

New floristic records in the Balkans: 28*

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Abstract: New chorological data are presented for 239 species and subspecies from Bulgaria (1-8, 93-101, 113-115, 117-121, 127-136), Greece (9, 10, 16-91, 102-112, 116, 122-126, 137-239) and Turkey-in-Europe (11-15, 92). The taxa belong to the following families: *Alliaceae* (37, 79-81, 229), *Apiaceae* (109-111, 137-144), *Araceae* (38), *Asclepiadaceae* (1), *Asteraceae* (2, 16-18, 51-59, 102-104, 145-153), *Basellaceae* (19), *Boraginaceae* (9, 93, 154-157, 239), *Brassicaceae* (20, 60, 92, 105, 158-165), *Campanulaceae* (166, 167), *Caryophyllaceae* (21-23, 61, 94, 95, 168-176), *Chenopodiaceae* (24, 62), *Colchicaceae* (230), *Convolvulaceae* (25), *Crassulaceae* (3, 26, 63, 177-179), *Cucurbitaceae* (122), *Dipsacaceae* (180-182), *Eucommiaceae* (117), *Euphorbiaceae* (183-185), *Fabaceae* (11-13, 27-29, 64-70, 96, 116, 123, 186-189), *Fagaceae* (118), *Geraniaceae* (190), *Globulariaceae* (191), *Grossulariaceae* (192), *Hyacinthaceae* (231), *Hypericaceae* (71, 72, 97, 193), *Juncaceae* (39-41, 82), *Lamiaceae* (98, 194-204), *Lauraceae* (119), *Liliaceae* (42, 83, 232), *Lythraceae* (30), *Molluginaceae* (10), *Oleaceae* (120), *Onagraceae* (106), *Orchidaceae* (113-115, 233-237), *Orobanchaceae* (205), *Plantaginaceae* (31, 206), *Plumbaginaceae* (207), *Poaceae* (43-50, 84-91, 126, 127-136, 238), *Polygalaceae* (208, 209), *Polygonaceae* (32, 33, 73), *Primulaceae* (107), *Ranunculaceae* (14, 74, 112), *Resedaceae* (75), *Rosaceae* (4, 15, 34, 99, 100, 210), *Rubiaceae* (35, 76, 77, 101, 211-215), *Rutaceae* (5), *Santalaceae* (36, 216-218), *Saxifragaceae* (219), *Scrophulariaceae* (220), *Simaroubaceae* (121), *Solanaceae* (6, 108, 124, 125), *Tamaricaceae* (221), *Ulmaceae* (7), *Urticaceae* (8, 78), *Veronicaceae* (222-226) and *Violaceae* (227, 228).

New subspecies for science is: *Centaurea athoa* subsp. *chelmea* Kit Tan & al. (147).

New reports for countries are: Bulgaria – *Eucommia ulmoides* (117), *Laurus nobilis* (119); Greece – *Aeschynomene rudis* (123), *Euphorbia hyssopifolia* (184).

The publication includes contributions by: I. Aneva & P. Zhelev (1-8), A. Asenov (9), P. Authier & Kit Tan (10), M. Aybeke (11-13), M. Aybeke & C. Yarcı (14-15), B. Biel & Kit Tan (16-50), B. Biel & Kit Tan (51-91), F. Dane & M. Aybeke (92), E. Filipova & K. Vassilev (93-101), K. Giannopoulos, Kit Tan & G. Vold (102-108), K. Polymenakos & Kit Tan (109-112), A. Popatanasov (113-115), Kit Tan, G. Iszkuło, M. Dering & E. Pers-Kamczyc (116), A. Tashev & N. Tashev (117-121), I. Tsialtas & Kit Tan (122-126), K. Vassilev & H. Pedashenko (127-136), G. Zarkos, V. Christodoulou, Kit Tan & G. Vold (137-238), K.B. Simoglou, Ch.A. Dordas & Th.V. Koutsos (239).

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

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

Reports 1–8

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Asclepiadaceae

1. *Cynanchum acutum* L.

Bu Tundzha Hilly Country: near a *Quercus pedunculiflora* forest, about 2 km SE from Aitos, 42.65795°N, 27.30519°E, 04.08.2002, coll. P. Zhelev (SOM 171501).

The find confirms distribution of the species in this floristic region. Kuzmanov (1982) noted that the species was reported for this floristic region near Sliven by Velenovský (1898: 191).

Asteraceae

2. *Carpesium cernuum* L.

Bu Thracian Lowland: at the edge of a *Quercus pedunculiflora* forest in the Krichim Park, KG96, 02.09.2013, coll. P. Zhelev (SOM 170826).

The species is new for the Thracian Plain. It could be probably found in other lowland forests in the region.

Crassulaceae

3. *Umbilicus erectus* subsp. *lassithiensis* (Gand.) Stoj.

Bu Rhodopi Mts (*Western*): in the valley of river Chepinska, in the vicinities of Marko Nikolov railway station, KG66, 23.05.1993, coll. P. Zhelev (SOM 154060).

The species has been known so far from the Rhodopi Mts (*Central, Eastern*) (Assyov & Petrova 2012).

Rosaceae

4. *Potentilla supina* L.

Bu Valley of River Struma (*Northern*): on the gravel edge of river Struma, close to Belo Pole village, 42.03685°N, 23.03785°E, 01.05.2014, coll. P. Zhelev & I. Aneva (SOM 170830), 31.05.2014, coll. P. Zhelev & I. Aneva (SOM 170831).

A new species for this floristic region.

Rutaceae

5. *Haplophyllum suaveolens* (DC.) G. Don.

Bu Mt Slavyanka: near Petrovo village, between the road to Goleshevo village and river Petrovska,

41.4333°N, 23.5190°E, 12.07.2014, coll. I. Aneva & P. Zhelev (SOM 170834).

A new species to this floristic region.

Solanaceae

6. *Nicandra physalodes* (L.) Gaertner

Bu Balkan Range (*Eastern*): at the edge of a mixed oak forest in the Gorska Baraka locality, 42.9060°N, 27.7190°E, 01.08.2002, coll. P. Zhelev (SOM 171500).

The closest localities of this adventive species are along the Black Sea Coast.

Ulmaceae

7. *Ulmus glabra* Huds.

Bu Pirin Mts: along a river, about 12 km N from Pirin village, near the road to Pirin chalet, 41.6108°N, 23.5279°E, 07.10.2012, coll. P. Zhelev & I. Aneva (SOM 170829); close to Varbite locality, along the road between Varbite and Zagaza chalet, 41.7342°N, 23.2772°E, 14.10.2012, coll. P. Zhelev & I. Aneva (SOM 170827).

These are the first records of this species in the Pirin Mts.

Urticaceae

8. *Parietaria diffusa* Mert. & W.D.J. Koch

Bu Valley of River Struma (*Southern*): on stony walls in Melnik town, FL99, 07.10.2012, coll. I. Aneva & P. Zhelev (SOM 170828).

First report of the species for this floristic region.

Report 9

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Boraginaceae

9. *Echium russicum* J.F. Gmel.

Gr Nomos & Eparchia Dramas: Mt Falakron, Aj. Pnevma plateau, south of the EOS Katafigion, 1730–1750 m, subalpine pastures and rocky outcrops, 41°19'N, 24°03'E, 01.07.1981, Stamatiadou 22355 (ATH); south ridge of Choros peak 1 km SW of plateau, 1746 m, 41°18'38"N, 24°02'54"E, 01.06.2015, coll. A. Asenov (SO 107652).

Recently reported as new to the Greek flora (Simoglou & al. 2015). In fact, the species was already collected

by Elli Stamatiadou in 1981. In 2015, a population comprising ca. 30 flowering and 12 vegetative individuals was noted in a small damp pothole. The plants were growing together with *Alchemilla xanthochlora*, *Anthyllis montana*, *Carex caryophyllea*, *Centaurea tuberosa*, *Colchicum autumnale*, *Dactylorhiza sambucina*, *Festuca rubra*, *Fragaria vesca*, *Galium verum*, *Genista carinalis*, *Gentiana verna*, *Geranium silvaticum*, *Hieracium cymosum*, *Luzula campestris*, *Ranunculus montanus*, *Rhodax canus*, *Rosa pimpinellifolia*, *Plantago subulata*, *Serratula tinctoria*, *Sesleria nitida*, *Taraxacum erythrospermum*, *Veronica chamaedrys*, etc.

Echium russicum occurs in Central and East Europe, Caucasus and Anatolia, and is included in Annex II of Directive 92/43/EEC.

Acknowledgements. I thank Kit Tan and Arne Strid for information on the earlier documentation of the species in Greece.

Report 10

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Molluginaceae

10. *Glinus lotoides* L. (Fig. 1)

Gr Nomos Ioanninon, Eparchia Dodonis: near Kalpaki, ca. 500 m after Ioannina-Konitsa road junction and road to Doliana, damp bare ground near small pond, 400 m, 39°54'N, 20°36'E, 05.07.2013, Authier s.n. (herb. Authier); *loc. ibid.*, 466 m, 39°55'N, 20°36'E, 30.09.2015, fruiting, Authier obs.; seasonally wet meadow near the new road between Kalpaki and Albania, 397 m, 39°53'N, 20°35'E, 29.09.2015, Authier s.n. (herb. Authier).

New for nomos, eparchia, Timfi area and phytogeographical region Northern Pindos (NPI). More than a hundred plants in fruit and flower were noted. *Salix alba*, *Oenanthe fistulosa*, *Mentha pulegium*, *Alisma lanceolatum*, *Xanthium spinosum*, *Trifolium fragiferum*, *Cirsium italicum*, etc. occurred in the same localities.



Fig. 1. *Glinus lotoides* (photo P. Authier).

Reports 11–13

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Fabaceae

11. *Trifolium dubium* Sibth.

Tu(E) A1(E) Çanakkale: Eceabat, in the environs of Martyrdom Monument, 23 m, 40°11'03"N, 26°21'27"E, 11.05.1995, coll. M. Akpolat, det. M. Aybeke (EDTU 2880).

— A1(E) Edirne: Keşan, Beykoy, in a pasture (04 B 03), 65 m, 41°16'N, 26°51'E, 05.05.2004, coll. C. Kurt, A. Semerci & M. Aybeke, det. M. Aybeke (TTAE 80);

New for A1(E) Edirne and Çanakkale in European Turkey. According to Zohary (1970), this taxon was reported for Tekirdağ.

12. *Trifolium micranthum* Viv.

Tu(E) A1(E) Edirne: Lalapasa, Kalkansöğüt, in a pasture, 508 m, 41°56'26"N, 26°52'09"E, 17.07.2003, coll. C. Kurt, A. Semerci & M. Aybeke, det. M. Aybeke (TTAE 1164).

New for A1(E) Edirne in European Turkey. According to Zohary (1970), this taxon was reported for A2(E) Istanbul.

13. *Trifolium spumosum* L.

Tu(E) A1(E) Edirne: Süloğlu, in Geçkinli pasture (04 E 05), 183 m, 41°43'N, 26°51'E, 02.06.2004, coll. C. Kurt, A. Semerci & M. Aybeke, det. M. Aybeke (TTAE 1176).

New for A1(E) Edirne in European Turkey. According to Zohary (1970), this taxon was reported for A1(E) Kırklareli.

Reports 14–15

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Ranunculaceae

14. *Ranunculus lanuginosus* L.

Tu(E) A1(E) Kırklareli: Kırklareli, Demirköy, 1 km along the road from Demirköy to Pınarhisar, 252 m, 41°49'30"N, 27°45'35"E, 03.03.1990, coll. & det. C. Yarcı (EDTU 5055).

New for A1(E) Kırklareli in European Turkey. So far the species has been known from A1(E) Edirne, A2(E) Istanbul (Davis 1965).

Rosaceae

15. *Filipendula vulgaris* Moench

Tu(E) A1(E) Kırklareli: Demirköy, between Demirköy and Pınarhisar, 1 km from Demirköy, 252 m, 41°49'30"N, 27°45'35"E, 02.07.1989, coll. & det. C. Yarcı (EDTU 4161).

New for A1(E) Kırklareli in European Turkey. According to Peşmen & Chamberlain (1972), this taxon was reported only for A2(E) Istanbul.

Reports 16–50

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This is the second report of new plant-records for the island of Folegandros (phytogeographical region Kiklades, Nomos Kikladon, Eparchia Milou) based on three visits carried out in October 2004, March and May 2005 respectively. The 35 records listed are new to the island unless otherwise stated, and three species were found to be new for the floristic region Kiklades (Kik) as circumscribed in Flora Hellenica (Strid & Tan 1997), bringing the total number of new records for this area to 34. Occurrence on the other Kikladean islands is briefly summarized.

