

New floristic records in the Balkans: 27*

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Abstract: New chorological data are presented for 128 species and subspecies from Bulgaria (1, 48-54, 69, 77-79, 85-89, 107-120), Greece (11-44, 55-67, 70-76, 80-84, 121-128), Macedonia (90-106) and Turkey-in-Europe (2-10, 45-47). The taxa belong to the following families: *Apiaceae* (90, 91), *Apocynaceae* (11), *Asphodelaceae* (82), *Asteraceae* (12, 13, 48, 71, 80, 85, 92, 93, 121), *Boraginaceae* (14, 55, 86), *Brassicaceae* (8, 15, 56-58, 72, 122), *Caryophyllaceae* (16, 17, 123), *Convolvulaceae* (73, 124), *Cornaceae* (9), *Crassulaceae* (18-20), *Cyperaceae* (102, 103), *Dipsacaceae* (94), *Euphorbiaceae* (59, 95), *Fabaceae* (5-7, 21-24, 49-53, 60-63, 74-76), *Fumariaceae* (45), *Geraniaceae* (3), *Grossulariaceae* (96, 97), *Hyacinthaceae* (66, 67), *Hypericaceae* (125), *Iridaceae* (36-39), *Lamiaceae* (25, 26), *Lemnaceae* (69), *Liliaceae* (68, 83, 84), *Linaceae* (2, 87), *Malvaceae* (27, 28), *Orchidaceae* (1, 77-79, 89, 105), *Orobanchaceae* (29, 64), *Papaveraceae* (46, 47), *Poaceae* (40-43, 104, 107-120), *Polygonaceae* (70), *Primulaceae* (30), *Ranunculaceae* (31, 98), *Rhamnaceae* (4), *Rosaceae* (10, 32, 99, 106, 126, 127), *Rubiaceae* (81), *Santalaceae* (65, 88), *Scrophulariaceae* (33-35, 54, 100, 101, 128) and *Typhaceae* (44).

New reports for countries are: Macedonia – *Sorbus ×latifolia* (106).

The publication includes contributions by: A. Asenov (1), M. Aybeke (2-4), M. Aybeke, C. Kurt & A. Semerci (5-7), M. Aybeke & C. Yarıcı (8-10), B. Biel & Kit Tan (11-44), F. Dane, M. Aybeke & V. Altay (45-47), E. Filipova & K. Vassilev (48-54), K. Giannopoulos, Kit Tan & G. Vold (55-68), B. Gyosheva & V. Valchev (69), K. Koutsomarkos, Kit Tan & I. Tsialtas (70), K. Polymenakos & Kit Tan (71-76), A. Popatanasov (77-79), D. Shaw & Kit Tan (80, 81), Kit Tan & M. Issigoni (82-84), A. Tashev (85-89), A. Teofilovski (90-105), A. Teofilovski, J. Zieliński & V. Vladimirov (106), K. Vassilev & H. Pedashenko (107-120), G. Zarkos, V. Christodoulou, Kit Tan & G. Vold (121-128).

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, for Macedonia by V. Matevski, and for Turkey-in-Europe by F. Dane.

Report 1

Asen Asenov

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Orchidaceae

1. *Orchis pinetorum* Boiss. & Kotschy

Bu Znepole region: Mt Zemenska, FN30, 12.05.2010, coll. A. Asenov (SO 107 649); on the north slope of Silni Vrah, on limestone terrain, in an open ridge area, in a community of *Sesleria latifolia*, *Amygdalus nana* and *Artemisia alba*, 1214 m, 42°28'28"N, 22°41'39"E, a fragment with 26 generative individuals (including one albino form) growing on an area of 200 m², A. Asenov obs.

New for the Znepole region.

Acknowledgements. Thanks are due to Dr. A.S. Petrova, Botanical Garden, BAS, for confirming the determination.

Reports 2–4

Mehmet Aybeke

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Linaceae

2. *Linum tenuifolium* L.

Tu(E) A1(E) Edirne, Lalapasa, Sinankoy, in a pasture, 181 m, 41°47'60"N, 26°43'00"E, 03.06.2003, coll. C. Kurt & al., det. M. Aybeke (TTAE 1398).

New for A1(E) Edirne in European Turkey. According to Davis (1967), this taxon has occurred in A1(E) Kırklareli and A2(E) Istanbul.

Geraniaceae

3. *Geranium pusillum* Burm. f.

Tu(E) A1(E) Edirne, Lalapasa, Sinankoy, in a pasture, 181 m, 41°47'60"N, 26°43'00"E, 03.06.2003, coll. C. Kurt & al., det. M. Aybeke (TTAE 1394).

New for A1(E) Edirne in European Turkey. According to Davis (1967), this taxon has occurred in A1(E) Tekirdağ and A2(E) Istanbul.

Rhamnaceae

4. *Paliurus spina-christii* Mill.

Tu(E) A1(E) Edirne, Kesan, Kilickoy, 24 m, 40°46'60"N, 26°33'00"E, 05.05.2004, coll. C. Kurt & al., det. M. Aybeke (TTAE 299).

New for A1(E) Edirne in European Turkey. According to Davis (1967), this taxon has occurred in A1(E) Tekirdağ.

Reports 5–7

Mehmet Aybeke, Cengiz Kurt & Arif Semerci

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Fabaceae

5. *Trifolium nigrescens* Viv. subsp. *nigrescens*

Tu(E) A1(E) Edirne: Lalapaşa, Kalkansöğüt village, in a pasture, 126 m, 41°58'13.2816"N, 26°48'45.0396"E, 17.07.2003, coll. C. Kurt & al., det. M. Aybeke (TTAE 1165).

A new species for A1(E) Edirne in European Turkey. It has been known from A2(E) Istanbul and also indicated as a S. European element (Zohary 1970).

6. *Vicia sativa* L. subsp. *sativa* var. *nigra* (L.) Ehrh.

Tu(E) A1(E) Edirne: Hamzabeyli village, in a grassland, 391 m, 41°57'50"N, 26°38'39"E, 16.06.2004, coll. C. Kurt & al., det. M. Aybeke (TTAE 1105).

A new species for A1(E) Edirne in European Turkey. It has been known from A2(E) Istanbul (Davis & Plitmann 1970).

7. *Vicia tetrasperma* (L.) Schreb.

Tu(E) A1(E) Edirne: Meriç, Subaşı village, 48 m, 41°09'47,3"N, 26°23'37,6"E, 26.05.2004, coll. C. Kurt & al., det. M. Aybeke (TTAE 630).

A new species for A1(E) Edirne in European Turkey. It has been known from A1(E) Tekirdağ and A2(E) Istanbul (Davis & Plitmann 1970).

Reports 8–10

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Brassicaceae

8. *Matthiola incana* (L.) R. Br.

Tu(E) A1(E) Kırklareli, Demirköy, between Demirköy – İğneada, 18 km, 0 m, 41°52'28"N, 27°59'02"E, 18.05.1991, coll. & det. C. Yarcı (EDTU 5300).

New for A1(E) Kırklareli in European Turkey. So far

the species has been known from A1(E) Çanakkale and A2(E) Istanbul and also has occurred on the coast of S & W Europe (Cullen 1965).

Cornaceae

9. *Cornus mas* L.

Tu(E) A1(E) Kırklareli, Demirköy, between Limanköy – İğneada, 0.5 km, 0 m, 41°53'10"N, 28°03'09"E, 03.09.1989, coll. & det. C. Yarcı (EDTU 4254); Demirköy, Mert lake, in a longose forest, 252 m, 41°49'30"N, 27°45'35"E, coll. & det. C. Yarcı (EDTU 4255).

New for A1(E) Kırklareli in European Turkey. So far the species has been known from A1(E) Tekirdağ, A2(E) Istanbul (Chamberlain 1972).

Rosaceae

10. *Rosa canina* L.

Tu(E) A1(E) Kırklareli, Demirköy – Balaban köyü – Demirköy, 5 km, 508 m, 41°50'08"N, 27°40'34"E, 03.09.1989, coll. & det. C. Yarcı (EDTU 4246).

New for A1(E) Kırklareli in European Turkey. According to Nilsson (1972), this taxon has occurred in A1(E) Tekirdağ and A2(E) Istanbul.

Reports 11–44

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This is the fourth report of new plant-records for the island of Amorgos (phytogeographical region Kiklades, Nomos Kikladon, Eparchia Thiras) based on two visits carried out in May 2014 and April 2015 respectively. The 34 records listed are new to the island unless otherwise stated, and six 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 for this area to 31. Occurrence on the other Kikladean islands is briefly summarized.

Apocynaceae

11. *Vinca major* L. subsp. *major*

Gr Amorgos: SE of Arkesini, waste ground and walls by steep path, 240 m, 36°47'08"N, 25°48'14"E, 05.04.2015, *Biel* obs. (photo).

Recorded from Andros, Milos, Naxos and Tinos.

Asteraceae

12. *Andryala integrifolia* L.

Gr Amorgos: NW of Katapola-Xilokeratidi, walled road margins near To Nero, 20 m, 36°50'08"N, 25°51'30"E, 01.04.2015, *Biel* 15.003; NE of Chora at marked path no. 1, gravelly slope with open phrygana, 280 m, 36°50'15"N, 25°54'43"E, 03.04.2015, *Biel* 15.020.

Mainly on islands of N, Central and S Kiklades.

13. *Filago cretensis* subsp. *cycladum* Wagenitz

Gr Amorgos: NW of Katapola-Xilokeratidi, stony phrygana with *Juniperus* and *Pistacia* on peninsula with the chapel Ai Pandeileimonas, 15 m, 36°50'03"N, 25°51'21"E, 06.04.2015, *Biel* 15.048.

Recorded from N, Central and S Kiklades.

Boraginaceae

14. *Anchusella variegata* (L.) Bigazzi & al.

Gr Amorgos: S of Rachidi, grassy road margins, 200 m, 36°47'28"N, 25°48'22"E, 05.04.2015, *Biel* 15.045.

N, Central and S Kiklades.

Brassicaceae

15. *Matthiola incana* (L.) R. Br. subsp. *incana*

Gr Amorgos: NE of Kamari, grassy olive plantation near chapel Ag. Nikolaos, 220 m, 36°47'42"N, 25°49'36"E, 05.04.2015, *Biel* obs. (photo).

Also noted near Arkesini. Reported from N, Central and S Kiklades.

Caryophyllaceae

16. *Cerastium glutinosum* Fr.

Gr Amorgos: NE of Chora, phrygana by wet dirt road below chapel Ag. Georgios, 390 m, 36°51'09"N, 25°55'32"E, 03.04.2015, *Biel* 15.025.

N, Central and S Kiklades.

17. *Minuartia lydia* (Boiss.) Bornm.

Gr Amorgos: NE of Lagadha, slope near stairway, phrygana, 200 m, 36°54'29"N, 26°00'05"E, 09.04.2015, *Biel* 15.068.

New for the Kiklades.

Crassulaceae

18. *Aeonium arboreum* (L.) Webb & Berthel. (Fig. 1)

Gr Amorgos: S of Rachidi, grassy terraces and road margins, 200 m, 36°47'28"N, 25°48'22"E, 05.04.2015, *Biel* obs. (photo).

Also noted near Katapola-Xilokeratidi and Tholaria. Planted for ornament, locally naturalized. Recorded from Thira and Anafi (S Kiklades).



Fig. 1. *Aeonium arboreum* (photo B. Biel).

19. *Crassula tillaea* Lest.-Garl.

Gr Amorgos: SW of Aghia Thekla, estuary at beach Ormos Ag. Saranta, 2 m, 36°48'33"N, 25°50'45"E, 07.04.2015, *Biel* obs.

In most of Kiklades except the southeast.

20. *Umbilicus luteus* (Huds.) Webb & Berthel. (Fig. 2)

Gr Amorgos: S-SW of Chora, path below street, phrygana, 270 m, 36°49'39"N, 25°53'48"E, 02.04.2015, *Biel* obs. (photo).



Fig. 2. *Umbilicus luteus* (photo B. Biel).

Also noted near Apano Potamos, Egiali, Kamari, Lagadha and Tholaria. Reported from Tinos (N Kiklades).

Fabaceae

21. *Hippocrepis unisiliquosa* L. subsp. *unisiliquosa*

Gr Amorgos: NW of Katapola-Xilokeratidi, stony phrygana with *Juniperus* and *Pistacia* on peninsula with the chapel Ai Pandeileimonas, 15 m, 36°50'03"N, 25°51'21"E, 01.04.2015, *Biel* 15.005.

Also noted at Chora, Katapola and Lagadha. Reported from Sikinos (eparchia Milou), otherwise first record for the Kiklades.

22. *Lathyrus sativus* L.

Gr Amorgos: SW of Apano Potamos, rocky phrygana slopes at path near Oxo Meria, 340 m, 36°52'52"N, 25°57'39"E, 12.04.2015, *Biel* 15.082.

Also observed at Egiali, Lagadha and Tholaria; remnants of cultivation and locally naturalized. Probably the first domesticated wild crop in the Balkans, introduced from the Middle East. Recorded from Paros and Thira.

23. *Trifolium resupinatum* L.

Gr Amorgos: NE of Kamari, phrygana and waste ground by old cobblestone road near Vighles, 210 m, 36°47'50"N, 25°49'41"E, 07.04.2015, *Biel* 15.051.

