

New floristic records in the Balkans: 49*

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Abstract. New chorological data are presented for 291 species and subspecies from Bulgaria (73-96, 222-254, 274-281), Greece (15-72, 97-221, 255-273, 282-291), and Turkey-in-Europe (1-14). The taxa belong to the following families: *Acanthaceae* (101), *Aizoaceae* (102, 103), *Alliaceae* (272), *Amaranthaceae* (104-106, 231, 232), *Amaryllidaceae* (240), *Anacardiaceae* (107), *Apiaceae* (1, 108-112, 247, 265), *Apocynaceae* (113), *Asclepiadaceae* (114, 115), *Aspleniaceae* (213), *Asteraceae* (2, 15, 16, 37, 64, 65, 75-77, 116-145, 222-224, 233, 248, 255, 256, 264, 266), *Boraginaceae* (146-149, 257), *Brassicaceae* (3, 4, 38, 150-161, 225, 226, 258, 282), *Cactaceae* (162, 275), *Callitrichaceae* (55), *Campanulaceae* (283), *Caryophyllaceae* (5, 6, 17, 18, 39, 66, 78-81, 163-170, 234, 249, 259, 267, 268), *Chenopodiaceae* (40, 56, 171-173, 250), *Cistaceae* (235), *Colchicaceae* (273), *Convolvulaceae* (174), *Crassulaceae* (41, 57, 175), *Cucurbitaceae* (176, 214), *Cupressaceae* (99, 274), *Cuscutaceae* (82, 83), *Cyperaceae* (49, 71, 241), *Dennstaedtiaceae* (36), *Equisetaceae* (74), *Euphorbiaceae* (177-185, 251, 276), *Fabaceae* (19, 20, 42, 67-69, 186-212, 215, 227, 260-262, 284, 285), *Fumariaceae* (21), *Geraniaceae* (236), *Hyacinthaceae* (50, 72), *Hypericaceae* (216, 217), *Iridaceae* (253), *Juncaceae* (51, 254), *Lamiaceae* (7-9, 43, 84, 228, 237, 286, 287), *Lauraceae* (218), *Lemnaceae* (28), *Malvaceae* (44, 85), *Molluginaceae* (45), *Onagraceae* (86), *Orchidaceae* (279, 290), *Papaveraceae* (87, 229), *Pinaceae* (100), *Poaceae* (29-35, 52-54, 61-63, 96, 242-246, 263, 280, 281, 291), *Polygonaceae* (22, 23, 277), *Pteridaceae* (97, 98), *Ranunculaceae* (10, 11, 24, 46, 47, 58, 88, 230, 269), *Rosaceae* (25, 252, 278), *Rubiaceae* (12, 59, 70, 89-91), *Santalaceae* (288), *Scrophulariaceae* s.l. (13, 14, 92-94, 219, 238, 270, 271, 289), *Smilacaceae* (73), *Solanaceae* (26, 220, 239), *Thymelaeaceae* (221), *Ulmaceae* (95), *Violaceae* (60), and *Vitaceae* (27).

New taxa for a country are: for Greece – *Ballota nigra* subsp. *anatolica* (43) & *Symphotrichum novae-angliae* (264); Turkey – *Cymbalaria muralis* subsp. *muralis* (14).

The publication includes contributions by: M. Aybeke (1-14), E. Bergmeier (15-35), E. Bergmeier (36-54), E. Bergmeier & S. Meyer (55-63), B. Biel & Kit Tan (64-72), D. Dimitrov (73), D.S. Dimitrov (74-96), I. Gavalas, Kit Tan & R. Jahn (97-212), V. Ioannidis, D. Doukeridou & A. Strid (213-221), I. Kostadinov & A. Petrova (222-230), G. Kunev (231-246), A. Petrova, I. Gerasimova, R. Vassilev & D. Venkova (247-254), K. Polymenakos, Kit Tan & V. Pantavos (255-263), K.B. Simoglou & Kit Tan (264), Kit Tan & G. Kofinas (265-273), V. Vladimirov & A. Tashev (274-281), G. Zarkos & Kit Tan (282-291).

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This is an ongoing report in the series dealing with the new chorological data on vascular plants in the Balkans. For details on the presentation of information, see *Phytologia Balcanica*, vol. 12(1), pp. 107-108 and vol. 12(2), p. 279.

* Reports for Bulgaria have been reviewed by V. Vladimirov, for Greece by Kit Tan, and for Turkey-in-Europe by M. Aybeke.

Reports 1–14

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This is a report of 14 new records belonging to different families from European Turkey.

Apiaceae

1. *Torilis nodosa* (L.) Gaertner

Tu(E) A1(E) Edirne: Centre, Musabeyli village, in a pasture, 28.05.1989, coll. & det. *F. Dane* (EDTU 3558).

New for A1(E) Edirne in European Turkey. According to Cullen (1972), this taxon was known from A1(E) Çanakkale and A2(E) Istanbul.

Asteraceae

2. *Senecio vernalis* Waldst. & Kit

Tu(E) A1(E) Edirne: Centre, Selimiye Mosque, 01.06.1987, coll. *F. Dane*, det. *S. Arda* & *F. Dane* (EDTU 2676); Edirne, Centre, at roadside, 03.04.1987, coll. & det. *F. Dane* (EDTU 2733); Edirne, Centre, Kapıkule, 02.05.1987, coll. & det. *F. Dane* (EDTU 2741).

New for A1(E) Edirne in European Turkey. Matthews (1975) reported the taxon for A1(E) Tekirdağ and A2(E) Istanbul.

Brassicaceae

3. *Arabidopsis thaliana* (L.) Heynhold

Tu(E) A1(E) Edirne: Centre, Musabeyli village, in a pasture, 28.04.1989, coll. *F. Dane*, *N. Aktaç*, *N. Polat*, det. *F. Dane* (EDTU 3527).

New for A1(E) Edirne in European Turkey. Hedge (1965) reported the taxon only for A2(E) Istanbul.

4. *Capsella bursa-pastoris* (L.) Medik.

Tu(E) A1(E) Edirne: Centre, Musabeyli village, in a pasture, 30.03.1989, coll. *F. Dane*, *N. Aktaç*, det. *F. Dane* (EDTU 3514); Edirne, Centre, 15.04.2011, coll. & det. *F. Dane* (EDTU 13375).

New for A1(E) Edirne in European Turkey. According to Hedge (1965), this taxon was known from A2(E) Istanbul.

Caryophyllaceae

5. *Cerastium pumilum* Curtis

Tu(E) A1(E) Edirne: Uzunköprü, Çöpköy,

19.05.1987, coll. & det. *F. Dane* (EDTU 2696).

New for A1(E) Edirne in European Turkey. Cullen (1967) reported the taxon for A1(E) Çanakkale and A2(E) Istanbul.

6. *Spergula pentandra* L.

Tu(E) A1(E) Edirne: Centre, Musabeyli village, in a pasture, 30.03.1989, coll. *F. Dane*, *N. Aktaç*, det. *F. Dane* (EDTU 3513)

New for A1(E) Edirne in European Turkey. According to Ratter (1967), this taxon was known only from A2(E) Istanbul.

Lamiaceae

7. *Lamium album* L.

Tu(E) A1(E) Kırklareli: Pınarhisar, Soğucak village, in hilly area, in scrubland, 17.03.2001, coll. *G. Dalgıç*, *F. Dane*, *N. Özhatay*, det. *F. Dane*, *E. Özhatay* (EDTU 7834); Edirne, Karaağaç, 10.05.2012, coll. & det. *F. Dane* (EDTU 13360).

New for European Turkey. According to Mill (1982), this taxon was described for A7 Giresun, A8 Gümüşhane, A9 Kars and was reportedly found in Temperate Eurasia, but was rare or absent in the Mediterranean area, Euro-Siberian element.

8. *Lamium amplexicaule* L.

Tu(E) A1(E) Kırklareli: Vize, 22.03.1990, coll. *H. Günday*, det. *F. Dane* (EDTU 4286)

New for A1(E) Kırklareli in European Turkey. According to Mill (1982), this taxon was reported for A1(E) Edirne and A2(E) Istanbul.

9. *Rosmarinus officinalis* L.

Tu(E) A1(E) Çanakkale: Eceabat, between Eceabat – Anafartalar, 19.05.1987, coll. & det. *F. Dane* (EDTU 2667).

New for European Turkey. According to Mill (1982), this taxon was reported for A1(A) Çanakkale, C5 İçel and Adana.

Ranunculaceae

10. *Ranunculus ficaria* subsp. *calthifolius* (Rchb.) Arc

Tu(E) A2(E) Istanbul, Küçükçekmece, on the shore of Küçükçekmece Lake, 10.04.1993, coll. *B. İbilli*, det. *F. Dane* & *M. Aybeke* (EDTU 5511); A1(E) Kırklareli, Vize, Papuçdere, 15.02.1990, coll. *S. Yurtsever* & *F. Dane*, det. *F. Dane* & *M. Aybeke* (EDTU 4444).

New for European Turkey. According to Davis (1965),

this taxon was known from A2(A) Istanbul Kartal and A5 Samsun and reportedly was found in C. Europe, Balkans, Russia, Caucasia.

11. *Ranunculus ficaria* subsp. *ficariiformis* Rouy & Fouc

Tu(E) A1(E) Tekirdağ: Merkez, Viticulture Research Institute, 27.04.1991, coll. *E. Düzalan*, det. *F. Dane* (EDTU 4539).

New for A1(E) Tekirdağ in European Turkey. According to Davis (1965), this taxon was known only from A2(E) Istanbul.

Rubiaceae

12. *Sherardia arvensis* L.

Tu(E) A1(E) Edirne: Centre, Musabeyli village, in a dry pasture, 28.04.1989, coll. *F. Dane*, *N. Aktaç*, det. *F. Dane* (EDTU 3520)

New for Edirne in European Turkey. According to Ehrendorfer (1982), this taxon was identified in A1E Çanakkale and A2E İstanbul.

Scrophulariaceae

13. *Cymbalaria longipes* (Boiss. & Heldr.) Cheval.

Tu(E) A1(E) Tekirdağ: Şarköy, 21.06.1988, coll. & det. *F. Dane* (EDTU 2958).

New for European Turkey. According to Davis (1978), this taxon was known from C3 Antalya and reportedly was found in S. Greece, the Aegean, Cyprus, Latakia.

14. *Cymbalaria muralis* subsp. *muralis* Gaertn. & al.

Tu(E) A1(E) Edirne: Centre, Kaleiçi, on old school wall, 15.09.1987, coll. & det. *F. Dane* (EDTU 2957, 2985).

New for Turkey, respectively, for European Turkey. According to Webb (1972), this taxon was distributed in S. Alps, C. & S Italy, and across most of S., W. & C. Europe and also Greece.

Reports 15–35

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The plant records listed belong to the regions of West and Central Macedonia, prefectures (nomi) of Flori-

na and Pella in North Central Greece. They are either new to North Central Greece (NC) or to the Prespa National Park.

Asteraceae

15. *Ambrosia artemisiifolia* L.

Gr Nomos Pellis: village of Orma, 31 km NW of Edessa; ruderal, disturbed, open place and timber yard; 310 m, 40°57.21'N, 21°55.57'E, 31.05.2022; *loc. ibid.*, 31.07.2022, *Bergmeier* 22-296.

New to NC Greece. Observed in two sites in the village area and apparently locally established. Recorded in Greece from the region of S Pindos in 2006 (*Bergmeier* 2008: 466).

16. *Tragopogon dubius* Scop.

Gr Nomos Florinis: Prespes, between Lefkonas and Kallithea; road embankment between cultivated and fallow fields; 990 m, 40°47.63'N, 21°08.86'E, 03.06.2022; NW of Laimos, track road margin, 855 m, 40°50.66'N, 21°07.16'E, 04.06.2022; Koula, deep sandy ground, 850 m, 40°48.76'N, 21°04.19'E, 06.06.2022; Kallithea, village margin, 1055 m, 40°47.76'N, 21°09.20'E, 06.06.2022; all *Bergmeier* obs.

Confirmed for the Prespa National Park. Included in Strid & al. (2020) but noted as 'needing confirmation'.

Caryophyllaceae

17. *Sagina apetala* Ard.

Gr Nomos Florinis: Prespes, village of Ag. Germanos; cobble stones, damp half-shaded place; 1040 m, 40°50.29'N, 21°09.62'E, 07.06.2022, *Bergmeier* 22-410.

New to the Prespa National Park.

18. *Minuartia viscosa* (Schreb.) Schinz & Thell.

Gr Nomos Florinis: Prespes, above village of Ag. Germanos, locality named Potistra; dry grassland, gravelly schistose soil; 1415 m, 40°49.50'N, 21°09.95'E, 01.06.2022, *Bergmeier* 22-329; Prespes, south of Kallithea; dry annual-rich grassland, gravelly shallow soil; 1035 m, 40°47.49'N, 21°09.50'E, 03.06.2022, *Bergmeier* 22-378.

New to the Prespa National Park.

Fabaceae**19. *Vicia pannonica*** Crantz s. str.

Gr Nomos Florinis: Prespes, NW of Laimos; dirt road margin; 855 m, 40°50.66'N, 21°07.16'E, 04.06.2022, *Bergmeier* 22-380.

Stated by Strid & al. (2020: 256) to occur in the Prespa National Park (ruins of Sfika) where it is rare. Here, as elsewhere in Greece, the purplish-flowered *Vicia striata* M. Bieb. [= *Vicia pannonica* subsp. *striata* (M. Bieb.) Nyman] is more common than *V. pannonica* s. str. which has cream-coloured flowers. The latter appears to be restricted in Greece to the northern mainland (Dimopoulos & al. 2013, Flora of Greece web 2022).

20. *Vicia cordata* Hoppe [= *V. sativa* subsp. *cordata* (Hoppe) Batt.]

Gr Nomos Florinis: Prespes, between Psarades and Vrondero; moderately dry grassland, in semi-shade; 1025 m, 40°48.38'N, 21°00.07'E, 04.06.2022, *Bergmeier* 22-382.

New to the Prespa National Park.

Fumariaceae**21. *Fumaria petteri*** Rchb.

Gr Nomos Florinis: Prespes, above Platy; schistose eroded area; 1400 m, 40°48.9'N, 21°10.0'E, 02.06.2022, *Bergmeier* 22-347.

Confirmed for the Prespa National Park. Included in Strid & al. (2020: 259) based on single record just outside the Park.

Polygonaceae**22. *Fallopia japonica*** (Houtt.) Ronse Decr.

Gr Nomos Florinis: Prespes, village of Ag. Germanos; wet places near stream and ditch; 980 m, 40°50.35'N, 21°09.12'E, 07.06.2022, *Bergmeier* 22-413.

Observed at the locality already in 2016 but not included in Strid & al. (2020). Four small patches of the tall clonal plant found, locally established but apparently not yet invasive as in most of W and C Europe. Considered non-established (Dimopoulos & al. 2013, Flora of Greece web 2022) but included in NC by Arianooutsou et al. (2010).

23. *Rumex sanguineus* L.

Gr Nomos Florinis: Prespes, south of Kallithea; wet shaded forest track; 1165 m, 40°47.33'N, 21°10.01'E,

03.06.2022 and 02. 08. 2022, *Bergmeier* obs.
New to the Prespa National Park.

Ranunculaceae**24. *Ranunculus brutius*** Ten. subsp. *brutius*

Gr Nomos Florinis: Prespes, above Platy; abandoned transhumance summer camp, fertile soil, tall-herb vegetation; 1575 m, 40°48.77'N, 21°10.19'E, 02.06.2022, *Bergmeier* 22-356.

New to the Prespa National Park.

Rosaceae**25. *Agrimonia procera*** Wallr.

Gr Nomos Pellis: Orma, 31 km NW of Edessa; edge of village ditch; 305 m, 40°57.13'N, 21°55.67'E, 31.07.2022, *Bergmeier* 22-520.

New to NC. Reported from NE (Dimopoulos & al. 2013, Flora of Greece web 2022).

Solanaceae**26. *Datura wrightii*** Regel

Gr Nomos Pellis: Orma, 31 km NW of Edessa; ruderal site outside garden; 308 m, 40°57.16'N, 21°55.62'E, 31.07.2022, *Bergmeier* 22-519.

New to NC and mainland Greece where previous records of *Datura inoxia* Mill. should be checked. Found on the N Aegean island of Limnos (*Bergmeier* 2021: 363; *Bergmeier* & al. 2021: suppl.).

Vitaceae**27. *Parthenocissus inserta*** (A. Kern.) Fritsch

Gr Nomos Pellis: Orma, 31 km NW of Edessa; stream lined with *Platanus*; 302 m, 40°57.07'N, 21°55.74'E, 31.07.2022, *Bergmeier* 22-521.

Established in NC. Not included in Dimopoulos & al. 2013, the designation as “non-established” in Flora of Greece web 2022 should be revised.

Lemnaceae**28. *Lemna minuta*** Kunth

Gr Nomos Florinis: Prespes, south of Pyli; karst pool “Neraidopigi”; 850 m, 40°45.99'N, 21°02.74'E, 03.08.2022, *Bergmeier* 22-553.

Considered “as yet casual” by *Bergmeier* & al. (2020) and designated as “Established (?)” in Prespa National Park by Strid & al. (2020: 290). The new record, five years after the first and in a natural habitat and different locality, perhaps allows the species to be assumed

as established in the region. It was not included for NC Greece by Dimopoulos & al. 2013.

Poaceae

29. *Aira caryophyllea* L. subsp. *caryophyllea*

Gr Nomos Florinis: Prespes, just east of Platy; moderately trampled wayside, damp ground, turning dry; 1010 m, 40°48.76'N, 21°08.87'E, 02.06.2022, *Bergmeier* 22-339.

New to the Prespa National Park and NC Greece.

30. *Aira caryophyllea* subsp. *plesiantha* (Jord. ex Boreau) K. Richt. [= *Aira multiculmis* Dumort.]

Gr Nomos Pellis: between Likostomo and Sossandra, ca. 0.5 km W of Sossandra; cereal field; 158 m, 40°59.585'N, 22°01.640'E, 28.05.2022, *Bergmeier* 22-245.

New to NC Greece and Greek mainland (Dimopoulos & al. 2013, Flora of Greece web 2022). Formerly recorded in the Ionian Islands but not recently found (Flora Ionica Working Group 2016+).