Asteraceae

16. *Atractylis cancellata* L.

Gr Folegandros: S of Ano Meria, abandoned vine terraces above road, on schist, 100 m, 36°38'05"N, 24°51'24"E, 18.05.2005, *Biel* 05.130.

Also noted near Angali and Hora.

17. *Crepis fraasii* Sch. Bip. subsp. *fraasii*

Gr Folegandros: S-SW of Hora, pasture on limestone slope, 320 m, 36°37'16"N, 24°54'57"E, 15.05.2005, *Biel* 05.085.

18. *Lactuca tuberosa* Jacq.

Gr Folegandros: S-SW of Hora, rocky phrygana limestone slope, 270 m, 36°37'24"N, 24°55'02"E, 15.05.2005, *Biel* 05.080.

Also noted near Karavostasis and Hora.

Basellaceae

19. *Anredera cordifolia* (Ten.) Steenis

Gr Folegandros: W of Hora, damp uncultivated sandstone terraces, 180 m, 36°37'45"N, 24°55'05"E, 19.05.2005, *Biel* obs. (photo).

New for Kiklades; in Greece documented only from a few islands (Karpathos, Kefalonia, Kerkira and Thasos).

Brassicaceae

20. *Alyssum foliosum* Bory & Chaub.

Gr Folegandros: SW of Karavostasis, grazed phrygana near Livadi, on rocky limestone, 110 m, 36°36'16"N, 24°56'15"E, 07.03.2005, *Biel* 05.022.

Caryophyllaceae

21. *Holosteum umbellatum* L.

Gr Folegandros: E of Karavostasis, phrygana on steep rocky schistose slope, 20 m, 36°37'02"N, 24°57'06"E, 07.03.2005, *Biel* 05.014.

22. *Paronychia capitata* (L.) Lam.

Gr Folegandros: W-NW of Karavostasis, stony phrygana in valley, on limestone, 100 m, 36°37'10"N, 24°56'10"E, 07.03.2005, *Biel* 05.031.

New for Kiklades.

23. *Silene pentelica* Boiss.

Gr Folegandros: E of Karavostasis, phrygana on steep rocky schistose slope, 20 m, 36°37'02"N, 24°57'06"E, 07.03.2005, *Biel* 05.013.

Chenopodiaceae

24. *Atriplex prostrata* DC.

Gr Folegandros: S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 15.05.2005, *Biel* 05.100.

Also noted S of Karavostasis.

Convolvulaceae

25. *Cressa cretica* L.

Gr Folegandros: S of Karavostasis, road margins in west part of harbour, 5 m, 36°36'56"N, 24°56'52"E, 19.05.2005, *Biel* 05.157; S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 19.05.2005, *Biel* 05.161.

Observed near Karavostasis in 2004.

Crassulaceae

26. *Sedum rubens* L.

Gr Folegandros: NE of Hora, concrete path to monastery of Ag. Ioannis, phrygana on limestone, 240 m, 36°37'50"N, 24°55'23"E, 17.05.2005, *Biel* obs. (photo).

Occurring in most of Kiklades.

Fabaceae

27. *Medicago lupulina* L.

Gr Folegandros: NE of Angali, phrygana on schistose slope, 100 m, 36°38'07"N, 24°53'54"E, 08.03.2005, *Biel* 05.034.

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

Gr Folegandros: S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 19.05.2005, *Biel* 05.162.

29. *Vicia lathyroides* L.

Gr Folegandros: NE of Hora, concrete path to monastery of Ag. Ioannis, phrygana on limestone, 240 m, 36°37'50"N, 24°55'23"E, 06.03.2005, *Biel* 05.060.

Lythraceae

30. *Lythrum hyssopifolia* L.

Gr Folegandros: N-NE of Angali, terraced olive slopes in valley with seasonal stream, on schist, 30 m, 36°38'09"N, 24°53'47"E, 17.05.2005, *Biel* 05.133.

Also noted near Ano Meria.

Plantaginaceae

31. *Plantago lanceolata* L.

Gr Folegandros: W of Hora, wet uncultivated sandstone terraces, 180 m, 36°37'45"N, 24°55'05"E, 19.05.2005, *Biel* 05.152a.

Polygonaceae

32. *Rumex pulcher* subsp. *raulinii* (Boiss.) Rech. f.

Gr Folegandros: W of Hora, wet uncultivated sandstone terraces, 180 m, 36°37'45"N, 24°55'05"E, 19.05.2005, *Biel* 05.151.

33. *Rumex scutatus* L.

Gr Folegandros: W of Hora, wet uncultivated sandstone terraces, 180 m, 36°37'45"N, 24°55'05"E, 19.05.2005, *Biel* 05.152.

Also noted near Ano Meria and Karavostasis. New for Kiklades.

Rosaceae

34. *Rosa agrestis* Savi

Gr Folegandros: SW of Hora, uncultivated terraces above road, 240 m, 36°37'35"N, 24°54'60"E, 15.05.2005, *Biel* obs. (photo).

Recorded from Andros.

Rubiaceae

35. *Galium rotundifolium* L.

Gr Folegandros: W of Hora, damp uncultivated sandstone terraces, 180 m, 36°37'45"N, 24°55'05"E, 19.05.2005, *Biel* 05.152b.

Santalaceae

36. *Thesium humile* Vahl (Fig. 2)

Gr Folegandros: S-SE of Ano Meria, rocky phrygana slope by path, on schist, 70 m, 36°38'07"N, 24°52'57"E, 18.05.2005, *Biel* 05.145.



Fig. 2. *Thesium humile* (photo B. Biel).

Alliaceae**37. *Allium dentiferum*** Webb & Berthel.

Gr Folegandros: SE of Angali, olive terraces along dirt road, on limestone, 150 m, 36°37'40"N, 24°54'13"E, 17.05.2005, *Biel* 05.138.

Araceae**38. *Arum italicum*** Mill.

Gr Folegandros: W of Hora, damp uncultivated sandstone terraces, 180 m, 36°37'45"N, 24°55'05"E, 19.05.2005, *Biel* obs. (photo).

Also noted near Karavostasis.

Juncaceae**39. *Juncus inflexus*** L.

Gr Folegandros: S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 19.05.2005, *Biel* 05.163.

40. *Juncus maritimus* Lam.

Gr Folegandros: S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 19.05.2005, *Biel* 05.165c.

41. *Juncus subulatus* Forssk.

Gr Folegandros: S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 09.03.2005, *Biel* 05.058.

Liliaceae**42. *Gagea rigida*** Boiss. & Spruner (Fig. 3)

Gr Folegandros: SW of Karavostasis, grazed rocky phrygana below Livadi, on marble/limestone, 110 m, 36°37'54"N, 24°56'27"E, 07.03.2005, *Biel* 05.021; S of Hora, phrygana in olive plantation, on limestone, 250 m, 36°36'28"N, 24°55'28"E, 07.03.2005, *Biel* 05.061 (confirmed by J.-M. Tison, October 2015).

Poaceae**43. *Aegilops peregrina*** (Hack.) Maire & Weiller

Gr Folegandros: SW of Karavostasis, grazed rocky phrygana at pass, on limestone, 260 m, 36°36'21"N, 24°56'01"E, 15.05.2005, *Biel* 05.097b; N of Ano Meria, olive terraces, on schistose rock, 40 m, 36°39'45"N, 24°51'48"E, 16.05.2005, *Biel* 05.116; W of Hora, limestone plateau with phrygana, 160 m, 36°37'43"N, 24°54'51"E, 17.05.2005, *Biel* 05.127; S of Ano Meria, phrygana on rocky limestone slope S of Trachilias hill, 100 m, 36°38'05"N, 24°51'56"E, 18.05.2005, *Biel* 05.140; S-SW of Hora, rocky phrygana limestone slope near Ag. Nikolaos,

220 m, 36°36'51"N, 24°54'42"E, 20.05.2005, *Biel* 05.168.

44. *Elytrigia atherica* (Link) Kerguelen [syn.: *Elymus pycnanthus* (Godr.) Melderis]

Gr Folegandros: S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 19.05.2005, *Biel* 05.165.

45. *Elytrigia elongata* (Host) Nevski

Gr Folegandros: S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 15.05.2005, *Biel* 05.099.

46. *Hordeum marinum* Huds.

Gr Folegandros: S-SE of Karavostasis, sandy and marshy ground at Livadi beach, 5 m, 36°36'30"N, 24°57'11"E, 28.10.2004, *Biel* 04.007.

Also noted near Ano Meria.

47. *Hordeum murinum* subsp. *glaucum* (Steud.)

Tzvelev

Gr Folegandros: NW of Ano Meria, rocky phrygana at road near Karkana, on schist, 210 m, 36°39'19"N, 24°51'29"E, 16.05.2005, *Biel* 05.119.

48. *Phalaris aquatica* L.

Gr Folegandros: S of Hora, clearing in olive



Fig. 3. *Gagea rigida* (photo B. Biel).

plantation with phrygana, on limestone, 250 m, 36°36'28"N, 24°55'28"E, 15.05.2005, *Biel* 05.096.

Also noted near Ano Meria.

49. *Phalaris canariensis* L.

Gr Folegandros: S of Karavostasis, grazed phrygana in-between fields, 10 m, 36°36'22"N, 24°57'02"E, 19.05.2005, *Biel* 05.158.

50. *Setaria adhaerens* (Forssk.) Chiov.

Gr Folegandros: SE of Angali, grassy olive terraces along dirt road, on limestone, 150 m, 36°37'40"N, 24°54'13"E, 17.05.2005, *Biel* 05.138a.

Cited vouchers are provisionally kept in the private herbarium of B. Biel at H6chberg (herb. Biel). We thank Prof. Hildemar Scholz† (Berlin) for kindly identifying our *Poaceae* specimens.

Reports 51–91

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This is the second report of new plant-records for the island of Sikinos (phytogeographical region Kiklades, Nomos Kikladon, Eparchia Milou) based on three visits carried out in October 2004, March and May 2005 respectively. All records listed are new to the island unless otherwise stated. Occurrence on the other Kikladian islands is briefly summarized.

Asteraceae

51. *Centaurea laconica* subsp. *lineariloba* (Halácsy & D6rfl.) E. Gamal-Eldin & Wagenitz (Fig. 4)

Gr Sikinos: SW of Hora, uncultivated field at hill saddle, on limestone, 400 m, 36°41'13"N, 25°06'28"E, 25.05.2005, *Biel* obs. (photo).

On several Kikladian islands.

52. *Chondrilla juncea* L.

Gr Sikinos: Hora-Apano, road margins and stone steps in village, 280 m, 36°41'38"N, 25°07'01"E, 25.05.2005, *Biel* 05.189.

Almost throughout Kiklades.

53. *Crepis setosa* Haller f.

Gr Sikinos: E-NE of Hora, stony phrygana slopes near chapel Prof. Ilias, 340 m, 36°42'26"N, 25°08'42"E, 24.05.2005, *Biel* 05.185.

Recorded from Andros.

54. *Erigeron bonariensis* L.

Gr Sikinos: Hora-Apano, road margins and stone steps in village, 280 m, 36°41'38"N, 25°07'01"E, 25.05.2005, *Biel* 05.188.

On several Kikladian islands.

55. *Filago eriocephala* Guss.

Gr Sikinos: SW of Hora, terraced slopes near chapel Ag. Pantas, on schist, 270 m, 36°41'24"N, 25°06'24"E, 22.05.2005, *Biel* 05.159.

Almost throughout Kiklades.

56. *Lactuca acanthifolia* (Willd.) Boiss.

Gr Sikinos: Hora-Apano, road embankments, stone steps in village, 280 m, 36°41'38"N, 25°07'01"E, 25.05.2005, *Biel* obs. (photo).

On several Kikladian islands.

57. *Senecio leucanthemifolius* Poir.

Gr Sikinos: S of Hora, abandoned terraces along old path below village, on schist, 220 m, 36°41'33"N, 25°07'10"E, 26.05.2005, *Biel* 05.001; SW of Alopronia, phrygana slope near holiday homes, on marble, 10 m, 36°40'32"N, 25°08'46"E, 28.05.2005, *Biel* 05.038.

Recorded from Amorgos, Naxos, Ofidoussa, Paros and Sifnos. Also noted near Alopronia and Hora.



Fig. 4. *Centaurea laconica* subsp. *lineariloba* (photo B. Biel).

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

Gr Sikinos: S of Hora, stony terraces near threshing place and chapel Ag. Stefanos, on schist, 340 m, 36°41'20"N, 25°07'05"E, 31.10.2005, *Biel* obs. (photo).

Recorded from Amorgos, Folegandros, Kea, Kimolos, Naxos and Paros.

59. *Taraxacum hellenicum* Dahlst.