Also noted near Lagadha. Reported from N, Central and S Kiklades.

24. *Vicia cuspidata* Boiss.

Gr Amorgos: NW of Katapola, phrygana on small peninsula east of Meltezi beach, 10 m, 36°50'07"N, 25°51'16"E, 04.04.2015, *Biel* 15.039.

N, Central and S Kiklades.

Lamiaceae

25. *Origanum* aff. *calcaratum* Juss. (Fig. 3)

Gr Amorgos: E-NE of Lagadha, rocky outcrop on phrygana slope, 600 m, 36°54'11"N, 25°59'40"E,



Fig. 3. *Origanum* aff. *calcaratum* (photo B. Biel).

11.04.2015, *Biel* 15.079; SW of Lagadha, rocky limestone cliffs at steps to chapel Agia Triada, 220 m, 36°54'11"N, 25°59'40"E, 13.04.2015, *Biel* 15.094.

Also noted east of Tholaria. New for the Kiklades, so far reported only from Crete. Unusual in having a very dense white-villous leaf indumentum.

26. *Salvia argentea* L. (Fig. 4)

Gr Amorgos: NE of Chora, gravelly slope below cliffs surrounding doline near Kastelas, 390 m, 36°51'35"N, 25°56'06"E, 12.04.2015, *Biel* obs. (photo). Reported from Andiparos, Naxos, Paros and Siros.

Malvaceae

27. *Malva arborea* (L.) Webb & Berthel.

Gr Amorgos: Chora, ruderal and waste ground in village, 320 m, 36°49'53"N, 25°53'52"E, 02.04.2015, *Biel* 15.015.

N, Central and S Kiklades.

28. *Malva pusilla* Sm.

Gr Amorgos: S-SE Ag. Georgios, *Sarcopoterium-phrygana* between walls near Agrilas, 380 m, 36°51'50"N, 25°56'10"E, 12.04.2015, *Biel* 15.085.

Also noted near Lagadha. Recorded from the islands of Serifos and Kithnos (W Kiklades).

Orobanchaceae

29. *Orobanche lutea* Baumg. (Fig. 5)

Gr Amorgos: E-SE of Tholaria, slope with phrygana near path, 200 m, 36°54'51"N, 26°00'02"E, 28.05.2014, *Biel* obs. (photo; det. H. Uhlich, June 2015).



Fig. 4. *Salvia argentea* (photo B. Biel).



Fig. 5. *Orobanche lutea* (photo B. Biel).

Rather rare in Greece, apparently new for the Kiklades. Reports from Andros (N Kiklades) and Samos (E Aegean islands) have not been verified. The host plant may possibly be *Bituminaria bituminosa* which was in close proximity.

Primulaceae

30. *Anagallis foemina* Mill.

Gr Amorgos: NW of Katapola, rocky phrygana slope and terraces near ruined house, 110 m, 36°50'22"N, 25°50'44"E, 04.04.2015, *Biel* obs. (photo).

Recorded from Central and S Kiklades.

Ranunculaceae

31. *Ranunculus neapolitanus* Ten.

Gr Amorgos: S-SW of Lagadha, pasture slope with phrygana and walls, 400 m, 36°53'56"N, 25°59'43"E, 09.04.2015, *Biel* obs. (photo).

Recorded from Andros and Tinos (N Kiklades), Naxos (Central) and Thira (S Kiklades).

Rosaceae

32. *Pyrus communis* L. (Fig. 6)

Gr Amorgos: NE of Chora, small ravine with cliffs and *Quercus ilex*, 240 m, 36°51'15"N, 25°55'00"E, 03.04.2015, *Biel* 15.030.



Fig. 6. *Pyrus communis* (photo B. Biel).

New for the Kiklades; the large tree in the midst of *Quercus ilex* was first noted on 06.06.2014.

Scrophulariaceae

33. *Linaria chalepensis* (L.) Mill.

Gr Amorgos: S of Katapola, olive terraces with well at dirt track near Marmara, 160 m, 36°49'09"N, 25°51'43"E, 07.04.2015, *Biel* 15.055.

Central and S Kiklades.

34. *Linaria triphylla* (L.) Mill.

Gr Amorgos: Apano Potamos, phrygana at rocky slope by stairway, 150 m, 36°53'40"N, 25°58'28"E, 12.04.2015, *Biel* 15.081.

NW, Central and S Kiklades.

35. *Veronica arvensis* L.

Gr Amorgos: NE of Chora, phrygana by wet dirt road below chapel Ag. Georgios, 390 m, 36°51'09"N, 25°55'32"E, 03.04.2015, *Biel* 15.027; E-SE of Tholaria, rocky phrygana slope at old cobblestone path, 200 m, 36°54'55"N, 25°59'25"E, 10.04.2015, *Biel* 15.072; SW of Potamos, rocky pasture at path near Oxo Meria, 340 m, 36°52'44"N, 25°57'24"E, 12.04.2015, *Biel* 15.083.

Also noted near Ag. Georgios, Kamari and Lagadha; occurring in N, Central and W Kiklades.

Iridaceae

36. *Freesia leichtlinii* subsp. *alba* (G.L. Mey.) J.C. Manning & Goldblatt (Fig. 7)

Gr Amorgos: N-NE of Katapola-Xilokeratidi, grassy and shrubby phrygana slope at road near chapel, 30 m, 36°49'54"N, 25°51'56"E, 03.04.2015, *Biel* 15.032.

Also noted *ca.* 1 km to the west. New for the Kiklades.



Fig. 7. *Freesia leichtlinii* subsp. *alba* (photo B. Biel).

37. *Moraea mediterranea* Goldblatt (syn.: *Gynandriris monophylla* Klatt) (Fig. 8)

Gr Amorgos: NW of Katapola-Xilokeratidi, rocky phrygana with *Juniperus* and *Pistacia* on peninsula with the chapel Ai Pandeileimonas, 15 m, 36°50'03"N, 25°51'21"E, 01.04.2015, *Biel* 15.010; NW of Katapola, rocky phrygana slope with *Juniperus* near path, 100 m, 36°50'25"N, 25°50'59"E, 04.04.2015, *Biel* 15.035.



Fig. 8. *Moraea mediterranea* (photo B. Biel).

Also noted in vicinity of Katapola. The only other records from the Kiklades are from the small islands of Koufonissi and Kato Koufonisii to the west of Amorgos.

38. *Iris albicans* Lange (syn.: *Iris florentina* auct. fl. graec., non L.)

Gr Amorgos: E-SE of Arkesini, on road embankment near well, 190 m, 36°47'11"N, 25°48'15"E, 04.04.2015, *Biel* obs. (photo).

Recorded from Naxos (Central Kiklades). Locally naturalized but not spreading.

39. *Iris germanica* L.

Gr Amorgos: E-SE of Arkesini, on road embankment near well, 190 m, 36°47'11"N, 25°48'15"E, 04.04.2015, *Biel* obs. (photo).

Also noted near Katapola, Lagadha and Rachidi. N, Central and S Kiklades. Native distribution unknown due to long-established cultivation and subsequent naturalization.

Poaceae

40. *Alopecurus myosuroides* Huds.

Gr Amorgos: Egiali, marshy coastal area with waste-deposits, 2 m, 36°54'14"N, 25°58'42"E, 08.04.2015, *Biel* 15.064.

Mainly N, Central and S Kiklades.

41. *Avena fatua* L. subsp. *fatua*

Gr Amorgos: E of Katapola, vineyards, gardens and road margins, 10 m, 36°49'29"N, 25°52'08"E, 07.04.2015, *Biel* 15.056.

Also noted near Katapola. New for the Kiklades and S Aegean.

42. *Vulpis fasciculata* (Forssk.) Fritsch

Gr Amorgos: NW of Egiali, beach with small dunes at Psili Amos, 5 m, 36°54'29"N, 25°57'58"E, 08.04.2015; *Biel* 15.062.

Also noted ca. 1.3 km to the southeast. N, Central and S Kiklades.

43. *Vulpia muralis* (Kunth) Nees

Gr Amorgos: E-NE of Tholaria, *Phlomis*-phrygana on steep slope of gorge, 130 m, 36°55'22"N, 25°59'53"E, 13.04.2015, *Biel* 15.090.

N, Central and S Kiklades.

Typhaceae

44. *Typha domingensis* Pers.

Gr Amorgos: Egiali, marshy coastal area with waste-deposits, 2 m, 36°54'14"N, 25°58'42"E, 08.04.2014, *Biel* obs. (photo).

N, Central and S Kiklades.

Cited vouchers are provisionally kept in the private herbarium of B. Biel at H6chberg (herb. Biel).

Reports 45–47

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Fumariaceae

45. *Fumaria kralikii* Jordan

Tu(E) A1(E) Edirne, Keşan, Mecidiye, 23.04.1987, coll. G. Dalgiç & F. Dane, det. G. Dalgiç & F. Dane, conf. M. Aybeke (EDTU 611); Lalapaşa, between Donk6y-Hamzabeyli villages, 4 km, 334 m, 41°55'60"N, 26°41'60"E, 21.05.1992, coll. F. Sever, det. V. Altay, conf. M. Aybeke (EDTU 4900).

— A1(E) Tekirdağ, Centre, Kumbağ, on a slope, 10.04.1988, coll. E. Düzalan, det. F. Dane, conf. M. Aybeke (EDTU 2608);

New for A1(E) Edirne and Tekirdağ. According to Cullen (1965), this taxon has occurred in A1(E) Çanakkale and in the Balkans.

Papaveraceae

46. *Papaver argemone* L.

Tu(E) A1(E) Edirne, Centre, Medical Faculty Campus, 26 m, 41°40'33"N, 26°33'31"E, 08.05.1989, coll. F. Dane & al., det. N. Başak, conf. M. Aybeke (EDTU 3689).

New for Edirne in European Turkey. According to Cullen (1965), this taxon has occurred only in A1(E) Tekirdağ.

47. *Papaver rhoeas* L.

Tu(E) A1(E) Çanakkale, Eceabat, Anafartalar – Bolayır, 68 m, 40°30'57"N, 26°45'19"E, 20.05.1987, coll. F. Dane, det. V. Altay, conf. M. Aybeke (EDTU 2810).

— A1(E) Edirne, between Edirne – Uzunk6prü, 33 m, 41°15'58"N, 26°41'19"E, 23.04.1987, coll. F. Dane, det. V. Altay, conf. M. Aybeke (EDTU 598); Süleoğlu, between Süleoğlu – Tatarlar village, 252 m, 41°49'55"N, 26°53'06"E, 02.05.1987, coll. G. Olgun & al., det. V. Altay, conf. M. Aybeke (EDTU 840);

— A1(E) Kırklareli, Babaeski, Pancark6y – Nadırlı,

3 km, 67 m, 41°24'04"N, 27°09'55"E, 06.07.1987, coll. G. Dalgiç & al., det. V. Altay, conf. M. Aybeke (EDTU 1655); Babaeski, Oruçlu village, along the river, 252 m, 41°32'60"N, 27°49'60"E, 20.05.1995, coll. S. Aslantaş, det. M. Aybeke (EDTU 2801);

New for A1(E) Edirne, Kırklareli and Çanakkale in European Turkey. According to Cullen (1965), this taxon has occurred in A1(E) Tekirdağ and A2(E) Istanbul; in connection with these new reports, this taxon was found in other provinces of European Turkey.

Reports 48–54

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Asteraceae

48. *Filago eriocephala* Guss.

Bu Mt Sredna Gora (*Eastern*): in grasslands around Turiya village, 42.54282N, 25.18258E, LH51, 07.03.2014, coll. K. Vassilev (SOM 171291).

According to Assyov & Petrova (2012), this species is distributed in four floristic regions. It has not been reported for this floristic region so far.

Fabaceae

49. *Chamaecytisus calcareus* (Velen.) Kuzmanov

Bu Tundzha Hilly Country: in dry places between Dolno Sahrane village and Kazanlak town, 42.64852N, 25.29747E, LH62, 04.07.2014, coll. K. Vassilev (SOM 171289).

It is a Balkan endemic known from eight floristic regions and three countries (Petrova & Vladimirov 2010). It is found in xerophytic and xeromesophytic grasslands of the class *Festuco-Brometea*, frequently together with some other Balkan endemics such as *Achillea clypeolata* and *Scabiosa triniifolia*. *Chamaecytisus calcareus* prefers calcareous substrates and semiclosed grassland communities. It is also found as a companion species in shrubland and open woodland vegetation types.

50. *Hippocrepis ciliata* Willd.

Bu Mt Belasitsa: in a *Castanea sativa* woodland

above Petrich town, FL88, 12.07.1969, coll. B. Kuzmanov (SOM 29921).

- Pirin Mt (*Southern*): in dry grasslands close to the Chereshnitsa village, Sandanski Municipality, 41.48623N, 23.46018E, GL09, 28.05.2014, coll. K. Vassilev (SOM 171287); in the area of Lyalevo, in dry grasslands between Melnik town and Rozhen Monastery, GM00, 28.06.1978, coll. N. Andreev (SOM 136138).

According to Assyov & Petrova (2012), this species is distributed in South Bulgaria and is known from 10 floristic regions. It has not been reported for these floristic regions before.

51. *Lotus angustissimus* L.

