

New floristic records in the Balkans: 29*

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Abstract: New chorological data are presented for 123 species and subspecies from Bulgaria (32-50, 52-55, 66-68, 71-84, 97-118), Greece (12-29, 51, 56-65, 69, 70, 119-123), Macedonia (85-96) and Turkey-in-Europe (1-11, 30, 31). The taxa belong to the following families: *Amaranthaceae* (13, 32), *Anacardiaceae* (2, 14), *Apiaceae* (3, 4, 71, 85, 102), *Araceae* (27), *Asteraceae* (30, 31, 33-35, 56, 57, 72, 73, 86-92, 103, 119), *Betulaceae* (74), *Boraginaceae* (36, 58, 97), *Brassicaceae* (15, 37, 38, 93), *Callitrichaceae* (39), *Caprifoliaceae* (120), *Caryophyllaceae* (40, 41, 75, 76, 98, 104), *Ceratophyllaceae* (42), *Chenopodiaceae* (43, 61), *Convolvulaceae* (16, 17), *Crassulaceae* (62), *Cuscutaceae* (18), *Cyperaceae* (28, 49, 96, 110), *Euphorbiaceae* (19, 69, 70), *Fabaceae* (1, 5-9, 20, 44, 63, 80, 105), *Fagaceae* (81), *Geraniaceae* (59), *Iridaceae* (84), *Juncaceae* (29, 50), *Lamiaceae* (21-23, 106, 121), *Onagraceae* (64, 77), *Ophioglossaceae* (12), *Orchidaceae* (60, 66-68), *Orobanchaceae* (78), *Oxalidaceae* (24), *Papaveraceae* (107), *Plantaginaceae* (45), *Poaceae* (51-55, 101, 111-118), *Polygalaceae* (79), *Ranunculaceae* (82, 94), *Rhamnaceae* (122), *Rosaceae* (10, 46, 47, 99, 108), *Rubiaceae* (11, 123), *Rutaceae* (83), *Salicaceae* (25), *Santalaceae* (109), *Scrophulariaceae* (26, 48, 95, 100) and *Solanaceae* (65).

New subspecies for science are: *Achillea grandifolia* subsp. *hellenica* Kit Tan & al. (119), *Sedum eriocarpum* subsp. *cycladicum* Kit Tan & Polymenakos (62).

New reports for countries are: Bulgaria – *Ptelea trifoliata* (83); Greece – *Perovskia abrotanoides* (23).

The publication includes contributions by: M. Aybeke (1), M. Aybeke & F. Dane (2-4), M. Aybeke, C. Kurt & A. Semerci (5-8), M. Aybeke & C. Yarci (9-11), B. Biel & Kit Tan (12-29), F. Dane & H. Sezginer (30-31), D. Dimitrov & V. Vutov (32-55), K. Giannopoulos, Kit Tan, G. Vold (56-60), K. Polymenakos & Kit Tan (61-65), A. Popatanasov (66-68), K. Sutorý (69-70), A. Tashev, D. Dimitrov & M. Delcheva (71-79), A. Tashev, K. Koev & N. Tashev (80-84), A. Teofilovski (85-96), R. Tzonev & Ch. Gussev (97-101), K. Vassilev (102-109), K. Vassilev & H. Pedashenko (110-118), G. Zarkos, V. Christodoulou, Kit Tan & G. Vold (119-123).

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

Mehmet Aybeke

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Fabaceae

1. *Dorycinum pentaphyllum* Scop. subsp. *pentaphyllum*

Tu(E) A1(E) Edirne: Centre, Budakdoğanca vilage, in hilly environment of Taşkaynak Deresi, 41.758849°N, 26.367967°E, 06.06.2015, coll. & det. *M. Aybeke* (EDTU 15003).

A new record for the flora of European and Anatolian Turkey. The taxon has been reported from SW Europe and extending its area to S Italy (Ball 1968).

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Reports 2–4

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Anacardiaceae

2. *Cotinus coggyria* Scop.

Tu(E) A1(E) Edirne: Centre, between Sığırcalı–Meşeli, 4 km, 106 m, 41°24'40"N, 26°38'56"E, 09.06.1987, coll. *F. Dane* & *G. Dalgıç*, det. *F. Dane* (EDTU 965).

A new record for Edirne in European Turkey. According to Davis & al. (1967), this taxon was found only in A2(E) Istanbul.

Apiaceae

3. *Myrrhoides nodosa* (L.) Cannon

Tu(E) A1(E) Edirne: Centre, Söğütlük, in a humid forest, 26 m, 41°40'33"N, 26°33'31"E, 10.04.2001, coll. *F. Dane*, *N. Başak* & *G. Dalgıç*, det. *M. Aybeke* (EDTU 108 & 704).

A new record for Edirne in European Turkey. According to Hedge & Lamond (1972), this taxon was found only in A1(E) Kırklareli and A2(E) Istanbul.

4. *Turgenia latifolia* (L.) Hoffm.

Tu(E) A1(E) Edirne: Centre, between

Budakdoğanca–Ahiköy, 3 km, 98 m, 41°45'40"N, 26°20'26"E, 02.06.1987, coll. *G. Dalgıç*, *N. Başak*, *F. Dane*, det. *M. Aybeke* (EDTU 825 & 2395); between Domurcalı–Taşlımüsellim, 2 km, 252 m, 41°48'51"N, 26°49'17"E, 01.06.1987, coll. *A. Asan* & *H. Arda*, det. *M. Aybeke* (EDTU 900).

A new record for Edirne in European Turkey. According to Cullen (1972), this taxon was found only in A1(E) Kırklareli and A2(E) Istanbul.

Reports 5–8

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Fabaceae

5. *Trifolium constantinopolitanum* Ser.

Tu(E) A1(E) Edirne: Uzunkopru, Çöpköy (04 C 03), 145 m, 26°41'60"E, 26°49'22"E, 12.05.2004, coll. *C. Kurt*, *A. Semerci* & *M. Aybeke*, det. *M. Aybeke* (TTAE 214).

A new record for Edirne in European Turkey. According to Zohary (1970), this taxon occurs only in A2(E) Istanbul.

6. *Trifolium fragiferum* L. var. *pulchellum* Lange

Tu(E) A1(E) Edirne: Keşan, Pasayigit (04 A 02), 250 m, 40°57'56"N, 26°38'17"E, 01.07.2004, coll. *M. Aybeke*, *C. Kurt* & *A. Semerci*, det. *M. Aybeke* (TTAE 1364).

A new record for Edirne in European Turkey. According to Zohary (1970), this taxon occurs only in A2(E) Istanbul.

7. *Trifolium resupinatum* L. var. *microcephalum* Zoh.

Tu(E) A1(E) Edirne: Uzunkopru, Yenikoy (04 E 01), 80 m, 41°20'41"N, 26°46'05"E, 02.06.2004, coll. *C. Kurt*, *A. Semerci* & *M. Aybeke*, det. *M. Aybeke* (TTAE 1553).

A new record for Edirne in European Turkey. According to Zohary (1970), this taxon occurs only in A2(E) Istanbul.

8. *Trifolium resupinatum* L. var. *resupinatum*

Tu(E) A1(E) Edirne: Keşan, Yenimuhacir villa-ge (04 B 05), 121 m, 40°51'29"N, 26°41'36"E, 08.06.2004, coll. *C. Kurt*, *A. Semerci* & *M. Aybeke*, det. *M. Aybeke* (TTAE 1559); Kesan, Beykoy (04

B 03), 65 m, 41°16'00"N, 26°51'00"E, 05.05.2004, coll. C. Kurt, A. Semerci & M. Aybeke, det. M. Aybeke (TTAE 85); Kesan, Kilickoy (04 B 01), 24 m, 40°46'60"N, 26°33'00"E, 05.05.2004, coll. C. Kurt, A. Semerci & M. Aybeke, det. M. Aybeke (TTAE 1243).

A new record for Edirne in European Turkey. According to Zohary (1970), this taxon was found only in A1(E) Kırklareli and A2(E) Istanbul.

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Reports 9–11

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Fabaceae

9. *Lotus corniculatus* L. var. *tenuifolius* L.

Tu(E) A1(E) Kırklareli: Demirköy, 252 m, 41°49'30"N, 27°45'35"E, 02.07.1988, coll. & det. C. Yarci, apr. M. Aybeke (EDTU 2248).

A new record for A1(E) Kırklareli in European Turkey. So far the species has been known from A1(E) Edirne, A2(E) Istanbul (Heyn 1970).

Rosaceae

10. *Potentilla reptans* L.

Tu(E) A1(E) Kırklareli: Demirköy, between Dereköy–Kırklareli, 5 km, Hediye Bayırı locality, in a mixed forest, 508 m, 41°55'48"N, 27°22'14"E, 12.07.1997, coll. C. Yarci, det. C. Yarci (EDTU 7201).

A new record for Kırklareli in European Turkey. According to Peşmen (1972), this taxon was found only in A1(E) Edirne.

Rubiaceae

11. *Sherardia arvensis* L.

Tu(E) A1(E) Kırklareli: between Demirköy–Pınarhisar, 1 km, 252 m, 41°49'30"N, 27°45'35"E, 02.07.1989, coll. & det. C. Yarci (EDTU 4172).

A new record for A1(E) Kırklareli in European Turkey. So far the species has been known from A1(E) Çanakkale, A2(E) Istanbul (Ehrendorfer 1982).

Reports 12–29

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This is the fifth report of new plant-records for the island of Amorgos (phytogeographical region Kiklades, Nomos Kikladon, Eparchia Thiras) based on a single visit in November 2015. The 18 records listed are new to the island unless otherwise stated, and five 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 38. Occurrence on the other Kikladean islands is briefly summarized.

Ophioglossaceae

12. *Ophioglossum lusitanicum* L. (Fig. 1)

Gr Amorgos: S of Kolofana, rocky slope with *Juniperus* NW of saddle, 380 m, 36°46'44"N, 25°46'31"E, 22.11.2015, *Biel* 15.138.

W & S Kiklades, on Andimilos, Kithnos, Poliegos and Thira; also a new record for the islands of Serifos and Sifnos (unpubl. data from February 2004). Observed S of Arkesini in April 2015.

Amaranthaceae

13. *Amaranthus hypochondriacus* L.

Gr Amorgos: E of Katapola, vineyards, gardens and road margins, 10 m, 36°49'29"N, 25°52'08"E, 19.11.2015, *Biel* 15.132.

W & C Kiklades, on Kithnos, Milos and Naxos.



Fig. 1. *Ophioglossum lusitanicum* (photo B. Biel).

Anacardiaceae**14. *Pistacia terebinthus* L. subsp. *terebinthus***

Gr Amorgos: N of Lagadha, phrygana along path on slope, 210 m, 36°54'33"N, 26°00'46"E, 13.11.2015, *Biel* 15.115.

On several Kikladean islands; also noted S of Hora.

Brassicaceae**15. *Lobularia maritima* (L.) Desv.**

Gr Amorgos: Apano Potamos, phrygana at rocky slope by stone steps, 150 m, 36°53'40"N, 25°58'28"E, 12.11.2015, *Biel* 15.106.

This has also been recorded from Sifnos and Siros in W Kiklades.

Convolvulaceae**16. *Ipomoea nil* (L.) Roth**

Gr Amorgos: Katapola-Xilokeraditi, ruderal and waste ground in village, 6 m, 36°49'53"N, 25°51'48"E, 24.11.2015, *Biel* 15.139.

Garden escape; distribution in Greece rarely documented by specimens.

17. *Ipomoea purpurea* Roth (Fig. 2)

Gr Amorgos: Kato Potamos, waste ground at steep slope in village, 80 m, 36°53'50"N, 25°58'38"E, 12.11.2015, *Biel* 15.111; E of Katapola, vineyards, gardens and road margins, 10 m, 36°49'29"N, 25°52'08"E, 19.11.2015, *Biel* 15.131.

Recorded from Serifos. Garden escape established in fields and ruderal places, observed in several localities on island.

Cuscutaceae**18. *Cuscuta planiflora* Ten. (Fig. 3)**

Gr Amorgos: SE of Katapola, phrygana and waste

places along dirt track, below reservoir, 20 m, 36°49'18"N, 25°52'11"E, 08.04.2015, *Biel* 15.058; NE of Katapola, vegetable fields and ruderal places along dirt track to Pira Rachidi, 5 m, 36°49'50"N, 25°52'01"E, 18.11.2015, *Biel* 15.128.

On several Kikladean islands; also noted at Katapola-Rachidi. The *Cuscuta* (*Biel* 15.128) was parasitic on *Alyssum simplex*.

Euphorbiaceae**19. *Euphorbia maculata* L.**

Gr Amorgos: NE of Katapola, vegetable fields and ruderal places along dirt track to Pira Rachidi, 5 m, 36°49'50"N, 25°52'01"E, 19.11.2015, *Biel* 15.129.

Also collected on Naxos by K. Sutorý in September 2015, otherwise new for the Kiklades (see report 69).

Fabaceae**20. *Cercis siliquastrum* L.**

Gr Amorgos: N-NE of Katapola-Xilokeraditi, grassy and shrubby slope by road near chapel, 30 m, 36°49'54"N, 25°51'56"E, 24.11.2015, *Biel* 15.140.

Reported from Kea and Sifnos, possibly not native in the Kiklades.



Fig. 2. *Ipomoea purpurea* (photo B. Biel).



Fig. 3. *Cuscuta planiflora* (photo B. Biel).

Lamiaceae**21. *Mentha spicata* subsp. *condensata* (Briq.)**

Greuter & Burdet

Gr Amorgos: NE of Egiali-Kampos, waste ground in olive plantation near road, 25 m, 36°54'26"N, 25°58'55"E, 12.11.2015, *Biel* 15.104.

Widely distributed taxon with dense grey indumentum and small leaves up to 3 × 1 cm. *Mentha spicata* subsp. *spicata*, which also occurs on Amorgos, is glabrous and with leaves up to 6 cm long (see Biel & Tan 2014: 276).

22. *Mentha ×smithiana* Graham

Gr Amorgos: Kato Potamos, waste ground at steep slope in village, 80 m, 36°53'50"N, 25°58'38"E, 12.11.2015, *Biel* 15.109.

Garden escape, not fully established.