31. *Briza maxima* L.

Gr Nomos Florinis: Prespes, south of Kallithea; gravelly wayside, micaceous schist, temporary wet, soon turning dry; 1100 m, 40°47.52'N, 21°09.93'E, 02.08.2022, *Bergmeier* obs.

New to the Prespa National Park.

32. *Bromus catharticus* Vahl [≡ *Ceratochloa cathartica* (Vahl) Herter]

Gr Nomos Pellis: Orma, 31 km NW of Edessa; ruderal site in village, deep damp soil; 310 m, 40°57.206'N, 21°55.569'E, 31.05.2022, *Bergmeier* 22-295.

In the village of Orma occupying a few square metres, apparently locally established. Several reports have been published from NC by E. Willing, including two from Nomos Pellis: *Willing* 249559, 296539, 296398, 296253, 295718, 253124, 252962, 252784, 252549, 251926, 249559 (material cited deposited in B).

33. *Eragrostis pectinacea* (Michx.) Nees

Gr Nomos Pellis: Orma, 31 km NW of Edessa; ruderal sites such as damp roadsides and irrigated garden, together with *Eragrostis minor* Host; 300 m, 40°57'02"N, 21°55'44"E, 31.07.2022, *Bergmeier* 22-514.

New to NC Greece.

34. *Festuca rivularis* Boiss. subsp. *rivularis*

Gr Nomos Pellis: Mount Kaimaktsalan (Voras); sloping mire; 2000 m, 40°54.61'N, 21°49.02'E, 28.07.2022, *Bergmeier* 22-471.

Also noted in the area at 1855 m, 40°54.04'N, 21°49.54'E, and elsewhere nearby. *Festuca rivularis* was further observed on Mt Varnous, collected between Vigla and Ag. Germanos; 1785 m, 40°49.3'N, 21°15.2'E, 13.07.2017, *Bergmeier* 17-512a. In Greece and SE Europe, first reported from Mount Lailia in Nomos Serron (Scholz 1993). The species was included in *Festuca rubra* L. s. lat. by Strid & al. (2020: 327).

35. *Setaria italica* (L.) P. Beauv.

Gr Nomos Pellis: 1 km south of Sarakini, 21 km S-SW of Edessa; roadside, together with *Setaria pumila* (Poir.) Roem. & Schult.; 590 m, 40°54.33'N, 21°57.53'E, 29.07.2022, *Bergmeier* 22-479.

Not included in Dimopoulos & al. 2013, Flora of Greece web 2022. Although the species may not be fully established, there is a tendency toward naturalization in suitable habitats such as summer crop fields and other frequently disturbed and well irrigated sites in NC Greece.

Reports 36–54

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Information on the vascular plants of the island of Limnos (phytogeographical region North Aegean, Nomos Lesvou, Eparchia Limnou) was recently published (Bergmeier et al. 2021, Ristow et al. 2022) and in those publications it was predicted that documentation of the flora was still incomplete. Two later visits in autumn 2021 and spring 2022 confirmed this view. The new island records are now presented in two instalments, one by Bergmeier, the other jointly with Meyer. Voucher specimens are kept in Bergmeier's private herbarium. The collaboration with the Terra Lemnia (<https://terra-lemnia.net/en/>) project team as well as the financial support provided by MedINA is much appreciated.

Dennstaedtiaceae

36. *Pteridium aquilinum* subsp. *brevipes* (Tausch) E. Wulff

Gr Limnos: 3.5 km SE of Moudros, north slope of Paradise hill; volcanic rock, screes and scrub; 105–130 m, 39°50.9'N, 25°17.8'E, 27.09.2021, *Bergmeier* 21-341.

A subspecies (with frond segments lanate beneath) new to N Aegean. Earlier species records for Limnos (see Panitsa et al. 2003: 87) may refer to subsp. *brevipes*.

Asteraceae

37. *Pulicaria sicula* (L.) Moris

Gr Limnos: area called 'Pérama' south of the airport; salt marsh, slightly disturbed site; 39°55.00'N, 25°14.58'E, 01.10.2021, *Bergmeier* 21-386.

New to the N Aegean, and entire Aegean area (see Strid 2016), but indicated for Kos in the E Aegean (Grierson 1975) based on an early 19th-century record by Aucher-Éloy. With stem leaves 1–2 mm wide, glandular-pubescent, strongly revolute; inner pappus hairs c. 25 (vs. 10–12 pappus hairs in *P. arabica* (L.) Cass.).

Brassicaceae

38. *Hornungia procumbens* (L.) Hayek

Gr Limnos: area called 'Pérama' south of the airport; salt marsh; 39°55.05'N, 25°15.01'E, 05.05.2022, *Bergmeier* 22-170.

Caryophyllaceae

39. *Cerastium ramosissimum* Boiss.

Gr Limnos: south of Kontias, coastal site near Ag. Ioannis; field margin, sandy ground; 2 m, 39°51.34'N, 25°09.48'E, 04.05.2022, *Bergmeier* 22-163.

The plants were 30 cm tall, loosely much-branched, with sepals 4.5–6.0 mm long, capsule 7–9(–10) mm long, sometimes slightly purple-tinged; seeds 0.6 mm. The identification is tentative and may have to be revised once the pattern of variation in this taxonomically critical group is better understood.

Chenopodiaceae

40. *Sarcocornia fruticosa* (L.) A.J. Scott [syn.: *Salicornia fruticosa* (L.) L.]

Gr Limnos: Aliko lagoon, SW margin; salt marsh (together with *Salicornia perennans* Willd.) 39°56.14'N, 25°21.79'E, 23.09.2022, *Bergmeier* 21-317a.

Crassulaceae

41. *Umbilicus luteus* (Huds.) Webb & Berthel.

Gr Limnos: 1 km west of Ag. Dimitrios; volcanic rock with *Quercus coccifera* low woodland; 115 m, 39°54.76'N, 25°08.46'E, 02.05.2022, *Bergmeier* obs.

Fabaceae

42. *Melilotus siculus* (Turra) B. D. Jacks.

Gr Limnos: area called 'Pérama' just south of the military airport; salt marsh, disturbed site; 39°55.06'N, 25°14.97'E, 05.05.2022, *Bergmeier* 22-168.

Lamiaceae

43. *Ballota nigra* subsp. *anatolica* P.H. Davis

Gr Limnos: south of Ag. Dimitrios; valley site with semi-ruderal vegetation bordering shrubs and an abandoned field; 70 m, 39°54.2'N, 25°08.25'E, 21.09.2021, *Bergmeier* 21-281.

New to Greece. Calyx teeth 3.5–4.0 mm long, 1.5–1.8 mm wide at base, patent or recurved. Two subspecies of *Ballota nigra* L. exist on Limnos, subsp. *nigra* (*Bergmeier* et al. 2021) and subsp. *anatolica*. However, the plants form a variable population with calyx characters more or less approaching subsp. *anatolica*.

Malvaceae

44. *Althaea cannabina* L.

Gr Limnos: SW of Ag. Dimitrios; scrub near stream; 77 m, 39°54.35'N, 25°08.14'E, 21.09.2021, *Bergmeier* 21-275.

Molluginaceae

45. *Glinus lotoides* L.

Gr Limnos: north margin of the artificial lake between Ag. Dimitrios and Kontias; wet mud, dried off; 35 m, 39°53.58'N, 25°08.78'E, 21.09.2021, *Bergmeier* 21-287.

Ranunculaceae

46. *Ranunculus constantinopolitanus* (DC.) Urv. [≡ *Ranunculus villosus* subsp. *constantinopolitanus* (DC.) Elenevsky]

Gr Limnos: 1 km W-NW of Ag. Dimitrios; stream valley with *Platanus* gallery woodland; 100 m, 39°54.865'N, 25°08.455'E, 02.05.2022, *Bergmeier* 22-150.

Very rare, a single specimen seen.

47. *Ranunculus velutinus* Ten.

Gr Limnos: between Tsimandria and Diapori;

slightly saline marshland, seasonally flooded; 1 m, 39°51.50–53'N, 25°10.46–48'E, 06.05.2022, *Bergmeier* 22-203.

Rubiaceae

48. *Rubia peregrina* L.

Gr Limnos: 3.5 km SE of Moudros, north slope of Paradisia hill; *Quercus coccifera* thicket over volcanic rock; 115 m, 39°50.93'N, 25°17.85'E, 27.09.2021, *Bergmeier* 21-340.

Cyperaceae

49. *Cyperus pygmaeus* Rottb. [= *Cyperus michelianus* subsp. *pygmaeus* (Rottb.) Asch. & Graebn.]

Gr Limnos: north margin of the artificial lake between Ag. Dimitrios and Kontias; wet mud, dried off; 35 m, 39°53.58'N, 25°08.78'E, 21.09.2021, *Bergmeier* 21-286.

Hyacinthaceae

50. *Ornithogalum boucheanum* (Knuth) Asch.

Gr Limnos: 4 km east of Myrina, above path towards Pan. Kakaviotissa; dense phrygana, volcanic rock (andesite); 225 m, 39°52.215'N, 25°06.53'E, 06.05.2022, *Bergmeier* obs.

New to N Aegean. In the Aegean otherwise known from several East Aegean islands (Strid 2016). Rare on Limnos where few specimens were observed, all in fruiting stage, identification is therefore tentative. The very similar *O. nutans* L., from which *O. boucheanum* can be distinguished with certainty only when in flower, seems to be absent from Limnos.

Juncaceae

51. *Juncus inflexus* L.

Gr Limnos: SE of Moudros; dry valley, temporary stream; 64 m, 39°51.84'N, 25°17.40'E, 27.09.2021, *Bergmeier* 21-332.

Poaceae

52. *Bromus racemosus* L.

Gr Limnos: between Moudros and Romanou, near the junction; depression in salt marsh, compacted sand; 39°53.77'N, 25°16.89'E, 05.05.2022, *Bergmeier* 22-174.

New to N Aegean.

53. *Festuca arundinacea* subsp. *orientalis* (Hack.) Tzvelev

Gr Limnos: between Tsimandria and Diapori; slightly

saline marshland, seasonally flooded; 1 m, 39°51.50'N, 25°10.46'E, 06.05.2022, *Bergmeier* 22-200.

New to N Aegean.

54. *Phleum pratense* L.

Gr Limnos: 3 km east of Myrina, south foot of Koukoula hill; abandoned wet-dry meadow; 132 m, 39°52.48'N, 25°06.04'E, 06.05.2022, *Bergmeier* 22-190.

New to N Aegean. In the Aegean, reported only on E Aegean island of Lesvos. The plants on Limnos differ strikingly from the widespread forms of *P. pratense* in their bulbous stem bases, resembling *P. nodosum* L., but with wider panicle and longer glumes (3 mm excl. 2–3 mm long awn). *P. pratense* has been introduced worldwide and sown as fodder grass. From the locality, habitat and associated species one can be certain that the species is native on Limnos.

Reports 55–63

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Callitrichaceae

55. *Callitriche brutia* Petagna subsp. *brutia*

Gr Limnos: bay W of Platy, SW of Myrina; wet muddy depression, coastal; 39°51.53'N, 25°03.14'E, 27.04.2022, *Bergmeier* 22-73.

Chenopodiaceae

56. *Atriplex halimus* L.

Gr Limnos: bay W of Platy, SW of Myrina; above coastal driftline; 39°51.52'N, 25°03.12'E, 27.04.2022, *Bergmeier* 22-75.

Approximately eight shrubs and some juvenile plants were observed.

Crassulaceae

57. *Sedum eriocarpum* Sm.

Gr Limnos: promontory at Platy Gialos bay; winter-wet sandy soil soon turning dry; 3 m, 39°51.53'N, 25°03.18'E, 27.04.2022, *Bergmeier & Meyer* obs.

Not identified to subspecies.

Ranunculaceae

58. *Adonis aestivalis* subsp. *squarrosa* (Steven) Nyman
Gr Limnos: SE of Chortarolimni; fallow field, sandy soil; 8 m, 39°53.63'N, 25°20.78'E, 03.05.2022, *Bergmeier* 22-153.

New to N Aegean, and entire Aegean area. Rare, three specimens found.

Rubiaceae

59. *Galium divaricatum* Lam.

Gr Limnos: NW headland, area named Neroviglia; open, stony phrygana, tertiary siltstone sediments; 305 m, 39°58.16'N, 25°04.08'E, 30.04.2022, *Bergmeier* 22-111; 4 km E of Myrina, path towards Pan. Kakaviotissa; open phrygana, thin soil over volcanic rock (andesite); 220 m, 39°52.15'N, 25°06.56'E, 06.05.2022, *Bergmeier* 22-196.

Violaceae

60. *Viola heldreichiana* Boiss.

Gr Limnos: NW headland, area named Neroviglia; open, stony phrygana, tertiary siltstone sediments; 305 m, 39°58.16'N, 25°04.08'E, 30.04.2022, *Bergmeier* 22-110.

New to N Aegean. Corolla lilac-blue, lower petal yellow at base, with spur 4–5 mm, stipules leaf-like.

Poaceae

61. *Dactylis glomerata* subsp. *hackelii* (Asch. & Graebn.) Cif. & Giacom.

Gr Limnos: Platy Gialos bay; coastal rock, *Centaurea spinosa* phrygana; 39°51.44'N, 25°03.09'E, 27.04.2022, *Bergmeier* & *Meyer* obs.; Limnos NW headland, Mourtzeflos bay; coastal rock; 39°59.19'N, 25°02.69'E, 30.04.2022, *Bergmeier* & *Meyer* obs.

62. *Parapholis marginata* Runemark

Gr Limnos: NW headland, Mourtzeflos bay; coastal shingle; 39°59.13'N, 25°02.71'E, 30.04.2022, *Bergmeier* 22-105.

Second record for Limnos, the first report was in 1997 (see Strid 2016).

63. *Phalaris canariensis* L.

Gr Limnos: promontory named Sgourogianni SE of Paleó Pedinó; cereal field; 25 m, 39°52.78'N 25°12.04'E, 29.04.2022, *Bergmeier* 22-99.



Fig. 1. *Crepis foetida* subsp. *rhoeadifolia* (photo B. Biel).

Reports 64–72**Burkhard Biel¹ & Kit Tan²**

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This is the eighth report of new plant-records for the island of Milos (phytogeographical region Kiklades, Nomos Kikladon, Eparchia Milou) based on visits in March/April and May 2022. The 9 records listed are new for the island unless otherwise stated. Three species were found to be new for the floristic region Kiklades (Kik) as circumscribed in *Flora Hellenica* (Strid & Tan 1997), bringing the total number of new records we have found for this floristic region to 95. Occurrence on the other Kikladean islands is briefly summarized.

Asteraceae

64. *Crepis dioscoridis* L.

Gr Nomos Kikladon, Eparchia Milou: Adamas-Neochori, sandy beach with *Tamarix* at edge of coastal road, 1 m, 36°43'25"N, 24°27'23", 08.05.2022, *Biel* 22.206.

New for the Kiklades.

65. *Crepis foetida* subsp. *rhoeadifolia* (M. Bieb.) Čelak. (Fig. 1)

Gr Nomos Kikladon, Eparchia Milou: Adamas, waste ground, parks, road margins in village, 10 m, 36°43'32"N, 24°26'42"E, 30.03.2022, *Biel* 22.098.

Reported from North Kiklades (Andros and islet of Gaidharos) and Central Kiklades (Amorgos and Folegandros).

Caryophyllaceae

66. *Paronychia argentea* Lam.

Gr Nomos Kikladon, Eparchia Milou: W of Emborios, stony phrygana at summit of Mt Favas, 290 m, 36°42'48"N, 24°21'23"E, 03.04.2022, *Biel* 22.116.

Central Kiklades (Naxos, Paros) and South Kiklades (Thira).

Fabaceae

67. *Astragalus pelecinus* (L.) Barneby

Gr Nomos Kikladon, Eparchia Milou: SW edge of Lake Chivadolimni, stony valley with phrygana, 2 m, 36°41'13"N, 24°26'25"E, 31.03.2022, *Biel* 22.085.

Widespread in the Kiklades, recorded from the adjacent islands of Kimolos and Andimilos.

68. *Trifolium grandiflorum* Schreb.

Gr Nomos Kikladon, Eparchia Milou: E of Chodro Vouno, by path on rocky slope with open phrygana and olive trees, 180 m, 36°41'32"N, 24°22'36"E, 10.04.2022, *Biel* 22.175.

Widespread in the Kiklades, recorded on adjacent island of Kimolos.

69. *Vicia laeta* Ces.

Gr Nomos Kikladon, Eparchia Milou: NW of Emborios, fallow field, pasture and phrygana by dirt track, 80 m, 36°44'06"N, 24°21'35"E, 05.04.2022, *Biel* 22.128.

Apparently new for the Kiklades.

Rubiaceae

70. *Asperula lutea* subsp. *rigidula* (Halácsy) Ehrend. (Fig. 2)

Gr Nomos Kikladon, Eparchia Milou: E-NE of Profitis Ilias, phrygana on steep slope of Koutsounarachi, along path to the old mining areas, 240 m, 36°40'54"N, 24°25'01"E, 08.04.2022, *Biel* 22.157; *loc. ibid.*, 11.05.2022, *Biel* 22.258; SE of Ag. Marina, artificial reservoir below saddle, 230 m, 36°40'55"N, 24°25'07"E, 11.05.2022, *Biel* 22.257.

New for the Kiklades, identification as belonging to *A. lutea* confirmed by Salih Gucl (Nicosia). *Asperula lutea* var. *abbreviata* was reported by Halácsy from the island of Naxos (WU 0064290 & WU 0064291); this refers to *A. abbreviata* (Halácsy) Rech. f. which is endemic to the islands of Amorgos, Nikouria and Naxos. The only other species of *Asperula* in the Kiklades is the quite dissimilar *A. tournefortii* Spreng. A report of *A. rigida* from Andros (Malakates 1933: 90) may possibly refer to *A. lutea* subsp.

rigidula [syn.: *A. rigidula* (Halácsy) Halácsy] which also occurs in south Evvia just north of Andros. *Asperula rigida* Sm. is a Cretan endemic and very unlikely to occur on Andros.

Cyperaceae

71. *Cyperus longus* L.

Gr Nomos Kikladon, Eparchia Milou: western edge of Achivadolimni, parking area, rocky slopes and damp places near Ag. Konstantinos, 5 m, 36°41'15"N, 24°26'24"E, 11.05.2022, *Biel* 22.261.