Gr Sikinos: N-NE of Hora, steep phrygana slope with spring near Vorino, on schist, 100 m, 36°42'02"N, 25°07'19"E, 28.05.2005, *Biel* 05.046.

On several Kikladean islands.

Brassicaceae**60. *Sisymbrium irio* L.**

Gr Sikinos: W of Hora-Kastro, abandoned terraces, road margins, on schist, 260 m, 36°41'24"N, 25°06'24"E, 24.05.2005, *Biel* 05.176.

Recorded from Amorgos, Denoussa, Kimolos, Kithnos, Naxos, Siros and Thira.

Caryophyllaceae**61. *Dianthus tripunctatus* Sm. (Fig. 5)**

Gr Sikinos: W-SW of Hora, stony phrygana and olive terraces near manor Villa, on limestone, 270 m, 36°41'40"N, 25°06'50"E, 22.05.2005, *Biel* 05.146.

Recorded from Amorgos, Andros, Ios, Kea, Kithnos, Serifos, Siros and Tinos.



Fig. 5. *Dianthus tripunctatus* (photo B. Biel).

Chenopodiaceae**62. *Chenopodium opulifolium* Schrad.**

Gr Sikinos: W of Hora, steep terraced slope with *Euphorbia* along steps, on schist, 130 m, 36°41'48"N, 25°06'54"E, 01.11.2004, *Biel* 04.030.

On several Kikladean islands.

Crassulaceae**63. *Sedum caespitosum* (Cav.) DC.**

Gr Sikinos: SW of Alopronia, stony phrygana and olive terraces along old path, on limestone, 100 m, 36°40'06"N, 25°07'47"E, 02.03.2005, *Biel* 05.079a.

Recorded from Anafi, Giaros, Giaros (Sourli), Milos, Naxos and Paros.

Fabaceae**64. *Ceratonia siliqua* L.**

Gr Sikinos: SW of Alopronia, stony phrygana and olive terraces along old path, on limestone, 100 m, 36°40'06"N, 25°07'47"E, 02.03.2005, *Biel* 05.065.

On several Kikladean islands.

65. *Lathyrus clymenum* L.

Gr Sikinos: SW of Alopronia, phrygana slope near holiday homes, on marble, 10 m, 36°40'32"N, 25°08'46"E, 28.05.2005, *Biel* 05.039.

On several Kikladean islands.

66. *Medicago truncatula* Gaertn.

Gr Sikinos: S-SW of Hora, stony phrygana with *Juniperus* at path in Klosenas valley, on limestone, 130 m, 36°39'28"N, 25°05'53"E, 04.03.2005, *Biel* 05.105; W-NW of Hora-Kastro, abandoned terraces with phrygana at steps, on schist, 170 m, 36°41'49"N, 25°06'58"E, 24.05.2005, *Biel* 05.178.

Almost throughout Kiklades.

67. *Ononis pubescens* L.

Gr Sikinos: SW of Alopronia, stony phrygana and olive terraces at old path, on limestone, 100 m, 36°40'06"N, 25°07'47"E, 23.05.2005, *Biel* 05.174.

On several Kikladean islands. Also noted N and S of Hora.

68. *Trifolium cherleri* L.

Gr Sikinos: N-NW of Alopronia, grazed phrygana slope near well, on limestone and schist, 140 m, 36°41'15"N, 25°08'23"E, 21.05.2005, *Biel* 05.140.

On several Kikladean islands.

69. *Trifolium infamia-ponertii* Greuter

Gr Sikinos: W-SW of Hora, grazed phrygana terraces near chapel, on schist, 280 m, 36°41'33"N, 25°06'34"E, 22.05.2005, *Biel* 05.151.

Common, almost throughout Kiklades.

70. *Vicia lathyroides* L.

Gr Sikinos: NE of Hora, stony phrygana with *Juniperus* near monastery Zoodochou Pighi, on limestone, 350 m, 36°41'55"N, 25°07'25"E, 03.03.2005, *Biel* 05.096.

On several Kikladean islands.

Hypericaceae

71. *Hypericum perforatum* L.

Gr Sikinos: SW of Hora, terraced phrygana in valley near chapel Ag. Pantes, on schist, 270 m, 36°41'24"N, 25°06'24"E, 22.05.2005, *Biel* 05.160.

Recorded from Andros, Naxos, Serifos and Tinos.

72. *Hypericum tetrapterum* Fr.

Gr Sikinos: W-NW of Hora, stony phrygana with *Euphorbia* and olive trees, on schist, 160 m, 36°41'48"N, 25°06'45"E, 05.03.2005, *Biel* 05.109.

Reported only from Andros.

Polygonaceae

73. *Rumex pulcher* subsp. *raulinii* (Boiss.) Rech. f.

Gr Sikinos: Hora-Kastro, ruderal places and road margins in village, on limestone, 280 m, 36°41'47"N, 25°07'18"E, 21.05.2005, *Biel* 05.132.

On several Kikladean islands.

Ranunculaceae

74. *Clematis cirrhosa* L.

Gr Sikinos: SW of Hora, phrygana terraces near channel, along old path, on schist, 300 m, 36°40'42"N, 25°05'51"E, 27.02.2005, *Biel* obs. (photo).

On several Kikladean islands.

Resedaceae

75. *Reseda alba* L.

Gr Sikinos: S-SW of Hora, stony phrygana slope near chapel Ag. Marina, on marble, 360 m, 36°39'37"N, 25°05'23"E, 23.05.2005, *Biel* 05.172.

On several Kikladean islands. Also noted near Hora.

Rubiaceae

76. *Crucianella angustifolia* L.

Gr Sikinos: NE of Hora, stony phrygana on ridge near chapel Ag. Fotini, on limestone, 100 m, 36°42'37"N, 25°08'13"E, 01.11.2004, *Biel* 04.027.

On several Kikladean islands.

77. *Valantia aprica* (Sm.) Tausch

Gr Sikinos: Hora (Apano Chorio), ruderal places near

old threshing place, on limestone and schist, 310 m, 36°41'34"N, 25°06'58"E, 27.02.2005, *Biel* 05.019.

Reported only from Naxos.

Urticaceae

78. *Urtica urens* L.

Gr Sikinos: N of Alopronia, edge of road junction, on limestone and schist, 30 m, 36°40'48"N, 25°08'34"E, 28.02.2005, *Biel* 05.044.

On several Kikladean islands.

Alliaceae

79. *Allium ampeloprasum* L.

Gr Sikinos: S-SE of Hora, rocky slope at stream, phrygana on limestone, 60 m, 36°39'37"N, 25°05'23"E, 23.05.2005, *Biel* obs.

On several Kikladean islands. Also noted W and E of Hora.

80. *Allium roseum* L.

Gr Sikinos: SW of Hora (Apano Chorio), terraces and road margins, phrygana on limestone and schist, 420 m, 36°41'20"N, 25°06'47"E, 22.05.2005, *Biel* 05.164.

On several Kikladean islands.

81. *Allium trifoliatum* Cirillo (Fig. 6)

Gr Sikinos: SW of Hora, terraced phrygana in valley near chapel Ag. Pantes, on schist, 270 m,



Fig. 6. *Allium trifoliatum* (photo B. Biel).

36°41'24"N, 25°06'24"E, 22.05.2005, *Biel* obs. (photo).

Recorded from Andros, Kimolos, Milos, Naxos, Paros, Siros, Thira and Tinos.

Juncaceae

82. *Juncus minutulus* V. Krecz. & Gontsch.

Gr Sikinos: SW of Alopronia, stony phrygana in dry stream bed by old path, on limestone, 50 m, 36°40'11"N, 25°07'56"E, 02.03.2005, *Biel* 05.083. Recorded from Andros, Ios, Paros, Sifnos and Tinos.

Liliaceae

83. *Ornithogalum arabicum* L.

Gr Sikinos: SW of Hora (Apano Chorio), phrygana terraces and road margins, on limestone and schist, 420 m, 36°41'20"N, 25°06'47"E, 22.05.2005, *Biel* 05.165.

Recorded from Anafi, Iraklia, Milos, Paros, Sifnos and Siros.

Poaceae

84. *Alopecurus myosuroides* Huds.

Gr Sikinos: W-SW of Hora, stony phrygana and olive terraces near manor Villa, on limestone, 270 m, 36°41'40"N, 25°06'50"E, 22.05.2005, *Biel* 05.150a. On several Kikladian islands.

85. *Bromus diandrus* Roth

Gr Sikinos: E of Hora, road margins and olive terraces below village, on schist, 60 m, 36°41'45"N, 25°07'33"E, 02.11.2004, *Biel* 04.033. On several Kikladian islands. Also noted W of Hora.

86. *Gastridium ventricosum* (Gouan) Schinz & Thell.

Gr Sikinos: E-SE of Hora, schistose roadside slope, 180 m, 36°41'26"N, 25°07'53"E, 21.05.2005, *Biel* 05.136; N-NW of Alopronia, grazed phrygana slope near well by path, on limestone and schist, 140 m, 36°41'15"N, 25°08'23"E, 21.05.2005, *Biel* 05.142.

Almost throughout Kiklades.

87. *Hordeum marinum* Huds.

Gr Sikinos: Alopronia, beach and estuary, 2 m, 36°40'35"N, 25°08'43"E, 30.10.2004, *Biel* obs. On several Kikladian islands.

88. *Lolium perenne* L.

Gr Sikinos: SW of Hora (Apano Chorio), uncultivated field at saddle, on limestone, 400 m, 36°41'13"N, 25°06'28"E, 25.05.2005, *Biel* 05.192. On several Kikladian islands. Also noted E of Hora.

89. *Poa infirma* Kunth

Gr Sikinos: SW of Alopronia, stony phrygana in dry stream bed near old path, on limestone, 50 m, 36°40'11"N, 25°07'56"E, 02.03.2005, *Biel* 05.082. On several Kikladian islands. Also noted N of Alopronia and Hora.

90. *Polypogon viridis* (Gouan) Breistr.

Gr Sikinos: W-NW of Hora-Kastro, abandoned terraces with well, on schist, 120 m, 36°41'50"N, 25°06'56"E, 24.05.2005, *Biel* 05.179. On several Kikladian islands. Also in vicinity of Hora.

91. *Rostraria smyrnacea* (Trin.) H. Scholz

Gr Sikinos: W-SW of Hora, grazed phrygana slopes near chapel, on schist, 280 m, 36°41'33"N, 25°06'34"E, 22.05.2005, *Biel* 05.153. Only reported from Naxos and Paros.

Cited vouchers are provisionally kept in the private herbarium of B. Biel at Höchberg (herb. Biel). We thank Prof. Hildemar Scholz[†] (Berlin) for kindly identifying our *Poaceae* specimens.

Report 92

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Brassicaceae

92. *Alyssum hirsutum* M. Bieb.

Tu(E) A1(E) Edirne: Centre, 26 m, 41°40'33"N, 26°33'31"E, 10.04.2001, coll. *F. Dane & G. Dalgiç*, det. *G. Dalgiç* (EDTU 8281) & 05.06.1988, coll. *F. Dane*, det. *N. Orcan* (EDTU 2685).

This is a new species for European Turkey. According to Dudley & al. (1965), this taxon was reported for A2(A) Istanbul, but not from any region in European Turkey.

Reports 93–101

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Boraginaceae**93. *Alkanna tinctoria* (L.) Tausch**

Bu Rhodopi Mts (*Western*): in dry grasslands between Velingrad town and Yundola village, 42.03811°N, 23.90109°E, 05.08.2015, coll. K. Vassilev & E. Filipova (SOM 171515).

Found in xerothermic communities as a companion species. According to Evstatieva (2015), it is an endangered species and is known from seven floristic regions. It is also protected by Annex 3 of the Biological Diversity Act (2007). This locality is isolated from the other populations in the country.

Caryophyllaceae**94. *Minuartia recurva* (All.) Schinz & Thell.**

Bu Balkan Range (*Central*): in dry rocky places near Kazanlak town, LH62, 17.08.1941, coll. A. Jurkovskyi (SOM 21133); in rocky grasslands under peak Botev, 2100 m, LH33, 02.07.1972, coll. P. Panov (SOM 147542); on rocks SE of Tazha chalet, under the Chin Koliba locality, 1580 m, LH33, 06.08.1956, coll. I. Bondev (SOM 157651); on rocks under Rai chalet, LH32, 1965, coll. D. Peev & S. Kozhuharov (SOM 11519); on rocks near Rai chalet, along the trail to peak Botev, LH32, 17.08.2008, coll. D. Dimitrov (SOM 164514).

— Vitosha region: in dry grasslands near Zlokuchene village, 42.38198°N, 23.56673°E, GM09, 07.07.2015, coll. K. Vassilev & E. Filipova (SOM 171516).