23. *Perovskia abrotanoides* Karel. (Fig. 4)

Gr Amorgos: Tholaria, along footpath on slope at southern outskirts of village, 210 m, 36°55'1"N, 25°58'59"E, 15.11.2015, *Biel* 15.123.

Casual, not naturalized; originating from C and SW Asia. Apparently first report for Greece. Cultivated in many parks in Bavaria and often escaping, thus as familiar to B. Biel as the rose in spring. Included as casual in the Bavarian Flora central database – see http://daten.bayernflora.de/de/info_pflanzen.php?taxnr=67309&suchtext=&g=&de=&prev=prev and also for Germany: <http://www.floraweb.de/pflanzenarten/druck.xsql?suchnr=26437&sipnr=26437&>

Oxalidaceae**24. *Oxalis articulata* Savigny (Fig. 5)**

Gr Amorgos: Chora, ruderal and waste ground



Fig. 4. *Perovskia abrotanoides* (photo B. Biel).

in village, 320 m, 36°49'53"N, 25°53'52"E, 19.11.2015, *Biel* 15.130.

New for the Kiklades, with scattered localities in Greece. Casual escape, native to S America.

Salicaceae**25. *Salix alba* L.**

Gr Amorgos: near Lefkes, S-SW of Tholaria, steep river gorge with shrubs, 90 m, 36°54'47"N, 25°58'48"E, 15.11.2015, *Biel* 15.122.

Recorded from several islands in N & C Kiklades.

Scrophulariaceae**26. *Kickxia commutata* (Rchb.) Fritsch subsp. *commutata***

Gr Amorgos: Egiali-Laki, waste ground and gardens near houses, 15 m, 36°54'24"N, 25°58'42"E, 13.11.2015, *Biel* 15.117.

Apparently new for the Kiklades. This is *K. c.* subsp. *commutata* with larger hastate leaves broader than long and with shorter pilose pedicels. The more widespread *M. commutata* subsp. *graeca* (Bory & Chaub.) R. Fern. occurs on several Kikladean islands. Also noted near Katapola.

Araceae**27. *Zantedeschia aethiopica* (L.) Spreng.**

Gr Amorgos: Kato Potamos, waste ground at steep slope in village, 80 m, 36°53'50"N, 25°58'38"E, 12.11.2015, *Biel* 15.110.

Established ornamental. Recorded from N & C Kiklades, on Andros, Paros and Tinos.

Cyperaceae**28. *Cyperus esculentus* L.**

Gr Amorgos: N of Egiali, beach and waste ground



Fig. 5. *Oxalis articulata* (photo B. Biel).

near houses, 3 m, 36°54'19"N, 25°58'38"E,
12.11.2015, *Biel* 15.102.

New for the Kiklades.

Juncaceae

29. *Juncus bufonius* L.

Gr Amorgos: S-SE of Katapola, stream bed at crossing, 60 m, 36°49'01"N, 25°52'08"E, 21.11.2015, *Biel* 15.135.

Widespread in Kiklades.

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

Reports 30–31

Feruzan Dane & Hazal Sezginer

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Asteraceae

30. *Crepis reuterana* Boiss. subsp. *reuterana*

Tu(E) A1(E) Edirne: Centre, Söğütlük, in a humid forest, 26 m, 41°40'33"N, 26°33'31"E, 25.02.2016, coll. *F. Dane*, det. *H. Sezginer*, conf. *F. Dane* (EDTU 15004).

A new record for Edirne in European Turkey. According to Lamond (1975), this taxon was found only in A1(E) Çanakale and A2(E) Istanbul. It is an Eastern Mediterranean element.

31. *Helminthotheca echioides* Vaill. ex Zinn.

Tu(E) A1(E) Edirne: Centre, Balkan Campus, 26 m, 41°40'33"N, 26°33'31"E, 10.07.2015, coll. & det. *F. Dane* (EDTU 15005).

— A1(E) Tekirdağ, Şarköy, Centre, 0 m, 40°36'50"N, 27°06'56"E, 16.08.1989, coll. & det. *F. Dane* (EDTU 4068).

A new record for Edirne and Tekirdağ in European Turkey. According to Lack (1975), this taxon was found only in A1(E) Çanakale: Gelibolu and A2(E) Istanbul. It is an Eastern Mediterranean element.

Reports 32–55

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Amaranthaceae

32. *Amaranthus hypochondriacus* L.

Bu Valley of River Struma (*Northern*): in a vegetable garden in Rila town, FM 76, 21.09.2015, coll. *D. Dimitrov* (SOM 171693).

Asteraceae

33. *Anthemis rumelica* (Velen.) Stoj. & Acht.

Bu Sofia region: Blatata Protected Area near Dolni Bogrov village, FN93, 07.2008, coll. *D. Dimitrov* (SOM 169291).

34. *Centaurea euxina* Velen.

Bu Thracian Lowland: Pyasachnik Water Reservoir, SE of Belovitsa village, Hisarya district, KH90, 19.07.2012, coll. *D. Dimitrov* (SOM 168876).

35. *Prenanthes purpurea* L.

Bu Rhodopi Mts (*Eastern*): in a beech forest southwards of Marzyana village, Zlatograd district, LG28, 16.08.2012, coll. *D. Dimitrov* (SOM 169290).

Boraginaceae

36. *Anchusa barrelieri* subsp. *longisepala* (T. Georg. & Kitan.) Kož.

Bu Forebalkan (*Western*): above Nivyanin village, Mishovets locality, GP20, 25.05.2015, coll. *D. Dimitrov* (SOM 171691).

Brassicaceae

37. *Alyssum reiserii* Velen.

Bu Vitosha region: S of Bosnek village, FN70, 27.06.2015, coll. *D. Dimitrov* (SOM 171685).

38. *Alyssum tortuosum* Willd.

Bu Rhodopi Mts. (*Central*): Trigrad Gorge, above Trigrad village, 25.06.2010, KG20, coll. *D. Dimitrov* (SOM).

Callitrichaceae

39. *Callitriche platycarpa* Kutz.

Bu Forebalkan (*Eastern*): Bukaka Reserve in Shumensko Plato Nature Park, MH99, 10.08.2010, coll. *D. Dimitrov* (SO 106311).

Caryophyllaceae

40. *Cerastium pumilum* subsp. *pallens* (Schultz) Schinz & Thell.

Bu Forebalkan (*Western*): above Nivyanin village, Mishovets locality, GP20, 25.05.2015, coll. *D. Dimitrov* (SOM 171693).

41. *Dianthus stenopetalus* Griseb.

Bu Rila Mts.: Iliina Reka, 1800 m, FM 96, 07.2004, coll. *D. Dimitrov* (SO 105664).

Ceratophyllaceae**42. *Ceratophyllum demersum*** L.

Bu Balkan Range (*Eastern*): along river Luda Kamchia, before Essen village, MH84, 23.10.2009, coll. *D. Dimitrov* (SO 106214).

Chenopodiaceae**43. *Polycnemum heuffelii*** Lang.

Bu Rhodopi Mts. (*Eastern*): Perpericon Archaeological Excavation Site, LG91, 28.07.2010, coll. *D. Dimitrov* (SO 106314).

Fabaceae**44. *Trifolium heldreichianum*** Hausskn.

Bu Forebalkan (*Eastern*): Zlatna Panega quarry – eastern part, KH67, 11.11.2010, coll. *D. Dimitrov* (SO 106418).

Plantaginaceae**45. *Plantago subulata*** L.

Bu Valley of River Struma (*Northern*): in sandy places above the road from Rila town to Smochevo village, Baba Rada locality, FM76, 30.08.2015, coll. *D. Dimitrov* (SOM 171713).

Rosaceae**46. *Potentilla detommasii*** Ten.

Bu Forebalkan (*Western*): Vratsa Divide, above Chelopek village, GN17, 05.06.2010, coll. *D. Dimitrov* (SOM).

47. *Rosa arvensis* Huds.

Bu Valley of River Struma (*Northern*): in a cornfield above the road from Rila town to Smochevo village, FM76, 30.08.2015, coll. *D. Dimitrov* (SOM 171719).

Scrophulariaceae**48. *Verbascum niveum*** Ten.

Bu Valley of River Struma (*Northern*): in sandy places above the road from Rila town to Smochevo village, FM76, 30.08.2015, coll. *D. Dimitrov* (SOM 171721).

Cyperaceae**49. *Carex punctata*** Gaudin

Bu Vitosha region: Mt Vitosha, in damp meadows near Studena Water Reservoir, FN71, 27.06.2010, coll. *D. Dimitrov* (SO 106397).

— Rhodopi Mts (*Central*): Bachkovo mountain springs, LG24, 22.05.1893, coll. *V. Stribrny* (SO 10258).

Juncaceae**50. *Juncus gerardii*** Loisel.

Bu Mt Sredna Gora (*Western*): Mt Eledzhik, eastwards above Zheko Restaurant on Trakia Motorway, KG59, 24.06.2015, coll. *D. Dimitrov* (SOM 171683).

Poaceae**51. *Bromus arvensis*** L.

Gr Athos Peninsula (Hagion Oros), 06.2007, coll. *V. Vutov* (SOM 171917).
New for eparchia.

52. *Bromus intermedius* Guss.

Bu Valley of River Struma (*Northern*): in sandy places above the road from Rila town to Smochevo village, Baba Rada locality, FM76, 30.08.2015, coll. *D. Dimitrov* (SOM 171720).

53. *Festuca perinensis* (Acht.) Acht.

Bu Mt Slavyanka: in meadows under peak Gotsev Vrah, 2100 m, GL29, 07.2008, coll. *D. Dimitrov* (SOM 171914).

54. *Festuca spectabilis* subsp. *affinis* (Boiss. & Heldr.) Hack.

Bu Forebalkan (*Western*): above Nivyanin village, Mishovets locality, in a mixed deciduous forest, GP20, 25.05.2015, coll. *D. Dimitrov* (SOM 171689).

55. *Lolium loliaceum* (Bory & Chaub.) Hand.-Mazz.

Bu Sofia region: Blatata Protected Area, near Dolni Bogrov village, FN93, 07.2008, coll. *D. Dimitrov* (SOM 172305).

Reports 56–60**Konstantinos Giannopoulos¹, Kit Tan² & Gert Vold³**

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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 Trapezitsa in the N Pindos. The floristic regions adopted follow those circumscribed in *Flora Hellenica* (Strid & Tan 1997).

Asteraceae**56. *Onopordum argolicum* Boiss. (Fig. 6)**

Gr Nomos & Eparchia Ilias: Astras plateau, Mt Lambia, rocky limestone slopes, 1400 m, 37°54'N, 21°47'E, 09.07.2011, *Giannopoulos* obs. (photos).
New for nomos and eparchia and first record from W Peloponnese. Rarely collected as herbarium vouchers but distinct by its involucre with dense arachnoid indumentum. Recorded from mountains of N Peloponnese (Mts Erimanthos, Chelmos) and E Peloponnese (Korinthos and type described from Nafplion); scattered in Sterea Ellas (Attikis), N Evvia and Kiklades (Thira).



Fig. 6. *Onopordum argolicum* with several insect-visitors (photo K. Giannopoulos).

57. *Onopordum illyricum* L. (Figs. 7a, b)

Gr Nomos Ilias, Eparchia Olimbias: archaeological site at Thisoa, open grassy slope overlying limestone, 720 m, 37°30'N, 21°56'E, 21.06.2014, *Giannopoulos* obs. (photos).

New for eparchia. Widespread at roadsides, waste ground, abandoned fields on mainland Greece, north-central Peloponnese and islands, with the exclusion of Kiklades. Equally unpopular with plant collectors. Popular with green scarab beetles which stomp around the fleshy capitulum. The Green Tara Mantra reveals that “beetles signal a confirmation we are on the right track and we should pursue our goals”.

Boraginaceae**58. *Alkanna noneiformis* Griseb.**

Gr Nomos Ioanninon, Eparchia Konitsis: NW slopes of Mt Trapezitsa, crevices and ledges on vertical limestone rock in *Abies borisii-regis* and *Pinus heldreichii* forest, 1700–2000 m, 40°03'N, 20°48'E, 08.08.2006, *Kit Tan & G. Vold* 29049 (herb. Kit).



Fig. 7a. *Onopordum illyricum* (photo K. Giannopoulos).



Fig. 7b. *Onopordum illyricum* visited by scarab beetles (photo K. Giannopoulos).

New for Mt Trapezitsa and eparchia, second record for N Pindos. *Alkanna scardica* Griseb. from N Albania, F.Y.R. Macedonia, Kosovo and Montenegro, differs by its eglandular indumentum and deep violet-blue, glabrous to subglabrous corolla limb. It has, so far, not been found in Greece. *Alkanna noneiformis* also occurs in the mountains of S Pindos (Koziakas, Peristeri, Avgo, Kakarditsa and Katafidi) at altitudes of 900 to 2100 m and in North Central (Voras, Vermio); the type was described based on material from Mt Voras.

Geraniaceae

59. *Erodium acaule* (L.) Bech. & Thell. (Fig. 8)

Gr Nomos Ilias, Eparchia Olimbias: Mt Minthi, rocky limestone slopes, 1020 m, 37°29'N, 21°46'E, 30.01.2016, *Giannopoulos* obs. (photos).

New for nomos and eparchia, first record from W Peloponnese. Within the Peloponnese, there are only a few reports from the northeast (in nomi Korinthias and Argolidos).

Orchidaceae

60. *Ophrys tenthredinifera* Willd. (Fig. 9)

Gr Nomos Ilias, Eparchia Olimbias: near village of



Fig. 8. *Erodium acaule* (photo K. Giannopoulos).



Fig. 9. *Ophrys tenthredinifera* (photo K. Giannopoulos).

Kakovatos, S-SE of Lake Kaiafas, ca. 5 m, 37°27'N, 21°38'E, 05.03.2016, *Giannopoulos* obs. (photos).
New for nomos and eparchia. Widespread on islands (including Evvia), S and E Peloponnese and the eastern part of Sterea Ellas (Attikis).

Reports 61–65
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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).

Chenopodiaceae

61. *Oxybasis urbica* (L.) S. Fuentes & al. (Fig. 10)

Gr Nomos & Eparchia Attikis: Vravrona, 5 m, 37°55'N, 23°59'E, 08.12.2015, *Polymenakos* 47 (herb. Polymenakos; photos, confirmed Kit Tan, February 2016).