North and Central Kiklades.



Fig. 2. *Asperula lutea* subsp. *rigidula* (photo B. Biel).



Fig. 3. *Ornithogalum exaratum* (photo B. Biel).

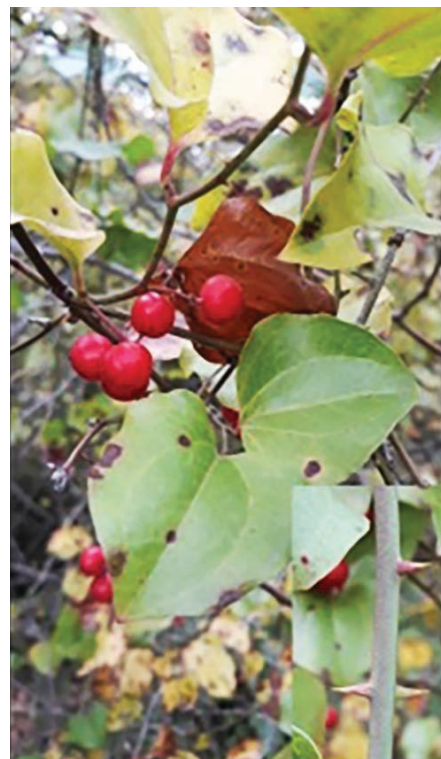


Fig. 4. *Smilax excelsa* (photo D. Dimitrov).

Hyacinthaceae

72. *Ornithogalum exaratum* Zahar. (Fig. 3)

Gr Nomos Kikladon, Eparchia Milou: N of Profitis Ilias, phrygana slope with olive trees, SW of Ag. Georgios, 170 m, 36°41'37"N, 24°23'01"E, 10.04.2022, Biel 22.173.

Mainly North Kiklades, and on Sikinos in south central Kiklades.

Cited vouchers are provisionally kept in the private herbarium of B. Biel at Höchberg (herb. Biel).

Report 73

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Smilacaceae

73. *Smilax excelsa* L. (Fig. 4)

Bu Northeast Bulgaria: Provadia Plateau, in riverside thickets north of Dobrina village, Provadia Municipality, 187 m, 43.19186°N, 27.46689°E, 08.10.2022, coll. D. Dimitrov (SO 178005).

The species has already been reported for the North-east Bulgaria floristic region (Zahariev & Dimitrov 2010; Zahariev 2012). However, since no herbarium material has been deposited and the literature data has been overlooked in the latest general works on the Bulgarian flora (cf. Assyov & Petrova 2012; Stoyanov & al. 2022), the species is reported here again for this floristic region. According to Assyov and Petrova (2012), the species has been known from the following floristic regions: Black Sea Coast, Balkan Range (*Eastern*), Valley of River Struma, Mt Belasitsa, Mt Slavyanka, Valley of River Mesta, Rhodopi Mts, Thracian Lowland, Tundzha Hilly Country, Mt Strandzha.

Smilax excelsa is a sub-Mediterranean geoelement, a remnant of the Bulgarian Tertiary flora, with a relatively wider distribution in South Bulgaria. The population is located in the protected area of Provadia-Royak Plateau, at the beginning of a valley extension along a small river with seasonally varying flow. The area in which the plants grow is about 7000 m² and the population has a mosaic character, with a dense prickly belt forming in some places, which makes some sections of the area inaccessible. The presence of such tall tree

species as *Populus alba* and *Ulmus minor* favors the ecological strategy of the species, which contributes to the stable state of the population. The phytocenosis is characterized both by some typical hygrophytes and mesophytes, and by some transitional groups, namely, *Populus alba*, *Ulmus minor*, *Hedera helix*, *Corylus avelana*, *Aegopodium podagraria*, *Equisetum telmateia*, and *Carex pendula*. In the periphery, some xerophytic species such as *Carpinus orientalis*, *Rosa* sp. and *Buglossoides purpureo-caerulea* can be found. So far, this is the only locality of the species on the territory of the Provadia Plateau.

Reports 74–96

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Equisetaceae

74. *Equisetum fluviatile* L.

Bu Black Sea Coast (*Southern*): at a parking lot by the beach of Ahtopol town, NG76, 28.08.2022, leg. & det. *D. Dimitrov* (SOM 177940).

Asteraceae

75. *Centaurea rutifolia* Sim.

Bu Forebalkan (*Eastern*): Krushunski Waterfalls, on calcareous terrain, LH38, 27.10.2022, leg. & det. *D. Dimitrov* (SOM 177971; 177972); on calcareous terrain near Devetashka Cave, LH28, 27.10.2022, leg. & det. *D. Dimitrov* (SOM 177969).

76. *Inula helenium* L.

Bu Balkan Range (*Western*): in damp meadows over Zanozhene residential area of Varshets town, FN88, 31.10.2022, leg. & det. *D. Dimitrov* (SOM 177967).

77. *Jurinea consanguinea* subsp. *arachnoidea* (Bunge) Kozuharov

Bu Balkan Range (*Western*): Mt Sofiyska, above the Seslavtsi suburb of Sofia, on calcareous terrain, GN04, 06.08.2022, leg. & det. *D. Dimitrov* (SOM 177933).

Caryophyllaceae

78. *Minuartia attica* (Boiss. & Spruner) Vierh.

Bu Rhodopi Mts (*Central*): above Trigrad village,

Devin Municipality, KG80, 08.06.2012, leg. & det. *D. Dimitrov* (SOM 177921).

79. *Minuartia setacea* (Thuill.) Hayek subsp. *setacea*

Bu Balkan Range (*Western*): Mt Sofiyska, above the Seslavtsi suburb of Sofia, GN04, 06.08.2022, leg. & det. *D. Dimitrov* (SOM 177932).

80. *Minuartia setacea* subsp. *bannatica* (Rchb.) Nyar.

Bu Balkan Range (*Western*): Mt Murgash, in calcareous rocky places above Negushevo village, Gorna Malina Municipality, GN23, 04.09.2022, leg. & det. *D. Dimitrov* (SOM 177914); Mt Sofiyska: on calcareous terrain above Seslavtsi suburb of Sofia, GN04, 06.08.2022, leg. & det. *D. Dimitrov* (SOM 177944).

81. *Minuartia rhodopaea* (Degen) Kozuharov & Kuzmanov

Bu Forebalkan (*Eastern*): Krushunski Waterfalls (Devetashko Plateau), on calcareous terrain, LH38, 27.10.2022, leg. & det. *D. Dimitrov* (SOM 177963).

Cuscutaceae

82. *Cuscuta epilinum* Weihe

Bu Balkan Range (*Western*): Mt Sofiyska, above Seslavtsi suburb of Sofia, GN04, 06.08.2022, leg. & det. *D. Dimitrov* (SOM 177925).

83. *Cuscuta planiflora* Ten.

Bu Balkan Range (*Western*): Mt Murgash, on calcareous terrain above Negushevo village, Gorna Malina Municipality, GN23, 04.09.2022, leg. & det. *D. Dimitrov* (SOM 177912).

Lamiaceae

84. *Stachys atherocalyx* K. Koch

Bu Balkan Range (*Western*): Mt Sofiyska, above Seslavtsi suburb of Sofia, on buntsandstein, GN04, 06.08.2022, leg. & det. *D. Dimitrov* (SOM 177924).

Malvaceae

85. *Malva nicaeensis* All.

Bu Valley of River Struma (*Northern*): Stob village, Kocherinovo Municipality, FM76, 23.07.2022, leg. & det. *D. Dimitrov* (SOM 177923).

Onagraceae

86. *Epilobium obscurum* Schreb.

Bu Valley of River Struma (*Northern*): in damp places in a garden southwards of Rila town, FM76, 14.08.2022, leg. & det. *D. Dimitrov* (SOM 177930).

Papaveraceae**87. *Papaver pinnatifidum* Moris**

Bu Forebalkan (*Eastern*): Krushunski Waterfalls (Devetashko Plateau), on calcareous terrain, LH38, 27.10.2022, leg. & det. *D. Dimitrov* (SOM 177859).

Ranunculaceae**88. *Ranunculus strigulosus* Schur**

Bu Valley of River Struma (*Northern*): in damp sandy and shady spots, on the rightside bank of river Rilska in Rila town, FM76, 14.08.2022, leg. & det. *D. Dimitrov* (SOM 177926; 177927). New locality of this Pontic and sub-Mediterranean element.

Rubiaceae**89. *Asperula setulosa* Boiss.**

Bu Balkan Range (*Western*), Mt Murgash: on calcareous terrain above Negushevo village, Gorna Malina Municipality, GN23, 04.09.2022, leg. & det. *D. Dimitrov* (SOM 177915); Mala Planina: above Katina village, FN84, 04.09.2022, leg. & det. *D. Dimitrov* (SOM 177945).

90. *Galium pseudoaristatum* Schur

Bu Forebalkan (*Eastern*): Krushunski Waterfalls (Devetashko Plateau), LH38, 27.10.2022, leg. & det. *D. Dimitrov* (SOM 177951).

91. *Galium intermedium* Schult. (*G. schultesii* Vest.)

Bu Valley of River Struma (*Northern*): in a garden southwards of Rila town, FM76, 14.08.2022, leg. & det. *D. Dimitrov* (SOM 177929).

Scrophulariaceae**92. *Linaria angustissima* (Loisel.) Borbás**

Bu Sofia region: near the rails before Poduyane Rail Station, FN93, 08.07.2022, leg. & det. *D. Dimitrov* (SOM 177715).

93. *Verbascum adenanthum* Bornm. [syn. *V. serpentanicum* Rech. f.]

Bu Black Sea Coast (*Southern*): Perla beach, Primorsko town, NG67, 28.08.2022, leg. & det. *D. Dimitrov* (SOM 177938). In sandy places at Kavatsite Camping Site, southwards of Sozopol town, NG59, 20.10.2022, leg. & det. *D. Dimitrov* (SOM 177951; 177952).

— Balkan Range (*Western*): Mt Sofiyska, above Seslavtsi suburb of Sofia, GN04, 06.08.2022, leg. & det. *D. Dimitrov* (SOM 177917).

According to Bornmüller (1922), this Balkan endemic was spread in Bulgaria, Greece and Macedonia. Peev (1992) reported the species as doubtfully present (?) in the Bulgarian flora. No vouchers of this taxon have been found in any of the Bulgarian herbaria.

94. *Verbascum chaixii* subsp. *austriacum* (Roem. & Schult.) Hayek

Bu Black Sea Coast (*Southern*): Butamyata locality, southwards of Sinemorets village, Tsarevo Municipality, near a parking lot, in a grassy place, NG85, 27.08.2022, leg. & det. *D. Dimitrov* (SOM 177938).

Ulmaceae**95. *Ulmus laevis* Pall.**

Bu Forebalkan (*Eastern*): Krushunski Waterfalls (Devetashko Plateau), LH38, 28.10.2022, leg. & det. *D. Dimitrov* (SOM 177951).

Poaceae**96. *Dactylis glomerata* subsp. *hispanica* (Roth) Nyman**

Bu Black Sea Coast (*Southern*): in Bakarlaka Protected Area above Ravadinovo village, NG59, Sozopol Municipality, 350 m, 18.09.2022, leg. & det. *D. Dimitrov* (SOM 177918).

Reports 97–212**Ioannis Gavalas¹, Kit Tan² & Ralf Jahn³**

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Iraklia lies south of Naxos island with the geographical co-ordinates of latitude 36°52'18" – 36°49'08"N and longitude 25°24'54" – 25°28'54"E. It is encircled by the islands of Naxos, Ios and Amorgos which are part of the Lesser Eastern Kiklades island group (Fig. 5). The island area is 18.1 km² with a maximum altitude of 418 m. The coastline is 29.2 km in length. The small rocky islets of Mikros Avelas (1.6 ha), Megalos Avelas (5.3 ha), and Venetiko (11.7 ha) lie offshore. The climate is typically insular Mediterranean, characterized by cool summers, calm and dry winters, and 'meltemia' which are strong northerly winds blowing



Fig. 5. The Lesser Eastern Kiklades island group (Google map).

in the summer, mainly in daytime. Other features are the high amounts of sunshine and the low precipitation, which often falls in the form of brief storms. The climate is greatly influenced by Naxos, a land mass lying only three nautical miles to the north. This results in less rainfall when winds blow from the north since Mt Zas on Naxos (at 1004 m) acts as a physical barrier for the rain-bearing clouds. The lesser force of the northern winds in the Iraklia - Schinoussa - Naxos triangle also produces an area perhaps the most wind-protected in the Kiklades. Temperatures range from -2°C to a recent high of 40°C . Snowfall is however, very rare although when it does occur, the entire island is covered by snow for two or three days. Iraklia has a varied landscape with macchie, phrygana, abandoned terraces and settlements, olive groves, lowland non-irrigated (dry) winter cultivations, steep coastal cliffs, sandy beaches, rocky coasts, coves and caves and offshore islets. This has created a surprisingly high diversity of flora and vegetation, unexpectedly

rich for such a small island less than 20 km^2 in area. We present a list of new floristic records for Iraklia (Nomos Kikladon, Eparchia Thiras) as a first step to documenting the island's vascular plant flora. The vascular plant list is divided into four parts, viz., Pteridophytes to *Fabaceae* (116 new records), *Fagaceae* to *Oleaceae*, *Orobanchaceae* to *Zygophyllaceae* and the Monocotyledons, which following the format of *New Floristic Records for the Balkans*, are relegated to the end of the account. Five taxa *Asperugo procumbens* L., *Carduus argentatus* L., *Euphorbia hypericifolia* L., *E. prostrata* Aiton and *Lathyrus amphicarpos* L. were found to be new for the floristic region Kiklades. Nomenclature follows that of the *Aegean Atlas* (Strid 2016) and *Flora of Greece web 2022*. Herbarium material is temporarily deposited with Sotiris Alexiou (Athens) and Theophanis Constantinidis (Athens). Material was sent to the latter more than five years ago but the specimens have remained unidentified and unmounted at the National and Kapodistrian

University of Athens (ATHU). Ioannis Gavalas decided to do the work himself without further delay, and enlisted the help of Ralf Jahn and Kit Tan who helped him prepare a preliminary floristic list.

Pteridaceae

97. *Adiantum capillus-veneris* L. (Figs. 6 & 7)

Gr Xylobati, 16 m, 36°51'46"N, 25°27'29"E, 24.05.2012, *Gavalas* obs. (photo).

Rare. Only locality on the island. Found in a small chasm c. 10 m deep, without water on the walls (see Fig. 7).

98. *Anogramma leptophylla* (L.) Link

Gr Cave entrance of Ag. Ioannis, 115 m, 36°49'43"N, 25°26'13"E, 28.04.2019, *Gavalas* 1271.

Rare. Only locality on the island.

Cupressaceae

99. *Cupressus sempervirens* L.

Gr Panagia, village cemetery, 156 m, 36°50'13"N, 25°27'19"E, 15.02.2012, *Gavalas* obs. (photo).

Planted.

Pinaceae

100. *Pinus halepensis* Mill.

Gr Ag. Georgios, in gardens, 40 m, 36°51'32"N, 25°28'06"E, 15.02.2012, *Gavalas* obs. (photo).

Planted in fields near villages.

Acanthaceae

101. *Acanthus spinosus* L.

Gr 70 m NW of Panagia old mill, along disused path with stone walls, 130 m, 36°50'19"N, 25°27'37"E, 17.06.2011, *Gavalas* 425.

Damp and wet places, scattered. This mill is one of the three on the island, 550 m E of Panagia church.

Aizoaceae

102. *Aptenia cordifolia* (L.f.) Schwantes

Gr 40 m NW of Ag. Mamas chapel, small abandoned field, 135 m, 36°50'14"N, 25°27'35"E, 27.03.2022, *Gavalas* obs. (photo).

Planted near villages, naturalized.

103. *Carpobrotus edulis* (L.) N.E. Br.

Gr Livadi, sandy shore, 1 m, 36°51'02"N, 25°28'26"E, 31.05.2011, *Gavalas* obs. (photo).

Planted and naturalized.

Amaranthaceae

104. *Amaranthus albus* L.

Gr 220 m SE of Panagia church, 130 m, unirrigated field, 36°50'12"N, 25°27'25"E, 05.07.2011, *Gavalas* 439. Not common in the fields.



Fig. 6. *Adiantum capillus-veneris* (photo I. Gavalas).



Fig. 7. *Adiantum capillus-veneris* habitat (photo I. Gavalas).

105. *Amaranthus deflexus* L.

Gr Ag. Georgios village, 38 m, weed in gardens, 36°51'32"N, 25°28'07"E, 28.05.2018, *Gavalas* 1259. Naturalized.

106. *Amaranthus viridis* L.

Gr Ag. Georgios village, 8 m, road pavements, 36°51'41"N, 25°28'07"E, 27.06.2011, *Gavalas* 436. Weed, naturalized.

Anacardiaceae**107. *Pistacia terebinthus* L.**

Gr 100 m W-SW of Taxiarchis church, 24 m, unirrigated field, 36°51'33"N, 25°27'56"E, 16.05.2018, *Gavalas* obs. (photo).

Two shrubs noted in abandoned field, these are the only plants found on the whole island.

Apiaceae**108. *Ammi majus* L.**

Gr 250 m E-SE of Panagia church, 130 m, unirrigated field, 36°50'13"N, 25°27'26"E, 02.06.2011, *Gavalas* 375.

Rare, only found once.

109. *Bupleurum subovatum* Spreng.

Gr 220 m SE of Ag. Mamas chapel, 95 m, unirrigated field, 36°50'10"N, 25°27'44"E, 11.05.2019, *Gavalas* 1273.

Rare, two plants, only found once.

110. *Daucus broteri* Ten.

Gr 30 m NW of Skordilis house, 32 m, traditional path with stonewalls, phrygana and few shrubs, 36°51'27"N, 25°27'48"E, 20.05.2013, *Gavalas* 1151.

Not common in open phrygana.

111. *Daucus carota* subsp. *maximus* (Desf.) Ball

Gr 600 m NE of Panagia church, 120 m, side of main road, 36°50'27"N, 25°27'35"E, 04.07.2013, *Gavalas* 1172.

Not common in fields and at road pavements.

