with well-preserved seeds, *Kunev* (SO 108173); *ibid.*, 19 May 2022, in pre-flowering stage, *Kunev* (SO 108164); *ibid.*, 28 May 2022, in flowering stage, *Kunev* (SO 108165, SO 108172, SOM 177700). – The species is new to the Bulgarian flora. There is no previous collection from the country according to the examined material at SO, SOA and SOM (herbarium codes follow Thiers 2023+), nor were any reports traced in the main regional floristic works (Kožuharov & Kuzmanov 1966; Stoyanov & al. 2021). The species was first noted during phytocoenological studies on chamaephyte- and therophyte-rich communities with dominance of *Satureja pilosa* Velen., on 14 Sep 2021. In the following season, two additional field trips were organized with the aim to collect plant material at the flowering stage and to track its phenology. On 19 May 2022, c. 200 individuals were recorded, all non-flowering. On 28 May, the plants were in the beginning of the flowering period. At that date, the species was recorded in two more microsites on the neighbouring hillslopes, with seven and 70 individuals respectively.

The collected plants completely correspond to the descriptions of McNeill (1967), Halliday (1993) and Kamari (1997), and to the type specimen at the virtual herbarium of the Conservatoire et Jardin botaniques de la Ville de Genève (herbarium G, <https://www.ville-ge.ch/musinfo/bd/cjb/chg/adetail.php?id=200586>). *Minuartia globulosa* is rather distinct and easily separable from the other representatives of the genus in Bulgaria. It differs from the morphologically close *M. montana* subsp. *wiesneri* (Stapf) McNeill by the type of indumentum, composed of glandular-viscid vs eglandular crispate hairs; flower pedicels 2.5–4 mm long vs always less than 2 mm long in *M. montana* subsp. *wiesneri*; calyx base truncate vs rounded; petals 2.5–3 mm long vs petals absent; stamens 5(or 6) vs 10 (McNeill 1967; Halliday 1993; Kamari 1997). Additionally, the seed micromorphology was studied under SEM (Fig. 1C–F). The seeds are dark brown to reddish brown, orbicular-reniform, 0.7–0.8 mm wide, lateral surfaces finely granulate, dorsal surface with 2–8 ridges variable in size bearing verrucate, cylindrical or narrowly obpyriform ornamentations.

The range of the species includes Croatia, Greece, Crete, the East Aegean Islands, asiatic Turkey, Cyprus, Lebanon-Syria and Israel-Palestine-Jordan (Marhold 2011+). It is most abundant in Peloponnisos, Greece,

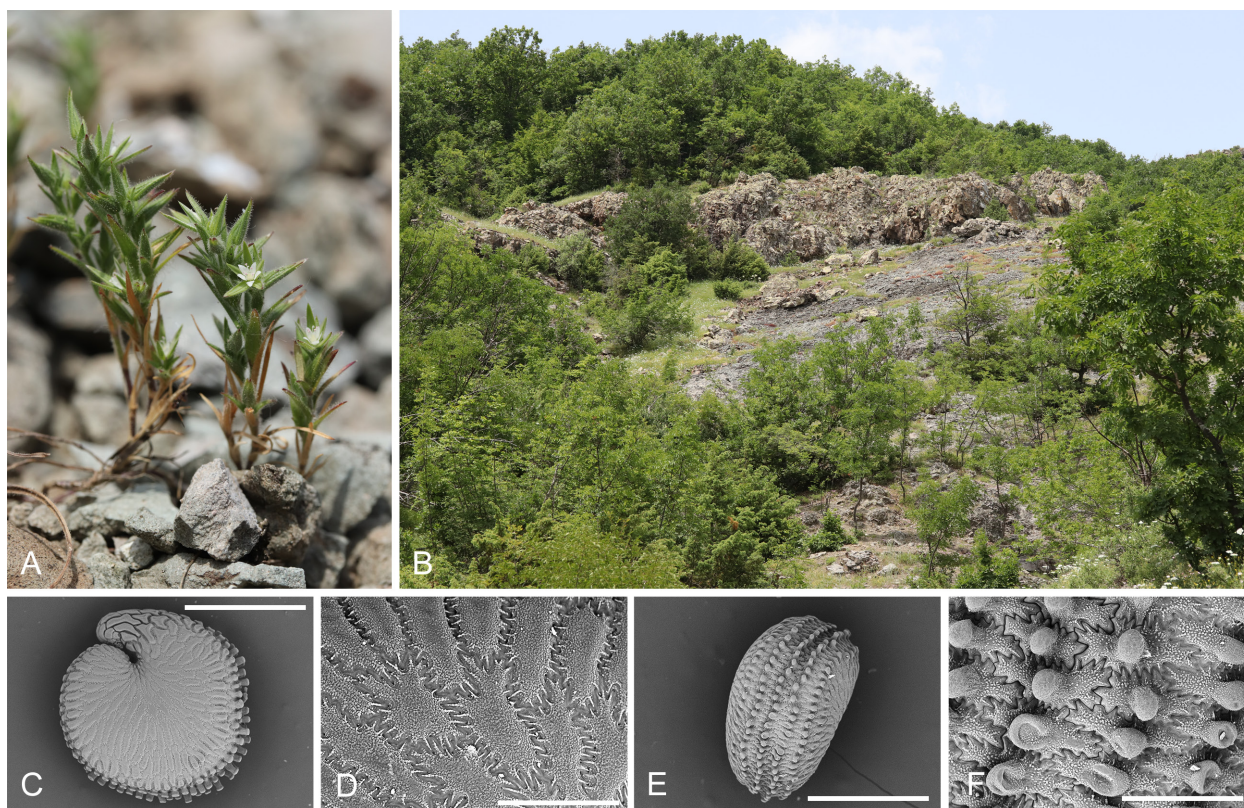


Fig. 1. *Minuartia globulosa* – A: habit of flowering plants; B: general view of habitat; C–F: SEM micrographs of seed surfaces; C, D: lateral view; E, F: dorsal view. – Scale bars: C, D = 500 μm ; D, F = 100 μm . – Source of material: Bulgaria, E Rhodope mountains, Kardzhali province, Momchilgrad municipality, Zvezdel village, Debelka hamlet, 14 Sep 2021, *Kunev* (SO 108173). – Photographs A, B: same locality, 28 May 2022, by G. Kunev.

and scattered elsewhere (GBIF 2023). Probably, the closest other reported locality of the species is near Xanthi, Greece (Strid & Tan 1997: map 316), which is about 70 km SE of the first Bulgarian locality, where *M. globulosa* grows mostly solitary or in groups of up to 15 individuals on the flat ledges of rocks where fine gravel and plant debris accumulate. Associated species are mostly xerophilous plants or ruderal annuals such as *Bromus squarrosus* L., *Melilotus neapolitanus* Ten., *Poa bulbosa* L., *Satureja pilosa* Velen., *Sedum album* L., *S. caespitosum* (Cav.) DC., *S. hispanicum* L., *Thymus zygoides* Griseb. and *Trifolium striatum* L. An abundance of bryophytes and lichens such as *Cladonia foliacea* (Huds.) Willd. (aggregate) and *Racomitrium canescens* (Hedw.) Brid. was also noted. At the second and third microsites, *Aegilops neglecta* Bertol., *Bunium ferulaceum* Sm., *Euphorbia taurinensis* All., *Fumana procumbens* (Dunal) Gren. & Godr., *Geranium columbinum* L., *Medicago minima* (L.) Bartal., *Minuartia hybrida* (Vill.) Schischk. (= *Sabulina tenuifolia* (L.) Rchb. subsp. *tenuifolia*), *Ornithogalum comosum* L., *Sideritis montana* L., *Stachys* cf. *cretica* L. and *Velezia rigida* L. (= *Dianthus nudiflorus* Griff.) were additionally recorded. The Bulgarian localities were registered at the northern limits of the range of the species, therefore the species most probably has a restricted distribution in the country.

G. Kunev, G. Petrova & K. Pachedjieva

Compositae (Asteraceae)

Erigeron epiroticus (Vierh.) Halácsy

+ **Cg**: Montenegro: Komovi mountains, 42°41'09.54"N, 19°40'24.77"E, 2000 m, shaded limestone rocks, 13 Jul 2022, *Szokala & al.* (BRNU). – *Erigeron epiroticus* is a species distributed in the Apennines, S Alps and the Illyrian region (Halliday 1976; Pignatti 2018) extending S to Mt Parnassos in C Greece (Strid 1991: 408–409). In the Komovi mountains, the species was found growing on a shaded, somewhat humid limestone wall. D. Szokala

Euphorbiaceae

Euphorbia nutans Lag. (\equiv *Chamaesyce nutans* (Lag.) Small) – Fig. 2.

A Cm: Crimea: Bakhchysaraiskiy district, Mostovoye, near railway bridge across Kacha river, 44°43'28"N, 33°48'47"E, 100 m on railway tracks and railway embankment, 11 Sep 2021, *Kashirina* (photo: <https://www.inaturalist.org/observations/94675634>); *ibid.*, Zheleznodorozhnoye, 44°43'27.90"N, 33°48'46.98"E, 100 m, on edge of railway, 12 Sep 2021, *Svirin & Kashirina* (YALT); *ibid.*, 12 Sep 2021, *Svirin* (photo: <https://www.inaturalist.org/observations/94826070>); *ibid.*, 20 Nov 2022, *Kashirina* (photo: <https://www.inaturalist.org/observations/145647341>). – This species is native to SE



Fig. 2. *Euphorbia nutans* – A: flowering plant, B: upper part of flowering plant. – Crimea, Bakhchysaraiskiy district, Zheleznodorozhnoye, 12 Sep 2021, photographs by S. Svirin.