New for eparchia. There exists only a single record from nomos Attikis, viz., from eparchia Pireos, with plants collected in Athens by Spruner in the year 1839. Five individual plants were found in a late flowering and fruiting state in December, on seasonally damp ground near the archaeological site, together with *Cirsium creticum* and *Bolboschoenus maritimus*.

Crassulaceae

62. *Sedum eriocarpum* Sm. subsp. *cycladicum* Kit Tan & Polymenakos, **subsp. nov.** (Figs. 11–12)

Gr Nomos Kikladon, Eparchia Naxou: island of Naxos, 1 km N of the town of Naxos, calcareous slope, ca. 150 m, 29.05.1982, *Franzén* & *Andersson* 1021 (holotype LD!).

Glandular-pubescent, 3–8 cm tall annual with erect-ascending stems. Leaves in whorls of 4 at base, alternate above, broadly oblong-elliptic, 10–12 mm long, obtuse-rounded, semi-terete to terete, dark glaucous-green or suffused red. Inflorescence a terminal cyme with 2-several monochasial branches. Flowers subsessile or with petiole less than 1 mm long. Sepals 0.5–1 mm long, connate at base, equal, triangular, acute. Petals free, 4–7 mm long, spreading, broadly ovate-elliptic, white with pink midvein and reddish keel be-



Fig. 10. *Oxybasis urtica* (photo K. Polymenakos).



Fig. 11. *Sedum eriocarpum* subsp. *cycladicum* (photo K. Polymenakos).

neath. Stamens 10; filaments white, papillose at base; anthers 1–1.5 mm, brick-red. Styles 5, white. Ripe follicles 3–4 mm long, tuberculate.

On calcareous ground in stony or rocky places, seasonally flooded areas and slopes dominated by *Sarcopoterium*, *Cistus* and *Anthyllis hermanniae*, 10–350 m. Flowering April and May. Endemic to the Kiklades (see Fig. 12).

Sedum eriocarpum subsp. *eriocarpum* which is endemic to Peloponnisos and adjacent islands often has dark green, glaucous leaves, and lanceolate to oblong, white or pink petals. *Sedum eriocarpum* subsp. *delicum* which occurs in the C and S Aegean region has bright green leaves, inflorescence with 3–7 branches and broadly ovate-elliptic, pale greenish-yellow petals. Our plants are, to some extent, morphologically intermediate between *Sedum eriocarpum* subsp. *eriocarpum* and *S. e.* subsp. *delicum* (Vierh.) 't Hart. This had already been noted by Henk 't Hart[†] for plants from Mikonos as well as from the adjacent islets of Dragonisi and Ag. Georgios, Siros (islet of Didymi), Tinos and Naxos. He recognized seven subspecies of *S. eriocarpum* in Greece and owing to his untimely death, the circumscription of this complex species was incomplete when published ('t Hart, 2002).

Other specimens examined (all at LD):

Nomos Kikladon, Eparchia Sirou: island of Mikonos, stony slope above Fokos beach, 10 m, 25.04.2011, *Polymenakos* obs. (photos); the valley south of Mt Ag. Elias, 50–100 m, 13.05.1968, *Runemark & Engstrand* 35386; the hill N of Ano Mera, ca. 200 m, seasonally flooded areas near the south peak, 12.05.1968, *Runemark & Engstrand* 35291; the hill between Ano Mera and Kalo Livadi, 80 m, 26.04.2011, *Polymenakos* obs. (photos); island of Dragonissi, 14.05.1968, *Runemark & Engstrand* 35596; island of Ag. Georgios, 15.05.1968, *Runemark & Engstrand* 35670.

Nomos Kikladon, Eparchia Sirou: Siros, the island of Didymi, 27.05.1968, *Snogerup & Bothmer* 33340.

Nomos Kikladon, Eparchia Tinou: island of Tinos, SE of Steni, 300–350 m, 20.05.1968, *Runemark & Engstrand* 36597.

Fabaceae

63. *Lotus palustris* Willd. (Fig. 13)

Gr Nomos & Eparchia Attikis: Vravrona, 5 m, 37°55'N, 23°59'E, 21.08.2015, *Polymenakos* 40 (herb. *Polymenakos*); *loc. ibid.*, 08.09.2014, *Polymenakos* obs. (photos; confirmed Kit Tan, February 2016).



Fig. 12. Distribution map of *Sedum eriocarpum* subsp. *cycladicum* (prepared by B. Biel).



Fig. 13. *Lotus palustris* (photo K. Polymenakos).

New for eparchia. In Attikis and Sterea Ellas only known from the *locus classicus* at Falirio (eparchia Pireos) where it was first collected by Spruner in 1839 and subsequently by Heldreich and others, but all from the same locality. A fine population was discovered at Vravra, on sea-

sonally damp saline ground near the archaeological site, together with *Juncus acutus* and *Elytrigia juncea*.

Onagraceae

64. *Epilobium hirsutum* L. (Fig. 14)

Gr Nomos Kikladon, Eparchia Sirou: Mikonos, along stream near Myrsini beach, 2 m, 37°28'N, 25°24'E, 26.08.2012, *Polymenakos* obs. (photo; confirmed Kit Tan, February 2016).

New for the island of Mikonos. Recorded for Kea, Andros and Tinos to the northwest, Naxos and Serifos to the south and southwest.

Solanaceae

65. *Solanum dulcamara* L.

Gr Nomos Kikladon, Eparchia Sirou: Mikonos, along stream south of the artificial lake at Ano Mera, 40 m, 37°27'N, 25°24'E, 26.08.2012, *Polymenakos* obs. (photo; confirmed Kit Tan, February 2016).

New for Mikonos; recorded only from the larger islands of Andros and Kea.



Fig. 14. *Epilobium hirsutum* (photo K. Polymenakos).

Reports 66–68

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Orchidaceae

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

Bu Znepole region: Mt Golo Bardo, on the east-facing slope of Mt Golo Bardo, in a mixed closed deciduous forest, ca. 100 m from the road to Orlichtal, 907 m, 42°33'46.638"N, 22°59'21.12"E, 20.05.2015, coll. A. Popatanasov (SO 107699).

The population was found back in 1990s, when only 30 shoots were observed on an area of approx. 1 ha in a mixed closed deciduous forest. Presently, the population comprises several hundred individuals and occupies approx. an area of over 0.5 km², forming small, randomly scattered groups in rather diverse habitats,

such as a *Pinus nigra* plantation, lilac-bushes, open calciferous meadow. Other species from this family found in this locality are: *Anacamptis pyramidalis*, *Cephalanthera damasonium*, *Epipactis helleborine* and *Ophrys cornuta*.

Although the species is relatively rare but spread widely across the country (Assyov & Petrova 2012), it is new for this mountain, according to Apostolova-Stoyanova & Stoyanov (2009).

67. *Orchis papilionacea* L. (Fig. 15)

Bu Znepole region: Mt Golo Burdo, in a calciferous meadow, on a south-facing slope, with inclination approx. 0–8 degrees, 788 m, 42°33'32.652"N, 22°58'38.022"E, 20.05.2015, with flowers, A.

Popatanasov obs.

This is a new record for this mountain, according to Apostolova-Stoyanova & Stoyanov (2009). Twenty plants were found at the location in a calciferous meadow with sparse tree-formations dominated by *Pinus nigra* and *Syringa vulgaris* bushes, separated



Fig. 15. *Orchis papilionacea* (photo A. Popatanasov).

from each other by several to a score of meters. Other species from this family found in this location are: *Anacamptis pyramidalis*, *Cephalanthera damasonium*, *Orchis morio*, *Orchis purpurea*, and *Ophrys cornuta*.

68. *Spiranthes spiralis* (L.) Chevall. (Fig. 16)

Bu Znepole region: Mt Golo Bardo, on a thick layer of mosses in a sparse lilac-bushes formation on a south-facing slope, with inclination approx. 10 degrees, 875 m, 42°33'36.162"N, 22°58'50.892"E, 16.10.2015, with flowers, A. Popatanasov obs.

The plants were found in the spring of 2013, when only leaf rosettes were observed and in the autumn the taxon was confirmed during its flowering phase. At the location, only three shoots were found and therefore no plants were collected.

Typically, this species inhabits short grasslands and meadows, according to P. Delforge (2006), while here it dwells among a thick layer of mosses under the shelter of lilac-bushes. So it seems from this untypical for the taxon commensalism that here the plant fa-



Fig. 16. *Spiranthes spiralis* (photo A. Popatanasov).

vours moist preservation of the mosses and protection from grazing by the bushes of *Syringa vulgaris*. Other species from this family found in this meadow and shrubs are: *Anacamptis pyramidalis*, *Cephalanthera damasonium*, *Himatoglossum jankae*, *Orchis morio* and *Ophrys cornuta*.

A new record for this mountain, according to Apostolova-Stoyanova & Stoyanov (2009).

Reports 69–70

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Euphorbiaceae

69. *Euphorbia maculata* L. [≡ *Chamaesyce maculata* (L.) Small]

Gr Nomos Kikladon, Eparchia Naxou: Naxos, chapel Ag. Demetrios, 1.5 km S of village of Ano Sangri, 135 m, 37°01'45"N, 25°25'52"E, 28.09.2015, Sutorý BRNM 772445.

Introduced, widespread in Greece. Not recorded for the Kiklades by Dimopoulos & al. (2013). Reported for Amorgos by Biel & Kit Tan (see report 19).

70. *Euphorbia serpens* Kunth [≡ *Chamaesyce serpens* (Kunth) Small] (Fig. 17)

Gr Nomos Kikladon, Eparchia Naxou: Naxos, Chora, on promenade in town centre, 5 m, 37°06'27"N, 25°22'37"E, 23.09.2015, Sutorý BRNM 772444.

Introduced. New for Kiklades. Recorded from Limnos (N Aegean islands, Biel & Tan 2015), Skiros (W Aegean islands, Snogerup & Snogerup 2008), E Aegean islands and Crete (Bergmeier 2007, 2008).



Fig. 17. *Euphorbia serpens* (photo K. Sutorý).

Reports 71–79

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Apiaceae

71. *Seseli tortuosum* L.

Bu Pirin Mts (*Northern*): on limestone rock along the road to Yavorov chalet, GM03, 17.07.2014. coll. *D. Dimitrov* (SOM 170838).

This is a new location for this sub-Mediterranean species in Bulgaria, so far reported only from the Black Sea Coast, Northeast Bulgaria, Danubian Plain, and Valley of River Struma (*Southern*) (Delipavlov & Cheshmedzhiev 2011: 270; Assyov & Petrova 2012: 381).

Asteraceae

72. *Achillea seidlilii* J. Presl & C. Presl

Bu Pirin Mts. (*Southern*): in a marshy Mountain Hay Meadows habitat (6520) in the Mlaki locality, on the way to peak Motorog, on silicate rock, with medium powerful, uneroded very moist soil, on a slanty southeast slope with inclination of 6°, 1650 m, 41°31'18,5"N, 23°39'37,0"E, 17.07.2013, coll. *A. Tashev & D. Dimitrov* (SOM 171767).

In a herbaceous community with projection cover of about 99% and with participation of: *Achillea collina*, *A. millefolium*, *Agrostis capillaris*, *Alchemilla* sp., *Campanula sparsa*, *Carduus* sp., *Carex leporina*, *Chamaecytisus absinthioides*, *Cruciata glabra*, *Deschampsia caespitosa*, *Epilobium anagalidifolium*, *Galium verum*, *Hypericum tetrapterum*, *Oenanthe fistulosa*, *Poa alpina*, *Prunella vulgaris*, *Ranunculus acris*, *Rubus idaeus*, *Rumex acetosa*, *Stellaria graminea*, *Trifolium pratense*, *Urtica dioica*, *Veronica chamaedrys*, *V. officinalis*, *Viola dacica*, *V. tricolor*, etc.

A new location of this species for Bulgaria, so far reported from the Black Sea Coast, Forebalkan and Rhodopi Mts (*Western*) (Kuzmanov & Anchev 2012: 359).

73. *Centaurea phrygia* L. subsp. *moesiaca* (Urum. & Wagn.) Hayek

Bu Pirin Mts. (*Northern*): at the Chalin Valog ski

trail, 1150 m, GM02, 11.08.2014. coll. *D. Dimitrov* (SOM 170554).

A new record of this European species for Bulgaria, so far reported from Northeast Bulgaria, Forebalkan, Balkan Range, Znepole region, Sofia region, Mt Vitosha, Rila Mts, the Valley of River Struma, and Rhodopi Mts (*Western, Central*) (Delipavlov 2011: 147; Assyov & Petrova 2012: 129).

Betulaceae

74. *Ostrya carpinifolia* Scop.

Bu Pirin Mts (*Southern*): above the motorway from Petrich to Gotse Delchev towns, at about 500 m from Dobrotino village, on a steep stony southeastern slope with breccia as the main rock and an inclination of 20°, 1024 m, 41°34'47.9"N, 23°39'57.7"E, 18.07.2013, coll. *A. Tashev & D. Dimitrov* (SOM 170633; SOA 060419).

The location is in a rocky community, under and around a *Pinus nigra* culture, along with *Quercus pubescens*, *Cornus mas*, *Juniperus deltoides*, *Clematis vitalba*, *Coronilla emerus* subsp. *emeroides*, *Teucrium chamaedrys*, and *T. montanum*. Among the identified grassy species were: *Dorycnium herbaceum*, *Origanum vulgare*, *Lotus corniculatus*, *Coronilla varia*, *Scabiosa argentea*, *Euphorbia myrsinites*, *E. cyparissias*, *Verbascum nigrum*, *Scrophularia canina*, *Sedum acre*, *Carlina vulgaris*, *Asperula purpurea*, *Silene flave-scens*, *S. italica*, *Chondrilla juncea*, *Campanula glomerata*, *Koeleria splendens*, *Festuca gigantea*, *Cichorium inthybus*, *Medicago minima*, *Melilotus alba*, etc.

A new location for Bulgaria of this relict sub-Mediterranean species, so far reported for the Balkan Range (*Central, Eastern*), Znepole region, West Frontier Mts, Valley of River Struma, Mt Belasitsa, Mt Slavyanka, Pirin Mts (*Northern*), Rila Mts, Valley of River Mesta, Mt Sredna Gora (*Western*), and Rhodopi Mts (Terzijski 2011: 64; Assyov & Petrova 2012: 302; Tashev & al. 2013a: 148).