112. *Ferula communis* L. subsp. *communis*

Gr 220 m SE of Panagia church, 130 m, unirrigated field, 36°50'12"N, 25°27'25"E, 10.04.2005, *Gavalas* obs. (photo).

Common in fields and olive groves.

Apocynaceae**113. *Nerium oleander* L.**

Gr 250 m NW Livadi, 22 m, planted at road pave-

ments, 36°51'16"N, 25°28'17"E, 30.06.2009, *Gavalas* obs. (photo).

Planted and naturalized in streets and gardens.

Asclepiadaceae**114. *Cynanchum acutum* L.**

Gr Livadi, 1 m, sand dune, 36°51'03"N, 25°28'24"E, 29.06.2011, *Gavalas* 437.

Only in one locality.

115. *Gomphocarpus physocarpus* E. Mey.

Gr Ag. Georgios village, 38 m, main road pavements, 36°51'31"N, 25°28'06"E, 20.07.2008, *Gavalas* obs. (photo).

Escape from gardens.

Asteraceae**116. *Achillea maritima* (L.) Ehrend. & Y.P. Guo**

Gr Vorini Spilia, 1 m, sandy shore, 36°51'12"N, 25°27'08"E, 30.05.2018, *Gavalas* 1260.

Single plant, only found once.

117. *Andryala integrifolia* L.

Gr Islet Megalos Avelas, 38 m, macchie clearings, 36°49'45"N, 25°24'34"E, 29.04.2013, *Gavalas* 1117.

Only on this islet.

118. *Anthemis chia* L.

Gr Panagia cemetery, 155 m, 36°50'13"N, 25°27'20"E, 15.05.2011, *Gavalas* 217.

Only in this cemetery, possibly brought from Amorgos with floral offerings to deceased relatives.

119. *Asteriscus aquaticus* (L.) Less. (Fig. 8)

Gr Xylobati, 4 m, rocky shore, 36°51'51"N, 25°27'40"E, 14.05.2011, *Gavalas* 193.

Two localities, one near the sea and one in a dry valley.



Fig. 8. *Asteriscus aquaticus* (photo. I. Gavalas).

120. *Carduus argentatus* L.

Gr 400 m W of Dexameni, 105 m, traditional path with stonewalls, phrygana and a few shrubs, 36°50'52"N, 25°27'13"E, 14.04.2011, *Gavalas* 114.

New for Kiklades. Rare, plants scattered, noted only in two localities.

121. *Carthamus dentatus* subsp. *ruber* (Link) Hanelt

Gr 150 m SE of Ag. Mamas chapel, 110 m, unirrigated field, 36°50'08"N, 25°27'37"E, 17.06.2011, *Gavalas* 426.

In fields.

122. *Chondrilla juncea* L.

Gr 220 m SE of Panagia church, 130 m, unirrigated field, 36°50'12"N, 25°27'25"E, 05.07.2011, *Gavalas* 441.

In fields.

123. *Cichorium intybus* L.

Gr Panagia old mill, 140 m, unirrigated field, 36°50'17"N, 25°27'38"E, 28.05.2012, *Gavalas* 869.

Not common in open habitats.

124. *Crepis vesicaria* L.

Gr 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 10.04.2012, *Gavalas* 708.

Rare in open habitats.

125. *Cynara cornigera* Lindl.

Gr Ag. Athanasios village, 165 m, traditional path with stonewalls, phrygana and a few shrubs, 36°50'39"N, 25°26'52"E, 04.05.2013, *Gavalas* obs. (photo).

Single plant, found only once.

126. *Dittrichia graveolens* (L.) Greuter

Gr 200 m W of Dexameni, 95 m, traditional path with stonewalls, phrygana and a few shrubs, 36°50'52"N, 25°27'20"E, 13.11.2011, *Gavalas* 471.

Scattered, usually at roadsides.

127. *Erigeron bonariensis* L.

Gr Ag. Georgios village, 38 m, 36°51'32"N, 25°28'07"E, 24.05.2011, *Gavalas* 286.

Ruderal places.

128. *Erigeron canadensis* L.

Gr 150 m NW of Livadi, 10 m, ruderal place, 36°51'12"N, 25°28'17"E, 07.09.2008, *Gavalas* obs. (photo).

Rare, single plant found once.

129. *Erigeron sumatrensis* Retz.

Gr 250 m SE of Panagia church, 130 m, abandoned field, 36°50'11"N, 25°27'26"E, 29.11.2020, *Gavalas* obs. (photo).

Rare, three plants found only once.

130. *Filago aegaea* subsp. *aristata* Wagenitz

Gr Ftero Mericha, S-point, 290 m, phrygana, 36°49'22"N, 25°27'08"E, 01.04.2013, *Gavalas* 1051.

Not common, in open phrygana.

131. *Filago cretensis* Gand. subsp. *cretensis*

Gr Vrysi, traditional path with stonewalls, phrygana and a few shrubs, 250 m, 36°49'55"N, 25°27'03"E, 25.05.2011, *Gavalas* 331.

Not common, in open phrygana.

132. *Glebionis segetum* (L.) Fourr.

Gr 300 m W of Dexameni, unirrigated field, 98 m, 36°50'50"N, 25°27'17"E, 18.04.2011, *Gavalas* 50.

Not common in fields.

133. *Hedypnois rhagadioloides* subsp. *tubaeformis* (Ten.) Hayek

Gr 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 08.04.2012, *Gavalas* 665.

Not common in open habitats.

134. *Hypochaeris cretensis* (L.) Bory & Chaub.

Gr Islet Megalos Avelas, 38 m, open macchie, 36°49'45"N, 25°24'34"E, 29.04.2013, *Gavalas* 1120.

Rare, found once on this islet.

135. *Lactuca saligna* L.

Gr 200 m SW of Panagia church, 200 m, traditional path with stonewalls, phrygana and a few shrubs, 36°50'03"N, 25°27'09"E, 24.08.2011, *Gavalas* 454.

Single locality on stony path.

136. *Lactuca serriola* L.

Gr 35 m SW of Ag. Georgios church, 20 m, roadside, 36°51'38"N, 25°28'06"E, 05.07.2011, *Gavalas* 438.

Common in open habitats.

137. *Onopordum caulescens* d'Urv.

Gr Xylobati, 12 m, unirrigated field, 36°51'46"N, 25°27'40"E, 01.06.2012, *Gavalas* 880.

Common in fields.

138. *Scorzonera araneosa* Sm.

Gr Ftero Dematou, 90 m, unirrigated field, 36°49'42"N, 25°28'08"E, 15.05.2011, *Gavalas* 248.

Common in open habitats.

139. *Silybum marianum* (L.) Gaertn.

Gr Panagia old mill, 140 m, unirrigated field, 36°50'17"N, 25°27'38"E, 05.05.2013, *Gavalas* 1131.

Not common in open habitats.

140. *Sonchus asper* subsp. *glaucescens* (Jord.) Ball

Gr 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 31.01.2012, *Gavalas* 500.

Common in fields.

141. *Symphyotrichum squamatum* (Spreng.) G.L. Nesom

Gr Ag. Georgios village, 38 m, roadside, 36°51'31"N, 25°28'06"E, 23.01.2012, *Gavalas* 494.

Not common in ruderal places, spreading.

142. *Taraxacum hellenicum* Dahlst.

Gr Vrysi, traditional path with stonewalls, phrygana and a few shrubs, 250 m, 36°49'55"N, 25°27'03"E, 01.12.2014, *Gavalas* 1250.

Common in open phrygana.

143. *Taraxacum minimum* (Guss.) N. Terracc.

Gr Ag. Georgios village, 38 m, roadside, 36°51'31"N, 25°28'06"E, 08.12.2011, *Gavalas* 483.

Common in open habitats.

144. *Taraxacum scolopendrinum* Dahlst.

Gr Ftero Mericha, S-point, 283 m, traditional path with stonewalls, phrygana and a few shrubs, 36°49'21"N, 25°27'09"E, 23.02.2013, *Gavalas* 1031.

Common in open habitats. Three species of *Taraxacum* were found. *Taraxacum megalorhizon* is a collective species and synonymous with *Taraxacum* sect. *Scariosa*.

145. *Tragopogon dubius* Scop.

Gr 400 m SE of Dexameni, 60 m, dry stream, 36°50'41"N, 25°27'39"E, 19.04.2012, *Gavalas* 772.

Common in open habitats.

Boraginaceae**146. *Anchusa undulata* subsp. *hybrida* (Ten.) Bég.**

Gr 600 m W of Tourkopigado, 100 m, roadside, 36°50'01"N, 25°28'01"E, 05.03.2012, *Gavalas* 538.

Not common in open habitats.

147. *Asperugo procumbens* L. (Fig. 9)

Gr 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 20.04.2009, *Gavalas* obs. (photo).

New for Kiklades. Only found once in this field but not again.



Fig. 9. *Asperugo procumbens* (photo. I. Gavalas).

148. *Echium plantagineum* L.

Gr Tourkopigado, 2 m, stony shore, 36°50'00"N, 25°28'26"E, 05.03.2012, *Gavalas* 536.

Single locality on stony shore and another at roadside.

149. *Heliotropium hirsutissimum* Grauer

Gr 300 m W of Dexameni, unirrigated field, 98 m, 36°50'50"N, 25°27'17"E, 19.06.2011, *Gavalas* 434.

Common in fields.

Brassicaceae**150. *Acuston perenne* (Mill.) Mabb. & Al-Shehbaz** (Basionym: *Lunaria perennis* Mill. 1768), see Al-Shehbaz & Mabberley, *Novon* 25: 415 (2017), <https://www.biodiversitylibrary.org/page/61460680> [syn. *Fibigia lunarioides* (Willd.) Sweet, *Acuston lunarioides* (Willd.) Raf.]

Gr Ftero Dematou, 10 m, on cliffs, 36°49'36"N, 25°28'02"E, 05.06.2011, *Gavalas* 385.

On S-facing cliffs; endemic to Kiklades. A proposal to reject the name *Lunaria perennis* Mill. has been submitted (German & Al-Shehbaz 2020) but no decision has been made at the time of writing.

151. *Brassica cretica* subsp. *aegaea* (Heldr. & Halácsy) Snogerup, M.A. Gust. & Bothmer

Gr Ftero Dematou, 10 m, on cliffs, 36°49'34"N, 25°28'01"E, 31.01.2012, *Gavalas* 502.

On cliffs and also grown in fields and gardens.

152. *Cardamine hirsuta* L.

Gr Vrysi, traditional path with stonewalls, phrygana and a few shrubs, 250 m, 36°49'55"N, 25°27'03"E, 02.03.2013, *Gavalas* 1038.

Not common, single locality with scattered plants in open phrygana.

153. *Draba boerhaavii* (H.C. Hall) Raus
Gr 300 m N-NE of Dexameni, 82 m, unirrigated field, 36°50'51"N, 25°27'30"E, 21.01.2015, *Gavalas* obs. (photo).

Not common in fields.

154. *Draba praecox* Steven

Gr Dexameni, 82 m, open phrygana, 36°50'51"N, 25°27'29"E, 15.02.2012, *Gavalas* 509.

Common in open habitats.

155. *Eruca vesicaria* (L.) Cav.

Gr Plastiga, 44 m, unirrigated field, 36°51'20"N, 25°27'45"E, 08.06.2013, *Gavalas* 1164.

Common in fields.

156. *Erucaria hispanica* (L.) Druce

Gr 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 16.06.2011, *Gavalas* 400.

Common in fields.

157. *Noccaea perfoliata* (L.) Al-Shehbaz [syn.: *Thlaspi perfoliatum* L., *Microthlaspi perfoliatum* (L.) F.K. Mey.] (Fig. 10)

Gr 250 m SW of Dexameni, 100 m, unirrigated field, 36°50'47"N, 25°27'20"E, 04.02.2013, *Gavalas* 1021.

Not common, scattered plants in field.

158. *Raphanus raphanistrum* L. [documented in Strid 2016]

Gr 200 m SW of Plastiga, 46 m, unirrigated field, 36°51'17"N, 25°27'38"E, 12.05.2013, *Gavalas* 1144.

Not common in fields.

159. *Rapistrum rugosum* (L.) All. [documented in Strid 2016]

Gr 200 m SW of Plastiga, 46 m, unirrigated field, 36°51'17"N, 25°27'38"E, 08.06.2013, *Gavalas* 1162.

Not common in fields.

160. *Sinapis arvensis* L.

Gr 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 16.06.2011, *Gavalas* 405.

Not common in fields.

161. *Sisymbrium irio* L.

Gr Ag. Georgios village, 38 m, roadside, 36°51'32"N, 25°28'07"E, 24.05.2011, *Gavalas* 291.

Common in fields.

Cactaceae

162. *Opuntia ficus-indica* (L.) Mill. [documented by Chilton, 22 May 2007]

Gr Panagia village, 145 m, roadside, 36°50'18"N, 25°27'27"E, 20.05.2007, *Gavalas* obs. (photo).

Naturalized in and near villages.

Caryophyllaceae

163. *Agrostemma githago* L.

Gr 500 m SW of Dexameni, 130 m, unirrigated field, 36°50'39"N, 25°27'17"E, 20.05.2009, *Gavalas* obs. (photo).

A few plants once noted in a field.

164. *Cerastium comatum* Desv.

Gr 250 m SE of Dexameni, 70 m, rock pool on psammitic path, 36°50'46"N, 25°27'38"E, 25.02.2013, *Gavalas* 1034.

Not common in open habitats.

165. *Minuartia mediterranea* (Link) K. Malý [syn.: *Sabulina mediterranea* (Link) Rchb.]

Gr 250 m SE of Dexameni, 70 m, rock pool in psammitic path, 36°50'46"N, 25°27'38"E, 15.02.2012, *Gavalas* 1510.

Not common in open habitats.

166. *Sagina maritima* G. Don

Gr 250 m SE of Dexameni, 70 m, rock pool on psammitic path, 36°50'46"N, 25°27'38"E, 25.02.2013, *Gavalas* 1035.

Not common in open habitats.

167. *Spergularia diandra* (Guss.) Heldr.

Gr Panagia old mill, 140 m, phrygana openings, 36°50'16"N, 25°27'39"E, 31.03.2013, *Gavalas* 1049.

Single locality in open phrygana.



Fig. 10. *Noccaea perfoliata* (photo. I. Gavalas).

168. *Spergularia marina* (L.) Besser [syn.: *Spergularia salina* J. Presl & C. Presl]

Gr Tourkopigado, 2 m, stony shore, 36°50'00"N, 25°28'27"E, 14.05.2011, *Gavalas* 208.

Common in littoral zone.

169. *Stellaria apetala* Ucria [syn.: *Stellaria pallida* (Dumort.) Crép.]

Gr Ag. Georgios village, 38 m, roadside, 36°51'32"N, 25°28'07"E, 15.05.2011, *Gavalas* 221.

Common as a weed in fields and gardens.

170. *Stellaria cupaniana* (Jord. & Fourr.) Bég.

Gr Vrysi, stony path, 250 m, 36°49'55"N, 25°27'03"E, 04.04.2012, *Gavalas* 625.

Rare in open habitats.

Chenopodiaceae

171. *Chenopodium album* L.

Gr Ag. Georgios village, 38 m, garden, 36°51'32"N, 25°28'07"E, 13.06.2013, *Gavalas* obs. (photo).

Rare, found once in garden.

172. *Chenopodium opulifolium* Schrad.

Gr Ag. Georgios village, 38 m, garden, 36°51'32"N, 25°28'07"E, 24.05.2011, *Gavalas* 292.

In fields and gardens, but not common.

173. *Chenopodium vulvaria* L.

Gr 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 16.06.2011, *Gavalas* 407.

Not common in fields.

Convolvulaceae

174. *Convolvulus arvensis* L.

Gr 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 22.05.2011, *Gavalas* 279.

In fields.

Crassulaceae

175. *Aeonium arboreum* (L.) Webb & Berthel.

Gr 50 m N of Ag. Georgios church, 7 m, rock crevices in dry stream, escaping from garden in large numbers, 36°51'40"N, 25°28'06"E, 23.04.2009, *Gavalas* obs. (photo).

Naturalized in Ag. Georgios village, spreading.

Cucurbitaceae

176. *Ecballium elaterium* (L.) A. Rich.

Gr 50 m N of Ag. Georgios church, 7 m, sandy soil in dry stream bed, 36°51'41"N, 25°28'06"E, 10.10.2013, *Gavalas* obs. (photo).

Rare, in a dry stream bed.

Euphorbiaceae

177. *Chrozophora tinctoria* (L.) A. Juss.

Gr 220 m SE of Panagia church, 130 m, unirrigated field, 36°50'12"N, 25°27'25"E, 05.07.2011, *Gavalas* 440.

Not common in fields.

178. *Euphorbia acanthothamnus* Boiss.

Gr Xylobati, 4 m, rocky shore, 36°51'51"N, 25°27'40"E, 11.04.2012, *Gavalas* 724.

Single locality on NW-facing rocky shore.

179. *Euphorbia chamaesyce* L.

Gr Ag. Georgios school, 22 m, stony path, 36°51'35"N, 25°28'01"E, 07.07.2011, *Gavalas* 444.

Rare in residential areas.

180. *Euphorbia helioscopia* L.

Gr Ag. Georgios village, 38 m, roadside, 36°51'31"N, 25°28'06"E, 23.01.2012, *Gavalas* 497.

Common in open habitats.

181. *Euphorbia hypericifolia* L. (Fig. 11)

Gr Ag. Georgios school, 22 m, garden, 36°51'37"N, 25°28'03"E, 17.06.2018, *Gavalas* 1261.

New for the Kiklades. Rare, naturalized in residential areas, spreading.

182. *Euphorbia maculata* L.

Gr Ag. Georgios school, 22 m, dry path, 36°51'35"N, 25°28'01"E, 12.09.2011, *Gavalas* obs. (photo).

Rare in residential areas.

183. *Euphorbia peplis* L.

Gr Livadi, 1 m, sandy beach, 36°51'03"N, 25°28'29"E, 16.06.2011, *Gavalas* 413.

Common in open habitats.

184. *Euphorbia prostrata* Aiton (Fig. 12)

Gr Ag. Georgios school, 2 m, stony path, 36°51'35"N, 25°28'01"E, 17.07.2018, *Gavalas* 1262.

New for the Kiklades. Rare in residential areas.

185. *Ricinus communis* L.

