

## New floristic records in the Balkans: 50\*

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**Abstract.** New chorological data are presented for 147 species and subspecies from Bulgaria (24-31, 102-104, 125-144), Greece (16-23, 32-101, 105-124, 145-147), and Turkey-in-Europe (1-15). The taxa belong to the following families: *Alliaceae* (117, 122), *Anacardiaceae* (16), *Apiaceae* (106, 107, 125, 145), *Asclepiadaceae* (126), *Asteraceae* (1, 17, 108-110, 118, 119, 127-129), *Brassicaceae* (18, 111, 120, 130, 146), *Cactaceae* (131), *Capparaceae* (112), *Caprifoliaceae* (132), *Caryophyllaceae* (2, 24, 121, 133, 134), *Chenopodiaceae* (3), *Convolvulaceae* (4), *Crassulaceae* (19, 147), *Cucurbitaceae* (5), *Ephedraceae* (105), *Euphorbiaceae* (25, 113), *Fabaceae* (6, 7, 20, 26-28, 114, 115, 135), *Fagaceae* (40, 41), *Frankeniaceae* (42), *Fumariaceae* (21, 43), *Geraniaceae* (44, 136), *Junaceae* (30), *Lamiaceae* (45-48, 137), *Lentibulariaceae* (103), *Linaceae* (49), *Lythraceae* (50), *Malvaceae* (51-53), *Nymphaeaceae* (138), *Oleaceae* (8, 116), *Orchidaceae* (23, 32-39), *Orobanchaceae* (29, 54-57), *Papaveraceae* (9, 59-61), *Plumbaginaceae* (10, 62, 63), *Poaceae* (31, 124, 143, 144), *Polygalaceae* (64), *Polygonaceae* (11, 22, 65-69), *Portulacaceae* (70), *Rafflesiaceae* (71), *Ranunculaceae* (72-76), *Resedaceae* (77), *Rosaceae* (12, 104, 139, 140), *Rubiaceae* (78, 79), *Rutaceae* (80), *Santalaceae* (81), *Scrophulariaceae* s.l. (13, 82, 83), *Solanaceae* (84-87, 123, 141), *Thelypteridaceae* (102), *Trapaceae* (142), *Tropaeolaceae* (88), *Urticaceae* (89), *Valerianaceae* (14, 91, 92), *Verbenaceae* (15, 93), *Veronicaceae* (94-100), and *Zygophyllaceae* (101).

New taxa for the countries are: Greece – *Bunium bulbocastanum* (145).

The publication includes contributions by: M. Aybeke (1-15), B. Biel & Kit Tan (16-23), D.S. Dimitrov (24-31), I. Gavalas (32-39), I. Gavalas, Kit Tan & R. Jahn (40-101), R. Natcheva, D. Ivanova & K. Lakovski (102-104), K. Polymenakos, Kit Tan & V. Pantavos (105-117), Kit Tan & G. Kofinas (118-122), I.T. Tsialtas & Kit Tan (123-124), R. Tzonev, Ch. Gushev, V. Georgiev, S. Tsoneva & K. Pachedjieva (125-144), G. Zarkos & Kit Tan (145-147).

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

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

## Reports 1–15

### Mehmet Aybeke

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This is a report of 15 new records belonging to different families from European Turkey.

#### Asteraceae

##### 1. *Xanthium spinosum* L.

**Tu(E)** A1(E) Edirne: centre, in pasture of Musabeyli village, in dry grassland, 23.06.1989, coll. *F. Dane* & *N. Aktaç*, det. *F. Dane* (EDTU 3593).

A new species for A1(E) Edirne in European Turkey. According to Kupicha (1975), this taxon was known from A1(E) Çanakkale and A2(E) Istanbul.

#### Caryophyllaceae

##### 2. *Cucubalus baccifer* L.

**Tu(E)** A1(E) Edirne: center, Söğütlük forest, under the forest canopy, 10.08.1989, coll. & det. *F. Dane* (EDTU 3829).

A new species for A1(E) Edirne in European Turkey. According to Cullen (1967), this taxon was known only from A2(E) Istanbul.

#### Chenopodiaceae

##### 3. *Chenopodium botrys* L.

**Tu(E)** A1(E) Edirne: centre, in pasture of Musabeyli village, 23.06.1989, coll. *F. Dane* & *N. Aktaç*, det. *F. Dane* (EDTU 3597).