Caryophyllaceae

75. *Dianthus deltoides* L.

Bu Pirin Mts (*Southern*): in a humid mountain hay meadows habitat (6520 in EU's Habitats Directive), in Popovi Livadi (Papaz Chair) locality, on silicate rock, with powerful, uneroded, moist, sandy-clayey soil, on a slanty northern slope with inclination of 3°, 1397 m, 41°32'58.3"N, 23°38'44.1"E, 16.07.2013, coll. *A. Tashev & D. Dimitrov* (SOM 170641); in a humid mountain hay meadows

habitat (6520 in EU's Habitats Directive), in the southwesternmost part of Popovi Livadi locality, towards river Kriva Reka, on silicate rock, with powerful, uneroded, moist soil, on a slant south-facing slope with inclination of 5°, 1375 m, 41°32'52.0"N, 23°38'15.2"E, 16.07.2013, coll. A. Tashev & D. Dimitrov (SOA 060431).

In the first locality the species grows in a herbaceous community with a projection cover of about 95 %, with participation of: *Achillea collina*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Anthriscus sylvestris*, *Blysmus compressus*, *Carex hirta*, *Cerastium fontanum*, *Cruciata glabra*, *C. laevipes*, *Deschampsia caespitosa*, *Equisetum arvense*, *Euphorbia serrulata*, *Galium palustre*, *G. verum*, *Geum coccineum*, *Heracleum sibiricum*, *Holcus lanatus*, *Hypericum perforatum*, *H. tetrapterum*, *Juncus tomasii*, *Leontodon autumnalis*, *Lotus corniculatus*, *Mentha spicata*, *Myosotis ramosissima*, *Oenanthe fistulosa*, *Phleum alpinum*, *Plantago altissima*, *P. lanceolata*, *P. major*, *Poa pratensis*, *Potentilla erecta*, *P. reptans*, *Prunella vulgaris*, *Ranunculus acris*, *R. repens*, *Rhinanthus rumelicus*, *Rumex acetosella*, *R. crispus*, *Stellaria graminea*, *Trifolium dubium*, *T. hybridum*, *T. pratense*, *T. resupinatum*, *Urtica dioica*, *Veronica chamaedrys*, *Viola tricolor*, etc.

In the second locality *D. deltooides* occurs in a herbaceous community with a projection cover of about 95 %, with participation of: *Alchemilla* spp., *Agrostis capillaris*, *Caltha palustris*, *Cerastium fontanum*, *Cynosurus cristatus*, *Dactylorhiza saccifera*, *Deschampsia caespitosa*, *Equisetum palustre*, *Euphorbia cypasissias*, *E. serrulata*, *Euphrasia liburnica*, *E. salisburgensis*, *Festuca nigrescens*, *F. spectabilis*, *Galium verum*, *Geum coccineum*, *G. rivale*, *Hypericum tetrapterum*, *Lathyrus pratensis*, *Leucanthemum vulgare*, *Lotus corniculatus*, *Luzula* sp., *Nardus stricta*, *Phleum alpinum*, *Plantago lanceolata*, *Platanthera bifolia*, *Polygala comosa*, *Potentilla reptans*, *Ranunculus acris*, *Rhinanthus rumelicus*, *Rumex acetosella*, *Stellaria graminea*, *Thymus* sp., *Trifolium pratense*, *T. repens*, *Veronica chamaedrys*, etc.

A new record in Bulgaria of this Euro-Siberian species so far reported for the Forebalkan (Western), West Frontier Mts, Rila Mts, Pirin Mts (Northern) and Rhodopi Mts (Western, Central) (Delipavlov 2011: 82; Assyov & Petrova 2012: 165).

76. *Dianthus quadrangulus* Velen.

Bu Pirin Mts. (Northern): under a karst ridge of

peak Kamenititsa, on a western slope, GM03, 18.07.2014. coll. D. Dimitrov (SOM 170557).

A new location for Bulgaria of this Balkan endemic so far reported from the Danubian Plain, Forebalkan, Balkan Range, Znepole region, and Rhodopi Mts (Central) (Assyov & Petrova 2012: 167).

Onagraceae

77. *Epilobium nutans* F.W. Schmidt

Bu Pirin Mts. (Southern): in a marshy mountain hay meadows habitat (6520 under EU's Habitats Directive) in the Mlaki locality, on the way to peak Motorog, on silicate rock, with powerful, uneroded, overhumid soil, on a slant south-facing slope with inclination of 5°, 1648 m, 41°31'17.6"N, 23°39'38.5"E, 17.07.2013, coll. A. Tashev & D. Dimitrov (SOM 170637; SOA 060423).

In a herbaceous community with a projection cover of about 98 %, with participation of: *Achillea millefolium*, *Alopecurus pratensis*, *Caltha palustris*, *Campanula sparsa*, *Carex hirta*, *C. pallescens*, *Cirsium appendiculatum*, *Cruciata glabra*, *Dactylorhiza cordigera*, *Daphne mezereum*, *Deschampsia caespitosa*, *Equisetum palustre*, *Eriophorum latifolium*, *Euphorbia cypasissias*, *E. serrulata*, *Festuca rubra*, *Galium aparine*, *G. palustre*, *Geum coccineum*, *Heracleum sibiricum*, *Hieracium cymosum*, *Hypericum tetrapterum*, *Juncus effusus*, *Luzula campestris*, *Mentha spicata*, *Myosotis orbelica*, *Oenanthe fistulosa*, *Poa angustifolia*, *Potentilla erecta*, *Ranunculus acris*, *R. ophioglossifolius*, *R. repens*, *Rumex crispus*, *Senecio nemorensis*, *Stellaria graminea*, *Urtica dioica*, *Verbascum longifolium*, *Veronica chamaedrys*, etc.

A new location for Bulgaria of this European species so far reported for the Balkan Range (Central), West Frontier Mts, Mt Belasitsa, Rila Mts, Pirin Mts and Rhodopi Mts (Western) (Delipavlov 2011: 240; Assyov & Petrova 2012: 178).

Orobanchaceae

78. *Orobanche loricata* Rchb.

Bu Pirin Mts. (Northern): under the circus Malak Kazan, on limestone, 1700 m, GM02, 17.07.2014, coll. D. Dimitrov (SOM 170551).

A new location for Bulgaria of this sub-Mediterranean species so far reported for the Black Sea Coast, Forebalkan (Eastern), Rhodopi Mts (Western, Central), Thracian Lowland, and Tundzha Hilly Country (Chesh-medzhiev 2011: 367; Assyov & Petrova 2012: 300).

Polygonaceae**79. *Rumex obtusifolius* L. × *R. patientia* L.**

Bu Pirin Mts. (*Northern*): in the lower part of ski trail No 5 on the slope of Todorin Vrah, GM02, 11.08.2014. coll. D. Dimitrov (SOM 170568).

This hybrid combination has been reported so far for the Danubian Plain, West Frontier Mts, Mt Belasitsa, Rila Mts, Mt Sredna Gora (*Western*), Rhodopi Mts (*Western, Eastern*), and Thracian Lowland (Raycheva 2009). It is widely spread in Macedonia, Bosnia and Croatia (Rechinger 1943).

Reports 80–84**Alexander Tashev¹, Koycho Koev² & Nikolay Tashev³**

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Fabaceae**80. *Genista lydia* Boiss.**

Bu Rhodopi Mts (*Central*): in the Chervenata Stena Biosphere Reserve, on a stony forest glade above the trail from Martsiganitsa chalet to Bachkovo village and Bachkovo Monastery, along with *Orchis tridentata*, *Ranunculus lanuginosus*, *Alyssum* spp., etc., on calcareous rocks, in the central part of southwest-facing slope with inclination of 30°, KF59, 41°56'N, 24°51'E, 15.05.2014, coll. A. Tashev & K. Koev (SOM 171892; SO 107670).

This is a new species for Central Rhodopi Mts and for the flora of the Chervenata Stena Biosphere Reserve. So far this Balkan subendemic species has been known from the Balkan Range (*Central, Eastern*), Rhodopi Mts (*Western, Eastern*), Thracian Lowland, Tundzha Hilly Country, and Mt Strandzha (Kolev & Kolev 2009: 97; Terzijski 2011: 205; Assyov & Petrova 2012: 207).

Fagaceae**81. *Quercus rubra* L.**

Bu Mt Sredna Gora (*Western*): Mt Lozenska, above lake Pancharevo, among remains of a *Pinus nigra* culture, along with *Quercus* spp., single individu-

als or small groups of about 3–4 individuals of different age, reaching a height of 3–5 m, were found on a slope facing north-northwest and with inclination of 8°, 780 m, 42°35'59.4"N, 23°25'12.7"E, 29.05.2015, coll. A. Tashev & N. Tashev (SOM 171763; 171764; SO 107686, 107687).

The specimens of *Quercus rubra* occur in various parts of a sapling forest with domination of *Quercus frainetto*, *Q. cerris* and *Q. dalechampii*, among about 60-year old culture of *Pinus nigra*, along with *Prunus avium*, *P. cerasifera*, *Ulmus minor*, *Crataegus monogyna*, *Ligustrum vulgare*, *Geum urbanum*, *Lathyrus niger*, *Poa nemoralis*, *Festuca heterophylla*, *Trifolium montanum*, *Helleborus odoratus*, *Aremonia agrimonoides*, *Viola hirta*, etc.

This is a new location for the Bulgarian flora of this adventive North American species mentioned so far for the Vitosha region, Black Sea Coast (*Southern*) and Tundzha Hilly Country (Tashev & al. 2013b; Vladimirov 2013; Tashev & Tashev 2015).

Ranunculaceae**82. *Ranunculus lanuginosus* L.**

Bu Rhodopi Mts (*Central*): in the Chervenata Stena Biosphere Reserve, in a stony forest glade under the trail from Martsiganitsa chalet to Bachkovo village and Bachkovo Monastery, along with *Orchis tridentata*, *Genista lydia*, *Alyssum* spp., etc., on calcareous rocks in the central part of a southwest-facing slope with inclination of 20°, KF59, 41°56'N, 24°51'E, 15.05.2014, coll. A. Tashev & K. Koev (SOM 171890).

This is a new species for the Rhodopi Mts and the flora of the Chervenata Stena Biosphere Reserve. So far this European species has been known in Bulgaria from the Northeast Bulgaria, Forebalkan, Balkan Range (*Eastern*), Thracian Lowland, and Tundzha Hilly Country (Kolev & Kolev 2009: 76; Popova 2011: 50; Assyov & Petrova 2012: 341).

Rutaceae**83. *Ptelea trifoliata* L.**

Bu Black Sea Coast (*Southern*): between Chernomorets and Sozopol towns, along the coastline of the Gradina Camping Site; individuals of different age, including very young undergrowth, were found; the mature plants had fruits from the previous year, on a sandy substrate, in glades among ca 20-year old culture of *Pinus nigra*, along with *Cionura erecta*, *Silene eu-*

xina, etc., close to the seashore, on a flat terrain, 5 m, NG59, 42°24'26.2"N, 27°39'53.3"E, 03.06.2015, with flowers, coll. A. Tashev & N. Tashev (SOM 171785, 171786; SO 107675, 107676, 107677); 5 m, NG59, 42°24'26.8"N, 27°39'50.7"E, 06.06.2015, with flowers, coll. A. Tashev & N. Tashev (SOM 171787, 171788; SO 107678, 107679).

This is a new adventive species for the Bulgarian flora. It originates from North America and is cultivated as a decorative tree in some regions of Bulgaria. A good melliferous plant, too.

Iridaceae

84. *Iris reichenbachii* Heuff.

Bu Black Sea Coast (*Southern*): in the region of Primorsko town, on the territory of the Beglik Tash-Ropotamo Protected Area, in a rock crevice, along with *Osyris alba*, among a sapling forest of *Quercus* spp., in the central part of a slope facing to the northwest and with inclination of 35°, 71 m, 42°18'52.9"N, 27°46'26.7"E, 06.05.2014, coll. A. Tashev (SOM 171895).

A new location for Bulgaria of this Balkan near endemic, so far known from the Danubian Plain, Forebalkan (*Western*), Balkan Range, Znepole region, Mt Vitosha, West Frontier Mts, Mt Slavyanka, Pirin Mts, Rila Mts, and Rhodopi Mts (Delipavlov 2011: 456; Assyov & Petrova 2012: 239).

Reports 85–96

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Apiaceae

85. *Seseli libanotis* (L.) W. D. J. Koch (Fig. 18)

Mk Mt Šar Planina: 2.3 km N from peak Popova Šapka, at the roadside in a spruce forest, on siliceous substrate, 1720 m, 21.08.2015, coll. A. Teofilovski (herb. Teofilovski).

Seseli libanotis is an Eurasian species previously reported only from Gorna Radika (Strezimir and Adžina Reka) and Mt Stogovo – Gari (Micevski 2005).

Asteraceae

86. *Doronicum hungaricum* Rchb. f. (Fig. 19)

Mk Mt Šar Planina: 1 km NW-W from Staro Selo village, in a beech forest, 950–1000 m, 08.05.2009, coll. A. Teofilovski (herb. Teofilovski)

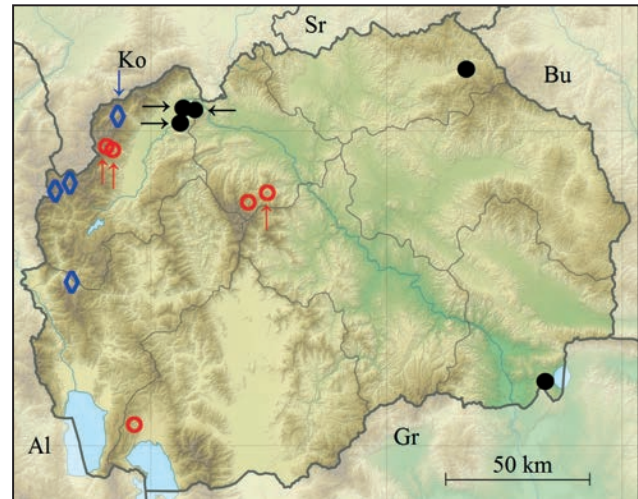


Fig. 18. Distribution of *Carex michelii* (●), *Hieracium umbrosum* (○), and *Seseli libanotis* (◇) in Macedonia. New records indicated by arrows.