North America, Central America, N South America and the Caribbean. As an alien it is widespread in subtropical and warm-temperate regions of the world, especially in the Mediterranean basin, C and SE Europe and W Asia (POWO 2023a). For E Europe, two localities in S Russia are known: in the Lipetsk region and near Volgograd (Geltman 2012b). The region closest to the Crimean localities of *Euphorbia nutans* is NW Caucasus (Zernov 2006; Geltman 2012a). Presumably the species was recently introduced to Crimea from there by rail. It is known that railroads are one of the main routes of distribution of *E. nutans* (Geltman 1996; Somlyay 2009), as well as of some other alien species of the genus in Europe (Brandes 1993; Eliáš 2009; Sîrbu & Şuşnia 2018; Májková & al. 2021). In Crimea, it was in these habitats that *E. davidii* Subils and *E. glyptosperma* Engelm.

were first discovered a few years ago (Greuter & Raus 2011; Raab-Straube & Raus 2019). *Euphorbia nutans* differs from the other species of *Euphorbia* subg. *Chamaesyce* Raf. that are known in the region by its larger size, erect or ascending main stem, and some more subtle morphological features (Geltman 1996; Pahlevani & Riina 2011; Sîrbu & Şuşnia 2018). In Crimea, it is a casual alien. In 2021–2022 the population included approximately 20 individuals.

E. Kashirina, S. Svirin
& L. E. Ryff

Gramineae (Poaceae)

Bromus paulsenii Hack.

+ **Rf(CS)**: Russia: Dagestan, Dokuzparinsky district, Mount Shalbuzdag, 41°20'07.4"N, 47°48'38.1"E, 3500 m, on rocky slopes in the nival zone, 30 Jul 2022, *Murtazaliev* (DAG, LENUD). – The species is reported for the first time for Russia and for the entire Caucasus. This locality is the westernmost point in the known area of the species. The main area of the species is in the mountains of C Asia. *Bromus paulsenii* is polymorphic in many features, especially in the size of the spikelets, the number of

flowers in the spikelet, the pubescence of the leaves, etc. Due to the strong variability of *B. paulsenii*, several new species (*B. angrenicus* Drobow, *B. pamiricus* Drobow, *B. turkestanicus* Drobow) were described, which are now considered to be its synonyms (Komarov 1934). *Bromus paulsenii* is closest to *B. variegatus* M. Bieb., from which it differs in smaller panicles (5–6 cm long) and inflorescence branches not exceeding the length of spikelets. The main morphological features of the species are that leaf sheaths are articulated and the stem grows almost horizontally.

R. A. Murtazaliev & P. O. Mukhumaeva

Paspalum distichum subsp. *paucispicatum* (Vasey) Verloove & Reynders (\equiv *Paspalum paucispicatum* Vasey) – Fig. 3.

N Bu: Bulgaria: Danubian plain, Pleven province, Belene municipality, Hisarlaka locality, about 4 km NW of Belene, 43°40'53.4"N, 25°05'51.43"E, 20 m, seasonally wet depression at shoreline of Danube river, population covering c. 20 m², with flowering individuals, associated with *Amorpha fruticosa* L., *Bolboschoenus maritimus* (L.) Palla (aggregate), *Cyperus glomeratus* L., *Erigeron annuus* (L.) Desf. and *Xanthium orientale* subsp. *italicum* (Moretti) Greuter, 20 Aug 2022, *Kunev* (SO 108191; SOM 177790, SOM 177791); *ibid.*, Limana locality, about 6 km NW of Belene, 43°41'07.6"N, 25°03'55.9"E, 22 m, on muddy shores of an artificial lake connected to Danube river, vast population with flowering and almost fruiting individuals forming dense, uniform, 1–15-m-wide stands around lake, 3 Oct 2022, *Kunev* (SO 108192, SOM 177792, SOM 177793). – The taxon is new to Bulgaria, not mentioned or keyed out in Stoyanov & al. (2021). It was originally published as a species based on collections from Mexico but was subsequently reduced to a subspecies of *Paspalum distichum* L. (Verloove & Reynders 2007). In Greece, *P. distichum* is a relatively recent introduction, with the first record from the Thessaloniki area in 1944 (Oberdorfer 1954). It has spread rapidly and now occurs throughout Greece (Dimopoulos & al. 2013, 2020). *Paspalum distichum* subsp. *paucispicatum*, as a naturalized alien in Europe, was previously known only from France (Valdés & Scholz 2009+). The Bulgarian plants completely match the French plants reported by Verloove & Reynders (2007). The populations are rather uniform, composed of robust plants with a somewhat glaucous appearance and considerable degree of pubescence on the leaf blades, sheaths and nodes. Most of the individuals were bearing 3-branched racemes. Normally, in *P. distichum* subsp. *paucispicatum*, spikes bear 2 rows of paired spikelets (appearing as 4 rows). On the other hand, the Bulgarian populations of *P. distichum* subsp. *distichum* are clearly distinguished by their slender habit, bright green aspect, loose indumentum or most often complete lack of trichomes. Examination of the Bulgarian material of the genus *Paspalum* L. kept in SO, SOA and SOM showed that only the typical *P. distichum* subsp. *distichum* has been collected in the country previously. Table 1 compares characters measured on specimens of both subspecies from Bulgaria to provide additional data to help distinguish the two taxa.

G. Kunev

Iridaceae

Iris halophila Pall. (≡ *Iris spuria* subsp. *halophila* (Pall.) C. E. Lundstr.) – Fig. 4.

+ **Cm:** Crimea: Sevastopol region, Balaclavsky district, 2.25 km SE of Balaclava, Blizhnee – Golden Beach locality, 44°29'10"N, 33°37'25"E, 120 m, gravelly slope near path in juniper woodland, 30 May 2012, *Seregin* (MW 0606074 as *Iris spuria* subsp. *musulmanica* (Fomin) Takht.); *ibid.*, 2 Aug 2021, *Svirin* (obs.); *ibid.*, Ayazma

Table 1. Biometrical comparison based on measurements of 50 specimens of *Paspalum distichum* subsp. *distichum* from the collections of SO and SOM, collected in the Balkans, and 20 specimens of *P. distichum* subsp. *paucispicatum* taken from own material already deposited at SO and SOM or kept in the private herbarium of G. Kunev. – Measurements are in mm: minimum–mean–maximum.

Taxon	<i>Paspalum distichum</i> subsp. <i>distichum</i>	<i>P. distichum</i> subsp. <i>paucispicatum</i>
Culm length from top of raceme to first rooting node	10– 40 –50	50– 65 –120
Leaf blade width	2.2– 3.7 –5.6	4.1– 5.5 –7.2
Leaf blade length	56– 108 –197	85– 147 –191
Raceme length	28– 42.2 –58	52– 69.8 –85
Length between raceme base and uppermost node	33– 103.1 –145	109– 182 –229

terrain, 44°29'09.54"N, 33°37'27.90"E, 145 m, clay slope, badlands, 24 May 2022, *Svirin* (YALT); *ibid.*, terrace in pine plantations, 24 May 2022, *Yevseyenkov* (photo: <https://www.plantarium.ru/page/image/id/759348.html>). – The native range of this species is SE Europe to C Asia, predominantly in the steppe biome. The localities closest to the Crimean populations are in the NW Black Sea region of Romania and adjacent Ukraine where this species is common. Typical habitats of *Iris halophila* are steppe slopes, wet and alkaline meadows and solonchaks (Fomin & Bordzilovskiy 1950; Prodan & Nyárády 1966). In Balaclava, it grows on a coastal slope on clay alkaline soils, which are moistened by temporary streams and groundwater in natural badland habitats and on artificial terraces with *Pinus brutia* Ten. plantations, associated with *Elymus nodosus* (Griseb.) Melderis, *Galium xeroticum* (Klokov) Pobed., *Phragmites australis* (Cav.) Steud., *Teucrium chamaedrys* L. and other species. The population covers an area of about 2000 m² and includes several hundred individuals, but only a few of them bloom. Probably, the first herbarium specimen of *I. spuria* L. affinity from this locality was collected in 2012 by A. Seregin and identified as *I. spuria* subsp. *musulmanica* (Fomin) Takht. (Seregin 2023a), but this record was not included in the additions to the flora of the Sevastopol area (Seregin & al. 2015). *Iris spuria* subsp. *musulmanica* was mentioned before for Crimea as an alien species naturalized near Yalta (Didukh & Yena 1999; Yena 2012). It differs from *I. halophila* by its bluish (not yellow) flowers. The plants from Balaclava are characterized by the following morphological features: plants 15–40 cm tall; leaves not or slightly exceeding the flowering stem, 7–15 mm wide; flowers 2 or 3 per peduncle, 6–8 cm in diam.; tepals sulphur-yellow or pale yellow with a bright yellow spot in the centre of the limb of the fall.

S. Svirin & E. Kashirina



Fig. 3. *Paspalum distichum* subsp. *paucispicatum* – A: general habit of typical plants; B: inflorescence, often 3-branched, rachis usually bearing 2 rows of paired spikelets (vs spikelets mostly not paired in *P. distichum* subsp. *distichum*); C: leaves and sheaths; D: node, usually bearing dense, long, bulbous-based trichomes. – Source of material: Bulgaria, Pleven Province, near Belene, 3 Oct 2022, *Kunev* (SO 108192, SOM 177792, SOM 177793). – Photographs by G. Kunev.



Fig. 4. *Iris halophila* – A: flowering plant; B: fruits. – A: Crimea, Sevastopol region, Balaclava vicinity, 24 May 2022; B: ibid., 23 Aug 2021; both photographs by S. Svirin.