A new species for European Turkey. According to Aellen (1967), this taxon was known from A4 Ankara, A6 Samsun, and is claimed to have been found in the Mediterranean area, C & E Europe, and Asia.

#### Convolvulaceae

##### 4. *Convolvulus arvensis* L.

**Tu(E)** A1(E) Edirne: center, in pasture of Musabeyli village, in dry grassland, 23.06.1989, coll. *F. Dane* & *N. Aktaç*, det. *F. Dane* (EDTU 3625).

A new species for A1(E) Edirne in European Turkey. According to Parris (1978), this taxon was seen in A1(E) Kirklareli and A2(E) Istanbul.

#### Cucurbitaceae

##### 5. *Bryonia alba* L.

**Tu(E)** A1(E) Tekirdağ: Şarköy, Merkez, center, on field edge, 10.06.1992, coll. & det. *F. Dane* (EDTU 4940). A new species for A1(E) Tekirdağ in European Turkey. According to Jeffrey (1972), this taxon was known only from A2(E) Istanbul.

#### Fabaceae

##### 6. *Lotus angustissimus* L.

**Tu(E)** A1(E) Edirne: centre, in pasture of Musabeyli village, 23.06.1989, coll. *F. Dane* & *N. Aktaç*, det. *F. Dane* & *A. Baytop* (EDTU 3566).

A new species for A1(E) Edirne in European Turkey. According to Heyn (1970), this taxon was found in A2(E) Istanbul.

##### 7. *Medicago lupulina* L.

**Tu(E)** A1(E) Edirne: centre, Kaleiçi, a historical building stone wall site, 30.06.1992, coll. & det. *F. Dane* (EDTU 5743)

A new species for Edirne in European Turkey. According to Davis (1970), this taxon was found only in A2(E) Istanbul.

#### Oleaceae

##### 8. *Fraxinus angustifolia* subsp. *oxycarpa* (Willd.) Franco & Rocha Afonso

**Tu(E)** A1(E) Kirklareli: Vize, on lake Saka shore, 05.09.1989, coll. *S. Yurtsever*, det. *F. Dane* (EDTU 3914).

A new species for A1(E) Kirklareli in European Turkey. According to Yaltırık (1978), this taxon was seen in A1(E) Tekirdağ and A2(E) Istanbul.

#### Papaveraceae

##### 9. *Fumaria densiflora* DC.

**Tu(E)** A1(E) Çanakkale: Gelibolu, Cevizlikoy, in a stream bed, 27.03.1983, coll. *Ş. Orkun*, det. *F. Dane* (EDTU 4293).

A new species for A1(E) Çanakkale in European Turkey. According to Cullen (1965), this taxon was known from A1(E) Tekirdağ.

#### Plumbaginaceae

##### 10. *Plumbago europaea* L.

**Tu(E)** A1(E) Edirne: center, on campus, 18.09.1989, coll. & det. *F. Dane* (EDTU 3927).

A new species for A1(E) Edirne in European Turkey. According to Bokhari & Edmondson (1982), this taxon was known only from A2(E) Istanbul.

**Polygonaceae****11. *Polygonum aviculare* L.**

**Tu(E)** A1(E) Edirne: center, in pasture of Musabeyli village, 15.09.1989, coll. *F. Dane* & *N. Polat*, det. *F. Dane* (EDTU 3877).

A new species for A1(E) Edirne in European Turkey. According to Coode & Cullen (1967), this taxon was known only from A1(E) Tekirdağ.

**Rosaceae****12. *Rosa canina* L.**

**Tu(E)** A1(E) Edirne: Lalapaşa, 4<sup>th</sup> km between Hamzabeyli-Donköy, 21.05.1992, coll. *E. Abacı*, det. *F. Dane* (EDTU 4874).

A new species for A1(E) Edirne in European Turkey. According to Nilsson (1972), this taxon was known from A1(E) Tekirdağ and A2(E) Istanbul.

**Scrophulariaceae****13. *Odontites verna* subsp. *serotina* (Dumort.) Corb.**

**Tu(E)** A1(E) Edirne: center, Faculty of Medicine, on campus, 15.09.1993, coll. & det. *F. Dane* (EDTU 5868).

A new species for A1(E) Edirne in European Turkey. According to Hedge (1978), this taxon was known only from A2(E) Istanbul.