Bu Balkan Range (*Central*): in grasslands around Dolno Izvorovo village, 42.65124N, 25.47082E, LH72, 06.07.2014, coll. K. Vassilev (SOM 171294).

- Balkan Range (*Eastern*): Mt Eminska, westwards of Panitsovo village in a *Quercus-Carpinus* woodland, in meadows along a tamrack road, 280 m, NH54, 29.05.2007, coll. D. Dimitrov (SOM 163501).

This species has not been known so far for these floristic regions.

52. *Ornithopus compressus* L.

Bu Balkan Range (*Central*): in grasslands around Dolno Izvorovo village, 42.65124N, 25.47082E, LH72, 06.07.2014, coll. K. Vassilev (SOM 171293); on a slope of the Balkan Range around Kazanlak town, in communities of *Chrysopogon gryllus*, LH62, 10.07.1956, coll. V. Velchev & I. Bondev (SOM 106909); above Kazanlak town, in dry grasslands on the southern slope, 400 m, LH62, 25.07.1956, coll. V. Velchev (SOM 103607).

- Mt Belasitsa: in a *Castanea sativa* woodland near Petrich town, FL88, 10.07.1969, coll. B. Kuzmanov (SOM 130429).

This is a sub-Mediterranean species found in dry grassland communities of the classes *Thero-Brachypodietae* and *Festuco-Brometea* as a companion species. It is a new species for these floristic regions.

53. *Trifolium strictum* L.

Bu Balkan Range (*Western*): Iskar gorge, Zhelen woodlands, FN96, 20.06.1980, coll. B. Kuzmanov (SOM 139719); in pastures above Lokorsko village, FN94, 16.06.1967, coll. N. Vihodcevsky (SOM 121339);

- Mt Belasitsa: in pastures above Kolarovo village, Petrich Municipality, FL78, 27.05.1950, coll. N. Stojanov & B. Achtarov (SOM 91906, 45720).
- Mt Svavyanka: Parilski Dol locality, GL28, 29.06.1980, coll. B. Kuzmanov (SOM 46876).
- Rila Mts: in pastures of Rila Mts against Dupnitsa town, FM77, 1905, coll. I. Urumov (SOM 45722).
- Mt Sredna Gora (Eastern): in meso-xerophytic grasslands close to Pavel Banya town, 42.58496N, 25.20327E, LH51, 03.07.2014, coll. K. Vassilev (SOM 171288).

This is a widely distributed species in dry grasslands of the country. It has not been reported for these floristic regions before.

Scrophulariaceae

54. *Linaria pelisseriana* (L.) Mill.

- Bu** Znepole region: in grasslands near Sovolyano village, Kyustendil district, FM38, 1902, coll. I. Urumov (SOM 66704).
- Mt Svavyanka: in grasslands, on silicate, against Mramor Manufactory near Goleshevo village, GL18, 13.07.1992, coll. I. Pashaliev (SOM 151243).
 - Pirin Mts (Southern): in xerothermic grassland communities near Lilyanovo village, Sandanski Municipality, 41.62041N, 23.63151E, GM11, 05.07.2012, coll. K. Vassilev (SOM 171264); in dry grasslands between Melnik town and Rozhen Monastery, GM00, 28.06.1978, coll. N. Andreev (SOM 136138).

These are new floristic regions for this species. It is a companion species, widespread in dry grasslands belonging to the class *Thero-Brachypodieteae* and more seldom to the class *Festuco-Brometea*.

Reports 55–68

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Continuing a series of new plant records based on further floristic investigations in the prefecture of Ilia in western Peloponnese, and on Mt Likeo. The records

listed are new for Eparchia Ilias or Olimbias, or for both eparchies in Nomos Ilias. Those reported as new for Mt Likeo have not been included in Baliouis (2013). The floristic regions adopted follow those circumscribed in *Flora Hellenica* (Strid & Tan 1997).

Boraginaceae

55. *Myosotis ramosissima* Rochel

- Gr** Nomos Ilias, Eparchia Olimbias: Ag. Paraskevi, valley between Andritsena and Vasses, 1130 m, 37°27'N, 21°55'E, 17.04.2015, Kit Tan, G. Vold & Giannopoulos 31854 (herb. Giannopoulos).

New for eparchia; widespread in Greece but rarely recorded in western Peloponnese.

Brassicaceae

56. *Alliaria petiolata* (M. Bieb.) Cavara & Grande

- Gr** Nomos Ilias, Eparchia Olimbias: along footpath outside Andritsena, 720–785 m, 37°29'N, 21°54'E, 17.04.2015, Kit Tan, G. Vold & Giannopoulos 31849 (herb. Giannopoulos).

New for eparchia; also observed on the plateau of Astras, Mt Lambia in eparchia Ilias.

57. *Aurinia saxatilis* subsp. *megalocarpa* (Hauskn.) T.R. Dudley

- Gr** Nomos Achaïas, Eparchia Patron: NE of Kalogria, at base of limestone rocks in *Phlomis fruticosa* phrygana, 5 m, 38°10'N, 21°23'E, 1.05.2015, Kit Tan & G. Vold 31871 (ATH, herb. Kit).

New for nomos and eparchia and also NW Peloponnese. Occurring mainly on rocky limestone slopes and cliffs in S and NE Peloponnese, Ionian and Aegean islands.

58. *Erysimum pusillum* Bory & Chaub.

- Gr** Nomos Arkadias, Eparchia Gortinias: Mt Likeo, crevices of limestone rock, 1168 m, 37°26'N, 21°59'E, 19.04.2015, Kit Tan, G. Vold & Giannopoulos 31866 (herb. Giannopoulos).

New for eparchia and Mt Likeo. Endemic to the mountains of the Peloponnese at altitudes of (850)1100–2200 m, with an outlying locality in western Sterea Ellas (Mt Boumistos, Akarnanika Ori).

Euphorbiaceae

59. *Euphorbia oblongata* Griseb. (Fig. 9)

- Gr** Nomos Ilias, Eparchia Olimbias: outside Andritsena, 720 m, 37°29'N, 21°54'E, 31.05.2015, Giannopoulos obs. (photo).

New for nomos and eparchia. This is the northernmost locality in the Peloponnese where it occurs mainly in



Fig. 9. *Euphorbia oblongata* (photo K. Giannopoulos).

the foothills of Taigetos and Parnonas. It was growing together with *Phelipanche schultzioides* although there is no indication that the latter is parasitic on it.

Fabaceae

60. *Astragalus pelecinus* (L.) Barneby subsp. *pelecinus*

Gr Nomos Ilias, Eparchia Olimbias: cemetery near Andritsena, foothills of Mt Likeo, 840 m, 37°28'N, 21°53'E, 07.05.2015, *Kit Tan & G. Vold* 31878 (herb. Kit).

New for eparchia and Mt Likeo. The pendent legumes with sinuate-dentate wings are unmistakable. *A. pelecinus* subsp. *leiocarpus* (A. Rich.) Podlech has subentire wings and occurs in Africa.

61. *Lens nigricans* (M. Bieb.) Godr.

Gr Nomos Ilias, Eparchia Olimbias: Ag. Paraskevi, valley between Andritsena and Vasses, 1130 m, 37°27'N, 21°55'E, 17.04.2015, *Kit Tan, G. Vold & Giannopoulos* 31853 (herb. Giannopoulos).

New for nomos and eparchia, first report from W Peloponnese.

62. *Medicago sativa* L. subsp. *sativa* × *M. sativa* subsp. *falcata* (L.) Arcang.

Gr Nomos Ilias, Eparchia Olimbias: outside Andritsena, 780–785 m, 37°28'N, 21°53'E, 31.05.2015, *Giannopoulos* obs. (photo).

New for eparchia. *M. sativa* subsp. *sativa* is 'alfalfa', an important forage crop. The hybrid has unusual yellowish-green, purple, multi-coloured or almost black flowers and is common in Greece and most of Europe. It is a fertile, partly stabilized hybrid known as *M. × varia* Martyn, although Martyn originally published it as a species and not as a hybrid.

63. *Vicia melanops* Sm.

Gr Nomos Ilias, Eparchia Olimbias: Ag. Paraskevi, valley between Andritsena and Vasses, 1130 m, 37°27'N, 21°55'E, 17.04.2015, *Kit Tan, G. Vold & Giannopoulos* 31855 (herb. Giannopoulos); roadside outside Andritsena, 720 m, 37°29'N, 21°54'E, 17.04.2015, *Kit Tan, G. Vold & Giannopoulos* obs. (photos).

New for nomos and eparchia.

Orobanchaceae

64. *Phelipanche schultzioides* M.J.Y. Foley (syn.: *Orobanche schultzioides* (M.J.Y. Foley) Domina (Fig. 10)

Gr Nomos Ilias, Eparchia Olimbias: outside Andritsena, parasitic on *Urtica dioica*, 720–785 m, 37°29'N, 21°54'E, 20.06.2012, *Kit Tan, G. Vold & Giannopoulos* 31383a (herb. Giannopoulos); *loc. ibid.*, 31.05.2015, *Giannopoulos* s.n. (herb. Giannopoulos).

New for nomos and eparchia. At least 50 plants noted; they were not discovered during earlier visits to the locality as they were completely hidden in a large canopy of nettles. The species is probably more common in Greece than reported since few botanists explore luxuriant patches of *Urtica* with bare hands. The type was collected near Zarouchla in North Central Peloponnese (Nomos Achaïas, Eparchia Kalavriton).

We thank H. Uhlich (Dresden) for kindly confirming our identifications in June 2012 and June 2015.

Santalaceae

65. *Viscum album* L. subsp. *album*

Gr Nomos Arkadias, Eparchia Gortinias: Mt Likeo, on *Acer sempervirens* (Figs. 11 & 11a), 1168 m, 37°26'N, 21°59'E, 19.04.2015, *Kit Tan, G. Vold & Giannopoulos* 31862 (ATH, herb. Giannopoulos).



Fig. 10. *Phelipanche schultzioides* (photo K. Giannopoulos).



Fig. 11. *Viscum album* subsp. *album* on *Acer sempervirens* (photo K. Giannopoulos).



Fig. 11a. *Viscum album* subsp. *album* germinating on *Crataegus monogyna* (photo K. Giannopoulos).

This taxon was reported in December 2013 as new for Mt Likeo and first record for the Peloponnese where it was found to be hemi-parasitic in large quantities on *Crataegus monogyna* (Giannopoulos & al. 2013). Further exploration of the area in August 2014 revealed it was also parasitizing *Prunus mahaleb*. As far as we know the occurrence of *Viscum album* on *Prunus mahaleb* has never been documented before in Greece. Other species of *Prunus*, e.g., *P. cerasifera*, *P. padua*, have been reported as host plants in Central Europe. The known hosts in Greece are *Crataegus*, deciduous oaks, *Populus* and *Pyrus*. Thus we documented the first report of *P. mahaleb* as a host for *Viscum album*, not only for Greece but possibly also for Europe (Giannopoulos & al. 2015). On re-visiting the area again in 2015, we found that the *Viscum* was also parasitic on *Acer sempervirens*. The latter is a new undocumented host for Greece and probably also for Europe. Within the genus *Acer*, *A. campestre*, *A. platanoides*, *A. pseudoplatanus* and *A. saccharinum* have been noted as host plants in the Czech Republic and elsewhere in Europe.

Hyacinthaceae

66. *Bellevalia romana* (L.) Sweet (Fig. 12)

Gr Nomos Ilias, Eparchia Olimbias: outside Andritsena, 760 m, 37°28'N, 21°53'E, 17.04.2015, Kit Tan, G. Vold & Giannopoulos obs. (photo).

New for nomos and eparchia, only three plants were noted. Occurring in the Ionian islands and western part of mainland Greece. Our locality at inland Andritsena is unusual as the other few records from the Peloponnese are coastal. Unfortunately, later visits to the locality to find plants in fruit revealed they had disappeared, probably browsed by goats.



Fig. 12. *Bellevalia romana* (photo K. Giannopoulos).

67. *Ornithogalum collinum* Guss.

Gr Nomos Ilias, Eparchia Olimbias: along footpath outside Andritsena, 785 m, 37°29'N, 21°54'E, 17.04.2015, Kit Tan, G. Vold & Giannopoulos 31847 (herb. Giannopoulos).

New for eparchia; subsp. *rhodium* Speta has been recognized from the E Aegean island of Rodos.

Liliaceae

68. *Tulipa australis* Link (Fig. 13)

Gr Nomos Ilias, Eparchia Olimbias: summit

of Vunuka, Mt Minthi, 1215 m, 37°29'N, 21°46'E, 16.04.2015, *Kit Tan, G. Vold & Giannopoulos* 31841 (herb. Giannopoulos); *loc. ibid.*, 03.05.2015, *Giannopoulos* s.n. (herb. Giannopoulos).

New for nomos and eparchia; first report for western Peloponnese. This is also the first record of a tulip from Nomos Ilias. We were told that a lady from the village of Minthi went to the summit every year to collect tulips during the first two weeks of May but had ceased this trip in recent years perhaps because the climb was too tiring. Acting on this information, we visited the area in mid-April and found to our delight, three plants in bud. A later visit in May revealed numerous plants in bloom. We had expected to find *Tulipa orphanidea* which flowers at the same period in the adjacent prefecture of Arkadias. The outer perianth is sometimes more reddish-orange than the usual pure yellow of *T. australis* and the leaves are more frequently 3 instead of 2. Nevertheless, all other characters fit *T. australis* well. The plants were restricted to only one slope of the mountain and the original population must have comprised hundreds of individuals.