Gr 40 m S of Panagia church, 167 m, garden, 36°50'13"N, 25°27'17"E, 19.07.2008, *Gavalas* obs. (photo).

Naturalized in village.



Fig. 11. *Euphorbia hypericifolia* (photo. I. Gavalas).



Fig. 12. *Euphorbia prostrata* (photo. I. Gavalas).

Fabaceae

186. *Astragalus boeticus* L.

Gr Xylobati, 12 m, unirrigated field, 36°51'46"N,
25°27'40"E, 28.03.2012, Gavalas 562.

Rare in fields.

187. *Astragalus hamosus* L.

Gr Panagia old mill, 140 m, phrygana, 36°50'16"N,
25°27'39"E, 02.04.2012, Gavalas 602.

Not common in open habitats.

188. *Astragalus pelecinus* (L.) Barneby [syn.: *Biserrula pelecinus* L.]

Gr Panagia cemetery, 140 m, perhaps brought from
Amorgos by relatives of the deceased, 36°50'13"N,
25°27'19"E, 03.04.2012, Gavalas 606.

Rare, found only once.

189. *Astragalus sinaicus* Boiss.,

Gr Skali, 280 m, abandoned terrace field, 36°49'42"N,
25°27'15"E, 17.04.2012, Gavalas 746.

Not common in open phrygana.



Fig. 13. *Lathyrus amphicarpos* (photo. I. Gavalas).

190. *Hippocrepis ciliata* Willd.

Gr 50 m SW of Dexameni, macchie, 90 m,
36°50'50"N, 25°27'28"E, 06.04.2012, Gavalas 651.

Common in open habitats.

191. *Lathyrus amphicarpos* L. (Fig. 13)

Gr Skali, 220 m, abandoned terrace field, 36°49'37"N,
25°27'18"E, 08.03.2014, Gavalas 1193.

New for the Kiklades. Rare, only found once.



Fig. 14. *Lathyrus annuus* (photo. I. Gavalas).

192. *Lathyrus annuus* L. (Fig. 14)

Gr 220 m SE of Panagia church, 130 m, unirrigated field, 36°50'12"N, 25°27'25"E, 18.04.2012, *Gavalas* 661.

Common in fields.

193. *Lathyrus articulatus* L.

Gr 220 m SE of Panagia church, 130 m, unirrigated field, 36°50'12"N, 25°27'25"E, 09.03.2008, *Gavalas* obs. (photo).

Rare, only found once.

194. *Lathyrus clymenum* L.

Gr 220 m SE of Panagia church, 130 m, unirrigated field, 36°50'12"N, 25°27'25"E, 18.04.2012, *Gavalas* 664.

Common in fields.

195. *Lathyrus setifolius* L.

Gr Ag. Athanasios village, 170 m, phrygana, 36°50'37"N, 25°26'49"E, 05.04.2012, *Gavalas* 645.

Not common in open habitats.

196. *Lens ervoides* (Brign.) Grande [syn.: *Vicia lenticula* (Hoppe) Janka]

Gr 830 m SW of Livadi beach, phrygana, 19 m, 36°50'45"N, 25°28'15"E, 18.05.2014, *Gavalas* 1231.

Rare.

197. *Lens nigricans* (M. Bieb.) Godr. [syn.: *Vicia lentoides* (Ten.) Coss. & Germ.]

Gr 100 m W-SW of Panagia old mill, 130 m, unirrigated field, 36°50'16"N, 25°27'34"E, 27.04.2012, *Gavalas* 804.

Rare.

198. *Lotus subbiflorus* Lag.



Fig. 15. *Medicago minima* (photo. I. Gavalas).

Gr Ag. Georgios village, 32 m, open phrygana, 36°51'33"N, 25°28'06"E, 07.03.2012, *Gavalas* 545.

Not common in open habitats.

199. *Medicago constricta* Durieu

Gr 400 m SW of Dexameni, 125 m, phrygana, 36°50'41"N, 25°27'20"E, 18.05.2011, *Gavalas* 259.

Rare in open habitats.

200. *Medicago minima* (L.) Bartal. (Fig. 15)

Gr Xylobati, 12 m, unirrigated field, 36°51'46"N, 25°27'40"E, 28.03.2012, *Gavalas* 569.

Not common in open habitats.

201. *Ononis pubescens* L.

Gr Ageli, 82 m, phrygana, 36°50'33"N, 25°27'50"E, 18.04.2011, *Gavalas* 38.

Not common in open habitats.

202. *Pisum sativum* L. subsp. *sativum* [syn.: *P. sativum* subsp. *elatius* (M. Bieb.) Asch. & Graebn.]

Gr 220 m SE of Panagia church, 130 m, cultivated & escape in unirrigated field, 36°50'12"N, 25°27'25"E, 12.04.2012, *Gavalas* 730.

Cultivated & naturalized in fields.

203. *Retama monosperma* (L.) Boiss. [syn.: *Genista monosperma* (L.) Lam.]

Gr Ag. Georgios village, 38 m, garden, 36°51'32"N, 25°28'07"E, 13.06.2013, *Gavalas* obs. (photo).

Planted in villages.

204. *Robinia pseudoacacia* L.

Gr Ag. Georgios village, 21 m, garden, 36°51'38"N, 25°28'05"E, 23.04.2009, *Gavalas* obs. (photo).

Planted in villages.

205. *Spartium junceum* L.

Gr 1 km NE of Panagia church, 90 m, roadside, 36°50'38"N, 25°27'44"E, 17.06.2011, *Gavalas* 423.

Planted at roadsides, one natural occurrence in dry stream bed.

206. *Trifolium angustifolium* L.

Gr 200 m W of Dexameni, 95 m, phrygana, 36°50'52"N, 25°27'20"E, 18.04.2011, *Gavalas* 70.

Not common in open habitats.

207. *Trifolium cherleri* L.

Gr Islet Megalos Avelas, 38 m, open macchie, 36°49'45"N, 25°24'34"E, 29.04.2013, *Gavalas* 1102.

Single locality on islet.

208. *Trigonella gladiata* M. Bieb.

Gr 50 m SW of Dexameni, macchie, 90 m, 36°50'50"N, 25°27'28"E, 29.03.2012, *Gavalas* 580.

Not common in open habitats.

209. *Vicia lutea* L.

Gr 70 m NW of Panagia old mill, phrygana, 130 m, 36°50'19"N, 25°27'37"E, 02.04.2012, *Gavalas* 600.

Not common in open habitats.



Fig. 16. *Asplenium scolopendrium* subsp. *scolopendrium* (photo V. Ioannidis).

210. *Vicia pannonica* subsp. *striata* (M. Bieb.) Nyman

Gr Xylobati, 10 m, unirrigated field, 36°51'46"N, 25°27'38"E, 20.04.2012, *Gavalas* 774.

Not common in fields.

211. *Vicia peregrina* L.

Gr 400 m W of Dexameni, 105 m, phrygana, 36°50'52"N, 25°27'13"E, 14.04.2011, *Gavalas* 117.

Common in open habitats.

212. *Vicia villosa* subsp. *varia* (Host) Corb.

Gr 100 m WSW of Panagia old mill, dry field, 132m, 36°50'15"N, 25°27'34"E, 15.04.2012, *Gavalas* 741.

Not common in fields.

Note: *Fagaceae* to *Oleaceae* will be published in New floristic records in the Balkans: 50.

Reports 213–221

Vassilis Ioannidis¹, Despina Doulkeridou¹ & Arne Strid²

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The following records are new for nomos Kilkis in northcentral/northeast Greece.

Aspleniaceae**213. *Asplenium scolopendrium* L. subsp. *scolopendrium* (Fig. 16)**

Gr Nomos Kilkis, Eparchia Paeonias: near the village of Koupa, woodland and scrub, 524 m, 41°4'10.46"N, 22°22'27.28"E, 15.05.2022, *Ioannidis* obs.

Rare in Greece, with nearest localities on Mt Pieria and Agion Oros.

Cucurbitaceae**214. *Echinocystis lobata* (Michx.) Torr. & A.Gray (Fig. 17)**

Gr Nomos Kilkis, Eparchia Paeonias: near Axios river, freshwater habitats, 54 m, 41°4'31.12"N, 22°32'18.43"E, 17.10.2022, A. Athanasiadis & Ioannidis obs.

Second report for Greece, first reported by Giannakis & al. (2017), also from Axios river area, at the estuary of Thermaikos.



Fig. 17. *Echinocystis lobata* (photo V. Ioannidis).



Fig. 18. *Hypericum annulatum* (photo V. Ioannidis).

Fabaceae

215. *Astragalus thracicus* Griseb. subsp. *thracicus*

Gr Nomos Kilkis, Eparchia Paeonias: near the village of Pontoiraklia, phrygana and grassland, 128 m, 41°3'49.31"N, 22°37'44.33"E, 21.11.2021, *Ioannidis* obs.

Hypericaceae

216. *Hypericum annulatum* Moris (Fig. 18)

Gr Nomos Kilkis, Eparchia Paeonias: between villages of Griva and Kastaneri, woodland and scrub, 645 m, 40°57'43.86"N, 22°23'46.38"E, 29.05.2010, *Ioannidis* obs.

A new locality in between previous records from Mt Vermion and NE Greece.

217. *Hypericum hirsutum* L.

Gr Nomos Kilkis, Eparchia Paeonias: between villages of Kastaneri and M. Livadia, woodland and scrub, 1135 m, 40°59'8.59"N, 22°19'21.58"E, 09.08.2022, *Ioannidis* obs.

Lauraceae

218. *Laurus nobilis* L.

Gr Nomos Kilkis, Eparchia Paeonias: Mt Paiko, woodland and scrub, 1156 m, 40°57'22.5"N, 22°21'19.45"E, 19.09.2021, *Ioannidis* obs.

An important northward extension of the range for the species. In NE Greece it has mainly been recorded from coastal areas (e.g., it is rather common at low altitude on the Athos peninsula).

Scrophulariaceae

219. *Veronica barrelieri* Roem. & Schult. subsp. *barrelieri*

Gr Nomos Kilkis, Eparchia Paeonias: near the lake of Metaleiou, grassland, 238 m, 41°1'47.36"N, 22°27'21.99"E, 11.09.2022, A. Athanasiadis & K.Kostantinidis obs.

The nearest locality is on Mt Belles where it was collected in 1981 by A. Strid and E. Stamatiadou.

Solanaceae

220. *Solanum nigrum* subsp. *schultesii* (Opiz) Wessely

Gr Nomos & Eparchia Kilkis: near the village of Ano Theodoraki, grassland, 687 m, 41°8'12.25"N, 23°1'21.6"E, 09.09.2022, *Ioannidis* obs.

Rather common in northern Greece.

Thymelaeaceae

221. *Daphne laureola* L.

Gr Nomos Kilkis, Eparchia Paeonias: near the village of Koupa, woodland and scrub, 604 m, 41°3'58.5"N, 22°21'28.32"E, 15.05.2022, *Ioannidis* obs.

A central European species extending southwards to Sterea Ellas and C Evvia. The records nearest to Kilkis seem to be on Mt Tzena and Mt Menikion.

Reports 222–230

Ivan Kostadinov¹ & Antoaneta Petrova²

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Asteraceae

222. *Artemisia austriaca* Jacq.

Bu Balkan Range (Eastern): Hamam Bair lo-

cality, Sliven town, 306 m, MH42, 42.67153°N, 26.30981°E, 28.08.2021, coll. I. Kostadinov (SOM 178035, 178036).

This record confirms the distribution of *A. austriaca* at lower altitudes and in urban habitats of the floristic sub-region, e.g., Aitos town, Karnobat town (Gushev 2012).

223. *Picnomon acarna* (L.) Cass.

Bu Balkan Range (*Eastern*): Barmuk Bair locality near Sliven town, 356 m, MH42, 42.68908°N, 26.31192°E, 24.07.2021, I. Kostadinov obs.; Hamam Bair locality, Sliven town, MH42, 306 m, 42.66992°N, 26.30886°E, 01.08.2021, coll. I. Kostadinov (SOM 178038) (Fig. 19).

New for the Balkan Range floristic region (cf. Assyov & Petrova 2012).

224. *Scolymus hispanicus* L.

Bu Balkan Range (*Eastern*): Hamam Bair locality, Sliven town, 306 m, MH42, 42.66992°N, 26.30846°E, 01.08.2021, coll. I. Kostadinov (SOM 178037); Mt Slivenska, above Sliven town, along the road to Ablanitsa locality, MH42, 42.690889°N, 26.319178°E, 27.08.2022, A. Petrova obs.

A Mediterranean element. In Bulgaria, it occurs mostly in the southern regions. New for the Balkan Range floristic region (cf. Assyov & Petrova 2012).

Brassicaceae

225. *Conringia austriaca* (Jacq.) Sweet

Bu Balkan Range (*Eastern*): Mt Slivenska, Enyova Bulka locality, MH53, 27.04.2014, coll. A. Petrova (SOM 170442); Barmuk Bair locality, the villa zone of Sliven town, 434 m, MH42, 42.68926°N, 26.30667°E, 03.05.2020, I. Kostadinov obs. (Fig. 20)



Fig. 19. *Picnomon acarna* (photo I. Kostadinov).



Fig. 20. *Conringia austriaca* (photo I. Kostadinov).



Fig. 21. *Eruca vesicaria* (photo I. Kostadinov).

This is the first report of the species for this region (cf. Assyov & Petrova 2012; Stoyanov & al. 2021).

226. *Eruca vesicaria* (L.) Cav.

Bu Balkan Range (*Eastern*): the villa zone of Sliven town, 370 m, MH42, 42.695773°N, 26.342683°E, 27.03.2022, coll. I. Kostadinov (SOM 178033, 178034).

— Rhodopi Mts (*Western*): near Snezhanka Cave, Peshtera Municipality, 550 m, KG75, 42.014272°N, 24.278725°E, 23.04.2016, I. Kostadinov obs. (Fig. 21).



Fig. 22. *Papaver hybridum* (photo I. Kostadinov).

These are the first reports of the species for these regions (cf. Assyov & Petrova 2012).

Fabaceae

227. *Lathyrus setifolius* L.

Bu Balkan Range (*Eastern*): Barmuk Bair locality near Sliven town, 434 m, MH42, 42.68926°N, 26.30667°E, 07.05.2020, coll. I. Kostadinov (SOM 178039).

This is the first report of the species for this region (cf. Assyov & Petrova 2012).

Lamiaceae

228. *Ajuga salicifolia* (L.) Schreb.

Bu Balkan Range (*Eastern*): Batmish Bair locality near Sliven town, 440 m, MH42, 42.67636°N, 26.29294°E, 28.05.2022, coll. I. Kostadinov (SOM 178040).

First report for this region. The species has quite local distribution in Bulgaria.

Papaveraceae

229. *Papaver hybridum* L.

Bu Balkan Range (*Eastern*): Sliven town, 302 m, MH42, 42.69000°N, 26.32031°E, 25.04.2020, coll. I. Kostadinov (SOM 178041, 178042); 42.69419°N, 26.33233°E, 06.05.2022; Sotirya village, Sliven Municipality, 252 m, MH 52, 42.69144°N, 26.40192°E, 07.05.2022, I. Kostadinov obs., Fig. 22).

A thermophilic species with Mediterranean-Turanic distribution, new for the floristic region. Observed also in other sunny places with somewhat ruderal herbal vegetation in Sliven town and its suburbs, the villa area and surroundings.



Fig. 23. *Ranunculus sphaerospermus* (photo I. Kostadinov).

Ranunculaceae**230. *Ranunculus sphaerospermus*** Boiss. & Blanche

Bu Tundzha Hilly Country: Gemetarla Reservoir lake, Sliven Mineral Baths, Sliven Municipality, 164 m, MH31, 42.60876°N, 26.23346°E, 07.04.2019, coll. *I. Kostadinov* (SOM 178043) (Fig. 23).

An extremely rare, Critically Endangered species in Bulgaria (Bancheva 2009, 2015). The population was dense. This is the first report of the species for this region (cf. Assyov & Petrova 2012; Bancheva 2015).

Reports 231–246**Georgi Kunev**

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Amaranthaceae**231. *Dysphania pumilio*** (R. Br.) Mosyakin & Clemants [syn. *Chenopodium pumilio* R. Br.]

Bu Pirin Mts (*Northern*): Dobrinishte village, Blagoevgrad District, as a pavement weed on Desilitsa street near river Dobrinishka, 845 m, GM13, 41.81880°N, 23.56283°E, 26.09.2022, coll. & det. *G. Kunev* (SOM 177978).

— Rhodopi Mts (*Eastern*): on the shores of Kardzhali Reservoir, close to the starting point of the trail to Utrobata Cave, Kardzhali District, 320 m, LG51, 41.69649°N, 25.23509°E, 06.10.2021, coll. & det. *G. Kunev* (SO 108198).

This is a recent addition to the alien flora of Bulgaria (Grozeva 2007). So far, it has been reported mostly from the eastern part of the country (Petrova & al. 2013b). Evidently, the species has expanded its range on the territory of the country in westward direction. This is its first report from the Pirin Mts (cf. Stoyanov & al. 2021). A small group of about 10 individuals was observed in the cracks between the curb and the asphalt layer on a city street. On the other hand, the population in Eastern Rhodopes was numerous and spread along the shoreline of Kardzhali Reservoir, accompanied by *Corrigiola litoralis* and *Eleocharis acicularis*.

232. *Oxybasis chenopodioides* (L.) S. Fuentes, Uotila & Borsch [syn. *Chenopodium chenopodioides* (L.) Aellen]

Bu Black Sea Coast (*Southern*): Pomorie, Burgas District, at the shore of lake Pomorie, 1 m, NH51, 42.57226°N, 27.63501°E, 07.10.2022, coll. & det. *G. Kunev* (SOM 177977).

According to Stoyanov & al. (2021), the species occurs in Bulgaria in two floristic regions: Danubian Plain and Black Sea Coast (*Northern*). However, there are earlier reports from the Black Sea Coast (*Southern*) and the city of Burgas, and the Rhodopes (*Eastern*) from Kardzhali town (Grozeva & al. 2019); no herbarium material from these two regions has been found in any of the indexed herbaria in Bulgaria. The current report concerns a new locality in the Black Sea Coast (*Southern*) floristic subregion. A small population of about 10 individuals was observed on the eastern shore of lake Pomorie, in front of the Junita Holiday Club.