**Fig. 1.** *Pistacia atlantica* (photo B. Biel).

**Valerianaceae****14. *Centhranthus ruber* (L.) DC.**

**Tu(E)** A1(E) Edirne: center, 10.07.1991, coll. & det. *F. Dane* (EDTU 5764).

A new species for A1(E) Edirne in European Turkey. According to Richardson (1972), this taxon was seen in A1(E) Çanakkale and A2(E) Istanbul.

**Verbenaceae****15. *Vitex agnus-castus* L.**

**Tu(E)** A1(E) Tekirdağ: Şarköy, 16.08.1989, coll. & det. *F. Dane* (EDTU 4090).

A new species for A1(E) Tekirdağ in European Turkey. According to Townsend (1982), this taxon was seen only in A1(E) Çanakkale.

**Reports 16–23****Burkhard Biel<sup>1</sup> & Kit Tan<sup>2</sup>**

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This is the ninth report of new plant-records for the island of Milos (phytogeographical region Kiklades, Nomos Kikladon, Eparchia Milou) based on visits in spring 2010, 2021 and 2022. The 8 records listed are new for the island unless otherwise stated. None of the species were found to be new for the floristic region Kiklades (Kik) as circumscribed in *Flora Hellenica* (Strid & Tan 1997), and the total number of new records we have so far found for this floristic region remains at 95. Occurrence on the other Kikladean islands is briefly summarized.

**Anacardiaceae****16. *Pistacia atlantica* Desf. (Fig. 1)**

**Gr** Nomos Kikladon, Eparchia Milou: Adamas, eastern village, phrygana on hill, 15 m, 36°43'40"N, 24°27'04"E, 16.05.2022, *Biel* obs. (photo).

Perhaps a remnant of cultivation. Recorded from Amorgos in the Kiklades and from several East Aegean Islands.





Fig. 2. *Malcolmia nana* (photo B. Biel).

#### Asteraceae

##### 17. *Phagnalon rupestre* (L.) DC. subsp. *rupestre*

Gr Nomos Kikladon, Eparchia Milou: N of Agia Marina, open phrygana and fallow land, pasture at road, 20 m, 36°41'54"N, 24°24'19"E, 07.05.2021, *Biel* 21.084.

Recorded from Andikeros, Anidros, Pachia and Schinoussa. All outer phyllaries are oblong-lanceolate and obtuse-tipped as compared to the phyllaries of *P. rupestre* subsp. *graecum* which are lanceolate and acute.

#### Brassicaceae

##### 18. *Malcolmia nana* (DC.) Boiss. (Fig. 2)

Gr Nomos Kikladon, Eparchia Milou: NE Achivadolimni, beach with *Tamarix* and phrygana, waste ground, 2 m, 36°41'18"N, 24°26'45"E, 12.03.2010, *Biel* 10.015.

Confirming report by Kalpoutzakis & al. (2019) from the same locality, otherwise recorded only from Naxos.

#### Crassulaceae

##### 19. *Umbilicus parviflorus* (Desf.) DC.

Gr Nomos Kikladon, Eparchia Milou: SW of Adamas, Mt Profitis Ilias, rocky phrygana below summit, 720 m, 36°40'33"N, 24°22'59"E, 30.03.2022, *Biel* obs. (photo).

Recorded from Amorgos, Naxos and the small adjacent island of Kimolos.

#### Fabaceae

##### 20. *Vicia pubescens* (DC.) Link

Gr Nomos Kikladon, Eparchia Milou: N of Profitis Ilias, *Sarcopoterium-Thymbra* phrygana with olive trees and water source near Ag. Georgios, 170 m, 36°41'38"N, 24°23'08"E, 10.05.2022, *Biel* 22.227.

Confirming report by Kalpoutzakis & al. (2019) from the northeastern part of the island; recorded from Amorgos, Andros, Ios and Naxos.

#### Fumariaceae

##### 21. *Fumaria capreolata* L.

Gr Nomos Kikladon, Eparchia Milou: Adamas, eastern part of village, phrygana and waste ground above concrete road, 15 m, 36°43'33"N, 24°27'15"E, 27.03.2022, *Biel* 22.034.

Recorded from most of the Kiklades. Also noted near Psathadika.