Iris unguicularis subsp. *carica* (Wern. Schulze) A. P. Davis & Jury

– **Gr:** This taxon was erroneously reported from the Ionian and W and C Aegean islands and continental Greece (Dimopoulos & al. 2013, 2020; Flora Ionica Working Group 2016+; Strid 2016: map 2066), where in fact it is replaced by *Iris unguicularis* subsp. *angustifolia* (Boiss. & Heldr.) Greuter (see Davis & Jury 1990: 296–297). *Iris unguicularis* subsp. *carica* (s. str.) is confined to SW Anatolia (vilayets of İzmir and Muğla, the ancient territories of Caria and Lycia) and the East Aegean Islands of Chios, Samos, Kos, Tilos, Simi and Rodos (Mathew 2000; Burton & Tan 2017). It should be noted that Davis & Jury (1990: 295, 297), when erecting *I. unguicularis* subsp. *carica* var. *carica* (Wern. Schulze) A. P. Davis & Jury and var. *syriaca* (Wern. Schulze) A. P. Davis & Jury, ascribed their new combinations to the basionym author “W. Schultze”, therewith erroneously referring to Wilhelm Schultze (Brummitt & Powell 1992: 576), who worked on the genus *Rubus* in C Europe (see, e.g., Sagorski 1894), instead of correctly to the *Iris* researcher Werner Schulze (Schulze 1965), whose standardized author abbreviation reads “Wern. Schulze”. The nominate subspecies of *Iris unguicularis* is native to oak forests in Mediterranean NW Africa, while Levantine populations of the species (see Davis & Jury 1990: 291, fig. 19) be-

long to *I. unguicularis* subsp. *syriaca* (Wern. Schulze) Güner. Th. Raus

Leguminosae (Fabaceae)

Vigna luteola (Jacq.) Benth. – Fig. 5.

D AE(G): Greece, East Aegean Islands: Rodos, Paradi, river mouth 1 km W of Rodos airport, 36°23'51"N, 28°03'30"E, c. 5 m, stand of *Phragmites* Adans., 5 Jul 2021, Krause & Ristow (herb. Ristow + photo [Fig. 5B]); ibid., 19 Oct 2021, still in flower, Sasse (photo [Fig. 5A]); 23 Sep 2022, Kummer (herb. Kummer); 12 Oct 2022, Manousakis (obs.). – New to Greece. In 2021, we found a population of several plants W of the airport of Rodos, in flower and fruit. The habitat is a mixed stand of *Phragmites australis* (Cav.) Steud. and *Arundo donax* L. in a small riverbed 150 m from the sea. The species is accompanied by typical wetland plants such as *Calyptegia* cf. *sepium* (L.) R. Br., *Cynanchum acutum* L., *Cyperus fuscus* L., *Epilobium hirsutum* L., *Lysimachia* sp., *Lycopus europaeus* L., *Lythrum junceum* Banks & Sol., *Pulicaria dysenterica* (L.) Bernh., *Schoenoplectus littoralis* (Schrad.) Palla, *Typha domingensis* (Pers.) Steud. and *Veronica anagallis-aquatica* L. as well as *Glycyrrhiza glabra* L., *Rubus sanctus* Schreb., *Symphotrichum squamatum* (Spreng.) G. L. Nesom and *Euphorbia hirsuta* L.

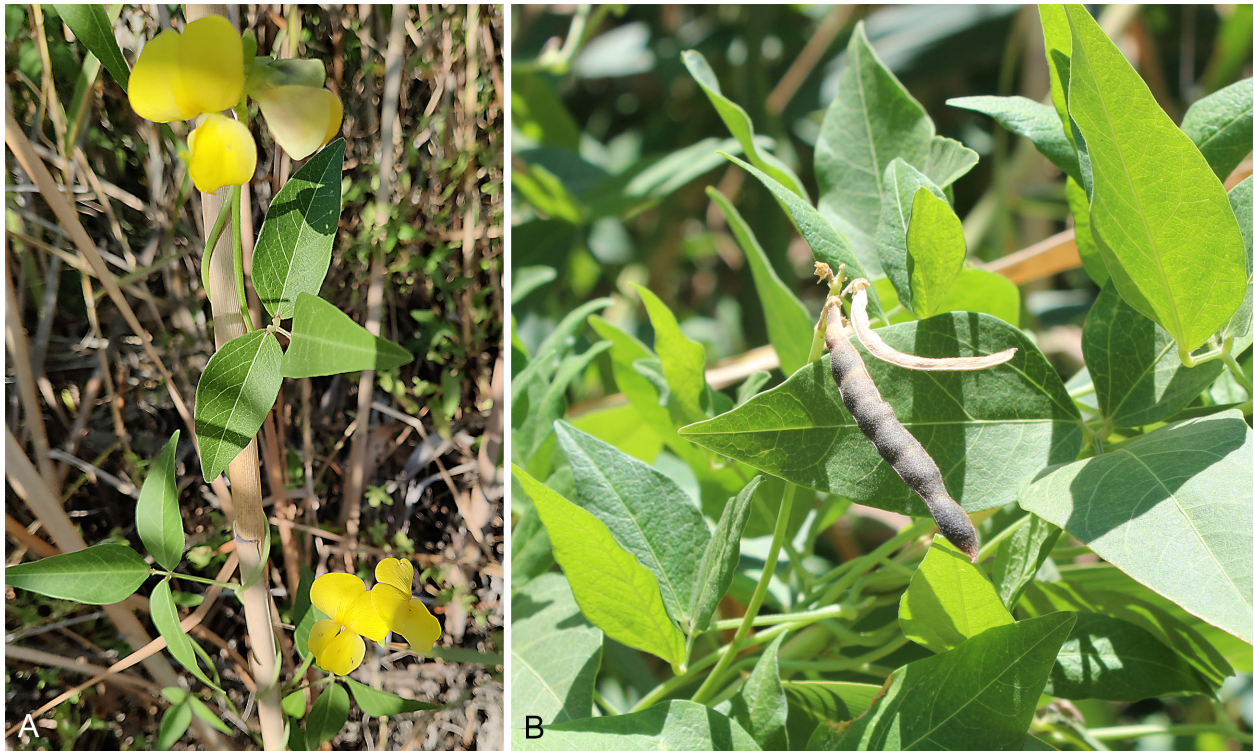


Fig. 5. *Vigna luteola* – A: flowering branch; B: fruiting branch. – A: Greece, East Aegean Islands, Rodos, Paradisi, 19 Oct 2021, photograph by I. Sasse; B: *ibid.*, 5 Jul 2021, photograph by J. Krause.

(for the last species only one other recent finding on Rodos is known). *Symphytotrichum squamatum* is the only typical ruderal species, while *Glycyrrhiza glabra* can be interpreted as a remnant or escape of old or ancient cultivation (see Strid 2016: map 1642). At the location of Paradisi, *Vigna luteola* seems to be a typical species of summer and autumn presence; in springtime (April 2022) no trace of it was to be seen.

The pantropical *Vigna luteola* reaches the Mediterranean only in the east: it is known from Israel (Post 1932; Zohary 1972), Lebanon (Post 1932; Mouterde 1970) and Egypt (Täckholm 1974). The nearest populations probably grow in the Nile delta, c. 600 km S of Rodos (Shaltout & al. 1994). The species is used as fodder plant on a small scale, e.g. in the U.S.A. (Tomooka & al. 2011). It is known to be highly salt-tolerant (Yoshida & al. 2020).

The Paradisi population clearly gives the impression of being established: several plants growing over at least 100 m² observed for two years in a natural habitat. The direct surroundings with ± extensive agriculture and partly abandoned gardens with *Cenchrus clandestinus* (Hochst. ex Chiov.) Morrone, *Chasmanthe floribunda* (Salisb.) N. E. Br., *Myoporum* cf. *laetum* G. Forst. and *Tropaeolum majus* L. as garden escapes nearby make a recent introduction most likely. The wider surrounding region of the N coast of Rodos, which is rather disturbed by agriculture, tourism and urban sprawl, is also a possible source of introduction. On the other hand, the growth site itself, a reed stand, looks rather undisturbed

and fits well with the habitats mentioned in literature for the Mediterranean occurrence of *Vigna luteola* (“by rivers and ditches”, Zohary 1972; “hedges by ditches and swampy places”, Post 1932; slopes, but also terraces and the littoral especially of canals of the Nile delta, Shaltout & al. 1994). Many of the above-mentioned populations of Egypt and SW Asia appear to be associated with ancient settlements (see, e.g., *Forsskal 1234* in C, collected 1761 in Rashid [Rosetta] in the Nile delta, <https://plants.jstor.org/stable/10.5555/al.ap.specimen.c10002194>). Recently, Frumin & al. (2015) discussed the connection of *V. luteola* in Israel to the ancient settlements of the enigmatic Philistine people of the late iron-age, who are said to have originated in the Aegean area. Though our discovery site near Paradisi is not far from the important ancient settlement of Ialysos, such a connection for Rodos needs further investigation.

M. Ristow, J. Krause, V. Kummer, F. Sasse & I. Sasse

Malvaceae

Sida rhombifolia L. – Fig. 6.