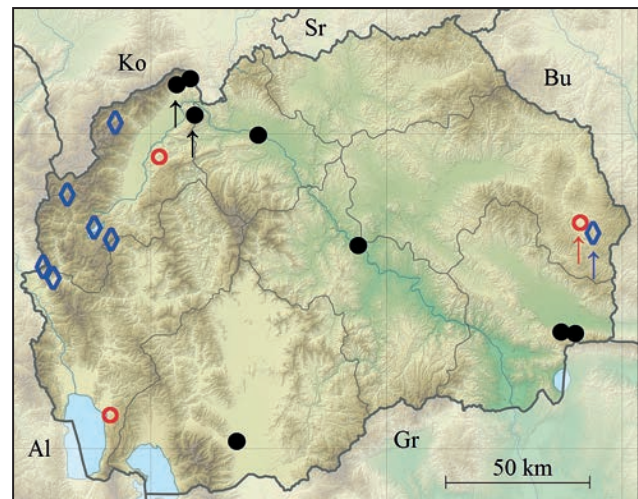


Fig. 19. Distribution of *Doronicum hungaricum* (●), *Helminthotheca echioides* (○), and *Ranunculus polyanthemos* subsp. *nemorosus* (◇) in Macedonia. New records indicated by arrows.

— Mt Žeden: 3.2 km SW from Raduša village, in shrubby places and an oak forest, 750 m, 14.05.2015, coll. A. Teofilovski (herb. Teofilovski). This species has been known from the following rather old data lacking a recent confirmation: Bitola (Adamović 1905), Mt Belasica – Gabrovo (Stojanoff 1921), Strumica – Bansko (Rudski 1943), Veles, Skopje (Halácsy 1906), Mt Šar Planina – Jažince (Soška 1938). Its range comprises: Balkan Peninsula, Pannonia, Carpathians, and parts of the Ukraine.

87. *Helminthotheca echioides* (L.) Holub (Syn.: *Picris echioides* L.) (Fig. 19)

Mk Berovo: 72 Moša Pijade, 14.10.2015, coll. A. Teofilovski (herb. Teofilovski).

The recorded small group of individuals grows in a waste place near the pavement in the central part of Berovo town. In Macedonia, this species has been known only from two recently reported localities: Mt Suva Gora – Čelopek and Ohrid – Hidrobiloški Zavod (Matevski & Teofilovski 2004, as *Picris echioides*), in both cases on dumps. *Helminthotheca echioides* is a Mediterranean species introduced in some parts of C, W & N Europe.

88. *Hieracium umbrosum* Jord. (Figs. 18 & 20)

- Mk** Mt Šar Planina: 0.7 km S from the Novo Selo to water intake, near the beech treeline, 1640 m, 05.09.2015, coll. A. Teofilovski (herb. Teofilovski); Mt Šar Planina, 1.1 km SW from Selce Keč village, in a beech forest, on siliceous substrate, 1010 m, coll. A. Teofilovski (herb. Teofilovski); — Mt Jakupica: near the road between Mala Reka and Aldinci village, on siliceous substrate, 1150 m, 20.08.2009, coll. A. Teofilovski (herb. Teofilovski).

This species is apparently very rare on the Balkan



Fig. 20. *Hieracium umbrosum* (Mt Jakupica, herbarium specimen) (photo A. Teofilovski).

Peninsula, although common in most other parts of its range, which comprises: W, C, & S Europe, Ukraine, and Norway. In Macedonia, it has been reported earlier only from: Pepelak (Behr & al. 1938, as *H. umbrosum* subsp. *eu-umbrosum* Zahn), Mt Korab (Zahn 1938, as *H. umbrosum* subsp. *pseudofastigiatum* (Degen & Zahn) Zahn), and Mt Galičica – Evla (Teofilovski 2011).

89. *Pilosella kalksburgensis* (Wiesb.) Soják
(Syn.: *Hieracium laschii* Zahn, nom. illeg.)
(Figs. 21 & 22)

- Mk** Mt Šar Planina: near river Vratnička, in a stony place, 760 m, 04.06.2015, col. A. Teofilovski (herb. Teofilovski); — Mt Žeden: 1.2 km SE from Tudence village, in a stony place, on limestone, 550 m, 27.05.2015, A. Teofilovski (herb. Teofilovski).

The only earlier reported finding site of this species from Macedonia is the canyon of river Treska (Behr & al. 1938, as *Hieracium laschii*). Its range comprises much of Europe (scattered in its S part), excluding some N, W & SW parts.



Fig. 21. *Pilosella kalksburgensis* (Mt Žeden): a. herbarium specimen; b. detail of lower leaf surface (photo A. Teofilovski).

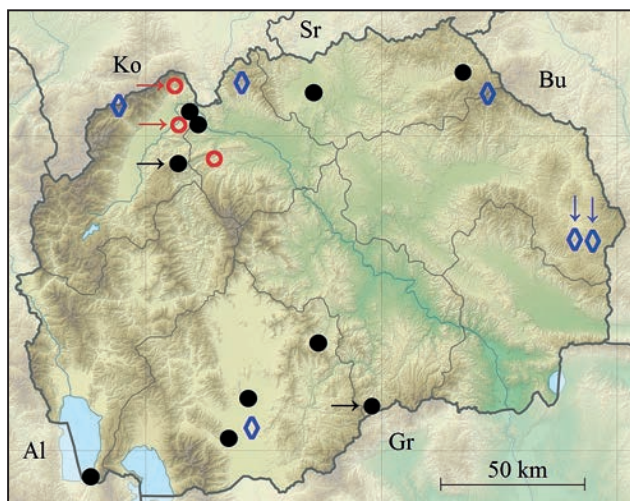


Fig. 22. Distribution of *Verbascum lychnitis* (●), *Pilosella kalksburgensis* (○), and *Scorzoneroideides autumnnalis* (◇) in Macedonia. New records indicated by arrows.

90. *Scorzoneroideides autumnnalis* (L.) Moench (Syn.: *Leontodon autumnnalis* L.) (Fig. 22)

Mk Maleševski Planini Mts: 4.4 km SW-S from Rusinovo village, in a fallow meadow, on siliceous substrate, 1200 m, 19.11.2015, coll. A. Teofilovski (herb. Teofilovski); Maleševski Planini Mts: 0.55 km NW-E from the dam of lake Berovo, in a fallow meadow, 1010 m, 03.12.2015, coll. A. Teofilovski (herb. Teofilovski).

Scorzonera autumnnalis is a rare species in Macedonia reported earlier (as *L. autumnnalis*) only from: Mt Šar Planina – Kobilica (Bornmüller 1926), Mt Skopska Crna Gora – road to Bošnjane (Grupče 1953), Mt Osogovo – Sultan Tepe (Urumov 1923), and Pelagonija (Todorovski 1967). Its native range comprises: Europe (rare in the S part) and the temperate part of Asia, but is introduced in N America.

91. *Tragopogon porrifolius* L. (Fig. 23)

Mk Tetovo: Jegunovce village, the mouth of river Beloviška, 380 m, 05 & 20.05.2015, coll. A. Teofilovski (herb. Teofilovski).

The recorded population consists of ca. 30 individuals, which grow in a dry grassy and stony place near the local railway. So far it has been reported from Dojran – Dedeli (Bornmüller 1926), Strumica (Rudski 1943), Veles – the mouth of river Babuna (Jurišić 1923), Veles (Bornmüller 1927), Prilep – Trojaci (Stojanoff 1928; Todorovski 1970). According to Euro+Med Plantbase (accessed 19.02.2016), the literature data from Macedonia refer to *T. porrifolius* subsp. *eriospermus* (Ten.) Greuter, but the taxonomical treatment of *T. porrifolius* s.l. apparently needs a further study.

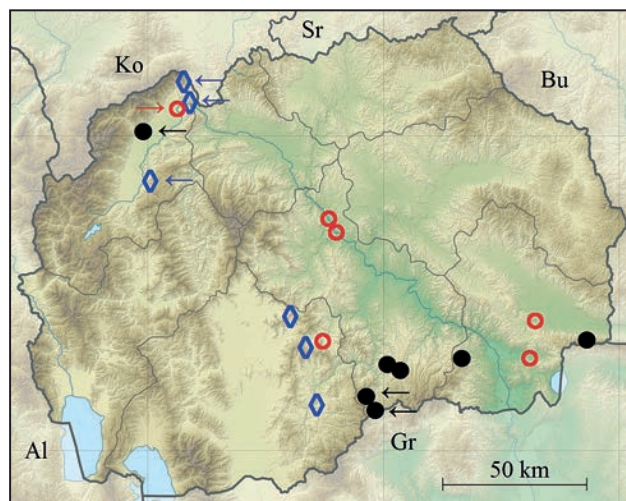


Fig. 23. Distribution of *Rorippa auastrica* (●), *Tragopogon porrifolius* (○), and *T. pterodes* (◇) in Macedonia. New records indicated by arrows.

92. *Tragopogon pterodes* Petrović (Figs. 23 & 24)

Mk Mt Suva Gora: 1.4 km SE-S from Volkovija village, in a stony place, on limestone, scattered, 650–750 m, 01.05.1998, coll. A. Teofilovski (herb. Teofilovski);

— Mt Šar Planina: 1.8 km S from Rogačevo village, in a dry grassy place, on serpentine substrate, scattered, 730 m, 22.05.2015, coll. A. Teofilovski (herb. Teofilovski); Mt Šar Planina: 1.3 km NE from Dolno Orašje village, in stony places, on serpentine substrate, 570–590 m, 06.06.2009 & 27.05.2015, coll. A. Teofilovski (herb. Teofilovski).

Tragopogon pterodes is a rare Anatolian–Balkan relict species whose range comprises parts of Serbia, Macedonia, Bulgaria, and Turkey. In Macedonia, it has been reported earlier only from Mariovo – river Zaduka (Hertzog 1922) and Prilep (Pletvar pass and between Mt Sivec and Mt Babuna) (Stevanović & al. 1991).



Fig. 24. *Tragopogon pterodes* (Dolno Orašje) (photo A. Teofilovski).

Brassicaceae**93. *Rorippa austriaca*** (Crantz) Besser (Fig. 23)

Mk Tetovo: JNA&Blagoja Toska Intersection, abandoned lawn, 01.06.2015, coll. A. *Teofilovski* (herb. *Teofilovski*);

— Mt Kozjak (Kavadarci): Majdan village – Kulaševa Livada, in a marsh and near a forest road, 980–1030 m, 22.08.2014, coll. A. *Teofilovski* (herb. *Teofilovski*); Mala Kruša, in a moist place, 1050 m, 24.06.2015, coll. A. *Teofilovski* (herb. *Teofilovski*).

This species has been reported earlier from: Mt Belasica (Stojanoff 1921, as *Nasturium austriacum* Crtz.), Mt Kožuf – Visoka Čuka (Micevski & Matevski 1995), and Kavadarci (Bojančište and Konopište) (Matevski 2002). The new record from Tetovo is the first one from a city area in Macedonia. *R. austriaca* is a native species of C, SE & E Europe and SW Asia, but has been also introduced in some other parts of Eurasia and N America.

Ranunculaceae**94. *Ranunculus polyanthemos*** L. subsp. *nemorosus* (DC.) Schübl. & G. Martens (Figs. 19 & 25)

Mk Mt Maleševski Planini: 0.8 km NW-E from the dam of lake Berovo, in a waste grassy place, 1030 m, 03.12.2015, coll. A. *Teofilovski* (herb. *Teofilovski*).

This subspecies has been reported earlier only from a few localities in W & NW Macedonia: Mt Šar Planina, Rudoka – Adžina Reka, Mavrovi Anovi, Mt Bistra, Mt Krčin, and Debar – Banjište (Micevski 1985, as *R. nemorosus* DC.). The range of this subspecies comprises a large part of Europe, from France to the Caucasus and from Sweden to Italy and Greece.

Scrophulariaceae**95. *Verbascum lychnitis*** L. (Fig. 22)

Mk Mt Suva Gora: 4.5 km SW from Merovo village, on the margin of a termophylous forest, on limestone, 1230 m, 06.08.2015, coll. A. *Teofilovski* (herb. *Teofilovski*);

— Kavadraci: Majdan village, near river Majdanska and near the road to Kruša, 750–850 m, 25.06.2015, coll. A. *Teofilovski* & D. *Mandžukovski* (herb. *Teofilovski*).

This species so far has been reported from: Mt Žeden (Rašče, Raduša) (Matvejeva 1965), Kumanovo, Kriva Palanka (Urumov 1923), Ohrid – Sveti Naum (Černjavski 1943), Bitola, Pelagonija (Todorovski 1963), and Trojaci (Stojanoff 1928, Todorovski 1963). Its range comprises much of Europe (excluding



Fig. 25. *Ranunculus polyanthemos* subsp. *nemorosus* (photo A. *Teofilovski*).

N parts) and parts of N Africa, but it is rare in the Mediterranean region.

Cyperaceae**96. *Carex michelii*** Host (Fig. 18)

Mk Mt Žeden: 1.3 km NE from Raotice village, 580 m, 13.05.2015, coll. A. *Teofilovski* (herb. *Teofilovski*), 3.3 km SW from Raduša village, 750 m, 14.05.2015, coll. A. *Teofilovski* (herb. *Teofilovski*), 1.2 km S from Kopance village, 400 m, 30.04.2015, coll. A. *Teofilovski* (herb. *Teofilovski*), 1 km SE from Tudence village, 520 m, 27.05.2015, coll. A. *Teofilovski* (herb. *Teofilovski*).

Carex michelii is a rare species in Macedonia reported earlier only from Kriva Palanka (Urumov 1923) and Mt Dub (Cirimotić 1958). On Mt Žeden (W slopes) we have recorded a few small populations growing in dry grassy and shrubby places, on limestone. Its range comprises C, E & S Europe (C & N Italy and the Balkan Peninsula, excluding Greece), Caucasus, and Transcaucasia.

Reports 97–101

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Boraginaceae

97. *Echium russicum* J. F. Gmelin

Bu Forebalkan (*Western*): in meadows N of Beli Izvor dam, Beli Izvor village, Vratsa district, FN99, 43°17'17.5"N, 23°27'05.1"E, 01.06.2012, coll. R. Tzonev (SO 107593).