Fig. 13. *Tulipa australis* (photo K. Giannopoulos).

Report 69

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Lemnaceae

69. *Wolffia arrhiza* (L.) Wimm.

Bu Northeast Bulgaria: near Malak Preslavets village, in Malak Preslavets swamp, near the swamp sluice, 44°05.935'N, 26°49.818'E, 05.10.2014, coll. *B. Gyosheva*

The occurrence of the taxon covers an area of 4 m². Accompanying species are *Lemna minor*, *Lemna trisulca*, *Ceratophyllum demersum* and *Spirodela polyrhiza*. Mention deserves the fact that during our fieldwork in June and August 2014 at exactly the same place in Malak Preslavets swamp, we did not find *W. arrhiza*.

Confirming the occurrence of the species in this swamp. It has been previously reported by Kochev & Jordanov (1981) for Malak Preslavets swamp but since then, the species has not been seen there. In important national reports, such as the Natura 2000 network reports (<http://natura2000.moew.government.bg/>) and in the check-list of identified macrophytes in Lake Srebarna (Valchev & al. 2012), the species has not been reported. The lack of information may be due to the small size of the plant, but, more likely, there is a big possibility that it became extinct in some places where it was spread some 60 years ago. These facts underline the great importance of documenting every newly discovered locality of *W. arrhiza* in the country.

Wolffia arrhiza is the smallest vascular plant in the world. It grows in still and quiet waters and in threatened habitats because of the shrinking territory of wetlands nowadays. The species falls into the Least Concern category according to the IUCN red list (Gupta 2014), it has Vulnerable status according to the *Red List of the Bulgarian vascular plants* (Ivanova & Tzonev 2009) and is included in the *Red Data Book of the People's Republic of Bulgaria* (Kochev 1984) as 'Rare'.

The information about the distribution of *W. arrhiza* in Bulgaria is very scarce. Most of the literature sources

date from the 20th century. The first record of the species was made by Petkoff (1908) in Arkutino swamp.

Data about the distribution of the plant is found in the following literature sources: Petkoff (1908), Valkanov (1955), Jordanov (1964), Stojanov & al. (1966), Jordanov & Kochev (1973), Kochev & Yordanov (1981), Kochev (1983, 1984, 1987), Kochev & al. (1987), Baeva (1986, 1988, 1991a, b, 1992, 1995, 1996).

The places where the plant is distributed, according to the above listed sources, are: Arkutino lake, an old channel between Beloslav and Varna lakes, one of the swamps in the Palamara Deer Game Park (40 km north of Shumen town), in swamps near river Tundja (Kazanlak region) and near river Maritsa (Plovdiv region), in the old riverbed of river Ogosta (SE from Harlevo village, Vratsa district), in Malak Preslavets swamp, Kaisheva Shuma locality (near Ropotamo river, Burgas region), Chantaloviya Gyol locality (NW of Svilengrad), in swamp areas and channels near Ryahovo village (Ruse district), Batin swamp (Batin Island), in the small swamp and channels near Nova Cherna village (Silistra district), lake Srebarna.

Baeva (1986, 1988, 1991a, b, 1992, 1995, 1996) has reported several times the plant's distribution in Srebarna reserve during the years 1975–1994. Unfortunately, the only material of *W. arrhiza* that Baeva deposited in the herbarium (SOM) of the Institute of Biodiversity and Ecosystem Research was revised by Prof. Pertti Uotila as *Lemna minor* L.

The most recent paper about a new locality of this species was by Tzonev (2005). The species was found near Plama Oil Factory, Dissevitsa village, and near Yasen village.

New for nomos and eparchia (East Central Greece). This Saharo-Sindian species is conspicuous by its large reddish fruiting valves and subfleshy leaves. It is now well-established in Greece occurring mainly in hot and dry coastal habitats, on disturbed ground and at roadsides in NW Crete (Akrotiri Peninsula), NE Peloponnese (Argolidos), SE Sterea Ellas (Saronic Gulf, Korinthias) and Rodos (see Browicz & al. 2001: 71–73). Its recent introduction at the rail terminal of Larissa is a first record for mainland Greece north of latitude 38°N.



Fig. 14. *Rumex vesicarius* (photo K. Koutsomarkos).

Report 70

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Polygonaceae

70. *Rumex vesicarius* L. (Fig. 14)

Gr Nomos & Eparchia Larisis: Larissa railway station, gravelly limestone pavement, ca. 75 m, 39°37'N, 22°25'E, 18.03.2015, Koutsomarkos s.n. (photos; det. Kit Tan, March 2015).

Reports 71–76

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Continuing a series of new plant records based on further floristic investigations in Greece. The floristic regions adopted follow those circumscribed in *Flora Hellenica* (Strid & Tan 1997).

Asteraceae**71. *Centaurea spruneri* Boiss. & Heldr. (Fig. 15)**

Gr Nomos & Eparchia Attikis: southern foothills of Mt Pendeli, edge of vineyard between Pikermi and Kallitechnoupoli, 100 m, 38°00'N, 23°57'E, 28.06.2015, Polymenakos s.n. (photo; confirmed Kit Tan, June 2015).

New for Mt Pendeli. A small population of *ca.* 10 plants on disturbed ground, growing together with *Roemeria hybrida*, *Diplotaxis viminea* and *Garidella nigellastrum* which have also been reported as new for the area.



Fig. 15. *Centaurea spruneri* (photo K. Polymenakos).

Brassicaceae**72. *Draba laconica* Stevanović & Kit Tan**

Gr Nomos & Eparchia Korinthias: Mt Killini, 2140 m, 37°56'N, 22°24'E, 14.06.2015, Polymenakos & *al.* obs. (photo; det. Kit Tan, July 2015).

New for Mt Killini and Korinthias. Independently collected and confirming an earlier gathering in 2012 by Zarkos (see report 122).

Convolvulaceae**73. *Convolvulus mairei* Halácsy (Fig. 16)**

Gr Nomos Viotias, Eparchia Thivon: edge of Lake Paralimni, 45 m, 38°27'N, 23°19'E, 05.05.2015, Polymenakos 21 (herb. Polymenakos; confirmed Kit Tan, June 2015).

Numerous plants. This species was also collected from the alluvial shore of the west side of Lake Iliki, *ca.* 3 km to the southwest. The type is from Lake Souvala on Parnassos (Nomos Viotias, Eparchia Levadias).



Fig. 16. *Convolvulus mairei* (photo K. Polymenakos).

Fabaceae**74. *Onobrychis arenaria* subsp. *lasiostachya* (Boiss.) Hayek (Fig. 17)**

Gr Nomos & Eparchia Attikis: Chalkoutsy village, west of Oropos, openings in *Cistus* scrub, 35 m, 38°19'N, 23°42'E, 28.04.2015, Polymenakos 16 (herb. Polymenakos; confirmed Kit Tan, June 2015).

In Nomos and eparchia Attikis, this species has apparently been documented only from Mt Pendeli. At Oropos, it was growing together with *Bellevalia ciliata*, *Hyacinthella leucophaea*, *Linum nodiflorum*, *Catananche lutea* and *Garidella nigellastrum*.



Fig. 17. *Onobrychis arenaria* subsp. *lasiostachya* (photo K. Polymenakos).

75. *Tetragonolobus purpureus* Moench

Gr Nomos & Eparchia Attikis: Mt Pendeli, abandoned field near Ag. Stefanos, 340 m, 38°08'N, 23°51'E, 07.04.2015, *Polymenakos* obs. (photo; confirmed Kit Tan, June 2015).

Large population, new for Mt Pendeli.

76. *Trifolium infamia-ponertii* Greuter

Gr Nomos Attikis, Eparchia Attikis/Pireos: Imittos (Mt Hymettus), road margins and openings of planted *Pinus* forest, 410 m, 37°59'N, 23°49'E, 11.05.2015, *Polymenakos* obs. (photo; confirmed Kit Tan, June 2015).

Reported from Mt Parnitha but new for Mt Imittos; widespread on the Aegean islands and coastal mainland. Often confused with *T. angustifolium* L.

Reports 77–79**Andrey Popatanasov**

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Orchidaceae**77. *Cypripedium calceolus* L. (see cover)**

Bu Rhodopi Mts (*Western*): Mt Devinska, ca. 5 km from the Orpheus chalet, near the trail to Devin road, in an open mixed forest, on a north-facing steep slope, inclination over 60 degrees, 970 m, KG71, 15.06.2015, with flowers and fruits, A. Popatanasov obs.

Confirming the distribution of the species in this region. It has very recently been reported from the same area by Perry & Perry (2014).

This relict European orchid with the largest flowers holds a special place in the history of the Bulgarian botany. Since the time when it was determined by the first Professor in Botany in Bulgaria, Stefan Georgiev, and found in the Bulgarian flora by his student Iliya Stoyanov in 1898, it has become a symbol of delicate charm, mysterious rarity, and a desperate call to the human conscience and responsibility for preserving and maintaining the delicate Nature's balance and biodiversity. Many of our renown botanists, such as Acad. B. Stefanov, N. Stoyanov etc., also Tsar Boris III have organized special expeditions to find it in the Rhodopi Mts but few had been fortunate to see it because of its rarity, unpredictable forming of germinative aerial stems in the different years and hard-to-access locations of occurrence (Stanev 1975, 2007).

This population was found in July 2012, after the flowering phase and has been monitored yearly ever since. In 2012, two spots were found along the trail, at a distance of several hundred meters from each other. The plants in both spots had only one fruit per stem in July and were clearly distinct in fruit and leaf morphology from the other co-occurring orchid *Epipactis helleborine* that just started flowering and for which it was occasionally mistaken. In June 2013, only two vegetative aerial stems were found. In 2014, in July, a single aerial stem was found with single fruit, and the plants in the second spot have been destroyed seemingly by falling rocks and trees. In 2015, in mid-June, three plants were found, each with two flowers and half of them have been already pollinated. Regardless of the low number of found individuals, the population seemed bigger – in 2014, only one plant with fruit was found, which means that there were more flowering individuals in a relatively close proximity (Terschuren 1998). The plant is predominantly a cross-pollinated species. However, the difficult geomorphology and the relatively well developed secondary floor of the forest makes the task of finding more individuals very challenging and nearly impossible without appropriate equipment.

The population seems to be in a good state, since, according to A. Petrova (2015) and P. Delforge (2006), the plants seldom had two or more flowers on the generative stems. Also, according to J. Terschuren (1998), a typical pollination and fruiting success is around 10% and seldom up to 40%. However, in this particular case over 50% pollination and fruiting success was observed. This is in contrast with the population in the Dobrostan Massif, which seems to be in suppressed state (Petrova 1995); besides, its habitat was badly damaged by the heavy snowfalls and stormwinds in recent years. So it was reasonable to find more individuals in this new location and to suggest the habitat for receiving a protected status.

Other species from this family found in this forest are: *Cephalanthera damasonium*, *C. rubra*, *Dactylorhiza saccifera*, *Epipactis helleborine*, *E. atrorubens*, *Gymnadenia conopsea*, and *Neottia nidus-avis*.

For over a century there was only one known and monitored location of this critically endangered plant in Bulgaria – Chervenata Stena Reserve and in the adjoining territories in the Dobrostan Massif, which happens to be the southernmost point of the area of its occurrence in Europe (Petrova 1995). With this new

location the area is increased nearly 50 km southwards and this probably also means that the distribution of this orchid in Bulgaria is wider than just the area of the Dobrostan Massif.

78. *Orchis militaris* L. (see cover)

Bu Rhodopi Mts (*Western*): Buynovsko Gorge, ca. 3 km from Yagodina Cave on the slopes along river Buynovska, in an open mixed forest, on an east-facing steep slope, inclination from 0 to over 60 degrees, KG71, 14.06.2015, with flowers and fruits, A. Popatanasov obs.

— Rhodopi Mts (*Central*): ca. 2 km from the Chairite chalet, on the slopes along river Chairdere in the Chairite Gorge, in an open mixed forest, on a west-facing steep slope, inclination over 60 degrees, KG80, 13.06.2015, with flowers and fruits, A. Popatanasov obs.

The species is new for Rhodopi (*Western*) (Petrova 2015; Assyov & Petrova 2012). Forty-six plants were found in the two spots in Buynovsko Gorge. In the first location, thirty-five plants were counted. Seven generative shoots with flowers and fruits were found and 28 mostly juvenile vegetative shoots, unevenly spread among them in a mixed open forest and the adjoining poor grassland openings. In the second spot 11 shoots were found on the poor grassland and rocks above the river. Four of them were generative and seven vegetative. A few plants looked as hybrids with another closely related taxon – *O. simia*. Their flower features and especially the labellum resembled the shape of *O. simia* (the lateral lobes of the lip were longer and thinner than normally and the two short lobules of the median lobe too), which is known to grow in that area, but flowered slightly earlier. However, no *O. simia* was found nearby at that time.

The other species from this family found nearby were: *Cephalanthera damasonium*, *Dactylorhiza saccifera* and *Epipactis helleborine*.

Seventeen plants were found at the location of Chairite Gorge, on the slope above the river, in an open mixed (mostly coniferous) forest with relatively well developed secondary floor. Eight generative shoots with flowers and fruits and 11 unevenly spread vegetative ones were among them.