#### Polygonaceae

##### 22. *Rumex obtusifolius* L.

Gr Nomos Kikladon, Eparchia Milou: Plaka, park and olive plantation near stadium, 130 m, 36°44'38"N, 24°25'44"E, 16.05.2022, *Biel* 22.321.



Fig. 3. *Ophrys ferrum-equinum* × *O. sphegodes* subsp. *mammosa* (photo B. Biel).



Recorded from Andros in the Kiklades. Also noted NNW of Ag. Marina.

#### Orchidaceae

**23. *Ophrys ferrum-equinum*** Desf. × *O. sphegodes* subsp. *mammosa* (Desf.) E. Nelson (Fig. 3)

**Gr** Nomos Kikladon, Eparchia Milou: Milos, W of Kato Komia, terraced olive plantation with phrygana, 140 m, 36°43'18"N, 24°31'07"E, 06.04.2022, *Biel* obs. (photo).

Also noted ESE of Zefyria.

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

## Reports 24–31

### Dimitar S. Dimitrov

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#### Caryophyllaceae

**24. *Dianthus stenopetalus*** Griseb.

**Bu** West Frontier Mts: Vlahina Mt., the village of Debochitsa, 1000 m, FM63, 07.2009, leg. & det. *I. Aneva* & *D. Dimitrov* (SOM 165 863).

#### Euphorbiaceae

**25. *Euphorbia seguieriana*** Neck.

**Bu** Sofia Region: near Electronica factory, FN93, 16.06.2011, leg. & det. *D. Dimitrov* (SOM 168 307).

#### Fabaceae

**26. *Astragalus glaucus*** M. Bieb.

**Bu** Danubian Plain: on calcareous sands E of the village of Kulina Voda, Belene Municipality, LJ42, 28.04.2012, leg. & det. *D. Dimitrov* (SOM 107 741).

**27. *Trifolium striatum*** subsp. *tenuiflorum* (Ten.) Koz.

**Bu** Northeastern Bulgaria: on the track of gas Nabuko by the village of Zvezditsa, Omurtag Municipality, NH67, 01.06.2009, leg. & det. *D. Dimitrov* (SOM 169 372).

**28. *Trifolium trichopterum*** Pančić

**Bu** Tundzha Hilly Country: near the village of Alexandrovo, Yambol district, MG98, 30.05.2009, leg. & det. *D. Dimitrov* (SOM 169 371).

#### Orobanchaceae

**29. *Orobanche lutea*** Baumg.

**Bu** Rila Mts: Beliyat Ulej above Kirilova Polyana locality, FM96, 07.2008, leg. & det. *D. Dimitrov* (SOM 168 302).

#### Juncaceae

**30. *Juncus ranarius*** Songeon & E.P. Perrier

**Bu** West Frontier Mts: (Maleshevska Mt., Sokolata Reserve, FM70, 04.2009, leg. & det. *D. Dimitrov* (SOM 172 868).

#### Poaceae

**31. *Stipa pennata*** L.

**Bu** Thracian Lowland: Balgarenska River under the village of Balgarin, MG14, Harmanli Municipality, 15.05.2011, leg. & det. *D. Dimitrov* (SOM 168 247).

## Reports 32–39

### Ioannis Gavalas

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A continuation of new floristic records for the island of Iraklia (Nomos Kikladon, Eparchia Thiras); the first part (Pteridophytes to *Fabaceae*) was presented in *Phytologia Balcanica* 28(3): 410–420 (2022), and the second in *Phytologia Balcanica* 29(1): 107–148 (2023). This article deals solely with the *Orchidaceae* the localities of which are indicated by distribution maps.

#### Orchidaceae

**32. *A. fragrans*** (Pollini) R.M. Bateman × *A. sancta* (L.) R.M. Bateman & al. [*Anacamptis* × *kallithea* (E. Klein) H. Kretzschmar, Eccarius & H. Dietr., nom. inval.] (Fig. 4)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 80 m SE of Dexameni, phrygana, 80 m, 36°50'49"N, 25°27'31"E, 23.04.2009, *Gavalas* obs. (photo).

Flowering from mid April to mid May. Uncommon in open habitats. Usually found together with *A. fragrans* and *A. sancta*.