Asteraceae**233. *Galatella villosa*** (L.) Rchb.f.

Bu Sofia region: Bezden village, Kostinbrod Municipality, in open dry grassland communities, NE from the karst spring, 660 m, FN75, 42.89176°N, 23.09656°E, 01.08.2022, coll. & det. *G. Kunev* (SOM 177777).

New for the Sofia region (cf. Kuzmanov & Ančev 2012; Stoyanov & al. 2021). A single plant was observed in the calcareous hills above Bezden village, accompanied by *Satureja kitaibelii*, *Artemisia alba*, *Crataegus monogyna*, etc.

Caryophyllaceae**234. *Silene gallinyi*** Rchb.

Bu Danubian Plain: between Florentin and Novo Selo villages, Vidin District, in a grassland herbal vegetation next to a vineyard, 80–100 m, FP48, 44.14140°N, 22.82926°E, 28.06.2022, with flowers, coll. & det. *G. Kunev* (SO 108189; SOM 177772); 44.13507°N, 22.83767°E, with flowers, *G. Kunev* obs. New for the Danubian Plain (cf. Stoyanov & al. 2021). Numerous individuals of the species have been observed in several spots, usually in pastures, abandoned crop fields or roadsides. It also participates in commu-

nities with *Convolvulus althaeoides*. Considering its relative abundance, it is probably presented in more localities at the region but due to its late summer flowering period, it has been overlooked until now.

Cistaceae

235. *Fumana bonapartei* Maire & Petitm. (Fig. 24)

Bu Rhodopi Mts (*Eastern*): SW from Dobromirtsi village, Kardzhali District, on serpentine outcrops, 365 m, LF48, 41.38028°N, 25.20226°E, 19.05.2022, with flowers, coll. & det. G. Kunev (SO 108177; SOM 177695); SW from Golyamo Kamenyane village, Kardzhali District, on open stony slopes, on serpentine, 390 m, LF98, 41.40165°N, 25.70014°E, 28.05.2022, with flowers and fruits, coll. & det. G. Kunev (SO 108178; SOM 177696).

This species has been recently reported for Bulgaria (Kunev 2020) from a single site near Fotinovo village, Eastern Rhodopi Mts. A second site near Kazak village was confirmed after further field studies in the region



Fig. 24. *Fumana bonapartei* (photo G. Kunev).

(Kunev & Kostadinov 2021). After the current report, the localities of the species in Bulgaria are now four. It is found exclusively on serpentine substrates, in open communities associated with other serpentinophytes such as *Convolvulus boissieri* subsp. *compactus*, *Fumana aciphylla*, *Thymus jalasianus*, *Onosma kittanae*, *Aethionema rhodopaeum*, and *Silene fetlerii*. Other constantly occurring species in these communities are *Juniperus communis*, *Chrysopogon gryllus*, *Linum tauricum* subsp. *bulgaricum*, *Agropyron cristatum* subsp. *pectinatum*, *Cerastium* aff. *bulgaricum*, etc. The species is well established in the reported sites, with numerous individuals and stable local populations.

Geraniaceae

236. *Geranium pratense* L. (Fig. 25)

Bu Mt Sredna Gora (*Western*): S of Paunovo village, Ihtiman Municipality, on the banks of river Mativir, 750 m, GN20, 42.50980°N, 23.71470°E, 31.07.2022, coll. & det. G. Kunev (SO 108201; SOM 177776).



Fig. 25. *Geranium pratense* (photo G. Kunev).



Fig. 26. *Salvia hispanica* (photo G. Kunev).

New for the floristic subregion (cf. Stoyanov & al. 2021). The species has been observed on alluvial terraces of the river, in mesic grasslands, associated with *Arrhenatherum elatius*, *Lysimachia vulgaris*, *Mentha longifolia*, *Glyceria fluitans*, *Hypericum tetrapterum*, *Scirpus sylvaticus*, *Stellaria graminea*, *Holcus lanatus*, *Poa pratensis*, *Scutellaria hastifolia*, etc.

Lamiaceae

237. *Salvia hispanica* L. (Fig. 26)

Bu Rhodopi Mts (*Eastern*): on gravel bars in river Varbitsa, Preseka village, Kirkovo Municipality, 380 m, LF48, 41.38382°N, 25.16280°E, 20.11.2022, with flowers, coll. & det. G. Kunev (SO 108196).

The Chia species originates from Central America (Baginsky & al. 2016). In Europe, it is considered a casual alien (POWO 2022). So far, it has been reported from one site in Bulgaria (Kunev 2021). A total of seven individuals were observed on sand-gravel depositions within river Varbitsa, near Preseka village.

In that spot, the river broadens significantly and at low water exposes large river bar depositions suitable for temporary establishment of some ornamental xer-



Fig. 27. *Limosella aquatica* (photo G. Kunev).

nophytes. Other such species noticed in the same locality were *Cosmos bipinnatus*, *Tagetes patula*, *Oenothera glazioviana*, and *Physalis peruviana*. In addition to the already established population of *Buddleja davidii* (Kunev 2020a), a small self-supporting population of *Catalpa* cf. *ovata* has been observed at the site.

Scrophulariaceae

238. *Limosella aquatica* L. (Fig. 27)

Bu Thracian Lowland: in the inflow area of Sinyata Reka Reservoir, Hisarya town, Plovdiv District, 300 m, LH10, 42.47629°N, 24.70588°E, 19.11.2022, with flowers, coll. & det. G. Kunev (SO 108193).

New for the Thracian Lowland. So far, it has been known from a few gatherings in the Danubian Plain, Vitosha region and Rila Mts (Stoyanov & al. 2021). The local population of this species comprised many individuals. They developed on desiccating silt depositions in the inflow area of the waterbody, along with other annual species typical for the association *Cyperetum micheliani* Horvatić 1931, class *Isoëto-Nanojuncetea*. The species composition included also *Cyperus micheliani*, *C. fuscus*, *Gnaphalium uliginosum*, *Potentilla supina*, *Lindernia dubia*, *Ranunculus sceleratus*, *Plantago major* subsp. *intermedia*, *Rorippa sylvestris*, *Veronica beccabunga*, *Physcomitrella patens*, and *Riccia cavernosa*. Remarkably, *Ammannia coccinea*, a taxon known in Bulgaria mainly from the rice fields (Vladimirov & al. 2017a), was also observed on the site. The area was significantly affected by livestock trampling, indicated by the presence of such ruderals or crop plants like *Oxybasis rubra*, *Amaranthus blitum* aggr., *Digitaria sanguinalis*, and *Panicum miliaceum*.



Fig. 28. *Physalis peruviana* (photo G. Kunev).

Solanaceae

239. *Physalis peruviana* L. (Fig. 28)

Bu Rhodopi Mts (*Eastern*): on gravel bars in river Varbitsa, Preseka village, Kirkovo Municipality, 380 m, LF48, 41.38379°N, 25.16289°E, 20.11.2022, with flowers and fruits, coll. & det. G. Kunev (SO 108197).

This is the second locality for the species in Bulgaria, so far known from the Valley of River Struma (*Southern*) floristic subregion (Kunev 2021a). Five individuals were noticed on the site, some bearing ripe fruits. Therefore, a possibility for further establishment of a sustained local population should not be rejected. The habitat characteristics are described in the report on *Salvia hispanica*.

Amaryllidaceae

240. *Allium denudatum* F. Delaroche

Bu Sofia region: Bezden village, Kostinbrod Municipality, in open dry grassland communities, NE

from the karst spring, 630 m, FN75, 42.88715°N, 23.09585°E, 01.08.2022, with flowers, coll. G. Kunev (SOM 177775)

New for Sofia region (cf. Stoyanov & al. 2021). The species is particularly abundant in the area, and associated with *Chrysopogon gryllus*, *Agropyron cristatum*, *Satureja kitaibelii*, *Artemisia alba*, *Rhamnus saxatilis*, etc.

Cyperaceae

241. *Cyperus michelianus* (L.) Delile

Bu Rhodopi Mts (*Eastern*): on the exposed bed of Ivaylovgrad Reservoir at Borislavtsi village, Madzharovo Municipality, 120 m, MG11, 41.65609°N, 25.94221°E, 13.09.2021, G. Kunev pers. obs.; On the exposed bed of Studen Kladehets Reservoir, Kardzhali District, 220 m, LG60, 41.62436°N, 25.42190°E, 19.11.2022, coll. & det. G. Kunev (SO 108200).

This species has not been reported so far from Eastern Rhodopes (cf. Stoyanov & al. 2021). It was most recently collected from the Valley of River Struma (Kunev 2020a, 2021b). In the new sites, the species was particularly abundant. All localities were affected by intensive grazing. Due to the unstable hydrological regime, trampling and grazing in both localities, mostly dwarf forms (1–2 cm tall) of the species were observed.

Poaceae

242. *Bromus diandrus* Roth

Bu Valley of Struma River (*Southern*): Damyanitsa village, Sandanski Municipality, in a ruderal site at the mouth of river Bozhdovska, 95 m, FL89, 41.51815°N, 23.25759°E, 28.08.2022, with fruits, completely withered, coll. & det. G. Kunev (SOM 177976).

The species has been recently reported for Bulgaria from Irakli locality in the Black Sea Coast (*Northern*) floristic subregion (Kunev 2021c). Subsequently, several new records have been added: from Ivaylovgrad area, Eastern Rhodopes (Kunev & Kostadinov 2021), and the findings along the Black Sea Coast, including the first Bulgarian collection of the species in the Arkutino area, Burgas District (Stoyanov & al. 2022). According to Stoyanov & al. (2022), the introduction of the species could be regarded as a result of hu-

man- assisted events due to expansion of the tourist infrastructure along the Black Sea Coast. However, the two inland findings from the Eastern Rhodopi Mts and the Valley of River Struma, observed within a relatively short period, are better explained by the natural expansion of the species range following the climate change process.

In the new locality, the species inhabits a typical ruderal site and waste dump on the sandy alluvium of the left bank of river Struma and the mouth of river Bozhdovska.

243. *Catapodium rigidum* (L.) C.E. Hubb. (Fig. 29)

Bu Pirin Mts (*Southern*): Kalimantsi village, Sandanski Municipality, 315 m, GL09, 41.46502°N, 23.48881°E, 25.04.2022, in pre-flowering state, coll. & det. G. Kunev (SO 108184); *loc. ibid.*, 19.06.2022, completely withered, coll. & det. G. Kunev (SO 108185).

It is a sub-Mediterranean element in the Bulgarian flora, known only from the southern regions of the country. It was reported first for this subregion by Velčev & al. (1962), but was apparently overlooked in the later botanical field guides and keys (cf. Stoyanov & al. 2021). One location with about 50 individuals on an area of 0.5 m² were observed in the ditch of a dirt road heading for Gaytaninovo village.

244. *Crypsis schoenoides* (L.) Lam.

Bu Rhodopi Mts (*Eastern*): Ivaylovgrad Reservoir, Borislavtsi village, Madzharovo Municipality, 120 m, MG11, 41.65609°N, 25.94221°E, 13.09.2021, G. Kunev obs.; on the exposed bed of Studen Kladenets Reservoir, Kardzhali District, 220 m, LG60, 41.62436°N, 25.42190°E, 19.11.2022, coll. & det. G.



Fig. 29. *Catapodium rigidum* (photo G. Kunev).

Kunev (SO 108199);

— Thracian Lowland: in the inflow area of Sinyata Reka Reservoir, Hisarya town, Plovdiv District, 300 m, LH10, 42.47677°N, 24.70604°E, 19.11.2022, with fruits, coll. & det. G. Kunev (SO 108195); on the desiccating shoreline of a fishpond near Tatarevo village, Mineralni Bani Municipality, 240 m, LG64, 41.93075°N, 25.41028°E, 01.10.2019, G. Kunev obs.

New for the above-mentioned regions (cf. Stoyanov & al. 2021). The species has been recently reported from the Valley of River Struma (Kunev 2020b, 2021b). In all reported localities, the species has been presented with numerous individuals. It forms monodominant stands or is associated with *Crypsis alopecuroides* and *Heliotropium supinum* on drier sites, and with *Cyper-*

us michelianus and *Gnaphalium uliginosum* on slightly moister substrates.

245. *Molineriella minuta* (L.) Rouy

Bu Pirin Mts (*Southern*): W from Rozhen Monastery, Blagoevgrad District, 650 m, GM00, 41.53080°N, 23.42104°E, 25.04.2022, in flowering state, coll. & det. G. Kunev (SOM 177697).

A species with Mediterranean distribution, known from a handful of localities in South Bulgaria (Assyov & Petrova 2012; POWO 2022). Recently, it was erroneously reported (Kunev 2018) from the Pirin Mts (*Northern*). During preparation of the current text, the precise location was re-evaluated and it was concluded that it is not within the borders of the Pirin Mts (*Northern*) subregion, but within the neighboring floristic region of Valley of River Mesta. Therefore, the current find of the species is the first documented with herbarium material from the Pirin Mts. The small population of several scores of individuals was recorded on the periphery of a temporary streamlet crossing the vehicle ruts along a dirt road. Associated species were other dwarf annuals, such as *Sagina apetala*, *Erophila verna*, *Cerastium brachypetalum*, etc.

246. *Panicum capillare* L.

Bu Valley of River Struma (*Northern*): Nevestino village, Kyustendil District, on the left bank of river Struma, under the Kadin Bridge, 450 m, FM57, 42.25653°N, 22.85367°E, 23.10.2022, coll. & det. G. Kunev (SO 108204, 108205; SOM 177979, 177980).

In Bulgaria, the species has been known so far from the Sofia region, Black Sea Coast (*Southern*), Danubian Plain, and Northeast Bulgaria (Deneva & Ljubenova 1996; Tzonev & Šumberová 2004; Stoyanov 2008; Vladimirov & al. 2016). In the newly identified locality, about 150 individuals were observed, dispersed in a section of 100 m at a few adjacent spots along the left bank of the river. The stands were observed at the Kadin Bridge architectural monument and were typically ruderalized.

Acknowledgement. Thanks are due to Prof. Neli Grozeva (Trakia University) for the confirmation of the identity on *Oxybasis chenopodioides*.

Reports 247–254

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Apiaceae

247. *Laserpitium prutenicum* L.

Bu Tundzha Hilly Country: in wet meadows in the Elaka forest near Gabarevo village, 465 m, LH42, 42.625436°N, 25.145405°E, 29.08.2022, coll. A. Petrova & al. (SOM 178030).

A new species for this floristic region (cf. Assyov & Petrova 2012). *Laserpitium prutenicum* is European geoelement, which marks in Bulgaria the southern limit of its distribution area. It inhabits mostly wet *Mollinia* meadows, a rare habitat type in Bulgaria, so the distribution of *L. prutenicum* is limited and rare.

Asteraceae

248. *Taraxacum hybernum* Steven

Bu Strandzha Mt: in dry grasslands along the road Burgas – Malko Tarnovo, at the turn to Indzhe Voivoda village, NG37, 42.22028°N, 27.448934°E, 24.10.2022, coll. A. Petrova & al. (SOM 178028).

This is a new region for this species, known so far from the Southern Black Sea Coast floristic region (Delipavlov 2011; Petrova & Dalakchieva 2017).

Caryophyllaceae

249. *Minuartia recurva* (All.) Schinz & Thell. subsp. *recurva*

Bu Forebalkan (*Western*): Belogradchik Rocks above Belogradchik town, FP33, 12.05.2013, coll. A. Petrova & I. Gerasimova.

New for this floristic region (cf. Assyov & Petrova 2012; Kožucharov & Kuzmanov 1966).

Chenopodiaceae

250. *Dysphania pumilio* (R.Br.) Mosyakin & Clemants [syn. *Chenopodium pumilio* R. Br.]

Bu Tundzha Hilly Country: Yambol Railway Station, on the pavement, MH50, 27.08.2022, coll. A.

Petrova (SOM 178031).

A new locality of this alien species in the Tundzha Hilly Country floristic region (cf. Assyov & Petrova 2012; Vladimirov 2012, 2013; Grozeva & Petkov 2013; Petrova & al. 2015, sub *Chenopodium pumilio* R. Br.).

Euphorbiaceae

251. *Euphorbia illirica* Lam.

Bu Tundzha Hilly Country: in wet meadows between Dunavtsi and Golyamo Dryanovo villages, LH 52, 19.06.2011, coll. A. Petrova, Fig. 30.

New for this floristic region (cf. Kuzmanov 1979; Assyov & Petrova 2012, sub *E. villosa* Willd).

Rosaceae

252. *Agrimonia procera* Wallr.

Bu Tundzha Hilly Country: in grassy places at the outskirts of Elaka forest near Gabarevo village, LH42, 42.625177° N, 25.145683° E, 29.08. 2022, coll. A. Petrova & al. (SOM 178029).

New for this floristic region (cf. Assyov & Petrova 2012).

Iridaceae

253. *Iris sibirica* L.

Bu Balkan Range (*Eastern*): in a wet meadow along a tributary of river Kamchia, MH34, 42.796534°N, 26.258839°E, 28.08.2022, coll. A. Petrova & al. (SOM 178027).

Euro-Siberian geoelement, comparatively rare in Bulgaria. New for this floristic region (cf. Assyov & Petrova 2012; Stoyanov & al. 2021).

Juncaceae

254. *Juncus ranarius* Song. & Perr. ex Bill.

Bu Vitoshka region: Mt Plana, in wet spots along a dirt road in Manastirishte locality, FN90, 02.08.2002, coll. A. Petrova (SOM 174220);

— Rhodopi Mts (*Western*): in wet spots along a dirt forest road above Ravnogor village, KG84, 01.08.2010, coll. A. Petrova (SOM 174314). The species has been also observed in Dulgata Polyana locality, Devin Municipality, KG82, 31.07.2010, A. Petrova.

— Rhodopi Mts (*Central*): in wet spots along a dirt forest road between Zarenitsa locality and Narechen Mineral Baths, LG12, 22.07.1997, coll. A. Petrova (SOM 174219).

These are new localities for this species, often neglected



Fig. 30. *Euphorbia illirica*: **A.** habitus; **B.** part of the inflorescence

in the floristic studies. It has been also confirmed for Mt Strandzha: in wet spots (former sandpits) along the road northwards of Evrenozovo village, NG26, 22.08.2017, coll. A. Petrova (SOM 174127).