Other species from this family found nearby were: *Cephalanthera longifolia*, *Dactylorhiza saccifera*, *Epipactis helleborine*, *E. atrorubens*, and *Gymnadenia conopsea*.

Regardless of being rather widespread species in the country – in seven floristic regions according to Assyov & Petrova (2012) on the basis of data from over a century – this taxon is assessed as ‘Endangered’ (Petrova 2009). According to Petrova (1995, 2015), recently only seven populations have been confirmed. However, according to a 2014 report on re-establishment of several rare species in the Sinite Kamani Park, the population at this location does not exist anymore. One of the reasons for such rarity is the necessity of simultaneous presence in the soil of two specific mycosymbiont partners (Vendramin & al. 2010) for successful development of the plant, which greatly restricts the territory on which it can actually grow. This specificity is reflected in the populational structures: some very local populations occupying an area of just few acres (0.05 ha – Petrova 2015). The populations in the two new locations make no exception from this “rule”. A common ecological characteristic of both locations is that the habitats deep in the gorge are kept moist throughout the year, with decreased dependence on rainfalls which favor the development of rich mycoflora so necessary for the ontogenesis of this species.

None of the sites is in a protected territory. So, they have to be included at least in the database of the local Forestry Agencies, so as to restrict the issuance of woodcut permits in these or nearby locations. Woodcutting and related activities are among the main threats that can completely destroy the populations, as it already happened with the last known location in Bulgaria of *Orchis spitzelii*, also located downwards, in the valley of river Chair dere.

No plant was collected due to the low number of generative individuals and its endangered status.

79. *Orchis papilionacea* L.

Bu Pirin Mts (*Northern*): Pirin Mts, in dry short grasslands, meadows and bushes, on south to southwest facing slopes, near the road from Brezhani to Senokos villages, ca. 730 m, 41°50'48.02"N, 23°10'53.04"E, 18.05.2015, with flowers, A. Popatanasov obs.

Six plants were found on an area of several ha along the road to Senokos village, in dry grasslands and meadows, few hundreds meters from each other. Due to the low number of shoots and the conservation status of the taxon, no plants were collected.

According to Kitanov & Kitanov (1990) and Assyov & Petrova (2012), this is a new species for this region.

Reports 80–81

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Asteraceae

80. *Phitosia crocifolia* (Boiss. & Heldr.) Kamari & Greuter (syn: *Crepis crocifolia* Boiss. & Heldr.)

Gr Nomos Arkadias/Lakonias, Eparchia Kinourias/Lakedemonos: Parnonas, rocky limestone flats and outcrops at summit of Megali Tourla, 1850–1900 m, 37°17'N, 22°37'N, 24.07.1999, *Shaw* obs. (photo; confirmed R. Burton, August 1999); *loc. ibid.*, 16.06.1996, *Kit Tan* & *G. Vold* obs.

These are the earliest records from Mt Parnon, the plants being noted in 1996 and 1999; it was re-collected in October 2010 (*Kyriakopoulos* & *al.* 301, UPA). *Phitosia crocifolia* is a Greek endemic otherwise known only from Mt Taigetos at altitudes of 1500 to 2200 m.

Rubiaceae

81. *Cruciata taurica* subsp. *euboea* (Ehrend.) Ehrend. (Fig. 18)

Gr Nomos Achaïas, Eparchia Kalavriton: Chelmos, road embankment between Peristera and Ski-



Fig. 18. *Cruciata taurica* subsp. *euboea* (photo D. Shaw).

centre, 1500 m, 38°01'N, 22°14'N, 07.06.2015,

Shaw obs. (photo; confirmed Kit Tan, June 2015).

New for Mt Chelmos, only two plants observed. In the Peloponnese, this was first reported from Skotini (Nomos Argolidos, Eparchia Argous) and its occurrence at this locality was once again confirmed in June 2015.

Reports 82–84

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This includes three new floristic records for the island of Egina in Nomos Attikis, Eparchia Eginis, belonging to the phytogeographical region Peloponnese (Pe) as circumscribed in *Flora Hellenica* (Strid & Tan 1997).

Asphodelaceae

82. *Asphodelus tenuifolius* Cav. (Fig. 19)

Gr S of Agioi, in an abandoned olive plantation adjoining *Pinus halepensis* forest, 80 m, 37°46'02"N,



Fig. 19. *Asphodelus tenuifolius* (photo A. Strid).

23°30'07"E, 21.06.2015, coll. M. Issigoni; loc. *ibid.*, uncultivated ground near habitation, 30.07.2015, M. Issigoni obs.

Also recorded from the phytogeographical region of Sterea Ellas (Attikis and Korinthias). Th. Heldreich collected it on 2 April 1877 from the small island of Leros and noted it on adjacent Megali Kyra (Heldreich 1877: 157). Leros, not to be confused with the other larger island of the same name in the Dodekanese, is to the north of Salamina (Nomos Attikis, Eparchia Megaridos). The plant was also collected by C. Haussknecht on 1 April 1885 from the low hills near Eleusina on the opposite mainland (Haussknecht 1900: 27). It was first reported from Egina by Heldreich in 1898 (Heldreich 1898: 52). There is no recent report of *A. tenuifolius* in Greece outside the Saronic Gulf until a discovery by A. Strid in April 2015 from the northern shore of Lake Vouliagmeni in Korinthia. There it was locally common at roadsides and on rocky limestone slopes at low altitudes between 5 and 30 m.

However, M. Issigoni remembered finding the plant on Egina in spring during the early 1990s and had noted it in her floristic lists (unpublished). *Asphodelus tenuifolius* is similar to, but annual and smaller in all its parts than, *A. fistulosus* with which it often grows. It occurs mainly in SW Asia and N Africa. Dimopoulos & al. (2013: 262) excluded *A. tenuifolius* from the vascular flora of Greece with the comment that Heldreich's records were doubtful and without later confirmation. The 2015 population comprised more than 50 plants in late bloom, intermixed with *Chondrilla ramosissima*, *Hypericum triquetrifolium* and *Phagnalon rupes-tre* subsp. *graecum*. Outside the immediate vicinity are *Ajuga iva*, *Cistus creticus*, *Sideritis montana* subsp. *remota*, and a few individuals of *Asphodelus fistulosus*. Two other plants were noted at a second nearby locality south of Agioi as well as a separate small population of 10 plants still with green leaves at the end of July. The belated flowering of *A. tenuifolius* following an unusually wet May and June rendered it conspicuous as in normal rainfall years the leaves of these annual plants would have been completely withered by late June.

Liliaceae

83. *Gagea pseudopeduncularis* J.-M. Tison

Gr SE of Agioi, a summit north of the hill Vrouva, 104 m, 37°46'07"N, 23°31'17"E, 10.03.2013, coll. M. Issigoni (confirmed by J.-M. Tison, May 2013). New for island, eparchia, nomos and Peloponnese, few

plants observed. This species was described from Mt Parnitha as recently as 2013. Its distribution in Greece is not fully known.

84. *Gagea rigida* Boiss. & Spruner (Fig. 20)

Gr S of Souvala, phrygana in open *Pinus halepensis* forest, on limestone together with *Colchicum cupanii* and *Bellevalia hyacinthoides*, 60 m, 37°45'58"N, 23°29'37"E, 12.01.2008, coll. M. Issigoni; loc. *ibid.*, 06.03.2013, coll. M. Issigoni. This was originally identified as *G. reticulata* (Pall.)



Fig. 20. *Gagea rigida* (photo B. Biel).

Schult. & Schult. f., a species which does not occur in Greece. All published records of *G. reticulata* from Crete and the Kiklades refer to *G. rigida*.

The third species of *Gagea* on the island of Egina is the widespread white-flowered *Gagea graeca* (L.) Irmsch. [syn. *Lloydia graeca* (L.) Lindley].

All cited vouchers are unnumbered and kept in the private herbarium of M. Issigoni at Egina.

Reports 85–89

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Asteraceae

85. *Centaurea orientalis* L.

Bu Valley of River Mesta: in the lands of Godeshevo village, Gabara locality, on calcareous rocks, 796 m, 41°27'48.9"N, 24°03'57.7"E, KF59, 27.06.2010, coll. A. Tashev (SOM 169655).

So far this Pontic-Mediterranean species in Bulgaria has been mentioned for the Black Sea Coast, Northeast Bulgaria, Danubian Plain, Forebalkan, Balkan Range, Znepole region, Sofia region, Thracian Lowland, and Rhodopi Mts (*Central*), at altitudes of 0 to 1500 m (Delipavlov 2011: 414; Assyov & Petrova 2012: 128).

Boraginaceae

86. *Cerinth glabra* Mill. subsp. *pirinica* (Stoj. & Acht.) Andreev & Peev

Bu Valley of River Mesta: in the lands of Godeshevo village, Babel locality, on a level stony grassland with calcareous rocks, close to the frontier with Greece – frontier block 175, along with *Jurinea mollis*, *Inula aschersoniana*, etc., 928 m, 41°29'02.9"N; 24°03'38.9"E. 25.07.2010, KF59, coll. A. Tashev (SOM 169690).

So far this Bulgarian endemic subspecies has been reported only for Pirin Mts, at altitudes of 1500 to 2500 m (Popova 2011: 405; Assyov & Petrova 2012: 136).

Linaceae

87. *Linum flavum* L. subsp. *flavum*

Bu Valley of River Mesta: in the lands of Godeshevo village, Gabara locality, in the stony ridge part with calcareous rocks, close to the frontier with Greece, 796 m, 41°27'48.9"N, 24°03'57.7"E, KF59, 27.06.2010, with flowers, coll. A. Tashev (SOM 169656).

So far this sub-Mediterranean species has been reported from Northeast Bulgaria, Danubian Plain, Forebalkan (*Eastern*), Balkan Range (*Western*), Sofia region, Znepole region, and Mt Sredna Gora (*Western*), at altitudes from 0 to 1600 m (Cheshmedzhiev 2011: 461; Assyov & Petrova 2012: 261).

Santalaceae

88. *Thesium linophyllum* L.

Bu Valley of River Mesta: in the lands of Godeshevo village, Gabara locality, in the stony ridge part with calcareous rocks, close to the frontier with Greece, 796 m, 41°27'48.9"N, 24°03'57.7"E, KF59, 27.06.2010, with flowers, coll. A. Tashev (SOM 169654).

So far this sub-Mediterranean species has been reported from Balkan Range (*Western*, *Central*), Sofia region, Znepole region, Vitosha region, Mt Slavyanka, Pirin Mts (*Northern*), Rila Mts, Mt Sredna Gora (*Western*), and Rhodopi Mts (*Central*), at altitudes of 800 to 2000 m (Delipavlov 2011: 283; Assyov & Petrova 2012: 412).

Orchidaceae

89. *Epipactis helleborine* (L.) Crantz subsp. *helleborine*

Bu Valley of River Mesta: in the lands of Godeshevo village, Gabara locality, in the stony ridge part with calcareous rocks, close to the frontier with Greece – frontier block 169, slope with eastern exposition and inclination of 5°, 806 m, 41°27'49.6"N, 24°03'59.3", KF59, 27.06.2010, with flowers, coll. A. Tashev (SOM 169688; SO 107553).

Fifteen individuals in a different stage were found in a offshoot forest of *Quercus pubescens*, *Ostrya carpini-folia*, *Carpinus orientalis*, *Pinus sylvestris*, *Juniperus deltooides*, *Artceutobium oxycedri* etc.

So far this subboreal species has been found in almost all floristic regions of Bulgaria, with the exception of the Black Sea Coast (*Southern*) and Valley of River Struma. Its distribution in the Danubian Plain and Mt Sredna Gora (*Eastern*) has been under question (Delipavlov 2011: 461; Assyov & Petrova 2012: 179).

Reports 90–105

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Apiaceae

90. *Laserpitium archangelica* Wulfen (Fig. 21)

Mk N Macedonia, Mt Karadžica – at the road 1.6 km E-NE from Kapina, in a deforested place, at the margin of a black pine forest, on limestone,

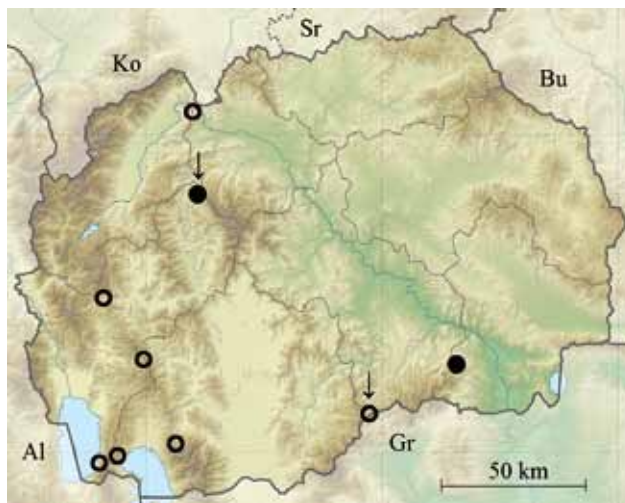


Fig. 21. Distribution of *Laserpitium archangelica* (●) and *Ribes multiflorum* (○) in Macedonia. New records are indicated by an arrow.

1070 m, ca. 25 individuals, 13.06.2014, coll.