**33. *Ophrys apifera*** Hudson (Fig. 5)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island,

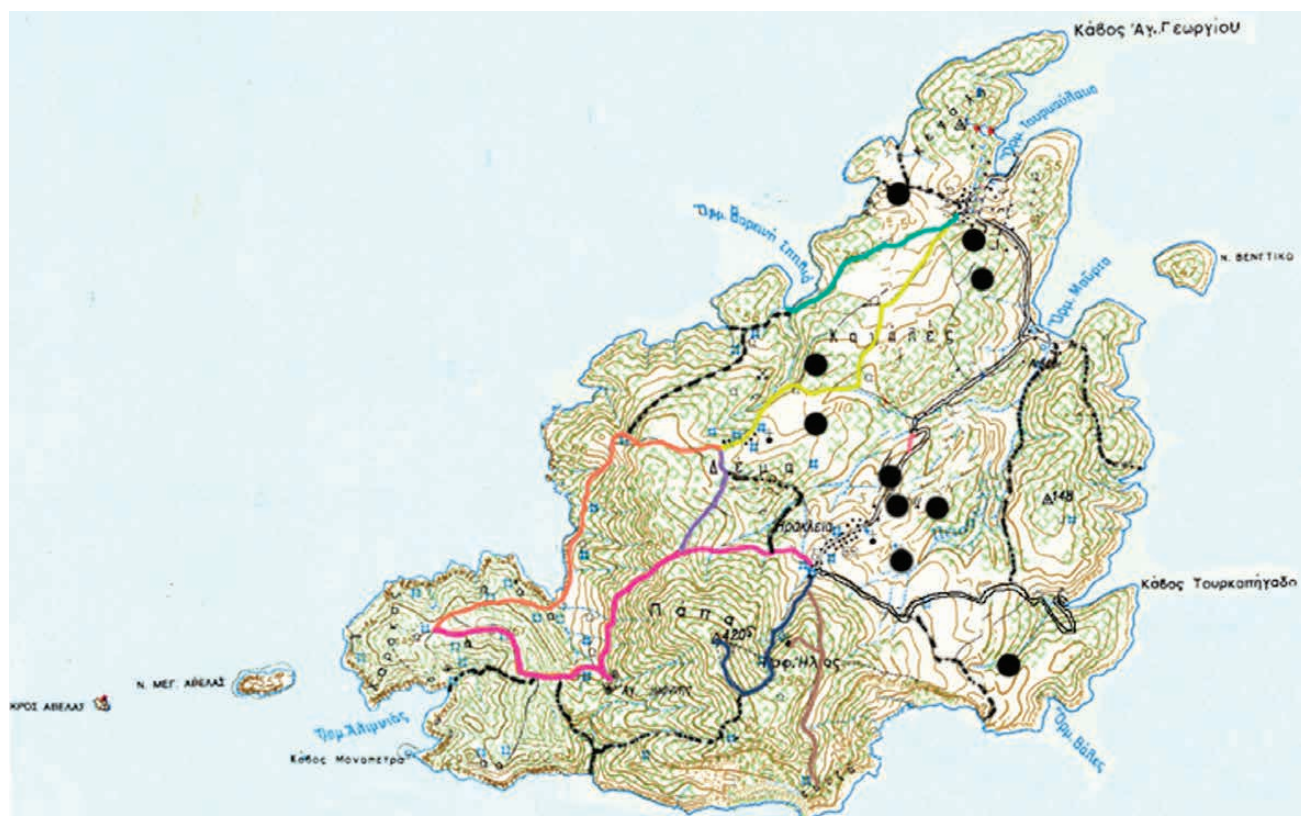


Fig. 4. Distribution of *Anacamptis fragrans* × *A. sancta* on Iraklia.



Fig. 5. Distribution of *Ophrys apifera* on Iraklia.



570 m NE of Agia Paraskevi church, 100 m, under olive tree in small valley, 36°50'31"N, 25°27'45"E, 07.05.2020, *Gavalas* obs. (photo).

Two plants only found once.

**34. *Ophrys cretica* subsp. *beloniae*** G. Kretzschmar & H. Kretzschmar (Fig. 6)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 50 m W of Livadi, sandy shore, 50 m, 36°51'07"N, 25°28'19"E, 16.03.2014, *Gavalas* obs. (photo).

Flowering from mid March to late April. Two plants distant from each other, found annually after 2014.