A Gg: Georgia: Guria region, Ureki–Magnetiti, nameless small street connecting Taqashvili Street and main lateral street, 41.9957556°N, 41.7632444°E, 5 m, eleven small shrubs, 26 Aug 2022, *Novák* (BRNU photo [Fig. 6] + herbarium specimen revised by G. Tavilla); *ibid.*, Imereti region, Vartsikhe, Ajameti Managed Reserve, 3.2 km ESE of Vartsikhe monastery, 42.1472467°N, 42.7536211°E, 115 m, 28 Aug 2022, roadside in forest,



Fig. 6. *Sida rhombifolia*, flowering branch. – Georgia, Guria region, Ureki–Magnetiti, 26 Aug 2022, photograph by P. Novák.

c. 20 small shrubs, Novák, Pustková, Sedláček, Štětková, Szokala & Večeřa (obs.). – *Sida rhombifolia* is a perennial weedy species probably spreading in the Mediterranean region, actually known from Italy and Spain (Cambria & al. 2022). It is distributed in tropical, subtropical and warm-temperate parts of the world, but its native range remains unknown, probably located in the palaeotropics (Verdcourt 2004). It prefers open, especially ruderal habitats (roadsides, abandoned farmland, seasonally flooded territories or gardens). The new sites are situated in the humid warm-temperate Colchic lowland of W Georgia, SW Caucasus. Both populations appeared relatively well established, consisting of woody shrubs c. 1.3 m tall. Presumably *S. rhombifolia* has been introduced accidentally to Georgia. The seeds of *Sida* L. are dispersed by wind, humans, animals and rainwater, and those of *S. rhombifolia* are frequently disseminated when their barbed awns stick to animals, clothing and other objects. In Georgia, the species has spread probably by seeds carried on vehicles linked to commercial activities (e.g. grain importation) or on migrating birds. The plants inhabit slightly trampled vegetation of the phytosociological class *Digitario sanguinalis-Eragrostietea minoris* Mucina & al. (Mucina & al. 2016), accompanied by *Cynodon dactylon* (L.) Pers., *Paspalum dilatatum* Poir., *Perilla frutescens* (L.) Britton, *Solanum pseudocapsicum* L. and *Sporobolus indicus* (L.) R. Br. The only species of *Sida* previously reported from Georgia is *S. spinosa* L., an annual alien weed (Valdés & Raab-Straube 2011+). Further spreading

of *S. rhombifolia* across W Georgia is predictable, similar to numerous other subtropical and tropical species, due to the favourable climate of the region, which is warm-temperate and humid all year round (Ponert 1977; Shara-bidze & al. 2018).

P. Novák & G. Tavilla

Portulacaceae

Portulaca cypria Danin – Fig. 7A, B.

A Cm: Crimea: Sudak, S slope, 31 Jul 1886, *Zelenetskiy* (YALT). – New area record for this taxon, identified by SEM study of the seeds. Its native range is the Mediterranean. It is also found in Belarus, Belgium, Iran, Switzerland and the Transcarpathian region of Ukraine (Uotila 2011+; Amini Rad & al. 2017; Bulakh & al. 2019; POWO

2023b). The only old record of this microspecies in Crimea suggests that it is a casual alien there.

E. Bulakh, L. E. Ryff & M. Shevera

Portulaca daninii Galasso & al. (≡ *Portulaca tuberculata* (Danin & H. G. Baker) Danin 2006 [non *Portulaca tuberculata* León 1950] ≡ *Portulaca oleracea* subsp. *tuberculata* Danin & H. G. Baker) – Fig. 7C, D.

A Cm: Crimea: Sudak, S slope, 31 Jul 1886, *Zelenetskiy* (YALT); Dzhankoyskiy district, Tarkhan-Sunak, 17 Aug 1897, *collector unknown* (YALT); Feodosiyskiy district, Vladislavovskiy site of grain farm, Bashta (melon field), area between Novo-Pokrovka village and Seit-Asan village, 22 Aug 1930, *Deutsch (Doych)* (YALT). – New area record for this taxon, identified by SEM study of the seeds. Its native range is Tropical America. It has recently been noted from Ukraine (Bulakh & al. 2020, as *Portulaca tuberculata*) and Poland (Bulakh & al. 2022). Only ancient specimens of this species have been discovered in Crimea. Perhaps it has disappeared by now; therefore it qualifies as a casual alien.

E. Bulakh, L. E. Ryff & M. Shevera

Portulaca granulostellulata (Poelln.) Ricceri & Arigoni ≡ *Portulaca oleracea* subsp. *granulostellulata* (Poelln.) Danin & H. G. Baker) – Fig. 7E, F.

D Cm: Crimea: Simferopol, 1886, *Andreyev* (YALT); Nikita, Nikitskiy Botanical Garden, 44°30'44"N, 34°13'51"E, 160 m, flowerbeds, 6 Dec 2019, *Ryff* (YALT); Gurzuf, on

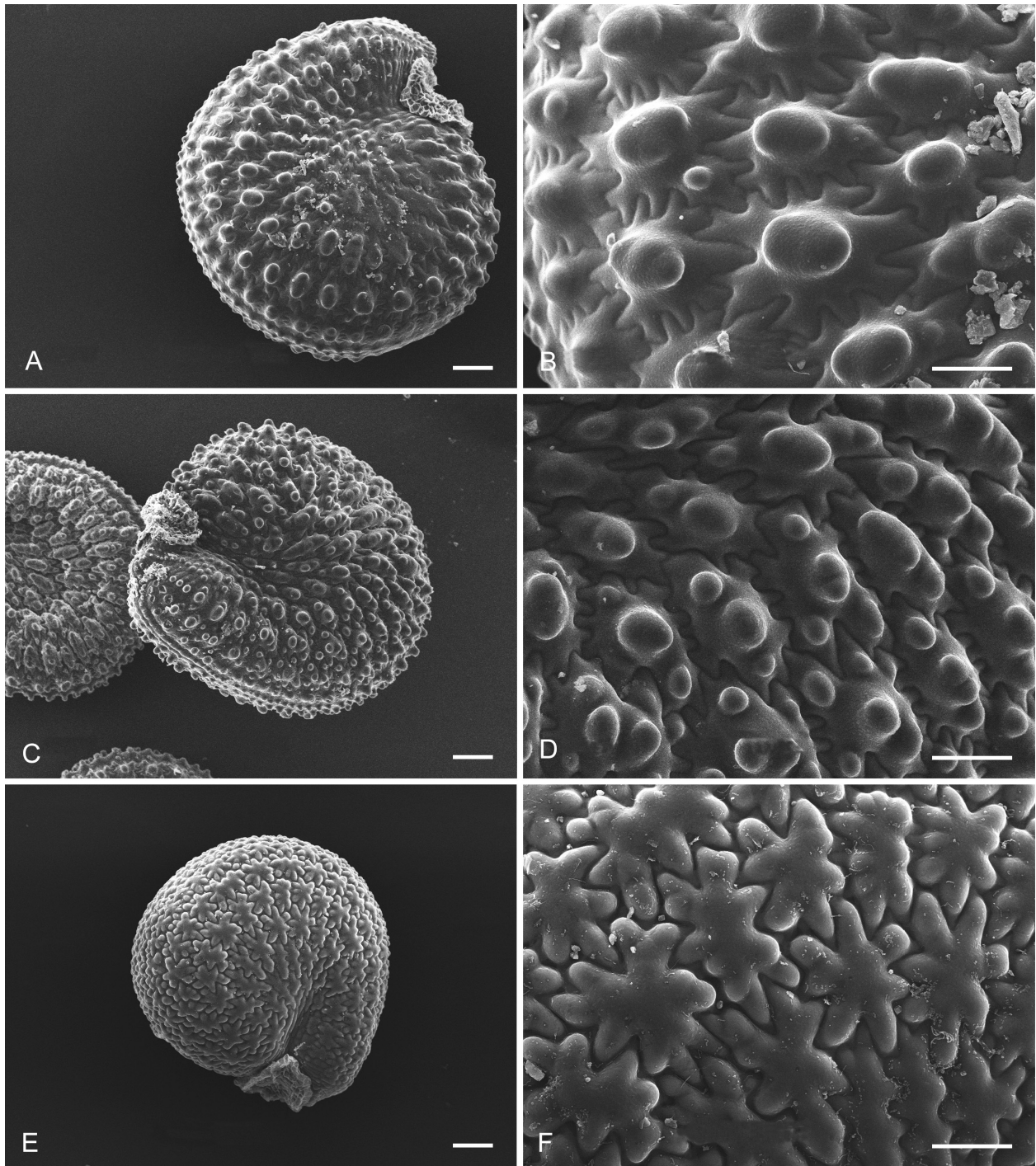


Fig. 7. *Portulaca oleracea* aggregate, ultrastructural study of seed surfaces by SEM. – A, B: *P. cypria*, Crimea, Sudak, S slope, 31 Jul 1886, Zelenetskiy (YALT). – C, D: *P. daninii*, Crimea, Tarkhan-Sunak, 17 Aug 1897, collector unknown (YALT). – E, F: *P. granulatostellulata*, Crimea, Great Yalta, Krasnokamyanka village, 44°33'57"N, 34°17'02"E, 250 m, side of asphalt road, 3 Aug 2020, Ryff & Ryff (YALT). – Scale bars: A, C, E = 100 µm; B, D, F = 50 µm. – Photographs by E. Bulakh & A. Terebilenko.

the embankment, 44°32'09"N, 34°16'26"E, 5 m, flowerbed, 15 Dec 2019, Ryff (YALT); Sevastopol, Krishtal beach area, 44°37'01.8"N, 33°31'03.3"E, 3 m, concrete embankment, 24 Aug 2020, Bogdanovich & Ryff (herb. Ryff); Bakhchisaray, railway station, 44°45'24.7"N 33°51'01.9"E, 145 m, on the tracks, 23 Aug 2020, Ryff (herb. Ryff); Kerch, bus station area, Melek-Chesmensky mound, 45°21'46"N, 36°28'13"E, 5 m, side of street, 10

Sep 2020, Bogdanovich & Ryff (herb. Ryff); Great Yalta, Krasnokamyanka village, 44°33'57"N, 34°17'02"E, 250 m, side of asphalt road, 3 Aug 2020, Ryff & Ryff (YALT); Yalta, Leningradskaya str., 44°30'06"N, 34°09'56"E, 50 m, on wall, 18 Sep 2021, Ryff (YALT). – New area record for this taxon, identified by SEM study of the seeds. It is one of the most common native taxa of the *Portulaca oleracea* aggregate in Europe and W Asia, primarily in

the subtropical zone (Danin 2011; Danin & al. 2011, 2016; Uotila 2011+; Amini Rad & al. 2017; POWO 2023b). For a number of countries, including Ukraine, it is also cited as alien (Bulakh & al. 2019, 2020; POWO 2023b). In Crimea, it has been present for a long time and is found in different parts of the peninsula, but only in anthropogenic habitats.