A. Teofilovski (herb. Teofilovski).

So far this species has been reported only from SW Macedonia (Mt Kožuf – Visoka Čuka) (Micevski 2005). This is a very rare Carpathian-Balkan species, with a range from southernmost part of Poland in the north to S Macedonia (Mt Kožuf) in the south, but absent in Serbia, Kosovo, Montenegro, and Albania.

91. *Prangos trifida* (Mill.) Herrnst. & Heyn (Syn. *Cachrys alpina* M. Bieb.)

MkN Macedonia, Skopje, 4.5 km NE-N from Raduša village, in a stony place, on serpentine, 570 m, 18.05.2013, coll. A. Teofilovski (herb. Teofilovski); Mt Žeden – 1.8 km NW from Bojane village, on limestone, 790 m, 11.05.2013, coll. A. Teofilovski (herb. Teofilovski).

So far it has been reported from N Macedonia [Mt Suva Gora (Drenkovski 1969, as *Cachrys alpina*), Mt Žeden, Žeden gorge – Orašje], C Macedonia (Taor gorge), S Macedonia (Demir Kapija gorge) (Micevski 2005, as *Cachrys alpina*). This rare species occurs in S France, Iberian Peninsula, Italy (considered as extinct), Balkan Peninsula [Bosnia and Herzegovina (considered as extinct), Serbia, Romania, Macedonia, Bulgaria], and S Crimea. According to the data circulated in literature, this species occurs only on carbonate substrate, therefore the locality near Raduša is probably the first record from a serpentine substrate within its entire range.

Asteraceae

92. *Crepis baldaccii* Halácsy subsp. *albanica* Jáv. (Figs. 22, 23)

MkNW Macedonia, Mt Šar Planina – SW slopes of Ljuboten, on a limestone scree, 2090 m, 27.07.2014, coll. A. Teofilovski, Z. Nikolov & D. Mandžukovski (herb. Teofilovski).

So far this species has been reported only from W Macedonia (Mt Jablanica – near Crn Kamen) (Černjavski 1943). *Crepis baldaccii* is a Balkan endemic with two recognised subspecies: subsp. *baldaccii* and subsp. *albanica*, the former restricted to S Albania and NW Greece and the latter to W & NW Macedonia, N Albania, and E Kosovo. The newly discovered site represents the easternmost point of the species and subsequently subspecies range, the nearest occurring in N Albania and E Kosovo, ca. 100 km to the NW.

93. *Galatella linosyris* (L.) Rchb. f. (Syn. *Aster linosyris* (L.) Bernh.)

MkN Macedonia, Mt Šar Planina (at the foothills) –



Fig. 22. *Crepis baldaccii* subsp. *albanica* (photo A. Teofilovski).

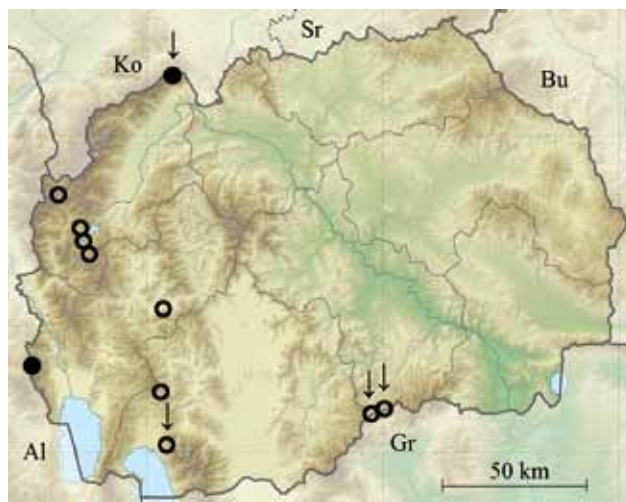


Fig. 23. Distribution of *Crepis baldaccii* subsp. *albanica* (●) and *Ribes alpinum* (○) in Macedonia. New records are indicated by an arrow.

3 km S from Jažince village, in a grassy place, on serpentine, 750 m, 17.08.2013, coll. A. Teofilovski (herb. Teofilovski).

So far the species has been reported from N Macedonia [Treska – Kapina (Soška 1938, as *Aster linosyris*), Rašče, Pčinja] and SE Macedonia (Star Dojran) (Micevski 1970, as *A. linosyris*).

Dipsacaceae**94. *Cephalaria leucantha* Schrad. (Fig. 24)**

Mk N Macedonia, Mt Šar Planina (at the foothills) – 1.7 km S-SE from Jažince village, in a stony place, on serpentine, 01.07.2013, coll. A. Teofilovski (herb. Teofilovski); S Macedonia, Mt Kožuf – Rožden village, close to Sveti Petar, at the margin of thermophilous forest, on limestone, 610 m, 15.08.2014, coll. A. Teofilovski (herb. Teofilovski); Mt Kozjak – 1.4 km N from Rožden village, at the roadside, in a Black Pine forest, 945 m, 20.08.2014, coll. A. Teofilovski (herb. Teofilovski).

So far this species has been reported from SW Macedonia (Mt Galičica – Tomoros) (Černjavski 1943) and N Macedonia (Raduša) (Stevanović & Stevanović 1985). *Cephalaria leucantha* is a Mediterranean species, very rare on the Balkan Peninsula and even absent from Bulgaria and Romania.

Euphorbiaceae**95. *Euphorbia subhastata* Vis. & Pančić (Fig. 24) [Syn. *E. agraria* var. *subhastata* (Vis. & Pančić) Gris]**

Mk N Macedonia, Mt Karadžica – Oča valley, near the road between Kolomon and Selište, in shrubby places, on limestone, 600–850 m, scattered, 17.06.2014, coll. A. Teofilovski (herb. Teofilovski).

So far the species has been known only from N Macedonia – NW slopes of Mt Suva Gora [Panja, Korija (Matevski & Teofilovski 2004, as *E. agraria* var. *subhastata*), Blace (Teofilovski 2011, as *E. a.* var. *subhastata*)]. The specific rank seems more appropriate, although the taxon is usually considered a variety of the closely related *E. agraria*, distinguished by subpandu-

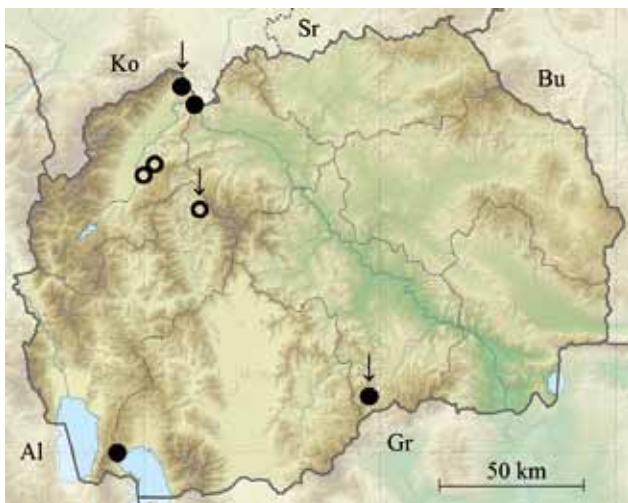


Fig. 24. Distribution of *Cephalaria leucantha* (●) and *Euphorbia subhastata* (○) in Macedonia. New records are indicated by an arrow.

riform leaves shape and presence of sterile shoots below the inflorescence. The specimens from Prilep – Mt Kozjak (S Macedonia) (coll. K. Micevski, MKNH) published by Micevski (1998a) as *E. agraria* (apparently in its wide sense) have simple stems and ovate leaves, and thus belong to *E. agraria* s.str. Mt Kozjak (Prilep) is the only known site of *E. agraria* s.str. in Macedonia.

Grossulariaceae**96. *Ribes alpinum* L. (Fig. 23)**

Mk S Macedonia, Mt Baba – 9 km SE-S from Resen, in a beech forest, 1470 m, 22.10.2014, coll. A. Teofilovski (herb. Teofilovski); Mt Kozjak (Kavadarci) – between Golem Kozjak and Mal Kozjak, in a beech and Scots Pine forest, 1560–1660 m, 09.10.2014, coll. A. Teofilovski (herb. Teofilovski), Mt Kožuf – Prašnik, in a beech forest, 1350–1500 m, coll. A. Teofilovski (herb. Teofilovski).

So far it has been reported from SW Macedonia (Mt Bigla) (Todorovski 1970), W Macedonia (Mavrovo, Mavrovska Reka, Mt Bistra, Mt Luben) (Micevski 1998a).

97. *Ribes multiflorum* Roem. & Schult. (Fig. 21)

Mk S Macedonia, Mt Kozjak – SW slopes of Mal Kozjak, at the roadside in a Scots Pine forest, 1600 m, 09.10.2014, coll. A. Teofilovski (herb. Teofilovski).

Only two individuals were observed. So far the species has been reported from N Macedonia (Mt Žeden), W Macedonia (Kičevo – Izvor, Mt Ilinska – Arbat), SW Macedonia (Mt Galičica – Ervenika Niva and Korita, Pelister – Vrteška) (for references, see Micevski 1998a).

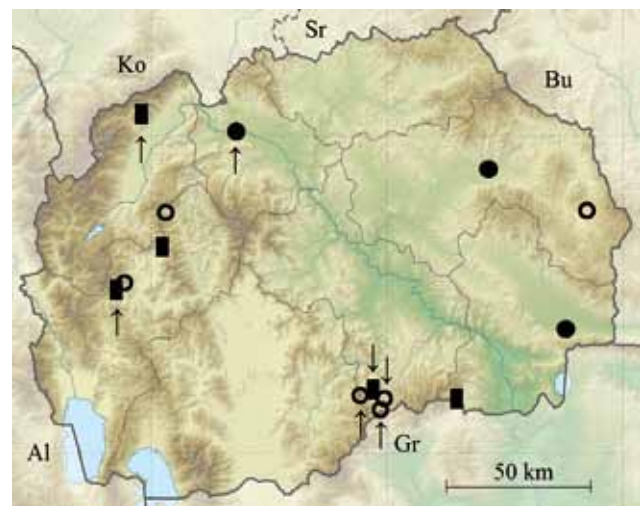
Ranunculaceae**98. *Ranunculus fontanus* C. Persl (Fig. 25)**

Fig. 25. Distribution of *Ranunculus fontanus* (○), *Cyperus difformis* (●) and *Isolepis setacea* (■) in Macedonia. New records are indicated by an arrow.

Mk S Macedonia, Mt Kozjak, 0.25 km SE-S from Tribor, in a wet place, 1420 m, 20.07.2014, coll. A. Teofilovski (herb. Teofilovski); 0.9 km NE from Golem Kozjak, in a wet place, 1680 m, 17.09.2014, coll. A. Teofilovski (herb. Teofilovski), 2.5 km SE-S from Majdan village, in a wet place, 1050 m, 22.08.2014, coll. A. Teofilovski (herb. Teofilovski). So far the species has been reported from E Macedonia (Pehčevo) (Micevski 1985), W Macedonia [Makedonski Brod – Volče (Matevski & Teofilovski 2004), Kičevo – Javorec (Teofilovski 2011)].

Rosaceae

99. *Rosa turcica* Rouy (Syn. *R. horrida* Crep.) (Figs. 26, 27)

Mk S Macedonia, Mt Kozjak – 2.4 km NW-N & from Rožden village, in a stony place, on limestone, 1280 m, 10.10.2014, coll. A. Teofilovski (herb. Teofilovski).

This is a NE Mediterranean species, so far reported only from Mt Kožuf in S Macedonia [Visoka Čuka (Micevski 1998a, as *R. horrida*), Sermenin and Dve Uši (Mandžukovski 2011, as *R. horrida*)].

Scrophulariaceae

100. *Verbascum nicolai* Rohlena (Figs. 27, 28)

Mk N Macedonia, Mt Karadžica – Kopanje (2 km E & SE from Kula), in a stony place, on limestone, 11.06.2014, A. Teofilovski obs. (photo Teofilovski); Mt Jakupica – between Mala Reka and Aldinci villages, in an abandoned meadow and at the roadside, on siliceous substrate, 1080–1190 m, 20.08.2010, coll. A. Teofilovski (herb. Teofilovski);



Fig. 26. *Rosa turcica* (photo A. Teofilovski).

S Macedonia, Mt Kožuf – S from Mihajlovo (0.3 km N from Macedonian-Greek border), at an abandoned forest road, on siliceous substrate, 1420 m, coll. A. Teofilovski (herb. Teofilovski).

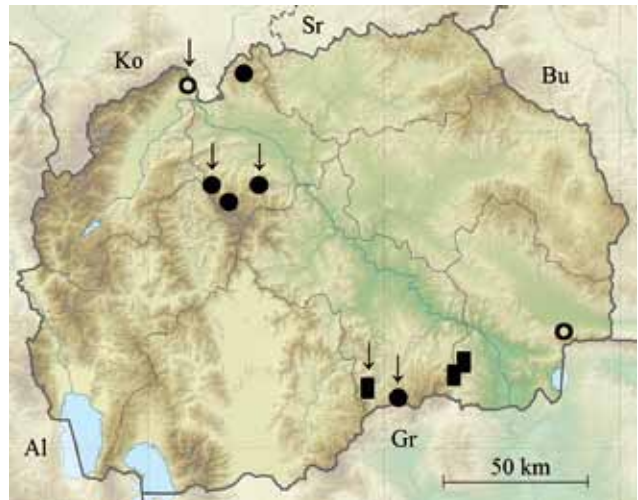


Fig. 27. Distribution of *Verbascum nicolai* (●), *Veronica orchidea* (○) and *Rosa turcica* (■) in Macedonia. New records are indicated by an arrow.