— Forebalkan (*Eastern*): Topuzka Korja locality, in meadows between Hlevena and Izvorche villages, FN99, 43°05'01.4"N, 24°36'13.1"E, 07.07.2006, coll. R. Tzonev (SO 105566, 105568, 105557) (Fig. 26).

The species is known from most floristic regions in the country, including from the Forebalkan (Assyov & Petrova 2012) but everywhere it is rare and has small



Fig. 26. *Echium russicum* (photo R. Tzonev).

isolated populations. This species is also of a special conservation interest because it is enlisted in Annexes II and III of the Bulgarian Biodiversity Act and also in Annex II of Directive 92/43/EEC. It is also evaluated as Vulnerable and included in the Bulgarian Red Data Book (Petrova 2015).

Caryophyllaceae

98. *Arenaria procera* Spreng.

Bu Sofia region: in dry grasslands on peak Visokata Mogila, above Rasnik village, Pernik district, FN62, 42°42'53.3"N, 22°59'10.9"E, 05.06.2013, coll. R. Tzonev & Ch. Gussev (SO 107582).

The species is comparatively rare in Bulgaria and so far has been known only from the Rhodopi Mts (*Central*), Thracian Lowland and Tundzha Hilly Country (Assyov & Petrova 2012). This locality is the first one in the western part of the country.

Rosaceae

99. *Potentilla emili-popii* E.I. Nyarady.

Bu Northeast Bulgaria: in steppe communities in a dry valley close to the Romanian-Bulgarian border, Malak Kachamak locality, Bezhanovo village, Dobrich district, PJ14, 43°44'29.2"N, 28°23'59.5"E, 09.06.2013, coll. R. Tzonev & Ch. Gussev (SO 107593).

The species is given as Critically Endangered (Meshinev 2015) in the Red Data Book and also is enlisted in Annex III of the Bulgarian Biodiversity Act. It is known only from several small localities and populations in Northeast Bulgaria. This locality has not been known so far. The species is endangered because of active plowing up of the neighboring areas.

Scrophulariaceae

100. *Lindernia procumbens* (Krock.) Borbás (Fig. 27)

Bu Danubian Plain: the shore of Gorni Dubnik dam, Telish village, Plevna district, KJ70, 43°21'58.0"N, 24°16'54.7"E, 06.08.2013, coll. R. Tzonev (SO 107583).

The species is Critically Endangered (Tzonev 2015) and listed in Annex III of the Bulgarian Biodiversity Act. It has many former localities in the Danubian Plain, Forebalkan, Balkan Range, Sredna Gora, Thracian Lowland (Tzonev 2015), but most of them have not been confirmed during the last 60–70 years. The shore of Gorni Dubnik dam, close to Telish village, is the only known recent locality of the species in Bulgaria. The lo-



Fig. 27. *Lindernia procumbens* (photo R. Tzonev).

cality was published by Tzonev (2015) but here we provide the exact geographical coordinates.

Poaceae

101. *Eleusine indica* (L.) Gaertn.

Bu Danubian Plain: Lozenka Str., Pleven town, LJ00, 43°25'07.3"N, 24°36'21.0"E, 25.08.2012, coll. R. Tzonev (SO 107600).

The species is alien in Bulgaria and so far has been known from Black Sea Coast, Forebalkan, Sofia region, Znepole region, West Frontier Mts, Mt Belasitsa, Valley of River Struma, Thracian Lowland and Tundzha Hilly Country (Assyov & Petrova 2012; Vladimirov 2013). The species has become quite widespread on the streets of Pleven.

Reports 102–109

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Apiaceae

102. *Daucus guttatus* Sm.

Bu Balkan Range (*Eastern*): in broadleaf woodland close to the road towards peak Golyama Orlitsa, 800 m, MH94, 27.06.2002, coll. D. Stoyanov (SOM 158034).

— Pirin Mts (*Southern*): in dry grasslands near Lazhnitsa village, GM20, 41.61528N, 23.65713E, 28.07.2014, coll. K. Vassilev (SOM 171269).

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

Asteraceae

103. *Leontodon tuberosus* L.

Bu Mt Strandzha: in xeromesophytic grasslands close to Izgrev village, NG66, 41.14474N, 27.80760E, 04.05.2014, coll. K. Vassilev (SOM 169149).

According to the *Red Data Book of the Republic of Bulgaria* (Vladimirov & Dimitrova 2015), this species is known from the Black Sea Coast (*Southern*), from the region of Rezovo and Sinemorets villages and is classified as Endangered. This is the third locality of the species in the country. Its population is represented by 10–15 individuals near Izgrev village. *Leontodon tuberosus* is a companion species in grassland communities dominated by *Hordeum bulbosum* and *Trifolium striatum*.

Caryophyllaceae

104. *Cerastium bulgaricum* Uechtr.

Bu Mt Slavyanka: in dry grasslands near Goleshevo village, GL18, 41.42717N, 23.58704E, 27.05.2014, coll. K. Vassilev (SOM 171267).

It is a new species for this floristic region.

Fabaceae**105. *Trifolium cherleri* L.**

Bu Black Sea Coast (*Southern*): in dry grasslands between Sinemorets village and Silistar beach, NG85, 42.04540N, 27.99360E, 04.05.2014, coll. K. Vassilev (SOM 171077); S of Ahtopol town, NG76, 18.05.1994, coll. A. Petrova (SOM 152685).

— Pirin Mts (*Southern*): between Melnik town and Rozhen Monastery, in sandy places, FL99, 13.05.1967, coll. V. Velchev (SOM 157253).

The species is new for these floristic regions. This is a widespread species in the southern part of the country known from 10 floristic regions (Assyov & Petrova 2012). It is a diagnostic species for the class *Thero-Brachypodietea* and grows along with other annual species like *Trifolium hirtum*, *T. arvense*, *T. angustifolium*, *Aegilops triuncialis*, *Vulpia ciliata*, *Medicago minima*, etc.

Lamiaceae**106. *Thymus callieri* Velen.**

Bu Pirin Mts (*Southern*): in dry grasslands near Lazhnitsa village, GM20, 41.61528N, 23.65713E, 28.07.2014, coll. K. Vassilev (SOM 171079).

This species is found in xerothermic communities in the country, frequently as subdominant species. It has not been reported so far for this floristic region.

Papaveraceae**107. *Fumaria thuretii* Boiss.**

Bu Black Sea Coast (*Southern*): in dry grasslands between Sinemorets town and Silistar beach, NG85, 42.04540N, 27.99360E, 04.05.2014, coll. K. Vassilev (SOM 171272); in wet ruderal places on the Kavatsi beach, south of Sozopol town, NG59, 22.04.1966, coll. I. Panov (SOM 127124).

— Rila Mts: eastwards of Rila town, FM76, 450 m, 06.2014, coll. D. Dimitrov (SOM 170315, 170316).

— Rhodopi Mts (*Eastern*): near Ivaylovgrad town, MF29, coll. M. Genovska (SOM 155560).

This is a new species for these floristic regions.

Rosaceae**108. *Potentilla laciniosa* Nestl.**

Bu Mt Slavyanka: in dry grasslands near the Ali Botush Reserve, GL28, 42.41404N, 23.60119E, 13.08.2014, coll. K. Vassilev (SOM 171030); on peak Mandrishteto above Lovcha village, GL28, 23.06.1991, coll. I. Pashaliev (SOM 151082).

— Mt Belasitsa: above the beech forest near Varshiloto locality, above Kongura chalet, FL87, 20.08.2014, coll. D. Dimitrov (SOM 170553).

This species has not been reported so far for these floristic regions. It is widespread in xerothermic grassland communities on calcareous and silicate substrates.

Santalaceae**109. *Thesium dollinieri* Murb.**

Bu Black Sea Coast (*Northern*): in calcareous grasslands on the territory of Kaliakra Reserve, PJ10, 06.2002, coll. D. Stoyanov (SOM 157866).

— Rhodopi Mts (*Western*): in grasslands near Golyamo Belovo village, GM47, 42.19390N, 23.99378E, 07.25.2015, coll. K. Vassilev (SOM 171281).

— Tundzha Hilly Country: in dry grasslands around Slaveikovo village, MG76, 42.12513N, 26.70107E, 18.05.2014, coll. K. Vassilev (SOM 171301).

This species has not been reported so far for these floristic regions. It is a companion species in xerothermic grasslands of the classes *Festuco-Brometea* (alliances *Saturejion montanae*, *Festucion valesiaca*, *Pimpinello-Thymion*) and *Thero-Brachypodietea*.

Reports 110–118**Kiril Vassilev & Hristo Pedashenko**

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Cyperaceae**110. *Carex flava* L.**

Bu Pirin Mts (*Northern*): in wet openings in a *Picea abies*–*Pinus peuce* woodland, 21.07.2007, coll. D. Dimitrov (SOM 164054); in meadows of Prodanovtsi village, Samokov municipality, GM09, 08.07.1949, coll. N. Stoyanov & I. Ganchev (SOM 93550).

— Rhodopi Mts (*Western*): in meadows along the south bank of Shiroka Polyana Water Reservoir, LG63, 03.03.2005, coll. A. Petrova (SOM 155600).

— Rhodopi Mts (*Central*): in wet meadows between Grudevtsi and Sivino villages, LF09, 17.06.2010, coll. A. Petrova (SOM 163064); in bogs in Pucknatiya Kamal place, SW of Barutin village, Dospat municipality, KG60, 03.08.2006, coll. A. Petrova (SOM 163157).

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

Poaceae

111. *Aegilops triuncialis* L.

- Bu** Black Sea Coast (*Northern*): Kaliakra Reserve, PJ10, 30.05.1992, coll. A. Petrova (SOM 158884); NE of Bulgarevo village near the road Kavarna–Kaliakra, PJ10, 13.06.1990, coll. L. Yurukova & V. Velchev (SOM 168571).
- Vitosha region: in dry grasslands around Knyazhevo village, MG56, 42.11332N, 26.46111E, 27.05.2015, coll. K. Vassilev & H. Pedashenko (SOM 171637).
- Rila Mts: peak St. Iliya, S of Dobarsko village, GM04, 41.95629N, 23.43131E, 13.06.2013, coll. S. Bancheva & M. Delcheva (SOM 163277).
- Mt Sredna Gora (*Western*): in dry grasslands near Kamenitsa village, GN41, 42.58721N, 23.92266E, 20.06.2015, coll. K. Vassilev & H. Pedashenko (SOM 171642).
- Rhodopi Mts (*Western*): on rocks above Velingrad, GM45, 28.07.1980, coll. S. Kozhuharov & A. Petrova (SOM 153767).

This species has not been reported so far for these floristic regions. It was found in xerothermic communities of the alliance *Festucion valesiaca*, dominated by *Festuca valesiaca* agg., *Poa angustifolia*, *Dichantium ischaemum*, and *Chrysopogon gryllus*.

112. *Aegilops neglecta* Bertol.

- Bu** Thracian Lowland: in dry grasslands near Rhodopi village, LG94, 41.93778N, 25.75688E, 21.05.2015, coll. K. Vassilev & H. Pedashenko (SOM 171638); near Ognyanovo village, Baba Bair locality, KG86, 08.06.1980, coll. S. Kozhuharov (SOM 153370); in grasslands around Popovitsa village, near Plovdiv town, LG36, 20.06.1980, coll. S. Kozhuharov & A. Petrova (SOM 153370); on Dzhendem Tepe in Plovdiv town, LG16, 13.05.2004, coll. D. Stoyanov (SOM 162129).
- Mt Sredna Gora (*Western*): near Srednogorets village, Pirdop area, on calcareous terrain, KH63, 28.05.1964, coll. I. Ganchev & V. Velchev (SOM 153778, 153779); 4 km south of Oborishte village near the road towards Milanovo village, LG81, 03.06.2011, coll. D. Stoyanov (SOM 162616).

This is a new species for these floristic regions.

According to Assyov & Petrova (2012) and Vladimirov & al. (2012), it is known from 13 (out of 20) floristic regions in the country but probably is more widespread.

113. *Agrostis gigantea* Roth

- Bu** Rila Mts: in mesophytic grasslands near Klisura village, FM98, 42.33011N, 23.36050E, 22.07.2015, coll. K. Vassilev & H. Pedashenko (SOM 171636).
- This species has not been so far reported for this floristic region. It was found in mesophytic grasslands of the alliance *Chrysopogono-Danthonion*, class *Festuco-Brometea*, order *Arrhenatheretalia elatioris* of class *Molinio-Arrhenatheretea*.

114. *Festuca dalmatica* (Hack) K. Richt.

- Bu** Mt Sredna Gora (*Western*): in dry grasslands near Smolsko village, GN42, 42.63299N, 23.99575E, 20.06.2015, coll. K. Vassilev & H. Pedashenko (SOM 171650).

This species has not been reported before for this floristic region. In Mt Sredna Gora (*Western*) floristic region it is a subdominant with other xerothermic species like *Dichantium ischaemum*, *Thymus* spp., and *Dorycnium herbaceum*.

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

- Bu** Mt Rila: in dry grasslands in the Rilomanastirska Gora Reserve, FN96, 42.14849N, 23.42504E, 15.06.2015, coll. K. Vassilev & H. Pedashenko (SOM 171651).

This species is a Balkan endemic (Petrova & Vladimirov 2010), which has been so far known from two floristic regions in the country: the Valley of River Struma & Mt Belasitsa. This is a new locality. In the Rilomanastirska Gora Reserve, *Festuca hercegovinica* was found in steep, rocky places with shallow to moderately deep soils. Still, the syntaxonomical position of its communities is not clear and calls for a future analysis.

116. *Trachynia distachya* (L.) Link.

- Bu** Mt Sredna Gora (*Western*): in xerothermic grasslands near Mirkovo village, GN43, 42.69361N, 23.69361E, 31.05.2015, coll. K. Vassilev & H. Pedashenko (SOM 171641).

This is a new species for this floristic region.

117. *Vulpia ciliata* Dumort.

- Bu** Valley of River Struma (*Northern*): in xerothermic grasslands near Bulgarchevo village, FM65, 42.01713N, 23.03553E, 15.06.2015, coll. K.

Vassilev & H. Pedashenko (SOM 171644); in xerothermic grasslands near Kocherinovo town, FM66, 42.07990N, 23.04583E, 15.06.2015, coll. K. Vassilev & H. Pedashenko (SOM 171645).