E. Bulakh, L. E. Ryff & M. Shevera

Portulaca macrantha (Maire) Ricceri & Arrigoni (\equiv *Portulaca oleracea* subsp. *macrantha* (Maire) Maire). – Fig. 8A, B.

A Cm: Crimea: Sudak, S slope, 31 Jul 1886, *Zelenetskiy* (YALT); Balaclava, 1896, *Andreyev* (YALT); Simeiz, 28 Jul 1903, in collibus, *Golde* (YALT); SW slope of Ayudag mountain, 22 Aug 1981, *Golubyev & Volokitin* (YALT); Nikita, Nikitsky Botanical Garden, 44°30'41"N, 34°13'56"E, 150 m, flowerbed, 6 Dec 2019, *Ryff* (YALT). – New area record for this taxon, identified by SEM study of the seeds. It is native to the Canary Islands and Morocco (Dobignard & Chatelain 2013), cultivated in Algeria and given as introduced in Tunisia (Domina & al. 2010) and Poland (Bulakh & al. 2022).

E. Bulakh, L. E. Ryff & M. Shevera

N Uk: Ukraine: Kherson region, Tsuriupinsk district, Kozachi Lageri, sand, 19 Jul 1952, *Gryn & Dubovik* (KW s.n.); Zhytomyr region, Zhytomyr district, Dovzhyk village, weeds in market garden, 31 Aug 2019, *Orlov* (KW 156624); *ibid.*, Glybochytzia village, side of Zhytomyr–Kyiv highway, 18 Sep 2019, *Orlov* (KW 156626); *ibid.*, Barashivka village, private market garden, on hill, as weed, 2 Oct 2019, *Orlov* (KW 156622); *ibid.*, Zhytomyr, railway station, unloading yard, 8 Oct 2019, *Orlov* (KW 156625); *ibid.*, Golubiatyn village, railway station, 14 Aug 2021, *Orlov* (KW 159035); *ibid.*, Troshcha village, market garden, 20 Aug 2021, *Orlov* (KW 159034); *ibid.*, Motovylovka village, side of highway, 15 Sep 2021, *Orlov* (KW 159036). – New area record for this taxon, identified by SEM study of the seeds. The closest known location is in Poland (Bulakh & al. 2022). In continental Ukraine, it is found in forests (Polissia), forest-steppe and steppe (N Black Sea region) zones. It is probably the most common microspecies of the *Portulaca oleracea* aggregate in the country.

E. Bulakh, O. Orlov, P. Bulakh & M. Shevera

Portulaca nitida (Danin & H. G. Baker) Ricceri & Arrigoni (\equiv *Portulaca oleracea* subsp. *nitida* Danin & H. G. Baker) – Fig. 8C, D.

A Cm: Crimea: Sevastopol, surroundings, Yalta Ring, 44°32'26"N, 33°35'49"E, 100 m, side of road, 19 Jul 2020, *Ryff* (YALT). – New area record for this taxon, identified by SEM study of the seeds. One of the most widespread taxa of the *Portulaca oleracea* complex. The native range is Europe to C Asia and N Africa (POWO 2023b). It was recently noted as an alien in W Ukraine

(Bulakh & al. 2020). In Crimea, it is a rare morphotype and likely to be considered a casual alien.

E. Bulakh, L. E. Ryff & M. Shevera

Portulaca oleracea L. s. str. – Fig. 8E, F

D Cm: Crimea: Dzhankovskiy district, Taganash, 17 Aug 1886, *Zelenetskiy* (YALT); Sevastopol region, Balaclava, boulevard, 27 Jul 1897, *collector unknown* (YALT); S coast of Crimea, Artek, “New village”, 44°33'57"N, 34°19'03"E, 200 m, as weed on trail, 6 Sep 2021, *Ryff* (YALT); Yalta, bus station, 44°30'42"N, 34°10'14"E, 45 m, flowerbed, 28 Sep 2021, *Ryff* (YALT). – *Portulaca oleracea* is the only species of the genus reported earlier for Crimea. In some sources, it is given as native (Yena 2012), in others as alien (POWO 2023b). It has been cited for Crimea as a plant widespread in ruderal places and agricultural lands since at least the end of the 18th century. In the Euro+Med Plant-Base (Uotila 2011+), the *P. oleracea* aggregate in general is reported for the region, but neither *P. oleracea* s. str. nor other taxa of *P. oleracea* complex are given. The results of our SEM study of the seeds confirm that *P. oleracea* s. str. occurs in Crimea along with other taxa of this complex, which are listed here for the first time. Specimens of this morphotype have been collected over a long time in different parts of the peninsula, though occasionally, usually in anthropogenic habitats. Probably it is a native plant or an archaeophyte in Crimea.

E. Bulakh, L. E. Ryff & M. Shevera

Portulaca papillatostellulata (Danin & H. G. Baker) Danin (\equiv *Portulaca oleracea* subsp. *papillatostellulata* Danin & H. G. Baker) – Fig. 9A, B.

N Cm: Crimea: Gurzuf, on the embankment, 44°32'09"N, 33°38'21"E, 5 m, flowerbed, 15 Dec 2019, *Ryff* (YALT); Bakhchisaray, railway station, 44°45'24.7"N 33°51'01.9"E, 145 m, on the tracks, 23 Aug 2020, *Ryff* (herb. Ryff); Armiansk vicinity, administrative border, 46°08'38"N, 34°16'26"E, 20 m, near road, 7 Oct 2021, *Ryff* (herb. Ryff); Kerch, bus station area, Melek-Chesmensky mound, 45°21'46"N, 36°28'13"E, 5 m, side of street, 10 Sep 2020, *Bogdanovich & Ryff* (herb. Ryff). – New area record for this taxon, identified by SEM study of the seeds. The native range is the Mediterranean; it is also given as native for some countries of the temperate zone of C and E Europe (POWO 2023b). It was recently noted from Ukraine (Bulakh & al. 2019, 2020).

E. Bulakh, L. E. Ryff & M. Shevera

Portulaca rausii Danin (\equiv *Portulaca oleracea* subsp. *rausii* (Danin) J. Walter) – Fig. 9C, D.

+ Cm: Crimea: Simeiz, W slope of Koshka mountain, 15 Aug 1977, *Kosykh & Usacheva* (YALT); S coast of Crimea, top of the Red Stone cliff, 44°34'09"N, 34°17'08"E, 370 m, 4 Aug 1978, *Kosykh & Usacheva* (YALT); Gurzuf, 44°32'36"N, 34°15'59"E, 150 m, vineyard below bus stop “Priyatnoye svidaniye”, 27 Jul 2020, *Ryff* (YALT); Nikita village, 44°30'59"N, 34°14'14"E, 170 m, along