Fig. 28. *Verbascum nicolai* (Mt Kožuf) (photo A. Teofilovski).

So far the species has been reported only from N Macedonia (Mt Skopska Crna Gora and Mt Karadžica – between Ubava and Patiška) (Murbeck 1933). Murbeck's report (1933) to "Serb. Macedon.: Möns Šar-planina: Krstac-Jažince (Sirinic)" refers to the territory of Kosovo. The species is a Balkan endemic, with a range comprising S Bosnia, W Serbia, Kosovo, NW Albania, and Macedonia. The locality on Mt Kožuf represents a significant extension of the species' range 90 km to the SE.

101. *Veronica orchidea* Crantz (Fig. 27) [Syn.

V. spicata subsp. *orchidea* (Crantz) Hayek;
Pseudolysimachion orchideum (Crantz) Wraber]

Mk N Macedonia, Mt Šar Planina (foothill):
Rogačevo village – Rudina, on serpentine,
15.07.2005, coll. A. Teofilovski (herb. Teofilovski)
(published as *V. spicata* s.l., Teofilovski 2011);
1.5–3.5 km SE from Rogačevo and Jažince
villages, 710–790 m, in dry pastures, on
serpentine, 01.07.2013, coll. A. Teofilovski (herb.
Teofilovski).

So far it has been reported only from SE Macedonia (Mt Belasitsa – Bansko) (Stojanoff 1928, as *V. s.* var. *orchidea* Crantz). The species belongs to *V. spicata* agg., consisting of several closely related species, two of which have been reported from Macedonia: *V. spicata* (Mt Dautica, Mt Kozjak, Mt Belasica) and *V. barrelieri* Roem. & Schult. [as *V. s.* subsp. *crassifolia* (Nyman) Hayek] (Mt Skopska Crna Gora) (for references see Teofilovski 2011). The listed reports on *V. spicata* may refer to *V. spicata* s.l. (incl. both *V. orchidea* and *V. barrelieri*).

Cyperaceae

102. *Cyperus difformis* L. (Fig. 25)

Mk N Macedonia, Skopje – 0.85 km NW-N from
Goce Delčev bridge, in a wet place near a public
fountain, 09.09.2014, coll. A. Teofilovski (herb.
Teofilovski).

Only two individuals were observed. So far it has been reported from SE Macedonia – Gaborvo (Stojanoff 1921) and E Macedonia – Kočani, as rice weed (Andreevska & al. 2008). The species is native to the area from S Europe and N Africa, to SE Asia and Australia, and naturalized in S, C & N America.

103. *Isolepis setacea* (L.) R. Br. (Fig. 25)

Mk NW Macedonia, Mt Šar Planina – 1.1 km NE-N
from Otunje village, in a wet place, 1180 m,
07.08.2012, coll. A. Teofilovski (herb. Teofilovski);

W Macedonia, Mt Bistra – 5 km NW-N
from Javorec village, in a wet place, 1470 m,
04.09.2009, coll. A. Teofilovski (herb. Teofilovski);
S Macedonia, Mt Kozjak – near the road between
Arničko and Mešnik, in a wet place, 1080 m,

15.10.2014, coll. A. Teofilovski (herb. Teofilovski).

The observed populations are very small, especially those on Mt Šar Planina and Mt Kozjak, where only few individuals were observed. So far it has been reported from S Macedonia (Mt Dudica – Konjsko) (Bornmüller 1928) and W Macedonia (Mt Dobra Voda) (Matevski 1995).

Poaceae

104. *Phalaris canariensis* L. (Fig. 29)

Mk N Macedonia, Skopje – near the headquarters of
the Karadžica Forest Enterprise, 09.06.2014, coll.
A. Teofilovski (herb. Teofilovski); S Macedonia,
Kavadarci – SW part, in a dry place, 10.07.2014,
coll. A. Teofilovski (herb. Teofilovski).

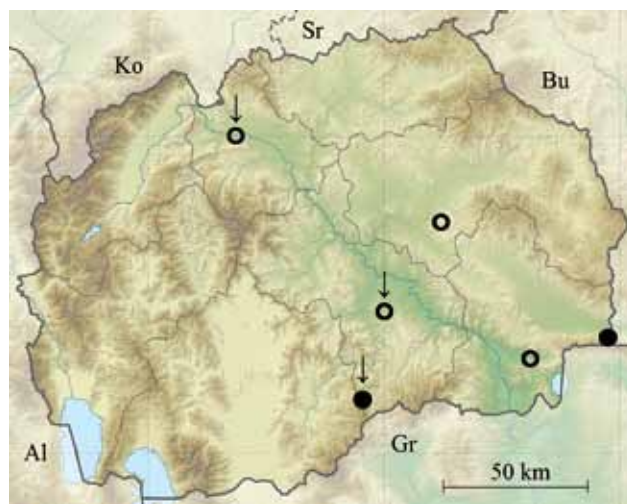


Fig. 29. Distribution of *Phalaris canariensis* (○) and *Epipogium aphyllum* (●) in Macedonia. New records are indicated by an arrow.

This is a rare adventive species with an apparently weak invasive potential in Macedonia. Only few individuals were observed in both localities. So far it has been reported from SE Macedonia – Valandovo (Stojanoff 1928) and E Macedonia – Štip (Micevski 1998b). The species is native to some parts of the Mediterranean region, but widely cultivated and adventive in most warm-temperate countries.

Orchidaceae

105. *Epipogium aphyllum* Sw. (Fig. 29)

Mk S Macedonia, Mt Kozjak: 4.5 km W from Rožden

village, at a forest margin, 1320 m, 22.07.2014, coll. A. *Teofilovski* (herb. Teofilovski).

So far the species has been reported only from Mt Belasica – near Konjarevo in SE Macedonia, close to the border with Bulgaria and Greece (Em 1966).

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Rosaceae

106. *Sorbus ×latifolia* s.l. (Figs. 30, 31)

Mk NW Macedonia, Mt Osoj, Gorna Matka village, near the road to Jasen, at a thermophilous forest margin, on limestone, 840 m, 25.05.2013 & 06.07.2013, coll. A. *Teofilovski* (herb. Teofilovski); Mt Suva Gora, Golina, at a beech forest margin, on limestone, 1250 m, 08.07.2006, coll. A. *Teofilovski* (herb. Teofilovski); Karpa Belenica, on limestone, 1250 m, 28.08.1999 & 08.07.2006,

coll. A. *Teofilovski* (herb. Teofilovski); Larce village – between Čam and Panja, in a sparse beech forest, on limestone, 1600 m, 22.05.1999, coll. A. *Teofilovski* (herb. Teofilovski); Blace village – near the road to Gurgurnica, on limestone, 1230 m, 09.06.2013, coll. A. *Teofilovski*, G. Tomović & B. Zlatković (herb. Teofilovski); Mt Karadžica – 1.9 km SE from Kula, in a thermophilous forest, on limestone, 1370 m, 11.06.2014, coll. A. *Teofilovski* (herb. Teofilovski).

This aggregate of hybrids is new to Macedonia. The above listed collections from Mt Suva Gora – Golina, Karpa Belenica, and Larce village – were earlier erroneously published as “? *S. austriaca* (Beck) Hedlung” (Teofilovski 2011).

Sorbus ×latifolia s.l. is a complex of numerous hybrids between *S. aria* s.l. and *S. torminalis* (L.) Crantz recognised by some authors as separate microspecies. Contrary to this treatment, according to some other authors, their delimitation in the rank of species might be unjustified because of continuous variations within the complex and between its members and *S. aria* s.l. Such variations are considered a result of easy hybridization within the complex and probably unidirectional introgression towards *S. aria* s.l. (see Zieliński & Vladimirov 2013).

Sorbus ×latifolia is distributed from Great Britain and France to the Crimea and Anatolia, but apparently rare and only recently reported from Anatolia and confirmed from the Balkan Peninsula (one locality in W Serbia and several localities in C & E Bulgaria) (Zieliński & Vladimirov 2013).



Fig. 30. *Sorbus ×latifolia* (Blace village) (photo A. Teofilovski).

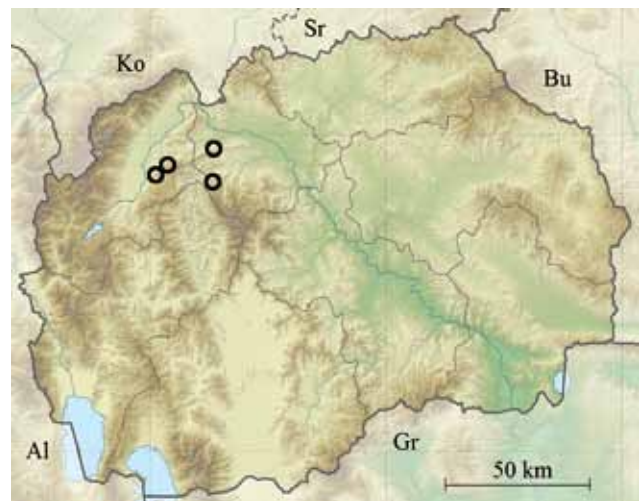


Fig. 31. Distribution of *Sorbus ×latifolia* in Macedonia.

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Poaceae

107. *Agropyron cristatum* (L.) Gaertn.

Bu Balkan Range (*Central*): in stony grasslands close to the road towards peak Buzludzha, 42.69222N, 25.37808E, LH62, 06.07.2014, coll. K. Vassilev & H. Pedashenko (SOM 171409).

This species has not been reported for this floristic region so far. It was found in dry grasslands of the alliances *Festucion valesiaca* and *Saturejion montanae*, on shallow soils on limestone bedrock. *Agropyron cristatum* can be often found together with other xerothermic species such as *Satureja coerulae*, *Thymus callieri*, *T. striatus*, *Festuca valesiaca*, *Medicago minima* etc.

108. *Agrostis castellana* Boiss & Reut.

Bu Balkan Range (*Eastern*): in meadows between Stara Reka and Sredorek villages, 42.87530N, 26.17370E, MH34, 11.06.2014, coll. K. Vassilev & H. Pedashenko (SOM 171402).

- Mt Belasitsa: in mountain grasslands in Kongura Reserve, FL87, 11.08.2014, coll. K. Vassilev & H. Pedashenko (SOM 171034).
- Pirin Mts (*Southern*): in calcareous alpine grasslands around peak Orelyak, 41.55405N, 23.61243E, GM10, 29.07.2014, coll. K. Vassilev & H. Pedashenko (SOM 171401).

According to Assyov & Petrova (2012), this species is distributed in 11 floristic regions. It is typical for xero-mesophytic and mesophytic grassland vegetation types as companion species, or seldom as subdominant or dominant. Communities of *Agrostis castellana* are still not well studied in Bulgaria but it allegedly prefers acid soils on silicate substrates. From syntaxonomical point of view communities of this species belonging to classes *Festuco-Brometea* and *Koelerio-Corynephoretea* (incl. *Sedo-Sclerenthatea*).

109. *Agrostis stolonifera* L.

Bu Black Sea Coast (*Southern*): near Burgas town, NH30, 17.07.1900, coll. I. Nejcheff & B. Davidoff (SOM 3496); Silistar locality, NG85, 25.06.1972, coll. S. Kozhuharov (SOM 30253); Silistar beach, NG85, 25.06.1972, coll. M. Stoeva & S. Kozhuharov

(SOM 130358); in *Quercus* woodlands near Sinemorets village, NG85, 07.07.1994, coll. A. Petrova, I. Apostolova & T. Meshinev (SOM 30253).

- Western Frontier Mts: in xero-mesophytic grasslands on the territory of Sokolata reserve, FL79, 08.10.2014, coll. K. Vassilev & H. Pedashenko (SOM 171037).
- Valley of River Struma: around Marikostinskitse Bani, St. Vrach, FL98, 02.08.1949, coll. B. Kitanov (SOM 3533).
- Valley of River Mesta: near river Mesta, close to Obidim village, GM12, 03.08.1949, coll. B. Kitanov (SOM 3532).
- Pirin Mts (*Northern*): the valley of river Retidzhe, GM22, 29.07.1967, coll. S. Kozhuharov (SOM 130180).
- Rila Mts: in shady places along Bistritsa river around Samokov town, 950 m, GM08, 15.07.1909, coll. B. Davidoff (SOM 3623).
- Mt Sredna Gora (*Western*): Central Sredna Gora, 10.08.1934, coll. A. Radoslavov (SOM 3514, 3540).
- Mt Sredna Gora (*Eastern*): in mesophytic grasslands near Aleksandrovo village, LH41, 05.07.2014, coll. K. Vassilev & H. Pedashenko (SOM 171298).
- Rhodopi Mts (*Western*): in grasslands near Chepelare town, LG02, 1910, coll. I. Urumov (SOM 3613).
- Tundzha Hilly Country: in xero-mesophytic grasslands, close to Kunchevo village, 42.53549N, 25.47564E, LH71, 03.07.2014, coll. K. Vassilev & H. Pedashenko (SOM 171297); near Yulievo village, 42.56874N, 25.59937E, LH81, 04.07.2014, coll. K. Vassilev & H. Pedashenko (SOM 171300); in grasslands near Edrevo village, 42.58816N, 25.79645E, MH01, 04.07.2014, coll. K. Vassilev & H. Pedashenko (SOM 171301).
- Mt Strandzha: 25.06.1921, coll. B. Achtaroff & B. Davidoff (SOM 155981).