This is a new species for this floristic region.

118. *Vulpia muralis* (Kunth) Nees

Bu Balkan Range (*Western*): in xerothermic grasslands near Spanchevtsi village, FN88, 43.19710N, 23.22154E, 31.05.2015, coll. K. Vassilev & H. Pedashenko (SOM 171641).

This is a new species for this floristic region.

Reports 119–123

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Continuing a series of new plant records based on floristic investigations mainly in the prefecture of Korinthias in north central Peloponnese, including Mt Killini which is *locus classicus* for several Greek mountain species and considered botanically well-explored. New discoveries, however, still emerge.

Asteraceae

119. *Achillea grandifolia* subsp. *hellenica* Kit Tan, Zarkos, V. Christodoulou & G. Vold, *subsp. nov.* (Figs. 28 & 29)

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana (Dourndouvana), stony ground along forest road to the summit, in open *Abies cephalonica* woodland, 1320–1350m, 37°55'N, 22°15'E, 24.05.2015, Zarkos & Christodoulou obs.; *loc. ibid.*, in fruiting state, 12.08.2015, Kit Tan & G. Vold 31957 (holotype C; isotype ATH).

— Nomos Achaias, Eparchia Kalavriton: northern slopes of Mt Saitas, on way to summit, 1380 m, 37°51'N, 22°15'E, 23.05.2010, Zarkos & Christodoulou obs. (photos); *loc. ibid.*, 20.05.2012, Zarkos & Christodoulou obs. (photos); Mt Saitas, ESE of Likouria, in-between limestone rock

boulders on slope along path to the summit, open *Abies cephalonica* forest, 1400 m, 37°51'N, 22°15'E, young plants with basal leaves only, 11.04.2012, Kit Tan & G. Vold obs.; *loc. ibid.*, in full-flowering state, 05.06.2012, Kit Tan & G. Vold 31310 (C; ATH); *loc. ibid.*, 22.06.2012, Kit Tan & G. Vold 31449 (herb. Kit).

Herbaceous perennial with ascending-erect, reddish-brown, striate, villous-pubescent flowering stems 30–50 cm long. Leaves alternate; median cauline leaves and those of non-flowering shoots broadly elliptic-ovate in outline, 9–20 × 4–7 cm, subsessile or with petiole shorter than lamina, green above, greyish-velutinous and densely glandular beneath, 1-pinnatisect with 4–7 patent, pinnatifid segment-pairs, ultimate (secondary) segment lobes ovate to oblong-elliptic, obtuse-apiculate (Fig. 28B). Corymbs compound with numerous, rather small capitula. Capitula heterogamous, 6–6.5 mm long. Phyllaries imbricate, 4–4.5 mm long, villous-pubescent, keeled green at anthesis, with scarious margin brownish at tip. Ligules broadly obovate, *ca.* 2.5 × 2 mm, entire or shallowly emarginate, white. Disc florets white or cream; tube 2.5–3 mm long. Achenes compressed, obovate, 2–2.5 mm long, pale brown.

Endemic to Greece. Sunny patches in open *Abies* or *Fagus* woodland, at forest path margins, in-between limestone rock boulders, 700–1650 m. Flowering late May to June.

Achillea grandifolia was described by Frivaldszky in 1836 based on a collection he made in 1835 from Kalofer in Central Bulgaria ('hab. in mont. Calophier', type material labelled as from Rumelia deposited at Martin-Luther-Universität, Halle-Wittenberg, HAL 0110963!). In 1846 Grisebach described *A. peucedanifolia* based on material from the Athos peninsula and the Bithynian Olympus; this is a synonym. *Achillea pallescens* DC., described in April 1838 from "Asia Minore", is another synonym. However, no valid name exists for our taxon from the Peloponnese which differs conspicuously from typical *A. grandifolia* Friv. by its leaf shape and generally fewer capitula. As it appears restricted to Greece, we name it as *A. grandifolia* subsp. *hellenica*. Both subspecies are recognized by the tall stems, large, 1-pinnatisect leaves (hence the specific epithet '*grandifolia*') and compound corymbs with numerous, rather small capitula.

Achillea grandifolia is scattered throughout the Greek mainland southwards to the Peloponnese

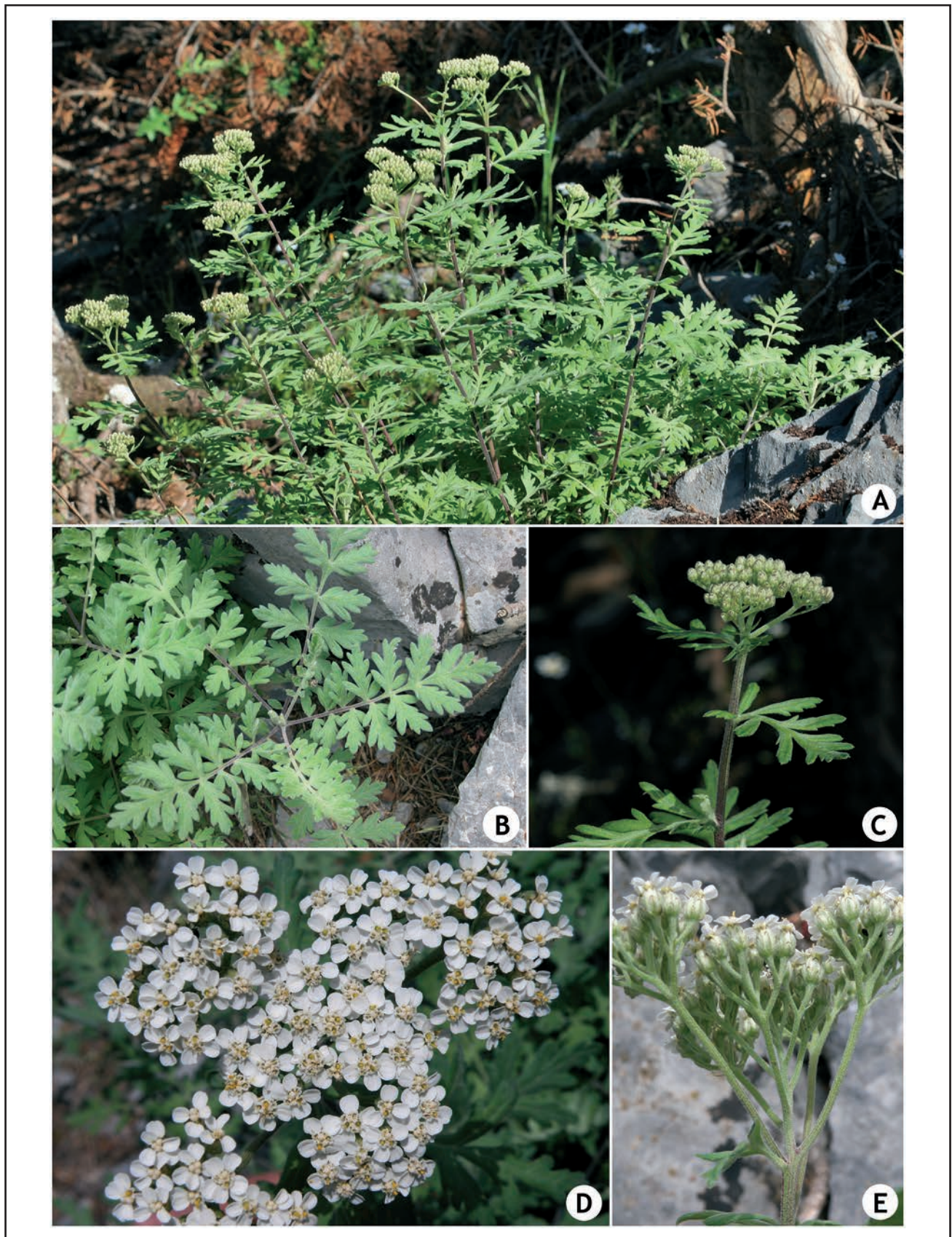


Fig. 28. *Achillea grandifolia* subsp. *hellenica*: A. habit; B. leaves; C. flowering stem; D. inflorescence; E. inflorescence in lateral view (photos G. Zarkos).



Fig. 29. *Achillea grandifolia* subsp. *hellenica* (photos G. Zarkos) and subsp. *grandifolia* from Athos Peninsula (photo A. Strid).

(Fig. 30). Thasos in the N Aegean, situated *ca.* 8 km from the mainland, is the only Greek island of occurrence. Typical *A. grandifolia* is restricted to northern Greece and the central part of the Balkan Peninsula (Albania, F.Y.R. Macedonia, Serbia, Bulgaria), N and W Turkey. It has deeply pinnatisect leaves with 5–9 primary segment-pairs, lanceolate ultimate leaf segments and more dense corymbs with up to 250 capitula (see Figs. 29 & 31). *Tanacetum macrophyllum* (Waldst. & Kit.) Sch. Bip. which occurs in N Pindos, N Central and North East Greece and elsewhere has sometimes been mistaken for it.

Achillea grandifolia subsp. *hellenica* is known from Erimanthos, Chelmos, Mega Spileo, Dourndouvana (Ntourntouvana) in the north Peloponnese, and from Taigetos in the south. Collections from the foothills of Taigetos were only in seed but there is no doubt they refer to *A. g.* subsp. *hellenica* rather than *A. g.* subsp. *grandifolia*, as here is the southernmost limit of the species' distributional range. Collections from Likeo in

central Peloponnese link the two areas of occurrence in the Peloponnese. We have also noted *A. grandifolia* subsp. *hellenica* from the southern part of mainland Greece, mainly from the mountains of Sterea Ellas at moderate altitudes of 800–1650 m. There is a range of intermediates with *A. grandifolia* subsp. *grandifolia* further to the north and typical *A. grandifolia* subsp. *grandifolia* can be found in the northeast (Pangeon, Vrontous, Rhodopi Mts, Papikio, Beles, Athos, etc.).

We thank Vladimir Vladimirov (Sofia) for providing Fig. 31, thus confirming that our new taxon, *A. grandifolia* subsp. *hellenica*, is clearly dissimilar to *A. grandifolia* subsp. *grandifolia* as he knows it from Bulgaria (*locus classicus*).

Caprifoliaceae

120. *Lonicera nummulariifolia* Jaub. & Spach subsp. *nummulariifolia* (Fig. 32)

Gr Nomos & Eparchia Korinthias: Mt Killini, west side of Skafida, 1555 m, 37°53'N, 22°21'E,



Fig. 30. Distribution map of *Achillea grandifolia* in Greece.

27.08.2015, Zarkos obs. (photos; confirmed Kit Tan, January 2016).

New for Mt Killini and Korinthias, growing together with *Crataegus pycnoloba*, *Prunus coccomilia* and *Juniperus foetidissima*. Occurring in mountains of S Pindos, Sterea Ellas, N and S Peloponnisos and Crete.

Lamiaceae

121. *Satureja hellenica* Heldr. ex Halácsy (Fig. 33)

Gr Nomos Achaias, Eparchia Kalavriton: Vouraikos gorge near Diakofto, north side of vertical limestone cliff, corolla suffused pink, 80 m, 38°10'N, 22°11'E, 21.10.2012, Zarkos obs. (photos; confirmed Kit Tan, January 2016).

— Nomos & Eparchia Korinthias: Mt Onia near village of Xilokeriza, north side of vertical limestone cliff, corolla white, spotted pink, 208 m, 37°52'N, 22°58'E, 18.10.2015, Zarkos s.n. (confirmed Kit Tan, January 2016).

New for the Peloponnese. *Satureja hellenica* occurs

between 80 to ca. 1000 m in Greece, it is recorded on Evvia and the low mountains of Sterea Ellas. The closely related *S. parnassica* Heldr. & Sartori ex Boiss. (Fig. 34) occurs in the Peloponnese at the higher altitudes of 1600 to 2200 m, occasionally down to 800 m in dry river beds. The corollas in both species are either pure white, white spotted pink or suffused pink.

Rhamnaceae

122. *Frangula rupestris* (Scop.) Schur

Gr Nomos & Eparchia Korinthias: Mt Oligirtos, in *Abies cephalonica* forest, 1290 m, 37°48'N, 22°22'E, 19.05.2015, Zarkos obs. (photos; det. J. Zieliński (Poznań) and Kit Tan, February 2016).

New for Oligirtos. Only a few large shrubs noted in vegetative state.

Rubiaceae

123. *Cruciata pedemontana* (Bellardi) Ehrend.

(Fig. 35)

Gr Nomos & Eparchia Korinthias: Mt Killini (Mikri



Fig. 31. *Achillea grandifolia* subsp. *grandifolia* from the Trigrad gorge, Central Rhodopi Mts, Bulgaria (photo V. Vladimirov).



Fig. 34. *Satureja parnassica* (photo G. Zarkos).



Fig. 32. *Lonicera nummulariifolia* subsp. *nummulariifolia* (photo G. Zarkos).



Fig. 33. *Satureja hellenica* (photo G. Zarkos).



Fig. 35. *Crucjata pedemontana* (photo G. Zarkos).

Ziria), 1880 m, 37°55'N, 22°27'E, 17.06.2014, Zarkos obs. (photos; confirmed Kit Tan, February 2016).

New for Mt Killini and Korinthias. Probably the highest altitudinal occurrence in the Peloponnese.