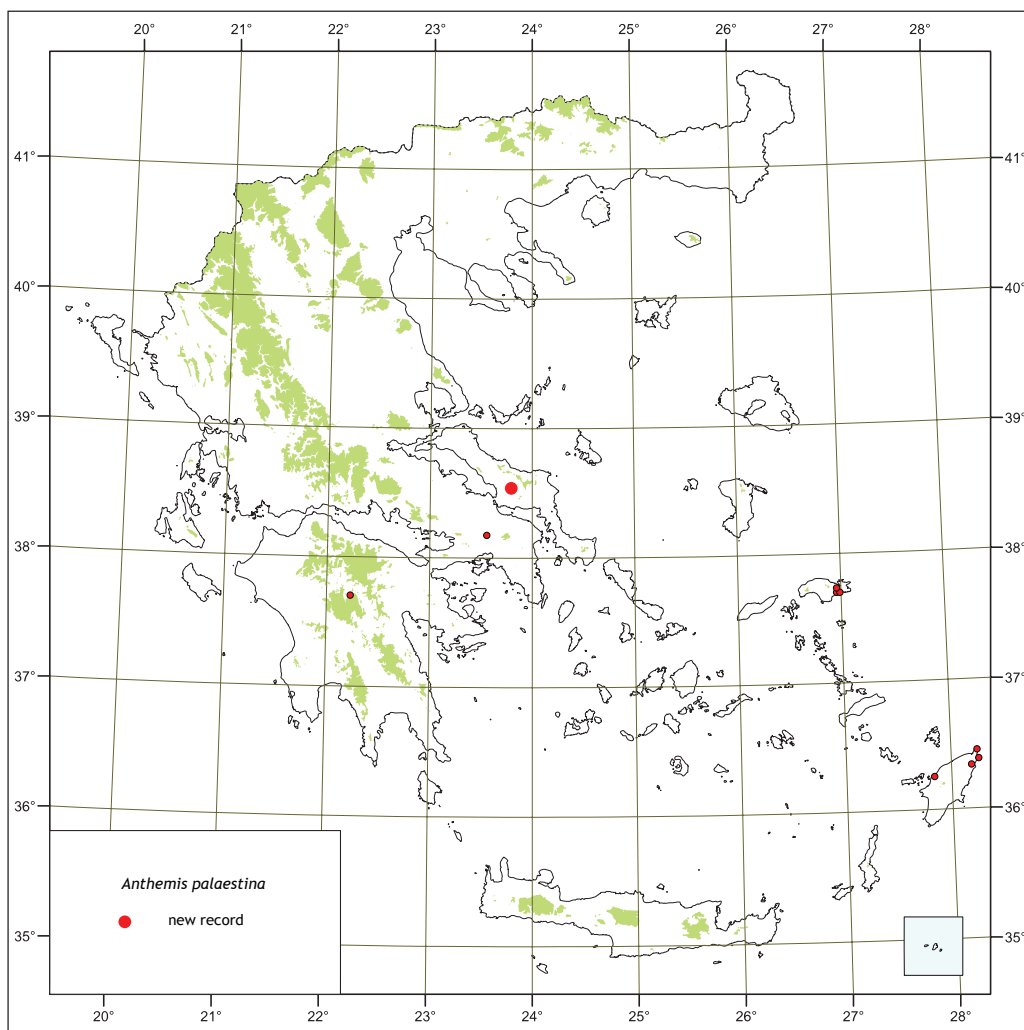


Fig. 31. Distribution of *Anthemis palaestina* in Greece.

Reports 255–263

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Asteraceae

255. *Anthemis palaestina* (Kotschy) Boiss. (Fig. 31)

Gr Nomos Evvias, Eparchia Chalkidos: island of Evvia, 1.5 km SW of Katheni, in cereal field with *Vicia narbonensis* and *Allium cyrilli*, clay, 200 m, 38°33'N, 23°45'E, 18.06.2022, Polymenakos & Pantavos 1146 (ATH).

New for W Aegean area and island of Evvia.

256. *Centaurea axillaris* Willd.

Gr Nomos Attikis, Eparchia Megaridos: Mt Kitheronas, near refuge 'Vaggelis Tsakos', openings in *Abies* woodland and at roadsides, limestone, 1085 m, 38°10'N, 23°17'E, 07.05.2022, Polymenakos & Pantavos 1138 (ATH).

New for eparchia Megaridos and Mt Kitheronas. In nomos Attikis, reported only from Mt Parnitha.

Boraginaceae

257. *Myosotis paucipilosa* (Grau) Ristow & Hand

Gr Nomos & Eparchia Attikis: Mt Parnitha, NE of Casino Mont Parnes, steep stony slope with remnants of burnt *Abies cephalonica*, limestone, 1020 m, 38°09'N, 23°44'E, 02.05.2022, Pantavos 8 (ATH). New for Mt Parnitha and eparchia. Originally described as a subspecies of *M. refracta* Boiss with which its distribution is sympatric. It differs from *M. refracta*



Fig. 32. *Trifolium andricum* (photo K. Polymenakos).

s. str. in some notable morphological features including indumentum on the lower part of the calyx. This is an inconspicuous plant first collected on Mt Parnitha by V. Pantavos, and may well be overlooked and more common in Greece than as known. In Attikis it has been reported from Mt Pateras (Constantinidis & Yannitsaros 1996) whereas *M. refracta* s. str. has been reported from both Mts Gerania and Parnitha.

Brassicaceae

258. *Hesperis theophrasti* Borbás subsp. *theophrasti*

Gr Nomos Evvias, Eparchia Chalkidos: island of Evvia, Mt Xirovouni, 2.5 km S-SE of Stropones, Steni to Koutourla, roadside, edge of *Abies* woodland, limestone, 760 m, 38°35'N, 23°53'E, 18.06.2022, Polymenakos & Pantavos obs.

New for eparchia, collected on Mt Ochi in S Evvia (eparchia Karistias) by Rechinger (*Rechinger* 17215, W!).

Caryophyllaceae

259. *Dianthus cruentus* Griseb.

Gr Nomos Attikis, Eparchia Megaridos: Mt Pastra, valley of Kaza, 3 km SE of Erythres, roadsides, stony ground with *Sarcopoterium spinosum*, limestone, 610 m, 38°11'N, 23°20'E, 05.06.2022, Polymenakos & Pantavos 1143 (ATH).

New for nomos, eparchia and Mt Pastra.

Fabaceae

260. *Galega officinalis* L.

Gr Nomos Evvias, Eparchia Chalkidos: island of Evvia, Mt Xirovouni, 2.5 km S-SE of Stropones, Steni to Koutourla, roadside, edge of *Abies* woodland, limestone, 760 m, 38°35'N, 23°53'E, 18.06.2022, Polymenakos & Pantavos obs.

New for eparchia; from Evvia, reported only from ep. Istieas. Together with *Vincetoxicum speciosum*, *Hesperis theophrasti* and *Trifolium ochroleucon* subsp. *roseum*.

261. *Trifolium andricum* Lassen (Figs. 32 & 33)

Gr Nomos & Eparchia Attikis: Schinias, Cape Psilos Kavos, east of village Dikastika, roadsides, edge of *Juniperus turbinata* scrub, limestone, 15 m, 38°09'N, 24°03'E, 15.05.2022, Polymenakos & Pantavos 1141 (ATH); bay of Schinias, on peninsula of Kynosoura, rocky slope with *Juniperus turbinata*, 35 m, 38°08'N, 24°03'E, 30.04.2022, Polymenakos 1137 (ATH).

First report for mainland Greece. Together with *Bonannia graeca* and *Trigonella corniculata* subsp. *rechingeri*. *Trifolium pallidum* occurs in the area and can be easily distinguished by the adpressed hairs on the upper part of stem (patent in *T. andricum*). It occurs in the marshy Schinias wetland while *T. andricum* is found in dry stony places with *Juniperus*.

262. *Trifolium ochroleucon* subsp. *roseum* (C. Presl) Lassen

Gr Nomos Evvias, Eparchia Chalkidos: island of Evvia, Mt Xirovouni, 2.5 km S-SE of Stropones, Steni to Koutourla, roadside, edge of *Abies* woodland, limestone, 760 m, 38°35'N, 23°53'E, 18.06.2022, Polymenakos & Pantavos 1144 (ATH).

New for W Aegean area and island of Evvia. A small population found together with *Vincetoxicum speciosum*, *Hesperis theophrasti* and *Galega officinalis*, the latter two taxa also new records.

Poaceae

263. *Vulpia ligustica* (All.) Link (Fig. 34)

Gr Nomos Viotias, Eparchia Livadias: 4.3 km W of village Tsoukalades, fallow field in the northern foothills of Mt Elikonas, clay, 270 m, 38°27'N, 22°44'E, 29.04.2022, Polymenakos & Pantavos 1136 (ATH).

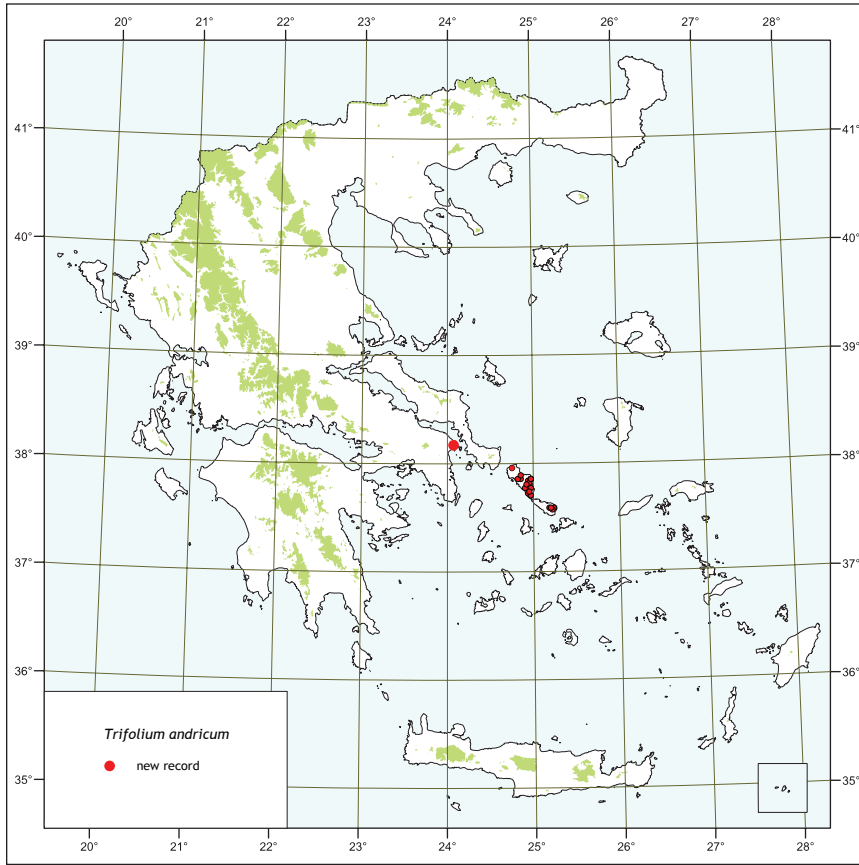


Fig. 33. Distribution of *T. andricum* in Greece.

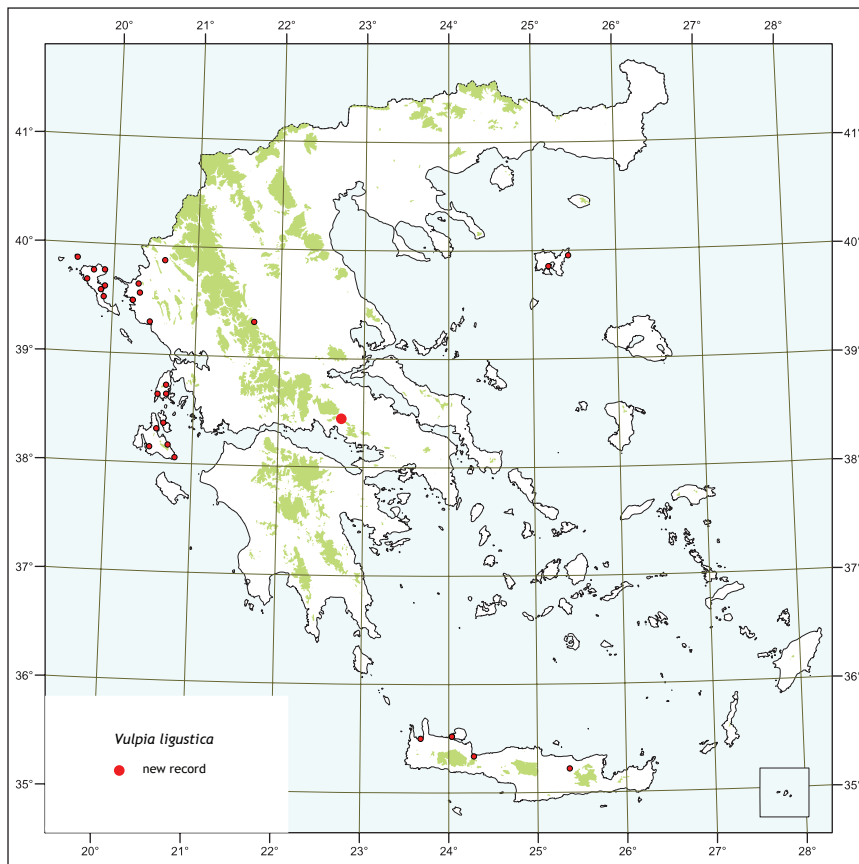


Fig. 34. Known distribution of *Vulpia ligustica* in Greece.

New for Sterea Ellas. The distribution in Greece is a little unusual but the plant seems to fit all diagnostic characters of the species.

Report 264

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Asteraceae

264. *Symphotrichum novae-angliae* (L.) G.L. Nesom [syn.: *Aster novae-angliae* L.] (Fig. 35)

Gr Nomos & Eparchia Dramas: 34 km NW of Drama, in agricultural area dominated mainly by potato crops, near village of Chrysokefalos, 560 m, 41°22'N, 23°52'E, 13.10.2022, K.B. Simoglou obs.

First report of species for Greece. Several very floriferous plants were noted well-established in fields; they have only been noticed recently although the area had been visited for several years. Chrysokefalos and



Fig. 35. *Symphotrichum novae-angliae* (photo K. Simoglou).

neighbouring Leucogeia are both small rural villages without any specialized horticultural places which could have cultivated this plant, thus it is unlikely to be a garden escape. It is cultivated as an ornamental in private gardens in Bulgaria. A possible route of transport from Bulgaria would be via the annual arrival of agricultural workers for the potato harvesting season in Drama. The workers travel on dirt roads to the rural areas in their own private vehicles. The locality where the plants were observed is near the border station at Exochi where there is constant movement of vehicular traffic. Strong wind can also transport the light-weight seeds as the area is close to the Greek-Bulgarian border.

This late summer to autumn-flowering perennial is native to central and east North America. It is called the New England aster (hence the specific epithet) or Michaelmas daisy as it flowers around the Feast of St Michael (29 September). Under short-day conditions flower buds are formed and the flowering period typically lasts 30–39 days. It is introduced in Europe, Central Asia and New Zealand, where it readily naturalizes, adapting easily to disturbed areas such as roadsides and agricultural fields (Chmielewski & Semple 2003). It can reproduce vegetatively by short rhizomes. The flowers are showy so it is also widely cultivated as an ornamental. In the Euro+Med Plant-Base area it is not mentioned for Greece (https://europusmed.org/cdm_dataportal/taxon/917cb8f5-3a5d-4bcd-bb7f-c10eb2e5aab2). We are certain this casual alien will persist and become naturalized.

Reports 265–273

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Apiaceae

265. *Peucedanum arenarium* subsp. *neumayeri* (Vis.) Stoj. & Stef. (Fig. 36)

Gr Nomos Serron, Eparchia Sintikis: Mt Beles, 637 m, 41°18'N, 22°47'E, 08.08.2022, Kofinas obs. (photos);



Fig. 36. *Peucedanum arenarium* subsp. *neumayeri* (photo Nun Pachomia).

SE of Agkistro, NW of Achladochori, stony limestone meadow, 1025 m, 41°20'N, 23°28'E, 29.07.2021, Nun Pachomia obs. (photos, together with *C. parilica* in lower left).

New for Mt Beles (Kerkini), nomos and eparchia. *Peucedanum officinale* L. and *P. austriacum* (Jacq.) W.D.J. Koch have also been reported from Mt Beles.

Asteraceae

266. *Scorzonera austriaca* Willd. (Figs. 37-39)

Gr Nomos Serron, Eparchia Sintikis: summit of Mt Agkistro, 1345 m, 41°20'N, 23°28'E, 17.06.2022, Nun Pachomia obs. (photos of whole plant including fibrous stock and long root); *loc. ibid.*, 03.06.2022, *Kofinas* obs. (photos); ridge of Mt Agkistro, 1025-1050 m, 19.08.2020, *Kofinas* obs. (photos).

Only two records for Greece have been previously verified, viz., from the northern foothills of Mt Olimbos in Nomos Pierias (North Central, *Strid & al.* 11340) and more recently, from Nomos Xanthis (North East, Doumas & al. 2022 sub nom. *Takhtajaniantha austri-*



Fig. 37. *Scorzonera austriaca* (photo Nun Pachomia).



Fig. 38. *Scorzonera austriaca*, whole plant including fibrous stock and impressively long root (photo Nun Pachomia).

aca). The fibrous woody stock readily distinguishes the species. Leaf shape and width is rather variable in this species which has a wide distribution from S and C Europe to Mongolia and Manchuria, ranging from very narrowly linear to broadly lanceolate-undulate. The leaves are much broader than in *S. hispanica* L. which occurs lower down the same mountain, at 750-977 m.



Fig. 39. Distribution of *Scorzonera austriaca* in Greece.

Caryophyllaceae

267. *Gypsophila pallasii* Ikonn.

Gr Nomos & Eparchia Dramas: Mt Falakro, 422 m, 41°14'N, 23°58'E, 10.08.2022, *Kofinas* obs. (photos). First report for Mt Falakro. In Dramas, recorded only from Mt Orvilos.

268. *Silene frivaldszkyana* Hampe

Gr Nomos Serron, Eparchia Sintikis: Mt Beles, 488 m, 41°18'N, 22°56'E. 08.08.2022, *Kofinas* obs. (photos). New for Mt Beles (Kerkini) and eparchia. Occurring in North Central and North East Greece.