This species has not been reported for these floristic regions so far. It is found in mesophytic and wet grasslands.

110. *Avenula compressa* (Heuff.) Sauer & Chmelitschek

Bu Balkan Range (*Central*): Koman locality around Troyan town, in a pasture near Koman chalet, LH05, 02.06.2001, coll. A. Petrova (SOM 157951).

— Valley of River Struma (*Northern*): Stobski Pyramids protected area, on sandy soils of the northern slope of the Grachkovska river valley, FM76, 05.06.2004, coll. *D. Stoyanov* (SOM 160445).

— Mt Sredna Gora (*Eastern*): in mesophytic grasslands W of Pavel Banya town, 42.58496N, 25.20327E, LH51, 04.07.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171414).

It is a new species for these floristic regions. Often it is an accompanying species in communities of the class *Festuco-Brometea* and alliances *Chrysopogono-Danthonion*, *Cirsio-Brachypodion* and *Festucion valesiacae*.

111. *Festuca callieri* (St-Yves) Markgr.-Dann.

Bu Balkan Range (*Central*): in dry grasslands on the southern slopes of the Central Balkan Range, 42.69151N, 25.38201E, LH62, 06.07.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171295); in xerothermic grasslands around Dolno Izvorovo village, 42.65155N, 25.47108E, LH72, 06.07.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171092).

This species has not been reported for this floristic region so far. It was found in xerothermic communities of the alliance *Festucion valesiacae*, on southern slopes. The soils are dry, shallow to moderately deep.

112. *Festuca peristerea* (Vetter) Markgr.-Dann.

Bu Mt Slavyanka: in subalpine grasslands of the Ali Botush Reserve, 41.40325N, 23.61021E, GL18, 13.08.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171127); in grasslands on the territory of the Ali Botish Reserve, 41.38759N, 23.60839E, GL18, 13.08.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171115).

— Rhodopi Mts (*Western*): Beglika, Chakmaklii locality, KG63, 27.07.1985, coll. *S. Kozhuharov* (SOM 102757).

It is a Balkan endemic known for the Pirin Mts and Rhodopi Mts (*Central*), according to Petrova & Vladimirov (2010). Except for Bulgaria, it could be also found in Macedonia and Greece.

113. *Festuca pseudodalmatica* Domin

Bu Balkan Range (*Central*): on peak Yumruka, KH83, 07.09.1995, coll. *T. Meshinev & I. Apostolova* (SOM 152988).

— Tundzha Hilly Country: in grasslands near Edrevo village, 42.58816N, 25.79645E, MH01, 04.07.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171408); in grasslands between Gurkovo

town and Konare village, MH02, 14.08.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171381).

This species has not been reported for these floristic regions so far.

114. *Festuca rupicola* Heuff.

Bu Balkan Range (*Central*): in grasslands near Dolno Sahrane village, 42.63776N, 25.24847E, LH52, 04.07.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171415); above Chelopech town, in rocky places with shallow soils and southern exposure, 800–900 m, KH53, 11.07.1959, coll. *I. Ganchev & V. Velchev* (SOM 108916).

— Balkan Range (*Eastern*): Kotlenska and Slivenska Mts, in grasslands of *Chrysopogon gryllus* and *Agrostis capillaris* and woodlands of *Quercus daleschampii*, MH54, 10.06.1969, coll. *S. Ganchev & S. Denchev* (SOM 121074).

— Vitosha region: Mt Vitosha, in pastures around Rudartsi village, FN71, 820 m, 06.2009, coll. *N. Velev & Z. Rozbrojova* (SOM 164969).

It is a new species for these floristic regions. According to Assyov & Petrova (2012), it is known from 13 floristic regions of the country. Its main habitats are dry grasslands of the alliances *Festucion valesiacae* and *Saturejion montanae* of class *Festuco-Brometea*.

115. *Festuca thracica* (Acht.) Markgr.-Dann.

Bu Tundzha Hilly Country: in grasslands near Slaveykovo village, 42.12513N, 26.70107E, MG76, 19.05.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171411); in grasslands close to Yagoda village, 42.55145N, 25.62827E, LH81, 04.07.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171299).

It is a Balkan endemic, growing in dry grassland communities. According to Petrova & Vladimirov (2010), it is known from six floristic regions. It usually plays a dominant role in its communities but could be occasionally seen as accompanying species only. The species usually grows on very shallow soils on calcareous substrates, which are also favourable for the development of a high cover of cryptogams.

116. *Festuca valida* (Uechtr.) Pénzes

Bu Mt Slavyanka: in alpine grasslands on the territory of the Ali Botush Reserve, 41.40597N, 23.58656E, GL28, 27.05.2014, coll. *K. Vassilev & H. Pedashenko* (SOM 171117); Paril village, Hambardere locality, on calcareous rocks, ca. 1200 m, GL28, 30.05.1993, coll. *I. Pashaliev & D. Dimitrov* (SOM 152252).

This species has not been known for this floristic region so far. It takes part in the subalpine and alpine grassland and shrubby communities of the mountain.

117. *Poa angustifolia* L.

Bu Mt Slavyanka: in dry grasslands on the territory of the Ali Botush Reserve, 41.40597N, 23.58656E, LG24, 27.05.2014, coll. K. Vassilev & H. Pedashenko (SOM 171275).

This species has not been reported for this floristic region so far. It is widespread on dry grasslands in the country and absent from only seven floristic regions (Assyov & Petrova 2012).

118. *Sesleria bielzii* Schur

Bu West Frontier Mts: Mt Osogovska, in the alpine meadows between Tsarni Kamak and Shapka peaks, 1800 m, FM26, 18.08.2007, coll. D. Dimitrov (SOM 163733).

— Mt Slavyanka: on the calcareous northern slope of peak Shabran, 2100 m, GL18, 01.08.2011, coll. D. Dimitrov (SOM 167657).

— Rhodopi Mts (*Central*): in xerothermic grassland above Bachkovo Monastery, 41.93986N, 24.85920E, LG24, 06.06.2014, coll. K. Vassilev & H. Pedashenko (SOM 171405); in the alpine pastures of peak Syutka, KG54, 2188 m, 22.06.1926, coll. B. Davidoff (SOM 100272).

It is a Carpatho-Balkan floristic element, known from four floristic regions in the country (Assyov & Petrova 2010). It was found in the subalpine and alpine grasslands and shrubby communities.

119. *Vulpia bromoides* (L.) Gray

Bu Balkan Range (*Eastern*): in dry grasslands between Izgrev and Boykovtsi villages, MH24, 10.06.2014, coll. K. Vassilev & H. Pedashenko (SOM 171406).

This species has not been reported for this floristic region so far.

120. *Vulpia muralis* (Kunth) Nees

Bu Balkan Range (*Central*): in xerothermic communities between Enina and Dolno Izvorovo villages, 42.66303N, 25.45051E, LH72, 06.07.2014, coll. K. Vassilev & H. Pedashenko (SOM 171292).

— Tundzha Hilly Country: in dry grasslands close to Razdel village, 42.08701N, 26.65116E, MG76, 17.05.2014, coll. K. Vassilev & H. Pedashenko (SOM 171416).

This species has not been reported for these floristic regions so far. According to Assyov & Petrova (2012), it is known from four floristic regions.

Reports 121–128

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Continuing a series of new plant records based on floristic investigations in the prefecture of Korinthias in north central Peloponnese. A more comprehensive report on the flora of Ntourntouvana (Dourdouvana), a mountain range bordering Nomos Achaïas and Nomos Korinthias will be presented in the next series.

Asteraceae

121. *Tanacetum parthenium* (L.) Sch. Bip.

Gr Nomos & Eparchia Korinthias: Kastania village, along road from Kiato to Gkoura, 889 m, 37°51'N, 22°23'E, 19.06.2015, Zarkos obs. (photos; confirmed Kit Tan, June 2015).

Confirming more than 100-year old records from Korinthias by Maire and Petitmengin in 1906 (near Gkoura and Kalyvia, Maire & Petitmengin 1908: 117) and by Heldreich (near Trikala, Halácsy 1902: 68).

Brassicaceae

122. *Draba laconica* Stevanović & Kit Tan (Fig. 32)



Fig. 32. *Draba laconica* (photo G. Zarkos).

Gr Nomos & Eparchia Korinthias: Megali Ziria, rocky limestone slope near summit Simio, 2055 m, 37°56'N, 22°24'E, 08.07.2012, *Zarkos* obs. (photos; det. Kit Tan, July 2015).

New for Mt Killini and Korinthias; a Greek endemic only known from Mt Taigetos. Distinguished from *D. lasiocarpa* Rochel which also occurs on Killini by its glabrous leaves with long marginal cilia 1–2 mm, glabrous fruits and relatively long styles at least 1/3 siliqua length (see figure). *Draba lacaitae* Boiss., the third species on Killini, differs by its short styles less than 1 mm long.

Caryophyllaceae

123. *Silene remotiflora* Vis. (Fig. 33)

Gr Nomos & Eparchia Korinthias: near Stymfalia village, vertical rocks by roadside, 635 m, 37°52'N, 22°27'E, 01.05.2015, *Zarkos* obs. (photos; confirmed Kit Tan, May 2015).



Fig. 33. *Silene remotiflora* (photo G. Zarkos).

New for Korinthias. The species has rarely been collected in the Peloponnese, being reported only from one location near Tripotama (Nomos Achaïas/Ilias, Eparchia Ilias/Kalavriton). *Silene remotiflora* was discovered while on a pleasant First of May excursion to Lake Stymfalia with family and friends. Two individuals were noted, together with *Silene graeca*, *S. corinthiaca*, *Convolvulus cantabrica* and *Campanula andrewsii* subsp. *andrewsii*. All plants had disappeared two weeks later, presumably browsed by the numerous flocks of sheep and goats.

Convolvulaceae

124. *Calystegia silvatica* (Kit.) Griseb. (Fig. 34)

Gr Nomos & Eparchia Korinthias: Kastania village, along road from Kiato to Gkoura, 889 m, 37°51'N, 22°23'E, 19.06.2015, *Zarkos* obs. (photos; confirmed Kit Tan, June 2015).



Fig. 34. *Calystegia silvatica* (photo G. Zarkos).

This was first collected at Feneos in Nomos Korinthias (further north of our present locality) by R. Maire and M. Petitmengin in 1906, more than a century ago; apparently it has not been re-documented for Korinthias.

Hypericaceae

125. *Hypericum vesiculosum* Griseb. (Fig. 35)

Gr Nomos & Eparchia Korinthias: Mt Killini, Flabouritsa gorge, along rocky footpath from Manna to Markou Lakka, 1200 m, 37°57'N, 22°26'E, 16.06.2012, *Zarkos* & *Christodoulou* obs. (photos; confirmed Kit Tan, June 2015).

New for Mt Killini and Korinthias.



Fig. 35. *Hypericum vesiculosum* (photo G. Zarkos).

Rosaceae

126. *Cotoneaster tomentosus* (Aiton) Lindl. (Fig. 36)

Gr Nomos & Eparchia Korinthias: Mt Killini, Flabouritsa gorge, peak Tsouma, 1966 m, 37°55'N, 22°27'E, 02.10.2009 & 24.06.2015, *Zarkos* obs. (photos; confirmed Kit Tan, June 2015); shaded limestone rock along footpath from Manna to Markou Lakka, 1142 m, 37°57'N, 22°28'E, 10.07.2009, *Zarkos* obs.



Fig. 36. *Cotoneaster tomentosus* (photo G. Zarkos).

Confirming a more than 100-year old record from the Flabouritsa gorge by Orphanides (Halácsy 1900: 544). Reported from Mts Chelmos, Erimanthos and Saitas in North Central Peloponnese.

127. *Fragaria vesca* L.

Gr Nomos & Eparchia Korinthias: Mt Killini, steep slopes of Flabouritsa gorge, 1110 m, 37°57'N, 22°27'E, 03.05.2014, Zarkos obs. (photos; confirmed Kit Tan, June 2015).

Confirming a more than 100-year old record from Killini by Heldreich (Halácsy 1900: 506). Reported from Panachaiko, Chelmos, Parnonas and Taigetos in the Peloponnese, widely distributed on most mountains of mainland Greece.

Scrophulariaceae

128. *Cymbalaria microcalyx* subsp. *alba* (Voiotis) Kit Tan (Fig. 37)

Gr Nomos & Eparchia Korinthias: Mt Oligirtos, vertical limestone rocks in *Abies cephalonica* forest, 1255 m, 37°48'N, 22°22'E, 14.05.2015 & 19.05.2015, flowering, Zarkos obs. (photos; confirmed Kit Tan, May 2015).

New for Mt Oligirtos and Korinthias; restricted to the Peloponnese. *Biebersteinia orphanidis* was noted in some dolines on Oligirtos at higher altitudes of 1500–1700 m.



Fig. 37. *Cymbalaria microcalyx* subsp. *alba* (photo G. Zarkos).

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