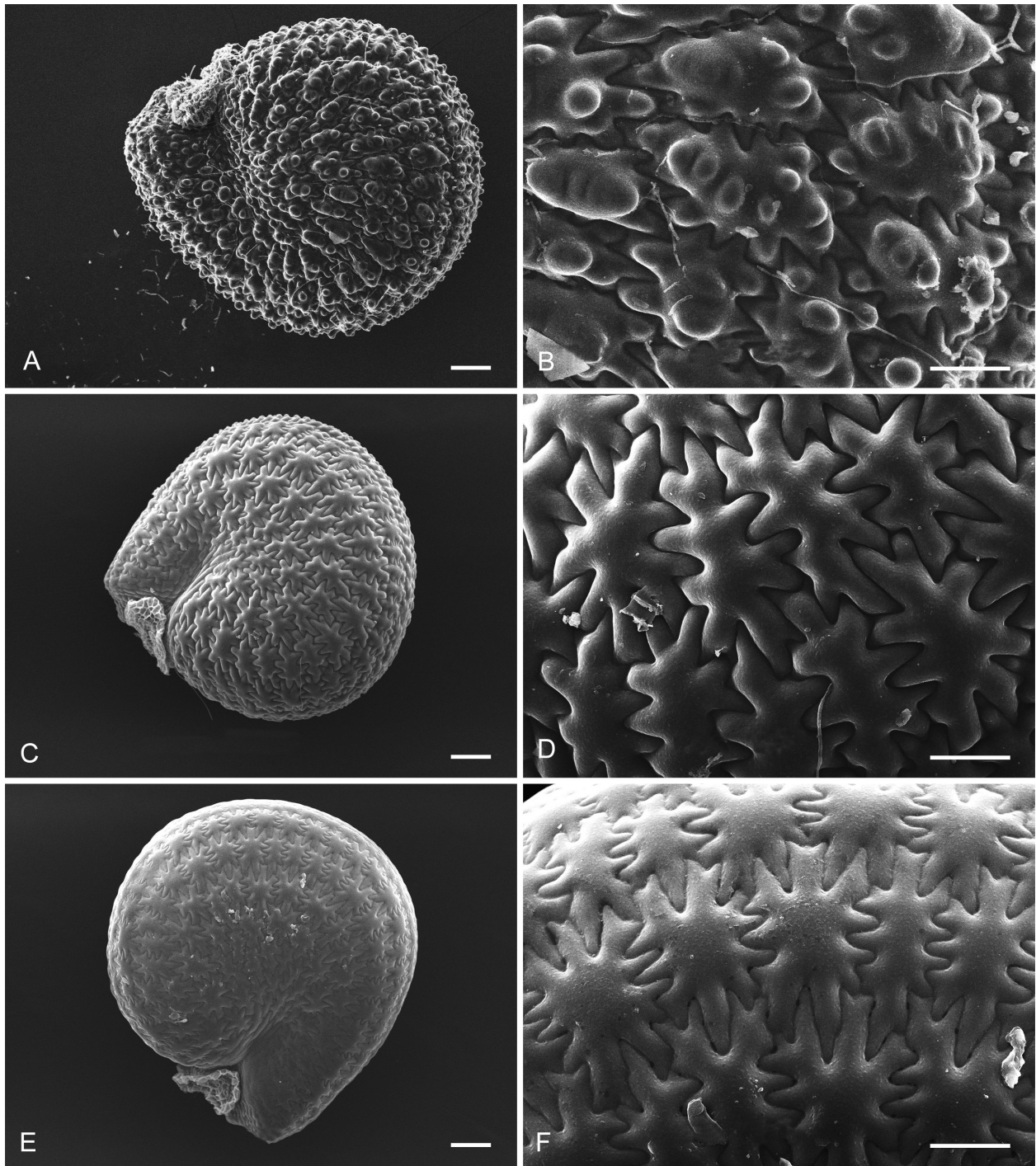


Fig. 8. *Portulaca oleracea* aggregate, ultrastructural study of seed surfaces by SEM. – A, B: *P. macrantha*, Crimea, Simeiz, 28 Jul 1903, in collibus, Golde (YALT). – C, D: *P. nitida*, Crimea, Sevastopol, surroundings, Yalta Ring, 44°32'26"N, 33°35'49"E, 100 m, side of road, 19 Jul 2020, Ryff (YALT). – E, F: *P. oleracea* s. str., Crimea, S coast of Crimea, Artek, "New village", 44°33'57"N, 34°19'03"E, 200 m, as weed on trail, 6 Sep 2021, Ryff (YALT). – Scale bars: A, C, E = 100 µm; B, D, F = 50 µm. – Photographs by E. Bulakh & A. Terebilenko.

street, 29 Jul 2020, Ryff (YALT). – New area record for this taxon, identified by SEM study of the seeds. Its native range is the Mediterranean. The localities nearest to the Crimean populations are in continental S Ukraine, where it is noted as doubtfully naturalized (Dzhus & al. 2015; POWO 2023b), and in the E Mediterranean, where it is native. In Crimea, *Portulaca rausii* was found pri-

marily in natural and semi-natural habitats only on the S coast, in the submediterranean zone. This suggests that it is a native species there.

E. Bulakh, L. E. Ryff & M. Shevera

Portulaca sardoa Danin & al. – Fig. 9E, F.

A Cm: Crimea: Yalta, bus station, 44°30'42"N,

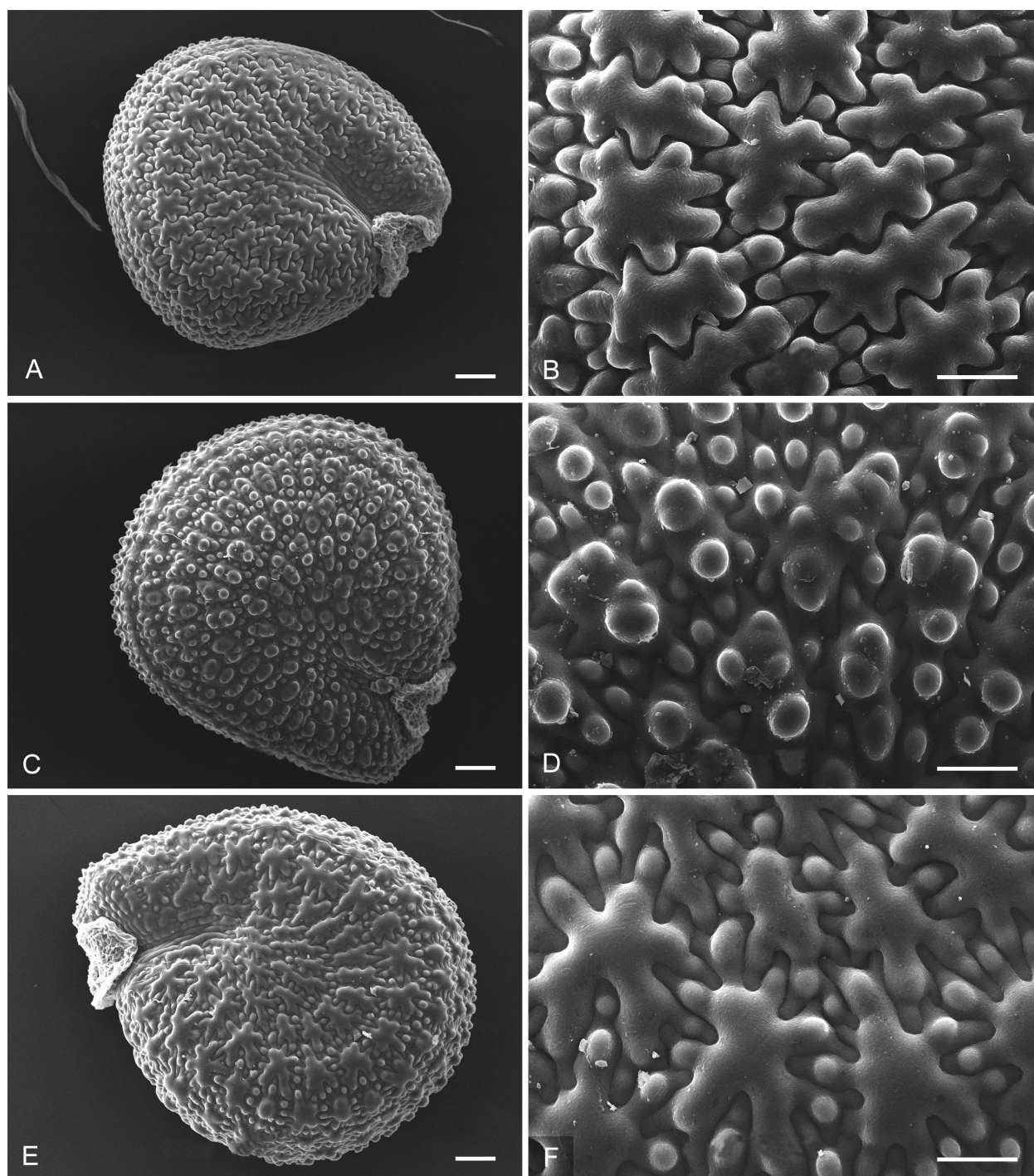


Fig. 9. *Portulaca oleracea* aggregate, ultrastructural study of seed surfaces by SEM. – A, B: *P. papillatostellulata*, Crimea, Bakhchisaray, railway station, 44°45'24.7"N 33°51'01.9"E, 145 m, on the tracks, 23 Aug 2020, Ryff (herb. Ryff). – C, D: *P. rausii*, Crimea, Gurzuf, 44°32'36"N, 34°15'59"E, 150 m, vineyard below bus stop "Priyatnoye svidaniye", 27 Jul 2020, Ryff (YALT). – E, F: *P. sardoa*, Crimea, Yalta, bus station, 44°30'42"N, 34°10'14"E, 45 m, flowerbed, 22 Dec 2019, Ryff (YALT). – Scale bars: A, C, E = 100 µm; B, D, F = 50 µm. – Photographs by E. Bulakh & A. Terebilenko.

34°10'14"E, 45 m, flowerbed, 22 Dec 2019, Ryff (YALT); *ibid.*, 44°30'41"N, 34°10'11"E, 45 m, flowerpot, 28 Sep 2021, Ryff (YALT). – This taxon is given only for Sardinia and Corsica (Danin & al. 2012, 2016; POWO 2023b). In Crimea, *Portulaca sardoa* has been found in a single locality so far. Probably it was accidentally introduced from Italy with a soil mixture or

planting material for ornamental plants.