This is a new species for these floristic regions. So far it has been known from nine floristic regions in Bulgaria (Assyov & Petrova 2012). Its population near Zlokuchene village is represented by 20–30 individuals and is developed on shallow soils and steep slopes.

95. *Minuartia setacea* (Thuill.) Hayek

Bu Balkan Range (*Central*): on rocks around peak Kademliya, at 1600–2000 m, LH42, 04.06.1956, coll. I. Bondev (SOM 177652).

— Pirin Mts (*Northern*): Bayuvi Dupki Reserve, in the Golyama Bayuva Dupka circus in rocky places around Parev Grob locality, 1880 m, FM94, 08.06.1976, coll. N. Andreev (SOM 135503).

This species is found in stony grasslands, from lowlands up to high mountains. It is a companion species in grasslands of classes *Asplenieta trichomanes* and *Festuco-Brometea*. It is a new species for these floristic regions.

Fabaceae**96. *Genista januensis* Viv.**

Bu Rhodopi Mts (*Eastern*): in dry grasslands near Chernichino village, MG00, 24.05.2015, coll. K. Vassilev & E. Filipova (SOM 171510).

The species is widespread in Bulgaria, but has not been reported for this floristic region before.

Hypericaceae**97. *Hypericum linarioides* Bosse**

Bu Tundzha Hilly Country: in dry grasslands near Dabravite village, 42.23706°N, 24.01347°E, KG57, 25.07.2015, coll. K. Vassilev & E. Filipova (SOM 171519).

This species is found locally in xerothermic grasslands. It is a new species for this floristic region.

Lamiaceae**98. *Thymus striatus* Vahl**

Bu Vitosha region: in xerothermic grasslands near Pasarel village, GN01, 42.54088°N, 23.51577°E, 06.07.2015, coll. K. Vassilev & E. Filipova (SOM 171522).

This is a new species for this floristic region found in grasslands of the class *Festuco-Brometea* and alliances *Saturejion montanae* and *Festucion valesiaca*. Other common species in the area are: *Festuca dalmatica*, *Phleum phleoides*, *Koeleria nitidula*, *Astragalus onobrychis*, *Dichantium ischaemum*, *Seseli pallasii*, *Euphorbia barrelieri*, *Teucrium chamaedrys*, etc.

Rosaceae**99. *Potentilla pedata* Willd.**

Bu Rhodopi Mts (*Western*): in dry grasslands near Dorkovo village, 42.04955°N, 24.01867°E, KG65, 05.08.2015, coll. K. Vassilev & E. Filipova (SOM 171512).

This is a widespread species in xerothermic grasslands and is new for this floristic region.

100. *Potentilla pilosa* Willd.

Bu Rhodopi Mts (*Central*): in dry grasslands near Yagodina village, 41.64240°N, 24.36369°E, KG71, 07.08.2015, coll. K. Vassilev & E. Filipova (SOM 171514); around St. Petka Monastery near Asenovgrad town, LG24, 29.06.1966, coll. M. Markova (SOM 127275).

This is a new species for this floristic region. Near Yagodina, it is found in rocky grasslands around the village and in dry grasslands of the classes *Asplenieta trichomanes* and *Festuco-Brometea*. These com-

munities host a great diversity of endemic and rare species (Petrova & Vladimirov 2009, 2010), such as *Scabiosa rhodopensis*, *Micromeria dalmatica*, *Achillea clypeolata*, *Sesleria latifolia*, *Trachelium rumelianum*, etc.

Rubiaceae

101. *Asperula tenella* Degen

Bu Vitosha region: in xerothermic grasslands near Pasarel village, 42.54088°N, 23.51577°E, GN01, 06.07.2015, coll. K. Vassilev & E. Filipova (SOM 171520).

— Rhodopi Mts (*Western*): in dry grasslands near Tsrancha village, 41.56428°N, 24.11204°E, KG50, 06.08.2015, coll. K. Vassilev & E. Filipova (SOM 171518).

The species is widespread in xerothermic grasslands as a companion species, but this is its first record for these floristic regions.

Reports 102–108

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Continuing a series of new plant records based on further floristic investigations in the prefecture of Ilia in western Peloponnese. The records listed are new for Eparchia Ilias or Olimbias, or for both eparchies in Nomos Ilias. The floristic regions adopted follow those circumscribed in *Flora Hellenica* (Strid & Tan 1997).

Asteraceae

102. *Cirsium eriophorum* (L.) Scop. (Fig. 7)

Gr Nomos & Eparchia Ilias: on road to Astras plateau, Mt Lambia, 1200 m, 37°54'N, 21°47'E, 09.08.2015, Kit Tan, G. Vold & Giannopoulos s.n. (herb. Giannopoulos).

New for nomos and eparchia. In Peloponnese, occurring in nomi Achaias, Arkadias (Mt Likeo) and Messinias (Mt Taigetos).

103. *Cirsium hypopsilum* Boiss. & Heldr.

Gr Nomos & Eparchia Ilias: on road to Astras plateau, Mt Lambia, 1200 m, 37°54'N, 21°47'E,



Fig. 7. *Cirsium eriophorum* (photo K. Giannopoulos).

09.08.2015, Kit Tan, G. Vold & Giannopoulos s.n. (herb. Giannopoulos).

New for nomos and eparchia. On mountains of N, C and S Peloponnese and Sterea Ellas (Mt Gerania).

104. *Echinops sphaerocephalus* subsp. *albidus* (Boiss. & Spruner) Maire & Petitm. (Fig. 8)

Gr Nomos & Eparchia Ilias: on road to Astras plateau, Mt Lambia, 1200 m, 37°54'N, 21°47'E,



Fig. 8. *Echinops sphaerocephalus* subsp. *albidus* (photo K. Giannopoulos).

09.08.2015, *Kit Tan, G. Vold & Giannopoulos* s.n. (herb. Giannopoulos).

New for nomos and eparchia. In Peloponnese, in nomi Achaïas, Arkadias and Korinthias.

Brassicaceae

105. *Lepidium graminifolium* L.

Gr Nomos Ilias, Eparchia Olimbias: outside Andritsena, 780 m, 37°28'N, 21°54'E, 08.08.2015, *Kit Tan, G. Vold & Giannopoulos* 31928 (herb. Giannopoulos).

New for eparchia; also collected in nearby locality by Willing (*Willing* 117981, B).

Onagraceae

106. *Oenothera biennis* L. (Fig. 9)

Gr Nomos & Eparchia Ilias: outside village Lanzoi, 80 m, 37°42'N, 21°33'E, 09.08.2015, *Kit Tan, G. Vold & Giannopoulos* 31935 (herb. Giannopoulos).

New for Peloponnese; garden escape, naturalized at outskirts of village. Native to N America and widely naturalized in temperate regions.

Primulaceae

107. *Cyclamen graecum* Link (Fig. 10)

Gr Nomos Ilias, Eparchia Olimbias: outside village of Taxiarches, 300 m, 37°27'N, 21°42'E, 29.11.2015, *Kit Tan, G. Vold & Giannopoulos* obs. (photos); Lepreo archaeological site, 425 m, 37°26'N, 21°43'E, 29.11.2015, *Kit Tan, G. Vold & Giannopoulos* obs. (photos); Ancient Figalia, archaeological site, 510 m, 37°24'N, 21°50'E, 29.11.2015, *Kit Tan, G.*



Fig. 9. *Oenothera biennis* (photo K. Giannopoulos).



Fig. 10. *Cyclamen graecum* (photo K. Giannopoulos).

Vold & Giannopoulos 32024 (herb. Giannopoulos); Mt Minthi, 1210 m, 37°29'N, 21°46'E, 24.10.2015, *Giannopoulos & Vendras* obs. (photos).

New for nomos and eparchia; widespread in N, C and S Peloponnese and flowering at the same time as *C. hederifolium*.

Solanaceae

108. *Nicotiana glauca* R.C. Graham

Gr Nomos & Eparchia Ilias: near village Lanzoi, 120 m, 37°42'N, 21°33'E, 09.08.2015, *Kit Tan, G. Vold & Giannopoulos* 31934 (herb. Giannopoulos).

New for Eparchia Ilias; also collected by Willing, SW of Vardha (*Willing* 107069, B). Naturalized near village and along roadsides. Native to S America.

Reports 109–112

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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).

Apiaceae

109. *Opopanax chironium* (L.) W.D.J. Koch (Fig. 11)

Gr Nomos & Eparchia Fthiotidos: Mt Iti, SE of peak Greveno, 1660–1665 m, 38°48'N, 22°17'E,



Fig. 11. *Opopanax chironium* (photo K. Polymenakos).

27.08.2015, *Polymenakos* obs. (photos; confirmed Kit Tan, October 2015).

New for Mt Iti, nomos and eparchia Fthiotidos. A few plants noted on the serpentine slopes. In Greece often photographed or collected in flowering state but rarely with ripe fruits. *O. hispidus* common in southern Greece has fruits with fewer commissural vittae.

110. *Peucedanum aegopodioides* (Boiss.) Vandas
(Fig. 12)

Gr Nomos & Eparchia Fthiotidos: by stream between Ano and Kato Pavliani, 900 m, 38°44'N, 22°20'E, 26.08.2015, *Polymenakos* obs. (photos; confirmed Kit Tan, October 2015).

A Balkan endemic, new for Mt Iti, nomos and eparchia Fthiotidos and phytogeographical region Sterea Ellas. On mainland Greece occurring north of 39°N in N & S Pindos, EC, NC and NE Greece. Numerous plants found, distinct by the *Aegopodium podagraria*-like leaves and fruits with broad wings.



Fig. 12. *Peucedanum aegopodioides* (photo K. Polymenakos).

111. *Seseli parnassicum* Boiss. & Heldr. (Fig. 13)

Gr Nomos Fokidos, Eparchia Parnassidos:

Pavliani to Pira, opening of *Abies* woodland, 1180–1200 m, 38°42'N, 22°19'E, 26.08.2015, *Polymenakos* obs. (photos; confirmed Kit Tan, October 2015).

New for Mt Iti; in Sterea Ellas, recorded from Mts Giona, Panetoliko, Parnassos and Timfristos. A single plant observed.



Fig. 13. *Seseli parnassicum* (photo K. Polymenakos).

Ranunculaceae

112. *Delphinium fissum* Waldst. & Kit. subsp. *fissum*

Gr Nomos & Eparchia Fthiotidos: meadow south of village Kastania, 1240–1245 m, 38°50'N, 22°12'E, 21.07.2015, *Polymenakos* obs. (photos; confirmed Kit Tan, October 2015).

New for Mt Iti; in Sterea Ellas, recorded from Mts Chelidonia, Giona, Kaliakouda, Kitheronas, Parnitha, Pateras, Timfristos, Xerovouni and Vardousia. Single plant observed.

Reports 113–115

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Orchidaceae

113. *Epipactis persica* (Soó) Nannf. (Fig. 14)

Bu Rhodopi Mts (*Central*): at the shrub edge of an old, open, mixed, mostly coniferous forest, along a forest dirt road near Chereshkite village, on a southwest-facing slope, with inclination approx. 30 degrees, 1068 m, 41°29'40.044"N, 24°35'2.082"E, with flowers and fruits, 03.08.2015, A. *Popatanasov* obs.



Fig. 14. *Epipactis persica* (photo A. Popatanasov).

Already reported for this floristic region from a nearby locality (Petrova & Vassilev 2006). Only two plants were found not far from each other above a forest dirt road used for transportation of timber. Presumably, the population was bigger, since several aerial stems were found nearby that died in the flowering phase because of excessive drought during this year's vegetation season. They had similar morphology and size. Other species from this family found in this forest were *Epipactis helleborine* and *Gymnadenia conopsea*.

Although this taxon was reported for the first time to the Bulgarian flora more than a quarter century ago (Siering & Henning 1990), only one more location in the country was reported ever since and only one specimen has been deposited in the Bulgarian herbaria (Petrova & Vassilev 2006).

Regardless of the rarity and peculiar vulnerable biology of this species, it is not yet included in the list of endangered plants in Bulgaria under the Biodiversity Act, nor in *Red List of Bulgarian vascular plants* (Petrova & Vladimirov 2009). This is its third

reported location which reconfirms the presence of this taxon in the Bulgarian flora, providing further arguments for getting an officially protected status from the institutions in charge of these matters.

The location lies less than 200 meters away from an area of active legal woodcutting activities which highly endanger the survival of the population either by direct damage or indirectly by anthropogenic changes in the ecosystem.

114. *Orchis laxiflora* Lam. (Fig. 15)

Bu Mt Pirin (*Northern*): in a waterlogged marshy meadow, near a dirt road that connects to the main road for Senokos village, few kilometres downhill, on a west-facing slope, with inclination from 1 to 10 degrees, 775 m, 41°50'47.16"N, 23°11'55.602"E, 18.05.2015, with flowers and fruits, coll. A. Popatanasov (SO 107665).