References

- Adamović, L.** 1905. Neue Bürger der altserbischen und macedonischen Flora. – *Allg. Bot. Zeit.*, **11**: 1-3
- Apostolova-Stoyanova, N. & Stoyanov, S.** 2009. Systematical and phytogeographical analysis of the flora on Mt Golo Bardo. – *Phytol. Balcan.*, **15**(3): 401-430.
- Assyov, B. & Petrova, A.** (eds). 2012. *Conspectus of the Bulgarian Vascular Flora. Distribution Maps and Floristic Elements*. 4th revised and enlarged edition. Bulgarian Biodiversity Foundation, Sofia.
- Ball, P.W.** 1968. *Dorycnium*. – In: **Tutin, T.G. & al.** (eds.), *Flora Europaea*. Vol. 2, p. 172-173. Cambridge Univ. Press, Cambridge.
- Behr, O., Behr, E. & Zahn, K.H.** 1938: Beiträge zur Kenntnis der Hieracien der Balkanhalbinsel. – *Glasn. Skopsk. Naučn. Društva, Odeljenje Prir. Nauka*, **18**(6): 51-67.
- Bergmeier, E.** 2007. *Chamaesyce serpens* Kunth. – In: **Greuter, W. & Raus, Th.** (eds), *Med-Checklist Notulae*, 26. – *Willdenowia*, **37**: 435-444.
- Bergmeier, E.** 2008. Diversity of aestival plant communities of irrigated garden croplands in Cretean villages. – *Braunschweiger Geobotanische Arbeiten*, **9**: 65-80.
- Biel, B. & Tan, Kit** 2014. Reports 62–112. – In: **Vladimirov, V. & al.** (comp.), *New floristic records in the Balkans*: 25. – *Phytol. Balcan.*, **20**(2–3): 267-310.
- Biel, B. & Tan, Kit** 2015. *Euphorbia serpens* Kunth (≡ *Chamaesyce serpens* (Kunth) Small). – In: **Vladimirov, V. & al.** (comp.), *New floristic records in the Balkans*: 26. – *Phytol. Balcan.*, **21**(1): 53-91.
- Bornmüller, J.** 1926. Beiträge zur flora Mazedoniens II. Sammlungen in den Kriegsjahren 1916-1918. – *Bot. Jahrb. Syst.*, **60**: 1-125.
- Bornmüller, J.** 1927. Bearbeitung der von H. Burgeff und Th. Herzog in den Kriegsjahren 1916-1918 in Mazedonien gesammelten Pflanzen. – *Allg. Bot. Z. Syst.*, **33**: 25-38.
- Cheshmedzhiev, I.** 2011. *Orobanchaceae*. – In: **Delipavlov, D. & Cheshmedzhiev, I.** (eds), *Key to the Plants of Bulgaria*. Pp. 364-367. Agrarian Univ. Acad. Press, Plovdiv (in Bulgarian).
- Cirimotić, J.** 1958. Beiträge zur Kenntnis der flora des Gebirges Dub bei "Doiran See". Year-Book of Forest Institute, Skopje, **3**: 175-210 (in Serbian).
- Cullen, J.** 1972. *Turgenia*. – In: **Davis, P.H.** (ed.), *Flora of Turkey and the East Aegean Islands*. Vol. 4, pp. 527-528. Univ. Press, Edinburgh.
- Černjavski, P.** 1943. Beitrag zur Kenntnis der Flora der Umgebung des Ochridasees. *Ohridski zbornik*, **35**(2): 11-18.
- Davis, P.H., Coode, M.J.E. & Cullen, J.** 1967. *Cotinus*. – In: **Davis, P.H.** (ed.), *Flora of Turkey and the East Aegean Islands*. Vol. 2, p. 543. Univ. Press, Edinburgh.
- Delforge, P.** 2006. *Orchids of Europe, North Africa and the Middle East*. Timber Press, Inc., Portland.
- Delipavlov, D.** 2011. *Asteraceae* (pp. 376-432), *Caryophyllaceae* (65-88), *Iridaceae* (455-457), *Onagraceae* (239-241). – In: **Delipavlov, D. & Cheshmedzhiev, I.** (eds), *Key to the Plants of Bulgaria*. Agrarian Univ. Acad. Press, Plovdiv (in Bulgarian).
- Delipavlov, D. & Cheshmedzhiev, I.** (eds). 2011. *Key to the Plants of Bulgaria*. Agrarian Univ. Acad. Press, Plovdiv (in Bulgarian).
- Dimopoulos, P., Raus, Th., Bergmeier, E., Constantinidis, Th., Iatrou, G., Kokkini, S., Strid, A. & Tzandoudakis, D.** 2013. *Vascular plants of Greece: An annotated checklist*. Botanischer Garten und Botanisches Museum Berlin-Dahlem, Berlin & Hellenic Botanical Society, Athens. – *Englera*, **31**.
- Ehrendorfer, F.** 1982. *Sherardia*. – In: **Davis, P.H.** (ed.), *Flora of Turkey and the East Aegean Islands*. Vol. 7, p. 724. Univ. Press, Edinburgh.
- Grupče, L.** 1953. Über das Pflanzenfokommen in der Skopska Crna Gora. – *Fac. Phil. Univ. Sk. edit. spec.*, **9**: 1-80 (in Macedonian).
- Halácsy, E.** 1906. Aufzählung der von Herrn Prof. Dr. L. Adamovic im Jahre 1905 auf der Balkanhalbinsel gesammelten Pflanzen. – *Öst. Bot. Z.*, **56**: 205-212.
- Hedge, I.C. & Lamond, J.M.** 1972. *Myrrhoides*. – In: **Davis, P.H.** (ed.), *Flora of Turkey and the East Aegean Islands*. Vol. 4, p. 310. Univ. Press, Edinburgh.
- Herzog, T.** 1922. Botanische Studien eines Frontsoldaten in Mazedonien. – *Allg. Bot. Z. Syst.*, **24-25**: 8-23.
- Heyn, C.C.** 1970. *Lotus*. – In: **Davis, P.H.** (ed.), *Flora of Turkey and the East Aegean Islands*. Vol. 3, pp. 518-531. Univ. Press, Edinburgh.
- Jurišić, Ž.** 1923. Contribution to the flora of Southern Serbia [Prilog flori južne Srbije]. – *Spomenik SKA*, **60**: 1-45 (in Serbian).
- Kolev, N. & Kolev, I.** 2009. Chervenata Stena Biosphere Reserve. Dionis, Sofia (in Bulgarian).
- Kuzmanov, B. & Anchev, M.** 2012. *Achillea*. – In: **Peev, D.** (ed.), *Fl. Reipubl. Bulgaricae*. Vol. 11, pp. 326-361. Ed. Acad. "Prof. Marin Drinov", Sofia (in Bulgarian).
- Lack, H.V.** 1975. *Helminthotheca*. – In: **Davis, P.H.** (ed.), *Flora of Turkey and the East Aegean Islands*. Vol. 5, p. 684. Univ. Press, Edinburgh.
- Lamond, J.M.** 1975. *Crepis*. – In: **Davis, P.H.** (ed.), *Flora of Turkey and the East Aegean Islands*. Vol. 5, pp. 814-841. Univ. Press, Edinburgh.
- Matevski, V.** 2002. New data regarding the flora in Republic of Macedonia. – In: *Proceeding of the 7th Symposium on Flora of Southeastern Serbia and Neighbouring Regions*, Dimitrovgrad. Pp. 9-13 (in Serbian).
- Matevski, V. & Teofilovski, A.** 2004. New contributions for the flora of the Republic of Macedonia. – In: *Proceedings of the II-Congress of Ekologists of the Republic of Macedonia with international participation*. Macedonian ecological Society, Skopje. Vol. 6, pp. 384-389 (in Macedonian).
- Matvejeva, J.** 1965. Contribution to the knowledge of mountain Zheden [Prilog poznavanju flore planine Žeden]. – *Acta Mus. Maced. Sc. Natur.*, Skopje, **10**(2): 27-65 (in Serbian).

- Meshinev, T.** 2015. *Potentilla emili-popii*. – In: **Peev, D. & al.** (eds), Red Data Book of the Republic of Bulgaria. Vol. 1, Plants & Fungi, p. 297. BAS & MOEW, Sofia.
- Micevski, K.** 1985. The Flora of the Republic of Macedonia. Vol. 1(1). Maced. Acad. Sci. & Arts, Skopje (in Macedonian).
- Micevski, K.** 2005. The Flora of the Republic of Macedonia. Vol. 1(6). Maced. Acad. Sci. & Arts, Skopje (in Macedonian).
- Micevski, K. & Matevski, V.** 1995. *Roripa*. – In: **Micevski, K.** Flora of the Republic of Macedonia. Vol. 1(3), pp. 610-619. Maced. Acad. Sci. & Arts, Skopje (in Macedonian).
- Peşmen, H.** 1972. *Potentilla*. – In: **Davis, P.H.** (ed.), Flora of Turkey and the East Aegean Islands. Vol. 4, pp. 41-68. Univ. Press, Edinburgh.
- Petrova, A.** 2015. *Echium ruscicum*. – In: **Peev, D. & al.** (eds), Red Data Book of the Republic of Bulgaria. Vol. 1, Plants & Fungi, p. 672. BAS & MOEW, Sofia.
- Petrova, A. & Vladimirov, V.** 2010. Balkan endemics in the Bulgarian flora. – *Phytol. Balcan.*, **16**(2): 293-311.
- Popova, M.** 2011. *Ranunculus*. – In: **Delipavlov, D. & Cheshmedzhiev, I.** (eds), Key to the Plants of Bulgaria. Pp. 47-51. Agrarian Univ. Acad. Press, Plovdiv (in Bulgarian).
- Raycheva, Tz.** 2009. Natural hybrids of subgenus *Rumex* (*Rumex*, *Polygonaceae*) in Bulgaria. – In: **Ivanova, D.** (ed.), Plant, Fungal and Habitat Diversity Investigation and Conservation. Proceedings of IV Balkan Botanical Congress, Sofia, 20-26.06.2006. Pp. 239-244. Institute of Botany, Sofia.
- Rechinger, K.H.** 1943. Flora Aegaea. Denkschriften der Akademie der Wissenschaften (Wien) Mathematisch-naturwissenschaftliche Klasse, **105**: 1-184.
- Rudski, I.** 1943. Beitrag zur Kenntnis der Flora der Umgebung von Strumica. – *Ohridski Zbor.*, **35**(2): 205-238.
- Snogerup, S. & Snogerup, B.** 2008. *Chamaesyce serpens* (Kunth) Small (*Euphorbia serpens* Kunth). – In: **Greuter, W. & Raus, Th.**, Med-Checklist Notulae, 27. – *Willdenowia*, **38**: 465-474.
- Soška, T.** 1938. Beitrag zur Schluchtenflore von Südserbien I. – *Glasn. Skopsk. Naučn. Društva, Odeljenje Prir. Nauka*, **18**(6): 223-238.
- Stevanović, V., Niketić, M. & Lakušić, D.** 1991. Chorological additions to the flora of eastern Yugoslavia. – *Fl. Medit.*, **1**: 121-142.
- Stojanoff, N.** 1921. Floristische Materialien von dem Belassitz-Gebirge. – *God. Sofijsk. Univ., Prir.-Math. Fac.*, **15-16**: 1-133 (in Bulgarian).
- Stojanoff, N.** 1928. Thracische und mazedonische Herbarmaterialien des Verstorbenen Prof. Dr. Theodor Nikoloff. – *Spis. Bulg. Akad. Nauk.*, **18**: 49-209.
- Strid, A. & Tan, Kit** (eds). 1997. Flora Hellenica. Vol. 1. Koeltz Scientific Books, Königstein.
- 't Hart, H.** 2002. *Sedum* L. – In: **Strid, A. & Tan, Kit** (eds), Flora Hellenica. Vol. 2, pp. 314-334. Ruggell, A.R.G. Gantner.
- Tashev, A., Koev, K. & Tashev, N.** 2013a. Reports 122-129. – In: **Vladimirov, V. & al.** (eds), New floristic records in the Balkans: 21. – *Phytol. Balcan.*, **19**(1): 147-149.
- Tashev, A., Koev, K. & Tashev, N.** 2013b. Reports 83-86. – In: **Vladimirov, V. & al.** (comp.), New floristic records in the Balkans: 23. – *Phytol. Balcan.*, **19**(3): 389-390.
- Tashev, A. & Tashev, N.** 2015. Reports 117-121. – In: **Vladimirov, V. & al.** (eds), New floristic records in the Balkans: 28. – *Phytol. Balcan.*, **21**(3): 383-384.
- Teofilovski, A.** 2011. Contributions to the Flora of the Republic of Macedonia, Skopje (in Macedonian).
- Terzijski, D.** 2011. *Genista* (pp. 204-205), *Ostrya* (64). – In: **Delipavlov, D. & Cheshmedzhiev, I.** (eds), Key to the Plants of Bulgaria. Agrarian Univ. Acad. Press, Plovdiv (in Bulgarian).
- Todorovski, A.** 1963. Contribution to the knowledge of the erosion-control flora in Bitola district [Prilog za poznavanje na protiveroziskata flora na bitolska okolijska]. – *Prilozi, Bitola*, **4**: 89-93 (in Macedonian).
- Todorovski, A.** 1967. Melliferous flora of the district of Bitola. – *Prilozi, Bitola*, **6-8**: 3-20 (in Macedonian).
- Todorovski, A.** 1970. The decorative flora of the area of the district of Bitola, Prilep, Kruševo and Demir Hisar. – *Prilozi, Bitola*, **14**: 1-36 (in Macedonian).
- Tzonev, R.** 2015. *Lindernia procumbens*. – In: **Peev, D. & al.** (eds), Red Data Book of the Republic of Bulgaria. Vol. 1, Plants & Fungi, p. 297. BAS & MOEW, Sofia.
- Urumov, I.K.** 1923. Contribution to the flora of Belomorska Trakia. – *Spis. Bulg. Akad. Nauk.*, **28**: 1-107 (in Bulgarian).
- Vladimirov, V. & Dimitrova, D.** 2015. *Leontodon tuberosus*. – In: **Peev, D. & al.** (eds), Red Data Book of the Republic of Bulgaria. Vol. 1, Plants and Fungi, p. 439. BAS & MoEW, Sofia.
- Vladimirov, V.** 2013. Reports 105-112. – In: **Vladimirov, V. & al.** (comp.), New floristic records in the Balkans: 23. – *Phytol. Balcan.*, **19**(3): 393-394.
- Vladimirov, V., Bancheva, S. & Delcheva, M.** 2012. Reports 189-197. – In: **Vladimirov, V. & al.** (comp.), New floristic records in the Balkans: 20. – *Phytol. Balcan.*, **18**(3): 365.
- Zahn, K.H.** 1938. *Hieracium*. – In: **Ascherson, P.F.A. & Graebner, K.O.P.P.** (eds), Synopsis der Mitteleuropäischen Flora. Vol. 12(3), pp. 1-708. Leipzig.
- Zohary, M.** 1970. *Trifolium*. – In: **Davis, P.H.** (ed.), Flora of Turkey and the East Aegean Islands. Vol. 3, pp. 384-448. Edinburgh Univ. Press, Edinburgh.