**35. *Ophrys lychnitis*** Paulus & M. Hirth [syn.: *Ophrys tenthredinifera* Willd.] (Fig. 7)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 65 m SW of Skordilis house, 33 m, phrygana, 36°51'26"N, 25°27'47"E, 03.03.2008, *Gavalas* obs. (photo).

Flowering from late January to late March. Uncommon in N-facing open habitats.

**36. *Ophrys parosica*** P. Delforge (Fig. 8)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island,

700 m W-SW of Tourkopigado, 84 m, phrygana, 36°49'44"N, 25°28'06"E, 21.03.2012 *Gavalas* obs. (photo).

Single locality, two plants together, found annually after 2012.

**37. *Ophrys parvula*** Paulus (Fig. 9)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 360 m SE of Antliostasio, 85 m, abandoned NW-facing terraced field reverting to open phrygana, 36°50'37"N, 25°27'55"E, 02.04.2009, *Gavalas* obs. (photo).

Flowering from early March to mid April. Single locality visited annually after 2009 and single plant found only once. Erroneously referred to *Ophrys cinereophila* Paulus & Gack in Antonopoulos & al. (2010).

**38. *Ophrys sitiaca*** Paulus, C. Alibertis & A. Alibertis (Fig. 10)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 1.4 km S-SW of Panagia church, 280 m, phrygana, 36°49'29"N, 25°27'10"E, 20.01.2013, *Gavalas* obs. (photo).