The species is new for this floristic region and mountain, according to Kitanov & Kitanov (1990) and Assyov & Petrova (2012). The population occupies an area of over 1 ha, adjacent to a water stream around which a marshy meadow is formed, rich in mosses and hygrophyte flora. The area probably extends fur-



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

ther downhill, but the land is mostly privately owned and it is hard to make a correct estimate due to limited access. The population is rather big for this rare and endangered species, comprising over five hundred individuals. Over 50% of the population occupies the marshy territories near the stream. The rest of it occupies the adjacent less moist areas with higher degree of inclination.

A relatively large size of the population increases the chance of occurrence of such genetically recessive phenomena as hypochromia. Five individuals with white flower pigmentation and 11 individuals with pale-pink flower coloration were found randomly distributed among the individuals with the normal flower coloration pattern.

Close to this population, seven spatially separated populations of *O. elegans* (Delforge 2006) – a closely related to *O. laxiflora* species – were also found in the appropriate moist to waterlogged habitats that are characteristic for them. However, regardless of their similar ecological requirements, after examination of the populations no plants of the other closely related species were found within the territory occupied by them: the populations of *O. elegans* had no plants of *O. laxiflora* among them and vice versa. Thus a geographical barrier of just few hundred meters is apparently sufficient to ensure spatial populational isolation for these closely related taxa.

Another species from this family found in this meadow was *Dactylorhiza saccifera*.

Although the population of *O. laxiflora* was rather big, it is quite vulnerable to anthropogenic damage or even destruction, because of its closeness to the private lands and the paths of the herds of local farmers.

115. *Orchis pinetorum* Boiss. & Kotschy

Bu Znepole region: Mt Ruy, in a mixed deciduous forest not very far from the road to Erma River Gorge, on a west-facing slope with inclination from 10 to 30 degrees, 691 m, 42°51'28.2"N, 22°38'44.556"E, with flowers and fruits, 31.05.2015, coll. A. Popatanasov (SO 107666).

This species was recently reported for this floristic region (Asenov 2015), however, it is a new record for Mt Ruy (cf. Assyov & Petrova 2012; Asenov 2015). In the location, over thirty plants were found on an area of over one ha, in a mixed deciduous forest not very far from the road from Tran town to Erma River Gorge; most of the shoots were generative. In the

same forest, a closely related taxon was also found, *O. ovalis* (Delforge 2006); however here it flowers approximately two weeks earlier so the chances for interspecies cross-pollination are significantly reduced. The forest had a rather poorly developed secondary floor but was relatively rich in fungus species. In the autumn, numerous fruit bodies of over ten Basidiomycota species were found. This is in conformity with the observed richness of myco-dependent forestry orchids found on such a relatively small area: nine orchid species.

Other species from this family found in this locality were: *Cephalanthera damasonium*, *Dactylorhiza saccifera*, *Epipactis helleborine*, *Orchis ovalis*, *O. purpurea*, *Listera ovata*, *Platanthera chlorantha*.

Report 116

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Fabaceae

116. *Laburnum alpinum* (Mill.) Bercht. & J. Presl (Fig. 16)

Gr Nomos & Eparchia Karditsis: N of the village Petrilo, steep eroded schistose slopes and ravine, in openings of *Fagus-Abies cephalonica* forest, 20–30 trees and large shrubs 2–5 m tall, 1300 m,

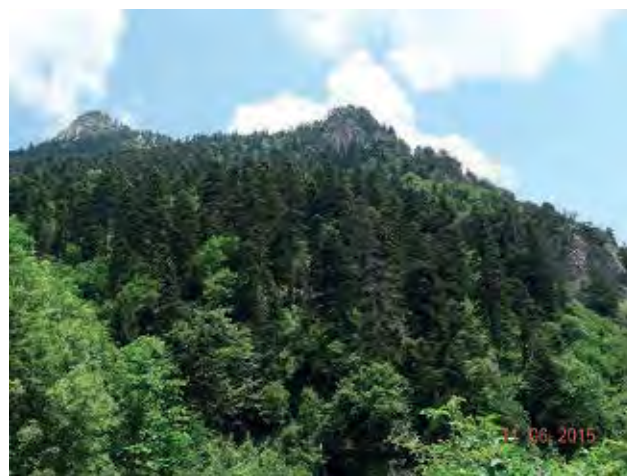


Fig. 16. *Laburnum alpinum* habitat near Plastira Lake (photo G. Iszkuło).

39°20'N, 21°37'E, 14.06.1997, *Strid, Kit Tan & Vold* 43982 (ATH!G!LD! herb. Strid!); ca. 40 km SW of Karditsa (near Plastira Lake), 1100 m, 39°12'N, 21°42'E, 11.06.2015, *Iszkuło, Dering & Pers-Kamczyc* (KOR 51232!).

New for nomos and eparchia Karditsis in S Pindos. The species is rare in Greece, first reported from nomos and eparchia Trikalon in S Pindos by Browicz & Zieliński (1989: 85) and subsequently by others in the same area, e.g., Sfikas & Sfikas (1995: 2). In the checklist of Dimopoulos & al. (2013) *Laburnum alpinum* was erroneously reported from northeastern Greece; this was based on a collection by Pavlides (1976: 59) from nomos & eparchia Chalkidiki: Sithonia Peninsula, Tripotamos; the record however, is of *L. anagyroides* Medik. In Bulgaria the latter species is planted in parks and gardens and along roads as an ornamental where it often escapes, becoming fully naturalized in both natural and disturbed habitats (Petrova & al. 2013).

Reports 117–121

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Eucommiaceae

117. *Eucommia ulmoides* Oliv.

Bu Black Sea Coast (*Southern*): between Chernomorets and Sozopol towns, along the coastline on the territory of Gradina Camping Site, on a sand substrate, among shrubbery and *Pinus nigra* culture, along with *Fraxinus americana*, etc., in close proximity to the sea coast, on an east-facing slope with inclination of 2°, 4 m, NG59, 42°24'51.2"N, 27°39'04.1"E, 20.09.2015, coll. A. Tashev & N. Tashev (SOM 171741, 171742; SO 107681).

This is a new adventive species for the Bulgarian flora, originating from West and Central China. It is cultivated as a decorative tree in some regions of Bulgaria.

Fagaceae

118. *Quercus rubra* L.

Bu Black Sea Coast (*Southern*): between Chernomorets and Sozopol towns, along the

coastline on the territory of Gradina Camping Site, in a thinned-out spot among 30-year culture of *Pinus nigra*, single individuals were found or small groups of about 3–4 individuals reaching 3 m in height, the underbrush was 5–7 years old, the terrain was level, with sandy soil cover, 2 m, NG59, 42°24'24.7"N, 27°39'38.5"E, 26.08.2015, coll. A. Tashev & N. Tashev (SOM 171755; 171756; 171757).

Along with *Quercus rubra*, there was usually found an undergrowth of *Q. frainetto*, *Q. cerris*, *Q. polycarpa*, *Q. pubescens*, *Fraxinus oxycarpa*, *Prunus cerasifera*, and *Pinus nigra*. Among the identified shrubs were: *Cornus sanguinea*, *Vitis sylvestris*, *Ligustrum vulgare*, *Prunus spinosa*, *Cionura erecta*, *Rosa canina*, *Rubus* sp., and of the grasses – *Calamagrostis epigeios*, *Althaea canabina*, *Agrimonia eupatoria*, *Hypericum perforatum*, *Plantago lanceolata*, *Cychorium inthybus*, etc.

This is a new find of this adventive North American species in the Bulgarian flora, so far reported from Vitosha region and Tundzha Hilly Country (Tashev & al. 2013; Vladimirov 2013).

Lauraceae

119. *Laurus nobilis* L.

Bu Black Sea Coast (*Southern*): between Chernomorets and Sozopol towns, along the coastline on the territory of Gradina Camping Site, several scores of individuals were found under the canopy of *Robinia pseudoacacia* on a sandy substrate, with northeastern exposition and an incline of 4°, 25 m, NG59, 42°26'13.0"N, 27°38'41.9"E, 08.08.2015, coll. A. Tashev & N. Tashev (SOM 171750); with northeastern exposition and an incline of 2°, 23 m, NG59, 42°26'09.9"N, 27°38'43.6"E, 08.08.2015, coll. A. Tashev & N. Tashev (SOM 171751); with eastern exposition and an incline of 3°, 30 m, NG59, 42°26'18.1"N, 27°38'42.5"E, 08.08.2015, coll. A. Tashev & N. Tashev (SOM 171752); with eastern exposition and an incline of 4°, 26 m, NG59, 42°26'19.7"N, 27°38'42.4"E, 08.08.2015, coll. A. Tashev & N. Tashev (SOM 171753).

Several scores of individuals reaching 50–60 cm in height were randomly scattered under the canopy of about 40-year old culture of *Robinia pseudoacacia*, along with *Prunus cerasifera*, *P. avium*, *Acer campestre*, *A. pseudoplatanus*, *A. negundo*, *Ailanthus altissima*, *Ulmus minor*, *Fraxinus oxycarpa*, *Quercus cer-*

ris, *Juglans regia*, and *Ficus carica*. The identified shrubs were: *Rubus caesius*, *Hedera helix*, *Clematis vitalba*, *Smilax exelsa*, and *Euonimus europaeus*. *Myrrhoides nodosa* dominated among the grasses, but also occurred *Tamus communis*, *Galium aparine*, *Brachypodium pinnatum*, *Geum urbanum*, *Sambucus ebulus*, *Buglossoides purpureoerulea*, *Arum maculatum*, *Stellaria media*, *Allium* sp., etc.

This is the first report of spontaneous development of this Mediterranean species in Bulgaria, its seeds probably being carried out by birds from the yards of the nearby towns, where it is cultivated as a decorative species. The spontaneous development of this warm-loving species suggests an actual warmup of the climate in the last years, which permits its survival during the cold winter periods of the year.

Oleaceae

120. *Fraxinus americana* L.

Bu Black Sea Coast (*Southern*): between Chernomorets and Sozopol towns, along the coastline on the territory of Gradina Camping Site, on a sandy substrate, among shrubs and a culture of *Pinus nigra*, in close proximity to the coastline, on an east-facing slope with inclination of 2°, 4 m, NG59, 42°24'51.2"N, 27°39'04.1"E, 20.09.2015, coll. A. Tashev & N. Tashev (SOM 171765; SO 107680).

This is a new locality of this adventive species for Bulgaria, so far reported from the Danube Plain and Sofia region. The population was numerous in the area between Chernomorets and Sozopol (Cheshmedzhiev 2011: 282; Assyov & Petrova 2012: 197).

Simaroubaceae

121. *Ailanthus altissima* (Mill.) Swingle

Bu Valley of River Mesta: in the lands of Godeshevo village, along the motorway to Gotse Delchev town, in a lay-by with a water fountain, in the upper part of a slope with west-northwest exposition and inclination of 10°, 792 m, KF59, 41°29'16.8"N, 24°03'00.1"E, 06.09.2015, coll. A. Tashev (SOM 171747; SO 107685); in the lands of Slashten village, along the motorway to Gotse Delchev town, along with *Robinia pseudoacacia*, *Ulmus minor* and *Prunus spinosa* on a south-southwest facing slope with inclination of 30°, 677 m, KF59, 41°30'13.7"N, 24°00'33.7"E, 06.09.2015, coll. A. Tashev (SOM 171745, 171746; SO 107684).

This find reconfirms distribution of this species in this floristic region (Assyov & Petrova 2012: 51; Petrova & al. 2013: 41, 43).

Reports 122–126

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Cucurbitaceae

122. *Sicyos angulatus* L.

Gr Nomos & Eparchia Kavala: Krinides, in a maize field at Tenagi Filippon, 45 m, 40°58'N, 24°15'E, 09.10.2015, Tsialtas obs. (photos; det. Kit Tan, October 2015).

This was first reported for Greece (in nomos Evrou) by Giannopolitis (2003). It is now noted in moderate numbers along the drainage channels in the Tenagi Filippon region. According to local growers *S. angulatus*, originating from N America, is one of the most harmful weeds of corn (*Zea mays*) along with other climbing species of *Ipomoea*. It evades the action of chemical herbicides due to the high organic content of the soils and also by its late emergence.