E. Bulakh, L. E. Ryff & M. Shevera

A Uk: Ukraine: Zhytomyr region, Zhytomyr, centre, near Zhytomyr Hotel, flowerbed, small plant with small leaves, 18 Sep 2019, Orlov (KW 159038); *ibid.*, Zhytomyr district, Teteriwka village, market garden, with large leaves

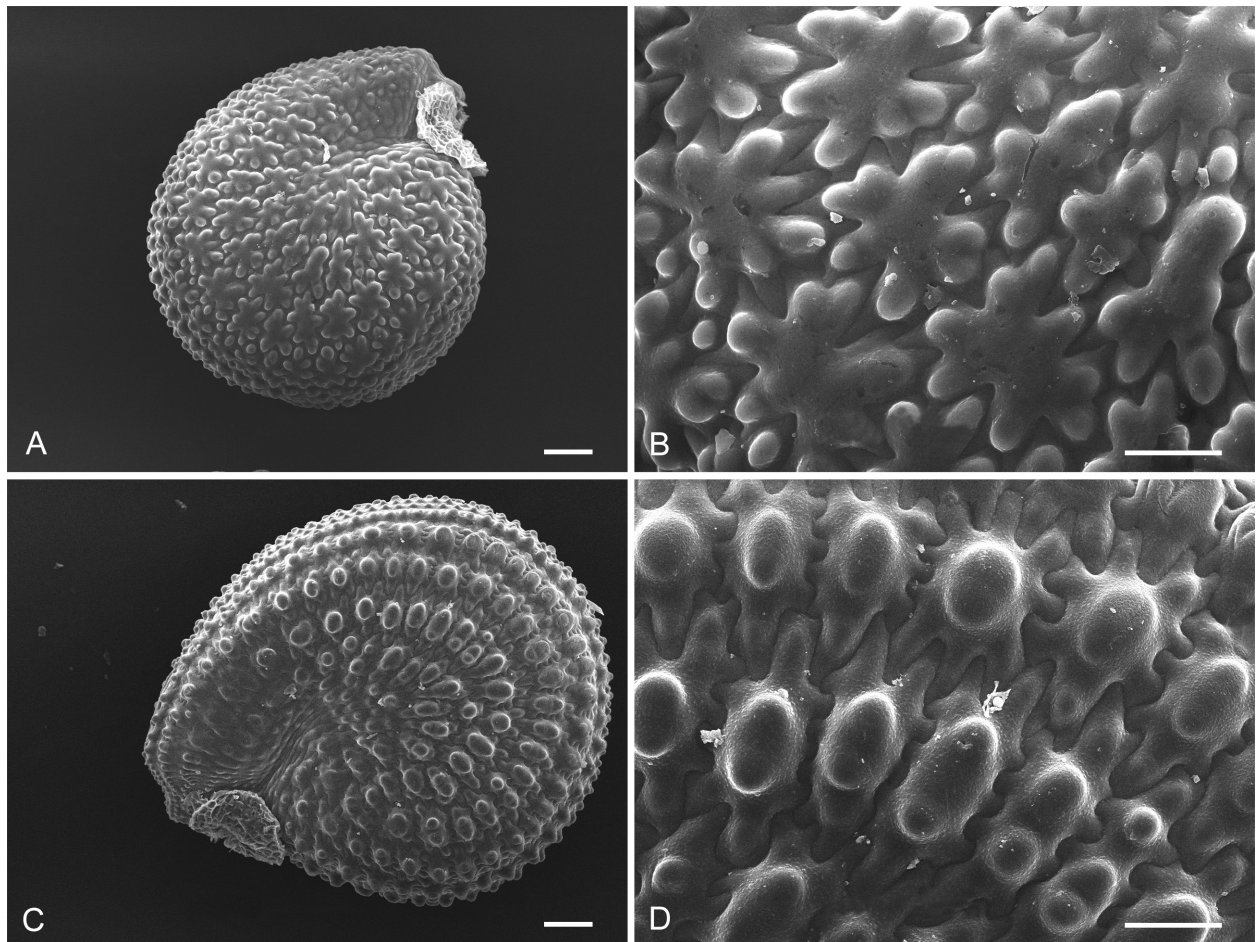


Fig. 10. *Portulaca oleracea* aggregate, ultrastructural study of seed surfaces by SEM. – A, B: *P. socotrana*, Crimea, Gurzuf, Podvoyskogo str., 44°32'38"N, 34°16'48"E, 50 m, 2 Oct 2021, Ryff (YALT). – C, D: *P. trituberculata*, Crimea, vicinity of Nikitsky Botanical Garden, fig tree plot, 10 Oct 1958, Prokonkina (YALT). – Scale bars: A, C = 100 µm; B, D = 50 µm. – Photographs by E. Bulakh & A. Terebilenko.

(2.5–3 cm long), 6 Oct 2019, Orlov (KW 159047); *ibid.*, Radomyshl, private sector, market garden, 9 Aug 2020, Orlov (KW 159039); *ibid.*, Berdychiv, railway station, near the track, 24 Jul 2021, Orlov (KW 159043); *ibid.*, Troshcha village, market garden, 20 Aug 2021, Orlov (KW 159034); *ibid.*, Velyka Volytsia village, wet clay on shore of pond, 16 Sep 2021, Orlov (KW 159041); *ibid.*, Velyki Korovyntsi village, railway station, gravel, 19 Sep 2021, Orlov (KW 159040); *ibid.*, Berdychiv district, Derganivka village, railway station, 9 Oct 2021, Orlov (KW 159042). – New area record for this taxon, identified by SEM study of the seeds. Previously, *Portulaca sardoa* was known only from Sardinia and Corsica (Danin & al. 2012, 2016; POWO 2023b). This is the first record for E Europe.

E. Bulakh, O. Orlov, P. Bulakh & M. Shevera

Portulaca socotrana Domina & Raimondo – Fig. 10A, B. **A Cm:** Crimea: Gurzuf, Podvoyskogo str., 44°32'38"N, 34°16'48"E, 50 m, 2 Oct 2021, Ryff (YALT). – New area record for this taxon, identified by SEM study of the seeds. The taxon was previously considered endemic to the island of Socotra in the Indian Ocean (Domina & Raimondo

2009), from where it was described, but was later noted in Tehran province in Iran (Amini Rad & al. 2017). It was probably accidentally introduced to Crimea with imported building materials. *Portulaca socotrana* grows together with other alien species recently recorded in the region: *Acalypha australis* L. (Yena 2012), *Erigeron sumatrensis* Retz. (Raab-Straube & Raus 2017) and *Sagina apetala* Ard. (Raab-Straube & Raus 2016).

E. Bulakh, L. E. Ryff & M. Shevera

Portulaca trituberculata Danin & al. (≡ *Portulaca oleracea* subsp. *trituberculata* (Danin & al.) J. Walter) – Fig. 10C, D.

+ Cm: Crimea: Sevastopol region, Georgiyevskiy monastery, 31 Aug 1891, collector unknown (YALT); Balaclava, 1896, Andreyev (YALT); Staryi Krym, ravines along E slope of Holyi Agarmysh, 17 Aug 1927, Tsyryna (YALT); vicinity of Nikitsky Botanical Garden, fig tree plot, 10 Oct 1958, Prokonkina (YALT); vicinity of Gurzuf, Myortvaya dolina, 44°33'03"N, 34°17'01"E, 80 m, dry grassland on rocky slope, 24 Feb 2006, Ryff (YALT); *ibid.*, below bus stop "Priyatnoye svidaniye", 44°32'36"N, 34°15'59"E,

150 m, vineyard, 27 Jul 2020, *Ryff* (YALT); *ibid.*, border between vineyards and territory of Yalta Natural Mountain and Forest Reserve near road to Gornoye Ozero, 44°32'28"N, 34°15'40"E, 250 m, flysch outcrops along road, 7 Nov 2020, *Ryff* (YALT). – New area record for this taxon, identified by SEM study of the seeds. The native range of this taxon is the Mediterranean; it is found in Europe, N Africa and W Asia (Amini Rad & al. 2017; POWO 2023b). Recently, *Portulaca trituberculata* was noted from continental Ukraine (Bulakh & al. 2020). Because this taxon is characterized as native in the regions adjacent to Crimea, and it has been widely distributed on the peninsula for a long time, mostly in natural and semi-natural habitats, it can obviously be considered a native species there.

E. Bulakh, L. E. Ryff & M. Shevera

Rosaceae

Prunus zielinskii (Browicz) Kosiński, D. Tomasz. & Ziel., **comb. nov.** = *Amygdalus zielinskii* Browicz in *Karaca Arbor. Mag.* 1: 126. 1992.

Due to the results of the latest molecular studies indicating that there was a need for a broad treatment of the genus *Prunus* (*Rosaceae*), it has also been necessary to correct some of the names of the species that were previously included in narrowly understood taxa at the rank of genus, including *Amygdalus* L. (Lee & Wen 2001; Bortiri & al. 2002, 2006). In the case of almonds, this adjustment has already been made for nearly all known species (Eisenman 2015), except for the relatively recently described *A. zielinskii* (Browicz 1992). That species has not yet had a formal name validation in the genus *Prunus* L., and in the POWO database (POWO 2023c), its name has been marked as “unplaced”.

Prunus zielinskii is a range-restricted taxon, so far known from several localities in SC Turkey, on the border of the provinces of Antalya and Mersin. It is similar to *P. argentea* Rehder (*Amygdalus orientalis* Mill.), a species widespread in SW Asia (Post 1896; Townsend & al. 1966; Browicz 1972; Zohary 1972), but differs from the latter primarily by its smaller, clearly serrated leaves and less permanently hairy shoots, becoming completely glabrous in the next growing season.

P. Kosiński, D. Tomaszewski & J. Zieliński

Solanaceae

Datura ferox L.

A Tn: Tunisia, Gafsa, Gafsa South, Kef Derbi, 34°37'45"N, 08°35'06"E, 510 m, along roadside, 27 May 2022, *El Mokni* (Herb. Univ. Monastir). – As part of ongoing studies on updating the list of Tunisian alien flora mainly within the *Solanaceae* (see, e.g., El Mokni 2018, 2019a, 2019b; El Mokni & Domina 2020), we report here a casual alien species new for the alien flora of Tunisia (Gafsa). Like all species of *Datura* L., *D. ferox* seems to be native to Central America (principally Mexico) and

the S U.S.A. (Symon & Haegi 1991; Geeta & Gharaibeh 2007). It is an annual herb growing up to 50 cm tall. The plant has become a significant weed of summer crops and pastures in many subtropical and warm-temperate parts of the world (CABI 2023). For N Africa, it is reported only as naturalized in Algeria, but there was no mention for Tunisia (Valdés 2012+; Dobignard & Chatelain 2013; APD 2023). In 2022, a few individuals were discovered growing along roadsides near Kef Derbi (Gafsa South). In Tunisia, the species seems to be a recent introduction by human activities and can therefore be considered as a casual alien. This is its second report for N Africa. An analytical key is proposed here for Tunisian species of the genus *Datura* (based on Dupin & Smith 2018).