Ranunculaceae

269. *Delphinium balcanicum* Pawł (Fig. 40)

Gr Nomos Serron, Eparchia Sintikis: Mt Beles, 460 m, 41°18'N, 22°56'E. 08.08.2022, *Kofinas* obs. (photos). New for Mt Beles (Kerkini). On mainland Greece with an outlier on the West Aegean island of Skiros.



Fig. 40. *Delphinium balcanicum* (photo G. Kofinas).

Scrophulariaceae

270. *Linaria genistifolia* subsp. *sofiana* (Velen.) Chater & D.A. Webb

Gr Nomos Serron, Eparchia Sintikis: Mt Beles, 463 m, 41°18'N, 22°56'E, 08.08.2022, *Kofinas* obs. (photos).
New for nomos, eparchia and Mt Beles (at North Macedonian border). A few reports in North East Greece from nomi Dramas and Kilkis (Bulgarian) and Evrou (Turkish) borders.

271. *Veronica barrelieri* Schott ex Roem. & Schult. (Fig. 41)

Gr Nomos Serron, Eparchia Sintikis: hill of Konoidos, Mt Agkistro 7 km S of the Bulgarian border, openings in *Pinus* forest just below ridge, limestone, 1025 m, 41°20'N, 23°28'E, 09.08.2022, *Kofinas* obs. (photos, confirmed September 2022, M.A. Fischer).

In nomos Serron only reported from Mts Beles and Menikio. Less than five plants were noted on the ridge where a military outpost on Konoidos became the Refuge of the Mountaineering Club of Siderokastro (F.O.S.S.). The latter was established by the late Left-heris Eleftheriadis, founder of the Black Rock of Siderokastro, a speleological association.

Alliaceae

272. *Allium vineale* L. (Fig. 42)

Gr Nomos & Eparchia Florinis: Prespa, roadside slope in *Quercus* woodland, 1125 m, 40°45'N, 21°10'E, 14.08.2022, *Kofinas* obs. (photos).

Hieracium jankae, *Helichrysum plicatum*, *Campanula persicifolia* and *Fritillaria gussichiae* were noted in the same vicinity.

Colchicaceae

273. *Colchicum lingulatum* Boiss. & Spruner (Fig. 43)

Gr Nomos Evvias, Eparchia Chalkidos: Mt Kandili, forest openings, 415 m, 38°42'N, 23°25'E, 04.09.2010, *Kofinas* obs. (photos).

New for Mt Kandili. Perianth segments pale lilac, faintly or obscurely tessellated. The only *Colchicum* species reported from Mt Kandili is *C. euboicum* (Boiss.) K. Perss., which however, has dark purplish-pink, strongly tessellated perianth segments differing in shape.



Fig. 41. *Veronica barrelieri* (photo G. Kofinas).



Fig. 42. *Allium vineale* (photo G. Kofinas).



Fig. 43. *Colchicum lingulatum* (photo G. Kofinas).

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Cupressaceae

274. *Platycladus orientalis* (L.) Franco [syn. *Thuja orientalis* L.]

Bu Black Sea Coast (*Southern*): Nesebar town, on sand dunes, 5 m, 42.66445°N, 27.71147°E, 07.05.2022, coll. V. Vladimirov & A. Tashev (SOM). This is the first report of the species for this floristic region. A single, about 1 m tall individual was recorded on the sand dunes, apparently originating from the seeds of cultivated trees across the town. So far, this ornamental species has been reported with self-seeded and naturalized stands in Northeast Bulgaria (Vladimirov 2012, sub *Thuja orientalis*), Forebalkan (*Western*) (Petrova & al. 2013a; Petrova & Venkova 2017) and Mt Sredna Gora (*Western*) (Vladimirov & al. 2017b).

Cactaceae

275. *Opuntia humifusa* (Raf.) Raf.

Bu Black Sea Coast (*Southern*): on sand dunes on a beach in Nesebar town, ca. 5 m, 42.66651°N, 27.71335°E, 07.05.2022, V. Vladimirov & A. Tashev obs. (Fig. 44).

This is a new locality of the species in this floristic subregion (cf. Petrova & al. 2013b). The observed population covered ca. 40 m².

Euphorbiaceae

276. *Euphorbia lucida* Waldst. & Kit. (Fig. 45)

Bu Black Sea Coast (*Southern*): on the bank of a small river in Arkutino locality, ca. 1 m, 42.33198°N, 27.73189°E, 03.06.2022, V. Vladimirov & A. Tashev obs. & 16.06.2022, coll. V. Vladimirov (SOM); on coastal sands in the Dyuni Resort, southwards of Sozopol town, 1 m, 42.36673°N, 27.70834°E, 17.06.2022, coll. V. Vladimirov (SOM).

In Arkutino locality, the species covered an area of about 5 m². The accompanying species were *Calystegia sepium*, *Periploca graeca*, *Phragmites australis*, and *Ulmus minor*. In the Dyuni Resort, the populations comprised several hundreds of flowering individuals in two groups, on a total area of about 200 m². The species has already been reported for the Black Sea Coast floristic region; however, only the localities



Fig. 44. *Opuntia humifusa* (photo A. Tashev).

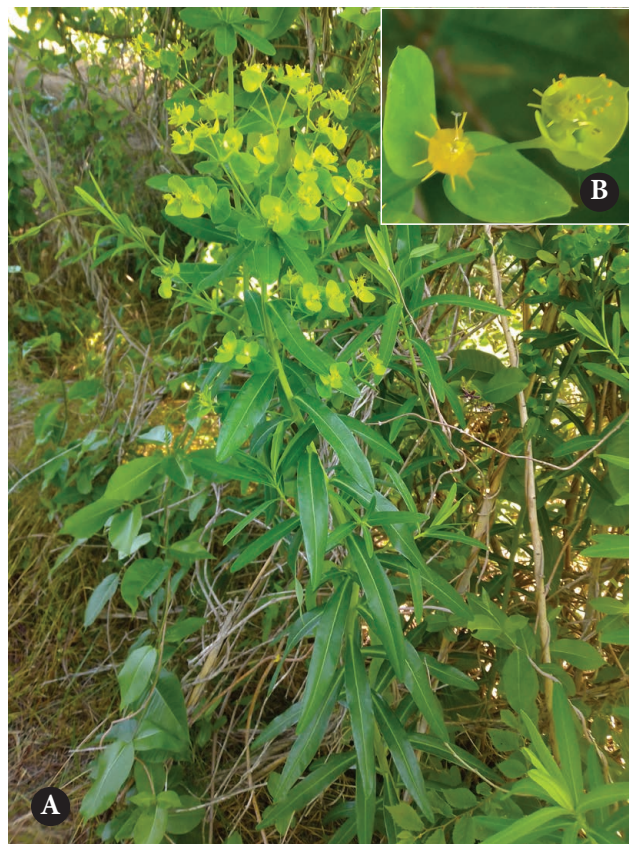


Fig. 45. *Euphorbia lucida*: A. habitus; B. part of the inflorescence (photos V. Vladimirov)

around the mouth of river Kamchia were mentioned (Kuzmanov 1979). The species has been evaluated as Vulnerable at national level (Dimitrov 2009), and hence, it is of conservation concern.

Polygonaceae

277. *Fallopia ×bohemica* (Chrtek & Chrtková) J.P. Bayley

Bu Black Sea Coast (*Southern*): on stabilized sand dunes in Nesebar town, *ca.* 15 m, 42.66167°N, 27.70618°E, 07.05.2022, V. Vladimirov & A. Tashev obs.

This is the second report of the species for this floristic subregion. The species has been recently reported from another locality in Nesebar town, situated between the buildings and closer to the deliberately planted stands (Vladimirov 2020). In the presently reported site, it is likely that viable rhizome fragments have been discarded with the garden waste and gave rise to small clonal colonies.

Rosaceae

278. *Cydonia oblonga* Mill.

Bu Black Sea Coast (*Southern*): on stabilized sand dunes NW of Ahtopol town, *ca.* 5 m, 42.10224°N, 27.93562°E, 13.04.2022, in flower, V. Vladimirov & A. Tashev obs; by the old road from Chernomorets to Sozopol towns, *ca.* 30 m, 42.43545°N, 27.63754°E, 16.04.2022, in flower, V. Vladimirov & A. Tashev (SOM); stabilized sand dunes in Nesebar town, *ca.* 5 m, 42.65145°N, 27.71155°E & 42.65112°N, 27.71202°E, 07.05.2022, V. Vladimirov & A. Tashev obs.

This is the first report of the taxon for this floristic region. The species has been widely cultivated in the past in a number of places along the Black Sea Coast. Subsequently, most plantations have been abandoned and some of them destroyed. The localities reported here probably result from escaping and self-dispersal of the species from similarly abandoned plantations. In the observed naturalized localities, the species forms dense stands, some with an area of 100–300 m², and blooms and bears fruit abundantly. So far, *C. oblonga* has been reported from the Balkan Range (*Eastern*) (Petrova 2018) and Tundzha Hilly Country (Petrova & Vassilev 2016).



Fig. 46. *Orchis papilionacea* (photo A. Tashev).

Orchidaceae

279. *Orchis papilionacea* L.

Bu Black Sea Coast (*Northern*): on the sands in Kamchiysky Pyasatsi locality, N of Shkorpilovtsi vilage, *ca.* 1 m, 43.00784°N, 27.88717°E & 43.00978°N, 27.88778°E, 23.05.2022, V. Vladimirov & A. Tashev obs. (Fig. 46)

This is the first report for this floristic subregion (cf. Assyov & Petrova 2012). Several hundreds of flowering plants have been observed in the locality. Also, about 20 flowering plants of *Ophrys cornuta* have been recorded in the same locality (43.00986°N, 27.888759°E). *Orchis papilionacea* has been assigned nationally the IUCN category of Vulnerable (Petrova 2009), and hence, it is of conservation concern.

Poaceae

280. *Bromus diandrus* Roth

Bu Black Sea Coast (*Southern*): Perla beach, in ruderal spots near a fence and concrete structures, 1 m, 42.289200°N, 27.759157°E, 17.06.2022, coll. V. Vladimirov (SOM).



Fig. 47. *Imperata cylindrica* (the red line roughly outlines the boundary of the *Imperata cylindrica* colony in the lower half of the photo) (photo A. Tashev).

This species has been very recently reported as a new species for the Bulgarian flora (Kunev 2021c; Stoyanov & al. 2022). So far, it has been recorded in the following floristic regions: Black Sea Coast (Kunev 2021c; Stoyanov & al. 2022), Rhodopi Mts (*Eastern*) (Kunev & Kostadinov 2021), and Valley of River Struma (*Southern*) (Kunev 2022). With the above record, the authors report a new locality of the species in the Black Sea Coast region (cf. Stoyanov & al. 2022).

281. *Imperata cylindrica* (L.) Raeusch. (Fig. 47)

Bu Black Sea Coast (*Northern*): in sandy places in the Kamchiyski Pyasatsi locality, N of Shkorpilovt-si village, 42.99935°N, 27.88602°E & 42.99921°N, 27.88419°E, 23.05.2022, V. Vladimirov & A. Tashev obs.

This is the first report of the species for this floristic subregion. *Imperata cylindrica* covered an area of about 600 m² and was the dominating species in the first locality. The accompanying species were *Anthemis tinctoria*, *Centaurea cyanus*, *Chondrilla juncea*, *Hypochoeris glabra*, *Pilosella bauhini*, *Sanguisorba*

minor, *Senecio vernalis*, *Stachys recta*, *Tragopogon dubius*, and *Vicia hirsuta*. In the second locality, a few small groups of *I. cylindrica* have been observed. So far, the species has been known from the Black Sea Coast (*Southern*), Valley of River Struma (*Southern*) and Mt Strandzha floristic regions (Assyov & Petrova 2012; Apostolova 2015). The species is of conservation concern and is assigned nationally the IUCN category Endangered (Apostolova 2009, 2015).

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The following are new plant records based on floristic investigations in the prefectures of Arkadias, Korinthias and the East Aegean island of Icaria.

Brassicaceae

282. *Cardaria draba* (L.) Desv. [syn.: *Lepidium draba* L.]

Gr Nomos Arkadias, Eparchia Mandinias: Mt Lirkio, montane meadows, 1514 m, 37°41'N, 22°27'E, 01.07.2022, Zarkos obs. (photos).

New for Mt Lirkio. Widespread in Greece.

Campanulaceae

283. *Campanula stenosphon* Boiss. & Heldr. (Fig. 48)

Gr Nomos Arkadias, Eparchia Mandinias: Vlachokerasia village 22 km from Tripoli, *Pinus nigra* forest, 1032 m, 37°21'N, 22°22'E, 29.05.2022, Zarkos obs. (photos).

New for eparchia. In Arkadias, recorded mainly from the Parnon area (eparchia Kinourias).

Fabaceae

284. *Cytisus villosus* Pourr. (Fig. 49)

Gr Nomos Arkadias, Eparchia Mandinias: Vlachokerasia village 22 km from Tripoli, in *Platanus orientalis* woodland, 800 m, 37°21'N, 22°22'E, 29.05.2022, Zarkos obs. (photos).

— Nomos Samou, Eparchia Ikarias: Ikaria island, near Armenistis village, *Pinus nigra* forest, 245 m, 37°36'N, 26°04'E, 01.08.2022, Zarkos obs. (photos).

New for eparchia Mandinias and second record for island of Ikaria, the latter confirming an unpublished observation by R. Düll made in 2011. Within the E Aegean islands it has only been reported for Samos. The legumes of the Ikarian plants were more densely white villous than in the Vlachokerasia plants.

285. *Genista sagittalis* L. [syn.: *Chamaespartium sagittale* (L.) P.E. Gibbs] (Fig. 50)

Gr Nomos Arkadias, Eparchia Mandinias: Vlachokerasia village 22 km from Tripoli, edge of path in *Quercus coccifera* scrub, 883 m, 37°21'N, 22°22'E, 29.05.2022, Zarkos obs. (photos).

New for eparchia. In Arkadias reported only from the Parnon area (eparchia Kinourias), often on gneiss or schist. Previously considered as disjunct in distribution between northern Greece and Peloponnese (found only on Parnonas).

Lamiaceae

286. *Lavandula pedunculata* subsp. *cariensis* (Boiss.) Upson & S. Andrews [syn.: *L. cariensis* Boiss.; *Lavandula stoechas* subsp. *cariensis* (Boiss.)



Fig. 48. *Campanula stenosphon* (photo G. Zarkos).



Fig. 49. *Cytisus villosus* (photo G. Zarkos).



Fig. 50. *Genista sagittalis* (photo G. Zarkos).

Rozeira] (Fig. 51)

Gr Nomos Samou, Eparchia Ikarias: Ikaria island, road margins from Agios Kirikos to Evdilos, 340 m, 37°38'N, 26°14'E, 01.08.2022, Zarkos obs. (photos).



Fig. 51. *Lavandula pedunculata* subsp. *cariensis* (photo G. Zarkos).

New for Ikaria, in Greece reported only from the East Aegean islands of Chios and Lesbos. S. Snogerup (Lund) recorded it from Chios as *L. stoechas* subsp. *cariensis*, noting it was growing together with *L. stoechas* subsp. *stoechas* but the latter was already in fruit while subsp. *cariensis* was still flowering.

287. *Phlomis herba-venti* subsp. *pungens* (Willd.) Maire ex DeFilipps (Fig. 52)

Gr Nomos Arkadias, Eparchia Mandinias: Mt. Lirkio, montane meadows, 1514 m, 37°41'N, 22°27'E, 01.07.2022, Zarkos obs. (photos).

New for Mt Lirkio. From eparchia Mandinias recorded near Agiorgitika (Rothmaler 1944 sub nom. *Phlomis pungens*) and collected by E. Willing in 2003 from Mt Menalo.

Santalaceae

288. *Thesium ramosum* Hayne [syn.: *T. arvense* Horvátovszky (1774), nom. illegit.] (Fig. 53)

Gr Nomos & Eparchia Korinthias: Mt Killini, Flavouritsa gorge, *Abies cephalonica* forest, 1457 m, 37°55'N, 22°26'E, 29.06.2022, Zarkos obs. (photos).



Fig. 52. *Phlomis herba-venti* subsp. *pungens* (photo G. Zarkos).

New for Mt Killini, second record for Korinthias. A neotype was designated by Hendrych for *T. arvense* (Hendrych 1961:22) which name is apparently illegitimate.

Scrophulariaceae

289. *Odontites vulgaris* Moench (Fig. 54)

Gr Nomos & Eparchia Korinthias: Mavro Oros, running water by Gelini village, 1132 m, 38°02'N, 22°26'E, 26.08.2022, Zarkos obs. (photos).

New for Korinthias. On Mavro Oros, it is the record furthest north in the Peloponnese. Several plants were found 2 km from the village by flowing water from a spring, as well as within the village at a lower altitude of 923 m, besides an irrigation channel for orchards.

Orchidaceae

290. *Listera ovata* (L.) R. Br.

Gr Nomos Arkadias, Eparchia Mandinias: Vlachokerasia village 22 km from Tripoli, near stream in *Platanus orientalis* woodland, 890 m, 37°21'N, 22°21'E, 29.05.2022, Zarkos obs. (photos).

New for eparchia. In nomos Arkadias reported only from Parnonas (eparchia Kinourias).

Poaceae

291. *Saccharum ravennae* (L.) L. [syn.: *Tripidium ravennae* (L.) H. Scholz; *Andropogon ravennae* L.] (Fig. 55)

Gr Nomos & Eparchia Korinthias: Mt Gerania, NW of Ag. Dimitrios near Sousaki volcano, in dry stream bed, culms 2-3 m tall, 248 m, 37°56'N, 23°05'E, 29.04.2022 & 07.05.2022, Zarkos obs. (photos).



Fig. 53. *Thesium ramosum* (photo G. Zarkos).



Fig. 54. *Odontites vulgaris* (photo G. Zarkos).



Fig. 55. *Saccharum ravennae* (photo G. Zarkos).

Second record for Korinthias, the first being from further north near Schinos, on way to Kato Alepori. Distinguished from *S. strictum* (Host) Spreng. by its culm height and width at base, panicle more than 5 cm broad, shorter (less than 2 mm) membranous ligule with fringe of hairs. Europe, N Africa and C Asia; introduced in N America.

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