Fabaceae

123. *Aeschynomene rudis* Benth. (Fig. 17)

Gr Nomos & Eparchia Serron: rice field at Nea Tyroloi overtaken by *Aeschynomene* plants 2 m tall, ca. 30 m, 41°06'N, 23°22'E, 04.09.2015, Tsialtas obs.; rice field and margins, near raised banks of Belitsa river, ca. 35 m, 41°06'N, 23°21'E, 04.09.2015, Tsialtas obs.; at edge of rice fields to the right of the Vamvakia to Anagennisi road, ca. 32 m, 41°05'N, 23°20'E, 11.09.2015, Tsialtas obs. (photos; det. Kit Tan, September 2015).

First report for Greece. *Aeschynomene indica* was reported by us from the same area (Tsialtas & Tan 2014) but we were not aware of the existence of the rather similar *A. rudis* which is native to Mexico and S America. Both species are distinguished locally by their vernacular names 'little-tree' and 'lentil-tree', and are well-established weeds in rice fields together with its rotation crop maize. According to growers, both *Aeschynomene* species were inadvertently introduced some 10 to 15 years ago, possibly as a contaminant of crop seed. The



Fig. 17. *Aeschynomene rudis* (photo I. Tsialtas).

species are easily controlled using chemical herbicides but without, or with unsuccessful, herbicide application, *Aeschynomene* takes over and dominates instead of the cultivated crop. The species grow intermixed in wet places at the edge of rice fields and raised banks of drainage channels together with *Sorghum halepense*, *Cynodon dactylon*, *Echinochloa crus-galli*, *Persicaria lapathifolia* and *Phragmites australis*. However, *Aeschynomene rudis* seems more tolerant of powdery mildew infection whereas *A. indica* usually succumbs.

Solanaceae

124. *Datura stramonium* f. *tatula* (L.) Geerinck & Walravens

Gr Nomos Lesvou, Eparchia Limnou: Tsimandria to Diapori, ca. 7 m, 39°51'N, 25°10'E, 24.08.2015, Tsialtas obs. (photos; det. Kit Tan, September 2015).

New for nomos, eparchia and island of Limnos, not reported by Baliouis (2014). Numerous flowering plants in field planted with *Vigna unguiculata* (black-eyed bean), causing a serious weed problem together with *Amaranthus retroflexus*, *Portulaca oleracea*, *Sorghum halepense* and *Xanthium spinosum*. Less abundant weeds are *Amaranthus albus*, *Convolvulus arvensis* and *Heliotropium europaeum*.

This purple-flowered variant has been observed in many localities in north, south and central Greece, of-

ten co-existing with the more common white-flowered form. In field notes it is usually presented as *D. stramonium* without formal recognition of the variant. The two forms differ only by a single pair of genes responsible for the flower colour.

125. *Solanum luteum* Mill.

Gr Nomos & Eparchia Kavalas: Krinides, in a field sown to *Glycine max* (soyabean), ca. 65 m, 41°00'N, 24°19'E, 09.10.2015, Tsialtas obs. (photos; det. Kit Tan, October 2015). New for eparchia. Several plants were found together with the more abundant *Solanum nigrum*, *Abutilon theophrasti*, *Sorghum halepense*, *Xanthium strumarium* and *Chenopodium album*.

Poaceae

126. *Panicum capillare* L. (Fig. 18)

Gr Nomos & Eparchia Kozanis: the former drained Lake Sari Giol, in a field sown to *Phaseolus communis* (dwarf dry bean), 655 m, 40°23'N, 21°51'E, 11.08.2015, Tsialtas obs. (photos; det. Kit Tan, August 2015).

New for nomos and eparchia. A few plants were noted in the bean field with a rich weed flora dominated by *Sorghum halepense*, *Abutilon theophrasti* and *Xanthium strumarium*. According to local growers, the species, originating from N America, is common in shady places and on the banks of drainage channels.



Fig. 18. *Panicum capillare* (photo I. Tsialtas).

Reports 127–136

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Poaceae

127. *Agrostis stolonifera* L.

Bu Rhodopi Mts (*Central*): in grasslands between Shiroka Laka village and Smolyan town, LG01, 41.61911°N, 24.66191°E, 09.08.2015, coll. K. Vassilev (SOM 171566).

This is a new species for this floristic region found in mesophytic grasslands of the class *Molinio-Arrhenathereteae*. It grows together with *Festuca pratensis*, *F. rubra*, *Cynosurus cristatus*, *Achillea millefolium*, *Trifolium pratense*, *T. repens*, *T. campestre*, *Lathyrus pratensis*, *Dactylis glomerata*, etc.

128. *Anthoxanthum aristatum* Boiss.

Bu Rhodopi Mts (*Central*): in dry grasslands near Zmeitsa village, KG71, 41.65034°N, 24.22931°E, 07.08.2015, coll. K. Vassilev & H. Pedashenko (SOM 171563).

This is a Euro-Asiatic species distributed in the southern parts of Bulgaria, which has not been reported so far for this floristic region. Its distribution in the country was probably wider and potential floristic regions of its possible finding are Mt Sredna Gora (*Eastern*), Mt Slavyanka, Pirin Mts (*Southern*), and the Valley of River Mesta.

129. *Bromus moesiacus* Velen.

Bu Valley of River Struma (*Southern*): Kresna Gorge, under Oshtava village, FM82, 31.07.2007, coll. D. Dimitrov (SOM 163781).

— Rila Mts: Rila Monastery Forest Reserve, in xero-mesophytic grasslands, FM97, 42.14096°N, 23.34269°E, 14.06.2015, coll. K. Vassilev (SOM 171568, 178570).

This is a new species for these floristic regions. It is a Bulgarian endemic known from eight floristic regions in the country, according to Assyov & Petrova (2012). On the territory of the Rila Monastery Forest Reserve, it appears in grasslands in the beech belt as subdominant species, together with *Festuca callieri*, *Koeleria nitidula* and *Stipa balcanica*. This vegetation is close to the class *Festuco-Brometea*, but a future analysis will show their syntaxonomical position.

130. *Elymus elongatus* (Host) Runemark

Bu Balkan Range (*Western*): Mt Mala Planina, in xerothermic grasslands near Gradets village, FN75, 42.89149°N, 23.18901°E, 03.08.2015, coll. K. Vassilev & H. Pedashenko (SOM 171573).

The species is locally distributed in an area covering only several square meters. It is a new species for this floristic region.

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

Bu Rhodopi Mts (*Central*): in dry grasslands near Trigrad village, KG80, 41.60907°N, 24.38181°E, 08.08.2015, coll. K. Vassilev & H. Pedashenko (SOM 171546).

— Mt Sredna Gora (*Western*): in dry grasslands between Strelcha and Koprivshitsa towns, KH81, 42.58847°N, 24.37037°E, 13.08.2015, coll. K. Vassilev & H. Pedashenko (SOM 171548).

This is a new species for these floristic regions. It is known from six floristic regions in the Bulgaria, according to Assyov & Petrova (2012). Its communities are locally distributed in rocky grasslands but their syntaxonomical position is still unclear. They are rich in different xerothermic species such as *Trifolium arvense*, *Thymus callieri*, *Rhodax canus*, *Plantago subulata*, etc.

132. *Festuca rupicola* Heuff.

Bu Rhodopi Mts (*Western*): in dry grasslands between Velingrad and Sarnitsa towns, KG53, 41.97276°N, 23.95003°E, 05.08.2015, coll. K. Vassilev & H. Pedashenko (SOM 171562).

A new species for this floristic region. It is a widespread grass in the lowlands and mountainous regions of Bulgaria. In the study region, it forms communities together with *Chrysopogon gryllus*, *Asperula depressa*, *A. purpurea*, *Koeleria nitidula*, *Scabiosa triniifolia*, *Teucrium chamaedrys*, *Phleum phleoides* and should be referred to class *Festuco-Brometea*.

133. *Lolium multiflorum* Lam.

Bu Valley of River Struma (*Southern*): Kresna Gorge, above Peyo Yavorov Railway Station, 31.07.2007, coll. D. Dimitrov (SOM 165837).

— Rhodopi Mts (*Western*): in dry grasslands between Dorkovo and Kostandovo villages, KG65 42.03406°N, 24.12135°E, 05.08.2015, coll. K. Vassilev & H. Pedashenko (SOM 171565).

This species has not been reported for these floristic regions before. It is widely distributed in pastures as a companion species.

134. *Poa molinerii* Balb.

- Bu** Balkan Range (*Central*): in grasslands on NE slope of peak Malka Ambaritsa, 1890 m, LH13, 15.07.1965, coll. *H. Kochev* (SOM 113043).
- Mt Slavyanka: Mt Slavyanka, GL18, 31.07.2008, coll. *D. Dimitrov* (SOM 169484); in calcareous grasslands around peak Gotshev, 2212 m, GL18, 26.08.2005, coll. *D. Dimitrov* (SOM 162402).
- Rhodopi Mts (*Central*): in dry grasslands between Gyovren and Trigrad villages, KG81, 41.61423°N, 24.38059°E, 08.08.2015, coll. *K. Vassilev* & *H. Pedashenko* (SOM 171552); on calcareous rocks in Durdaga locality near Trigrad village, KG80, 02.08.2011, coll. *D. Dimitrov* (SOM 167664); S of peak Chaeva Chuka above Mugla village, KG91, 03.08.2011, coll. *D. Dimitrov* (SOM 167665)

This species is distributed in the mountainous areas of Bulgaria in rocky places. It is a new species for these floristic regions.

135. *Poa timoleontis* Boiss.

- Bu** Vitosha region: in grasslands near Dolni Okol village, GN00, 42.48759°N, 23.50128°E, 07.07.2015, coll. *K. Vassilev* & *H. Pedashenko* (SOM 171575); Mt Lyulin, on rocks under the peak below Tabakov's property, FN72, 19.05.1935, coll. *B. Acharoff* (SOM 5559).
- Rhodopi Mts (*Western*): in rocky grasslands near Peshtera town, 450 m, KG75, 17.06.1926, coll. *B. Davidoff* (SOM 5767).
- Thracian Lowland: between Sladun and Varnik villages, MG53, 14.05.2011, coll. *D. Dimitrov* (SOM 168084); on rocks near Plovdiv town, LG16, 06.1984, coll. *V. Stribrny* (SOM 5759); in grasslands near Hisarya town, Plovdiv district, LH10, 06.05.1927, coll. *K. Urumov* (SOM 5756)
- Tundzha Hilly Country: in grasslands near Aitos town, NH22, 09.05.1915, coll. *I. Mrkvička* & *B. Davidoff* (SOM 5804, 5806).

According to Assyov & Petrova (2012), the species is known from seven floristic regions.

136. *Vulpia muralis* (Kunth) Nees

- Bu** Vitosha region: Mt Lozenska, in meadows of Vsred Rakita locality near Dolni Lozen village, GN01, 01.07.1954, coll. *I. Ganchev* (SOM 40295); Mt Lozenska, in dry meadows of Rusama locality near Dolni Pasarel village, GN01, 26.06.1953, coll. *I. Ganchev* (SOM 40296).
- Rhodopi Mts (*Central*): in dry grasslands near

Zmeitsa village, KG71, 41.65034°N, 24.22931°E, 07.08.2015, coll. *K. Vassilev* & *H. Pedashenko* (SOM 171564).

It is a new species for these floristic regions.

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The following are new plant records based on floristic investigations in the prefecture of Korinthias in north central Peloponnese. The list also includes 88 new records for Ntourntouvana (Dourndouvana), a mountain range bordering Nomos Achaias and Nomos Korinthias. This natural border lies between Mt Chelmos and Mt Saitas in nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias and is considered a southern extension of Chelmos. The range is distinguished by its steep NW-facing slopes; there are two summits, Ntourntouvana (2078 m) and Triadafilía (2109 m).

Apiaceae

137. *Bupleurum glumaceum* Sm.

- Gr** Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31960.

138. *Carum graecum* Boiss. & Heldr.

- Gr** Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, steep NW slopes, limestone rock and scree, 1600 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.; NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31974 (in fruit).

139. *Carum meoides* (Griseb.) Halácsy

- Gr** Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits Ntourntouvana and Triadafilía, 1956 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

140. *Laserpitium pseudomeum* Orph., Heldr. & Sartori

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, 1956 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Endemic to Greece (Peloponnese and Sterea Ellas).

141. *Physospermum cornubiense* (L.) DC.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31970.

142. *Sanicula europaea* L.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies cephalonica* forest on N slopes, 1317 m, 37°55'N, 22°15'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

143. *Selinum silaifolium* (Jacq.) Beck

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31969.

144. *Seseli aroanicum* Hartvig

Gr Nomos & Eparchia Korinthias: Mt Killini, crevices of vertical limestone cliff, 1216 m, 37°58'N, 22°21'E, 27.08.2015, *Zarkos* obs. (several photos: det. *Kit Tan*, August 2015); 1615 m, 37°53'N, 22°21'E, 30.08.2015, *Zarkos* obs.; 1375–1402 m, 37°54'N, 22°21'E, 30.08.2015, *Zarkos* s.n.