Analytical key to the species of *Datura* occurring in Tunisia

1. Leaves sinuately dentate to pinnately lobed; fruit (capsule) erect; seeds without elaiosome **2**
 - Leaves unequally dentate to almost entire; fruit (capsule) never erect; seeds with elaiosome **3**
2. Fruit with numerous, ± equal, evenly distributed spines *D. stramonium* L.
 - Fruit with few, unequal, stout, unevenly distributed spines (longer at fruit apex) *D. ferox* L.
3. Leaves glabrous; fruit spines short, blunt, sometimes reduced to bumps; corolla commonly with 2 verticils (flore pleno) and purple on outer surface
 - *D. metel* L.
 - Leaves pubescent; fruit spines not reduced, sharp to touch; corolla with 1 verticil and not purple on outer surface **4**
4. Corolla outer surface glabrous *D. innoxia* Mill.
 - Corolla outer surface pubescent *D. wrightii* Regel

R. El Mokni & G. Barone

Umbelliferae (*Apiaceae*)

Daucus guttatus Sm. (= *Daucus guttatus* subsp. *zahariadii* Heywood; = *Daucus broteri* Ten.) – Fig. 11.

+ **Cm:** Crimea: Chernomorskiy district, 3 km WNW of Olenyovka, 45°23'30"N, 32°29'50"E, 20 m, steppe with *Artemisia santonica* Lam., *Festuca valesiaca* Gaudin and *Stipa capillata* L. on rocky ground, 14 Aug 2008, *Seregin & Seregina* (MW 0621545 as *D. carota* L. s. l.) (*Seregin* 2023b); Sevastopol region, Balaclava, 44°31'58"N, 33°36'58"E, 95 m, dry grassland, 4 Jul 2018, *Ryff* (YALT); *ibid.*, 23 Jul 2018, *Ryff* (YALT); *ibid.*, S of Orlovka, 44°43'09.3"N, 33°34'45.2"E, 60 m, dry grassland, 20 Jun 2020, *Safina (dinasafina)* (photo: <https://www.inaturalist.org/observations/50313175> as *D. carota* L.); *ibid.*, Chernorech'e vicinity, 44°32'35.6"N, 33°39'46.1"E, 45 m, dry grassland, *Svirin (sapsan)* (photo: <https://www.inaturalist.org/observations/51320074> as *D. carota* L.); Sak-

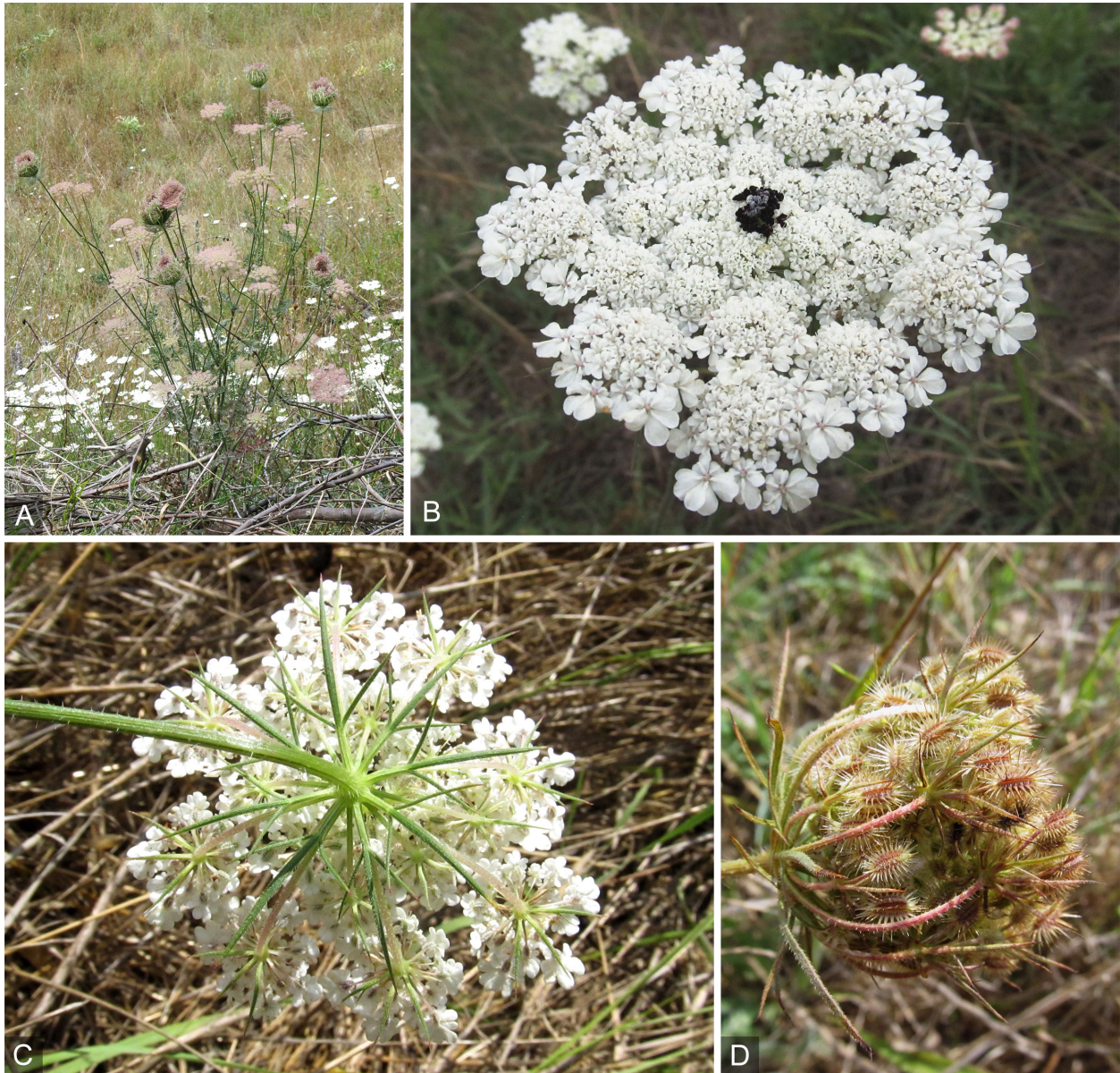


Fig. 11. *Daucus guttatus* – A: flowering plants (white) in background; with flowering and fruiting plant of *D. carota* in foreground; B: umbel in flower, top view; C: umbel in flower, bottom view; D: umbel in fruit, side view. – A–C: Crimea, Sevastopol region, Balaclava, 4 Jul 2018; D: ibid., 23 Jul 2018; all photographs by L. E. Ryff.

skiy district, Novoozernoye, 45°23'49.9"N 33°08'12.0"E, 100 m, steppe, 4 Jul 2020, *Seregin (apseregin)* (photo: <https://www.inaturalist.org/observations/68362356> as *D. carota* L.); Sevastopol, N slope of Mount Sapun, E of Khomutov ravine, 44°33'22.8"N, 33°33'42.5"E, 170 m, disturbed dry grassland habitat on side of road, 19 Jul 2020, *Yevseyenkov & Ryff* (YALT); ibid., near Generala Zhidilova str., 44°35'32.0"N 33°35'24.4"E, 165 m, dry grassland, 8 Jul 2021, *Karpenko (tatiana_karpenko)* (photo: <https://www.inaturalist.org/observations/86384911> as *D. carota* L.). – In POWO (2023d) and Euro+Med PlantBase (Hand 2011+), two separate species – *D. guttatus* and *D. broteri* – are cited as accepted. However, the morphological differences of these taxa are interpreted inconsistently in different sources, and their features largely overlap (Hey-

wood 1968b; Sáenz Laín 1981; Asenov 1982; Al-Safadi 2008; Martínez-Flores & al. 2016; Arbizu & al. 2016). Recent molecular and morphological studies and comparison of type specimens proved that these names are synonyms (Arbizu & al. 2014, 2016; Martínez-Flores & al. 2016). *Daucus guttatus* is widespread in the E Mediterranean and SW Asia from S France and Italy to W Iran, predominantly in coastal areas (Hand 2011+; Martínez-Flores & al. 2016; POWO 2023d). The locality closest to the W Crimea is the Black Sea coast of Bulgaria and Romania, where the taxon is interpreted as the Balkan endemic *D. guttatus* subsp. *zahariadii* Heywood (Heywood 1968a, 1968b; Beldie & Váczy 1976; Asenov 1982; Hand 2011+; POWO 2023d). Morphological characteristics of Crimean plants in general correspond to the description

of this taxon, viz.: plants annual; stems 20–60 cm tall; umbels 4–7 cm in diam., with 8–22 rays; bracts shorter than or as long as rays, usually 3-fid; flowers of central umbellule dark purple, other umbellules with no dark-pigmented flowers; mericarps 3–4 × 1–1.5 mm, with 9–13 spines in each secondary rib, central spine 1–2.5 × as long as mericarp width. Some authors consider the allocation of subspecies in *D. guttatus* inappropriate, because the species is very polymorphic throughout its range (Martínez-Flores & al. 2016). For E Europe, *D. guttatus* is reported here for the first time. Recently, this species was found in the N Caucasus in Dagestan, where it is considered an alien (Shner & al. 2017; <https://www.gbif.org/occurrence/3747373470>). For Crimea, *D. guttatus* is a native plant. It grows in steppe and semi-natural grasslands, sometimes as weed near roads, on the outskirts of vineyards and on household refuse in suburban areas. It occurs scattered mainly in the W part of the peninsula.

L. E. Ryff

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