New for Mt Killini, nomos and eparchia Korinthias; previously recorded from Mts Chelmos (*locus classicus*), Erimanthos and Kallifoni. Endemic to Greece (Peloponnese). A thousand plants were noted but only two were flowering. On Mt Erimanthos, the plants collected (*Strid*, *Kit Tan* & *Vold* 44800) are taller and with longer ultimate leaf segments than in the holotype from Chelmos; this tall habit was also noted in the plants from Killini.

Asteraceae

145. *Achillea umbellata* Sm.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies cephalonica* forest on NW slopes, 1692 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Endemic to Greece (Peloponnese, Sterea Ellas and Evvia).

146. *Bidens tripartitus* L.

Gr Nomos & Eparchia Korinthias: Xylokaastro, coastal pine forest, 7 m, 38°04'N, 22°39'E, 23.09.2015, *Zarkos* obs.

New for nomos and eparchia. In *Pinus halepensis* and *Pinus pinea* woodland.

147. *Centaurea athoa* subsp. *chelmea* Kit Tan, *Zarkos*, *V. Christodoulou* & *G. Vold*, **subsp. nov.** (Fig. 19)

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, stony ground along forest road in open *Abies cephalonica* woodland, 1125 m, 37°55'N, 22°16'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.; *loc. ibid.*, 12.08.2015, *Kit Tan* & *G. Vold* 31936 (holotype C; isotype ATH).

Endemic to Greece (Peloponnese). Differing from *C. athoa* DC. subsp. *athoa* (Mt Athos in NE Greece, W & S Anatolia) and *C. athoa* subsp. *parnonia* (Halácsy) E. Gamal-Eldin & Wagenitz (Mts Parnon and Taigetos in S Peloponnese) by its basal leaves with 6–11 pairs of narrowly linear-lanceolate and less densely arachnoid lateral segments (see Fig. 19). The achenes are 5–6 mm long, in *C. athoa* subsp. *athoa* they were observed to be 4.5–5 mm. *Centaurea athoa* subsp. *parnonia* has shorter and very densely arachnoid-lanate basal leaves.

148. *Centaurea grisebachii* (Nyman) Heldr.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan* & *G. Vold* 31946.



Fig. 19. *Centaurea athoa* subsp. *chelmea*, basal leaves and capitulum (photos *G. Zarkos*).

149. *Centaurea zuccariniana* DC.

Gr Nomos & Eparchia Korinthias: Mt Killini, 1470 m, 37°58'N, 22°22'E, 06.07.2015, *Zarkos* obs. New for Mt Killini. In Korinthias, recorded from Stymfalia (*Zarkos* & al. 2011) and near Sarandapicho.

150. *Echinops ritro* subsp. *ruthenicus* (M. Bieb.)

Nyman

Gr Nomos & Eparchia Korinthias: Mougosto forest, 835 m, 37°59'N, 22°36'E, 13.08.2015, *Zarkos* s.n. (det. Kit Tan, September 2015).

New for nomos and eparchia Korinthias. The plants were 20–40 cm tall. Rarely documented at subspecies rank, this is apparently the third confirmed record from the Peloponnese. *Echinops ritro* subsp. *ritro* occurs on mainland Greece.

151. *Echinops ritro* subsp. *sartorianus* (Boiss. & Heldr.) Kožuharov

Gr Nomos & Eparchia Korinthias: Mt Killini, along road to the peak Simio, 1590 m, 37°56'N, 22°25'E, 12.08.2015, *Zarkos* s.n. (det. Kit Tan, September 2015).

New for Mt Killini. Collected in Korinthias from the monastery of Ag. Giorgos, Feneos by Maire & Petitmengin in August 1906, more than a century ago (Maire & Petitmengin 1908: 120). The plants are taller than in *E. r.* subsp. *ruthenicus* being 80–100 cm in height, with pale blue capitula, unbranched or sparingly branched stems and less divided leaves. Endemic to Greece (Peloponnese and Sterea Ellas).

152. *Lactuca muralis* (L.) Gaertn.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31971.

153. *Tanacetum balsamita* L. (Fig. 20)

Gr Nomos & Eparchia Korinthias: village of Sarandapicho, 1227 m, 38°01'N, 22°22'E, 16.08.2015, *Zarkos* s.n.

New for the Peloponnese, and second record from Greece. It was first documented by Elli Stamatiadou who found it in open *Fagus* forest near the village of Hania on Mt Pilion (East Central Greece). Naturalized.

Boraginaceae**154. *Buglossoides incrassata* (Guss.) I.M. Johnst.**

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits,

rocky limestone slopes and scree, 2030 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

155. *Myosotis refracta* Boiss. subsp. *refracta*

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1995 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

156. *Myosotis sylvatica* subsp. *cyanea* (Hayek) Vestergren

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1995 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

157. *Onosma erecta* subsp. *malickyi* Teppner

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31964.

Endemic to Greece (Peloponnese).

Brassicaceae**158. *Aethionema saxatile* (L.) R. Br.**

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, along path to summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.; NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* obs.



Fig. 20. *Tanacetum balsamita* (photo G. Zarkos).

159. *Arabis alpina* L.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, path to summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

160. *Aubrieta deltoidea* (L.) DC.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, path to summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

161. *Draba lacaitae* Boiss.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1951 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

162. *Draba laconica* Stevanović & Kit Tan

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, steep NW slopes, limestone rock and scree, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

Endemic to Greece (Peloponnese).

163. *Draba lasiocarpa* Rochel subsp. *lasiocarpa*

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, path to summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

164. *Malcolmia graeca* subsp. *bicolor* (Boiss. & Heldr.) Stork

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, summit of Ntourntouvana, rocky limestone slopes, 2051 m, 37°54'N, 22°15'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

Endemic to Greece.

165. *Thlaspi graecum* Jord.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, path to summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.; NE slopes of Ntourntouvana,

5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* obs.

Endemic to Greece (Peloponnese and Sterea Ellas).

Campanulaceae**166. *Campanula aizoon* subsp. *aizoides* (Greuter) Fedorov**

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1995 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

Endemic to Greece (Peloponnese).

167. *Campanula spatulata* subsp. *spruneriana* (Hampe) Hayek

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1956 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Caryophyllaceae**168. *Arenaria cretica* Spreng.**

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, steep NW slopes, limestone rock and scree, 1790 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

169. *Bolanthus graecus* (Schreb.) Barkoudah

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: summit of Ntourntouvana, limestone scree, 2051 m, 37°54'N, 22°15'E, 24.07.2015, *Zarkos* s.n. (det. *Kit Tan*, September 2015).

New for Peloponnese, endemic to Greece (Sterea Ellas, Kiklades, E Aegean and W Aegean). Petals white with a transverse purple stripe.

170. *Cerastium candidissimum* Correns

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep NW slopes, 1692 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Endemic to Greece.

171. *Herniaria hirsuta* L.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan* & *G. Vold* 31945.

172. *Minuartia verna* (L.) Hiern

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between

summits, rocky limestone slopes and scree, 2080 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

173. *Silene caesia* Sm.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, path to summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

174. *Silene multicaulis* Guss. subsp. *multicaulis*

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep NW slopes, 1544 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

175. *Silene parnassica* Boiss. & Spruner

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep NW slopes, 1834 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

176. *Silene radicata* Boiss. & Heldr.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1978 m, 37°54'N, 22°15'E, 24.07.2015, *Zarkos* obs.

Crassulaceae

177. *Sedum dasyphyllum* L. subsp. *dasyphyllum*

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, steep NW slopes, limestone rock and scree, 1790 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

178. *Sedum hispanicum* L.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep NW slopes, 1682 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

179. *Sedum magellense* Ten. subsp. *magellense*

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, steep NW slopes, limestone rock and scree, 1790 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Dipsacaceae

180. *Cephalaria flava* subsp. *setulifera* (Boiss. & Heldr.) Kokkini

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit,

1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31965.

Endemic to Greece (Peloponnese, Sterea Ellas and Evvia).

181. *Ptercephalus perennis* Coult. subsp. *perennis*

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1984 m, 37°54'N, 22°15'E, 24.07.2015, *Zarkos* obs.; NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31961.

Endemic to Greece.

182. *Scabiosa ochroleuca* L.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31963.

Euphorbiaceae

183. *Euphorbia herniariifolia* Willd.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 2030 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

184. *Euphorbia hyssopifolia* L. (Fig. 21)

Gr Nomos & Eparchia Korinthias: Xylokastro,



Fig. 21. *Euphorbia hyssopifolia* (photo G. Zarkos).

coastal pine forest, 7 m, 38°04'N, 22°39'E, 23.09.2015, *Zarkos* obs. (photos; confirmed Kit Tan, October 2015).

New for Greece. Under *Pinus halepensis* and *P pinea* together with *Asparagus aphyllus*, *Bidens tripartitus*, *Euphorbia peplis*, *Tamarix smyrnensis* and *Rhamnus alaternus*.

185. *Euphorbia peplis* L.

Gr Nomos & Eparchia Korinthias: Xylokastro, coastal pine forest, 7 m, 38°04'N, 22°39'E, 23.09.2015, *Zarkos* obs.

New for nomos and eparchia. In *Pinus halepensis* and *Pinus pinea* woodland.

Fabaceae

186. *Astragalus depressus* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 2030 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

187. *Ononis pusilla* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, steep NW slopes, limestone rock and scree, 1600 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

188. *Tripodion graecum* (Boiss.) Lassen (Fig. 22)

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep rocky NW slopes, 1692 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Occurring only in Peloponnese and S Anatolia.

189. *Vicia cracca* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes,



Fig. 22. *Tripodion graecum* (photo G. Zarkos).

forest road in *Abies cephalonica* woodland, 1317 m, 37°55'N, 22°15'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

Geraniaceae

190. *Geranium rotundifolium* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31975.

Globulariaceae

191. *Globularia stygia* Boiss. (Fig. 23)

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 2030 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

Endemic to Greece (Peloponnese).

Grossulariaceae

192. *Ribes uva-crispa* subsp. *austro-europaeum* (Bornm.) Bech.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, steep



Fig. 23. *Globularia stygia* (photo G. Zarkos).

NW slopes, limestone rock and scree, 1600 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.; Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan* & *G. Vold* obs.

Hypericaceae

193. *Hypericum perforatum* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31975.

Lamiaceae

194. *Acinos alpinus* subsp. *meridionalis* (Nyman) P.W. Ball

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep rocky NW slopes, 1692 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

195. *Marrubium velutinum* subsp. *cylleneum* (Boiss. & Heldr.) Nyman

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep rocky NW slopes, 1692 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Endemic to Greece (Peloponnese, Sterea Ellas and S Pindos).

196. *Melittis melissophyllum* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31968.

197. *Micromeria juliana* (L.) Rchb.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31972.

198. *Origanum vulgare* subsp. *hirtum* (Link) A. Terracc.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan* & *G. Vold* 31941.

199. *Phlomis samia* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan* & *G. Vold* 31948.

200. *Scutellaria rupestris* Boiss. & Heldr. subsp. *rupestris*

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1980 m, 37°54'N, 22°15'E, 24.07.2015, *Zarkos* obs.; Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan* & *G. Vold* 31947.

Endemic to Greece (Peloponnese).

201. *Sideritis clandestina* subsp. *peloponnesiaca* (Boiss. & Heldr.) Baden

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, steep NW slopes, limestone rock and scree, 1600 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.; NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31966.

Endemic to Greece (Peloponnese).

202. *Teucrium montanum* L. subsp. *montanum*

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1980 m, 37°54'N, 22°15'E, 24.07.2015, *Zarkos* obs.; NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit Tan* & *G. Vold* 31962.

203. *Thymus leucotrichus* Halácsy subsp. *leucotrichus*

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep rocky NW slopes, 1692 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

204. *Thymus longicaulis* subsp. *chaubardii* (Rchb. f.) Jalas

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep rocky NW slopes, 1692 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Orobanchaceae**205. *Odontites linkii* Boiss.**

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan* & *G. Vold* 31949.

Endemic to Greece.

Plantaginaceae**206. *Plantago holosteum* Scop.**

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan* & *G. Vold* 31944.

Plumbaginaceae**207. *Armeria canescens* (Host) Boiss.**

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 2030 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

Polygalaceae**208. *Polygala alpestris* Rchb.**

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1956 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

209. *Polygala rausiana* U. Raabe & al. (Fig. 24)

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, E slopes, edge of forest path, 1135 m, 37°54'N, 22°16'E, 14.07.2015, *Zarkos* obs.

Endemic to Greece (Peloponnese), southernmost occurrence of species.

Rosaceae**210. *Potentilla speciosa* Willd.**

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: summit of Ntourntouvana, limestone scree, 2051 m, 37°54'N, 22°15'E, 24.05.2015, *Zarkos* & *Christodoulou* obs.

Rubiaceae**211. *Asperula laevigata* L.**

Gr Nomos & Eparchia Korinthias: edge of Lake Doxa, 885 m, 37°55'N, 22°17'E, 19.06.2015, *Zarkos* obs. (photos); *loc. ibid.*, *Kit Tan* & *G. Vold* obs.

New for nomos and eparchia Korinthias.

212. *Asperula oetaea* (Boiss.) Halácsy

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep rocky NW slopes, 1835 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.; ridge between summits, rocky limestone slopes and scree, 1956 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.

Endemic to Greece (Peloponnese, Sterea Ellas and S Pindos).

213. *Galium rotundifolium* L.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on steep rocky NW slopes, 1545 m, 37°55'N, 22°14'E, 09.07.2015, *Zarkos* obs.

214. *Galium thymifolium* Boiss. & Heldr.

Gr Nomos Achaias/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1956 m, 37°54'N, 22°14'E, 09.07.2015, *Zarkos* obs.



Fig. 24. *Polygala rausiana* (photo G. Zarkos).

Endemic to Greece (Peloponnese, Sterea Ellas and Evvia).

215. *Galium verticillatum* Danthoine

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/
Korinthias: Ntourntouvana, ridge between
summits, rocky limestone slopes and scree,
1896 m, 37°54'N, 22°14'E, 24.07.2015, *Zarkos* obs.

Santalaceae

216. *Viscum album* subsp. *abietis* (Wiesb.) K. Malý

Gr Nomos & Eparchia Korinthias: east of
Sarandapicho village, 1403 m, 38°01'N, 22°23'E,
03.11.2015, *Zarkos* obs. (photos; confirmed Kit
Tan, November 2015); *loc. ibid.*, 01.12.2015, *Kit
Tan* & *G. Vold* s.n.

From Korinthias, there are a few reports from the foot-
hills of Mt Killini. Observed parasitizing *Abies cepha-*
lonica on both sides of the road.

217. *Viscum album* L. subsp. *album* (Fig. 25)

Gr Nomos & Eparchia Korinthias: east of
Sarandapicho village, 1369 m, 38°01'N,
22°23'E, 03.11.2015, *Zarkos* obs. (photos; host
confirmed by Kit Tan, November 2015); *loc. ibid.*,
01.12.2015, *Kit Tan* & *G. Vold* 32028

New for nomos and eparchia. Parasitic on the inva-
sive *Robinia pseudoacacia*, which is a new host report
for Greece.

218. *Viscum album* subsp. *austriacum* (Wiesb.) Vollm.

Gr Nomos & Eparchia Korinthias: along road east of
Sarandapicho village, 1403 m, 38°01'N, 22°23'E,
03.11.2015, *Zarkos* obs. (photos; confirmed Kit
Tan, November 2015); *loc. ibid.*, 01.12.2015, *Kit
Tan* & *G. Vold* 32026.



Fig. 25. *Viscum album* subsp. *album* on *Robinia pseudoacacia*
(photo G. Zarkos).

New for nomos and eparchia. On *Pinus nigra*, also
on both sides of the road. Thus in the same area in
Korinthias, all three subspecies of *Viscum album* were
found. It is possible Maire & Petitmengin (1908: 101)
had already collected *Viscum album* subsp. *austria-*
cum from Korinthias (from Flabouritsa, Mt Killini)
more than a century ago, describing the plant as “sur
les branches du Pinus laricio [*P. nigra*]”. Because only
V. album subsp. *abietis* had been later noted in *Abies
cephalonica* forest at Flabouritsa, this report had not
received the attention it deserved or perhaps it was
considered as referring to *V. album* subsp. *abietis* al-
though the host was *Pinus nigra*.

Saxifragaceae

219. *Saxifraga scardica* Griseb.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/
Korinthias: Ntourntouvana, ridge between
summits, rocky limestone slopes and scree,
1995 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos* &
Christodoulou obs.

Scrophulariaceae

220. *Verbascum epixanthinum* Boiss. & Heldr.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/
Korinthias: Ntourntouvana, open *Abies* forest on
steep rocky NW slopes, 1692 m, 37°55'N, 22°14'E,
09.07.2015, *Zarkos* obs.

Endemic to Greece.

Tamaricaceae

221. *Tamarix smyrnensis* Bunge

Gr Nomos & Eparchia Korinthias: Xylokastro,
coastal pine forest, 7 m, 38°04'N, 22°39'E,
23.09.2015, *Zarkos* obs.

New for nomos and eparchia. Introduced planting in
Pinus halepensis and *P. pinea* woodland, together with
Rhamnus alaternus.

Veronicaceae

222. *Digitalis laevigata* subsp. *graeca* (Ivanina)

Werner

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/
Korinthias: NE slopes of Ntourntouvana, 5 km
from Panorama along forest road to the summit,
1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, *Kit
Tan* & *G. Vold* 31967.

223. *Veronica hederifolia* L.

Gr Nomos Achaïas/Korinthias, Eparchia
Kalavriton/Korinthias: Ntourntouvana,

summit of Triadafilía, stony limestone scree, 2085 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos & Christodoulou* obs.

Widespread in N and C Peloponnese.

224. *Veronica praecox* All.

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, summit of Triadafilía, stony limestone scree, 2085 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos & Christodoulou* obs.

225. *Veronica thymifolia* Sm.

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 1995 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos & Christodoulou* obs.

Endemic to Greece (Peloponnese, Sterea Ellas and Crete).

226. *Veronica verna* L.

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, summit of Triadafilía, stony limestone scree, 2085 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos & Christodoulou* obs.

Violaceae

227. *Viola graeca* (W. Becker) Halácsy

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, ridge between summits, rocky limestone slopes and scree, 2030 m, 37°54'N, 22°14'E, 24.05.2015, *Zarkos & Christodoulou* obs.

Endemic to Greece (Peloponnese and Sterea Ellas).

228. *Viola mercurii* Halácsy

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, along path to the summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos & Christodoulou* obs.

Endemic to Greece (Peloponnese).

Alliaceae

229. *Allium guttatum* subsp. *tenorei* (Parl.) Soldano

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes, along forest road in open *Abies cephalonica* woodland, 1120–1125 m, 37°55'N, 22°16'E, 12.08.2015, *Kit Tan & G. Vold* 31940.

Colchicaceae

230. *Colchicum atticum* Spruner ex Tomm. (Fig. 26)

Gr Nomos & Eparchia Korinthias: pine forest at Palaeo Kalamaki, 19 m, 37°53'N, 23°00'E, 18.11.2015, *Zarkos* obs.; *loc. ibid.*, 01.12.2015, *Kit Tan, G. Vold & Zarkos* obs.; *loc. ibid.*, 28 m, 18.11.2015, *Zarkos* obs.; *loc. ibid.*, 01.12.2015, *Kit Tan, G. Vold & Zarkos* obs.; Mt Onia, stony phrygana, 214 m, 37°52'N, 22°59'E, 26.11.2015, *Zarkos* obs.; *loc. ibid.*, 01.12.2015, *Kit Tan, G. Vold & Zarkos* 32030 (living plants also collected).

New for the Peloponnese. Recorded from Sterea Ellas, North Central, North East, North, East and West Aegean islands.

Hyacinthaceae

231. *Muscari botryoides* (L.) Mill.

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, along path to the summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, *Zarkos & Christodoulou* obs.

Liliaceae

232. *Fritillaria graeca* Boiss. & Spruner

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: summit of Ntourntouvana, rocky and stony limestone scree, 2051 m, 37°54'N, 22°15'E, 24.05.2015, *Zarkos & Christodoulou* obs.

Orchidaceae

233. *Cephalanthera longifolia* (L.) Fritsch

Gr Nomos Achaías/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, open *Abies* forest on



Fig. 26. *Colchicum atticum* (photo G. Zarkos).

steep rocky NW slopes, 1692 m, 37°55'N, 22°14'E, 09.07.2015, Zarkos obs.

234. *Dactylorhiza sambucina* (L.) Soó

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, along path to the summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, Zarkos & Christodoulou obs.

235. *Epipactis helleborine* (L.) Crantz

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, NE slopes, along forest road in *Abies cephalonica* woodland, 1317 m, 37°55'N, 22°15'E, 24.05.2015, Zarkos & Christodoulou obs.

236. *Orchis pallens* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, along path to summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, Zarkos & Christodoulou obs.

237. *Orchis spitzelii* W.D.J. Koch subsp. *spitzelii*

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: Ntourntouvana, W slopes, along path to summit, in *Abies cephalonica* and *Juniperus communis* subsp. *hemisphaerica* forest, 1620 m, 37°55'N, 22°14'E, 24.05.2015, Zarkos & Christodoulou obs.

Poaceae

238. *Melica ciliata* L.

Gr Nomos Achaïas/Korinthias, Eparchia Kalavriton/Korinthias: NE slopes of Ntourntouvana, 5 km from Panorama along forest road to the summit, 1320–1350 m, 37°55'N, 22°15'E, 12.08.2015, Kit Tan & G. Vold 31973.

Report 239

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Boraginaceae

239. *Echium russicum* J.F. Gmel. (Figs. 27, 28)

Gr Nomos & Eparchia Dramas: Mt Falakron, Aj. Pavlos, SE-facing slope, subalpine pastures and rocky outcrops, 1450–1600 m, 41°15'50"N, 23°53'13"E, 13.07.2012, Simoglou, Dordas & Koutsos s.n. (photos).

This is the second record of *Echium russicum* from Greece, the first being a collection by Elli Stamatiadou



Fig. 27. *Echium russicum* in full flower, visited by butterflies (photo K.B. Simoglou).



Fig. 28. *Echium russicum* flowers (photo K.B. Simoglou).

in 1981 (Stamatiadou 22355, ATH). Comments on ecology, habitat and distribution are provided in the following paragraphs. We found a small population of 100 plants for the first time in 2012 on a SE-facing slope of Mt Falakron at an altitude of 1450–1600 m. They were in full flower from mid-June to mid-July. The tubular corollas were a bright coral red and the ripe fruits black. We realized this was *Echium russicum* which to our knowledge, does not seem to have been documented from Greece and reported our discovery in a Greek publication which we sent to Kit Tan (Simoglou & al. 2015).

In the two localities of ca. 1.5 ha, rather shallow soil overlies the limestone slope and at the edges of the slope, apparently deeper soil supports a more dense *Fagus* forest cover. The vegetation in this small area includes *Festuca rubra*, *Valeriana officinalis*, *Thymus* spp., *Sideritis scardica*, *Centaurea salonitana*, *Stachys officinalis*, *Rhinanthus rumelicus*, *Delphinium fissum*, *Gladiolus palustris*, *Anthyllis aurea*, *Trifolium alpestre*, *Teucrium montanum*, *Senecio macedonicus*, *Coronilla varia*, *Jurinea mollis*, *Asyneuma limonifolium*, *Campanula persicifolia*, *Filipendula vulgaris* and *Rosa pimpinellifolia*, etc. In the following years of 2013, 2014 and 2015 we realized that *Echium russicum* is well-established on Mt Falakron, with steady numbers of ca. 100 plants.

According to Taravati & al. (2013) *Echium russicum* has high concentrations of anthocyanins (65 mg/g), the level of which depends on the intensity of the solar radiation in its habitat, and lower concentration of tannins (26 mg g). We noted that the plants were very attractive to various species of bees and butterflies; it is considered a honey-plant (Tashev & Pancheva 2011), producing sufficient quantities of nectar throughout the flowering period, with high (58%) sugar content (Chwil & Wesyszko-Chmielewska 2007). It also attracts the beetle *Phytoecia coeruleascens* (Cerambycidae) which is a known pest of the genus (Kirk & Wapshere 1979.).

The seeds which contain a high concentration of omega-3 and omega-6 fatty acids, make it a valuable plant for cultivation and production of useful fatty acids (Guil-Guerrero 2003). The plant is at risk in the wild probably due to over-collecting in the countries where it grows as it is considered a medicinal plant with healing properties (Altundag & Ozturk 2011). It has much ornamental value, being known horticulturally as Red-flowered Viper's Bugloss. *Echium russicum* is thus listed

as endangered in the *European Red List of Angiosperm Plants* (Bilz & al. 2011). It is also included in Annexes II and IV of the Habitats Directive 92/43/EU (as amended by the Directive 2013/17/EU) which covers European species requiring strict protection and Special Areas of Conservation. The less easily accessible localities on Mt Falakron would thus help to protect the plant and increase its survival possibilities. The populations have been monitored every year since the summer of 2012 and the plants were found to remain in good stand.

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