**Fig. 6.** Distribution of *Ophrys cretica* subsp. *bicornuta* on Iraklia.



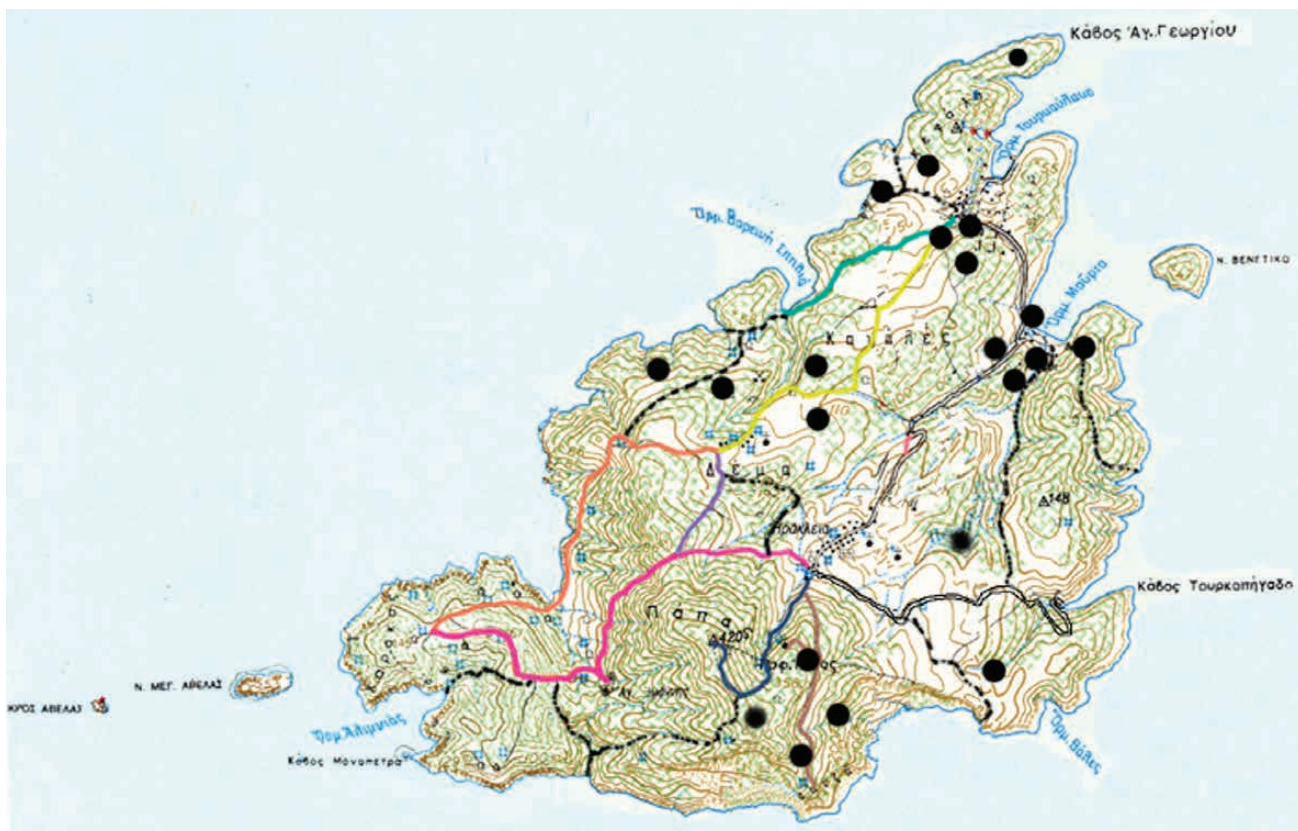


Fig. 7. Distribution of *Ophrys lychnitis* on Iraklia.

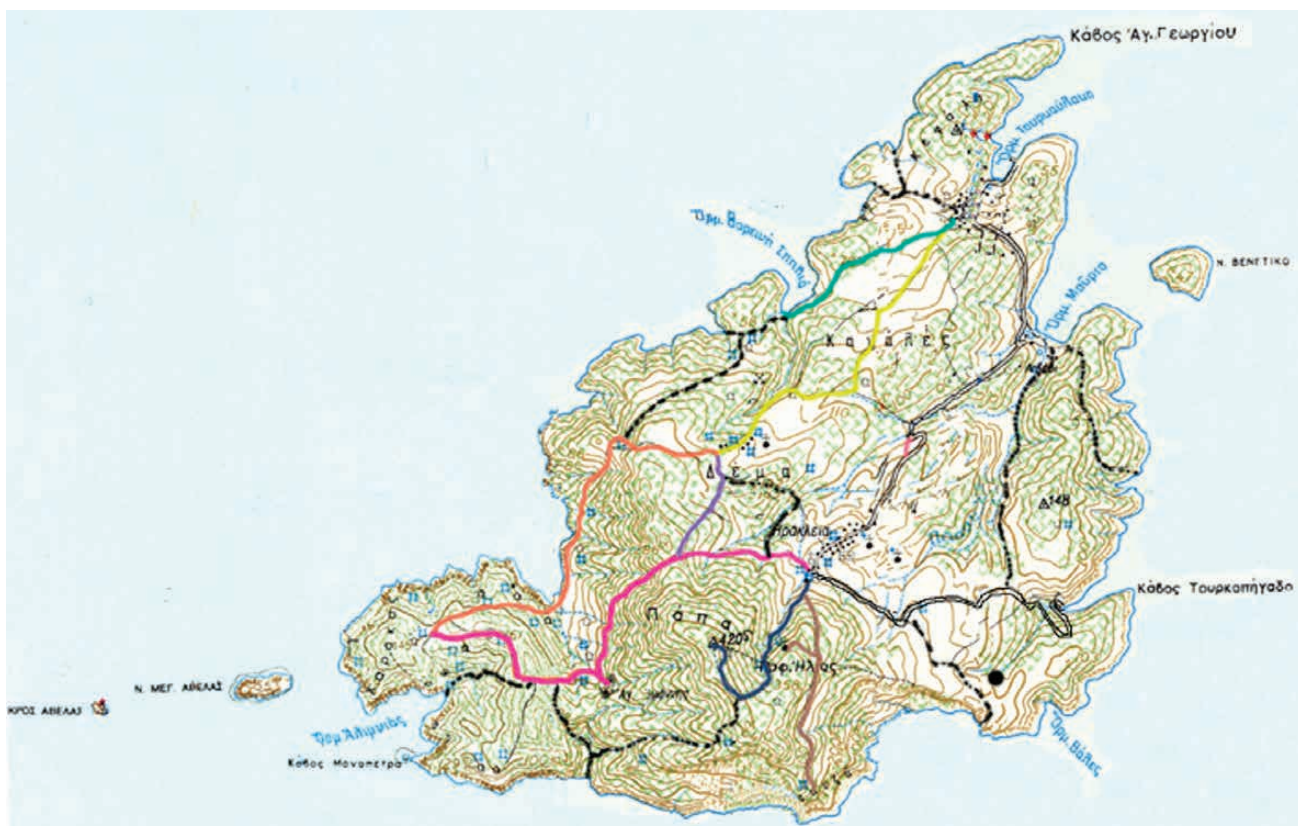


Fig. 8. Distribution of *Ophrys parosica* on Iraklia.

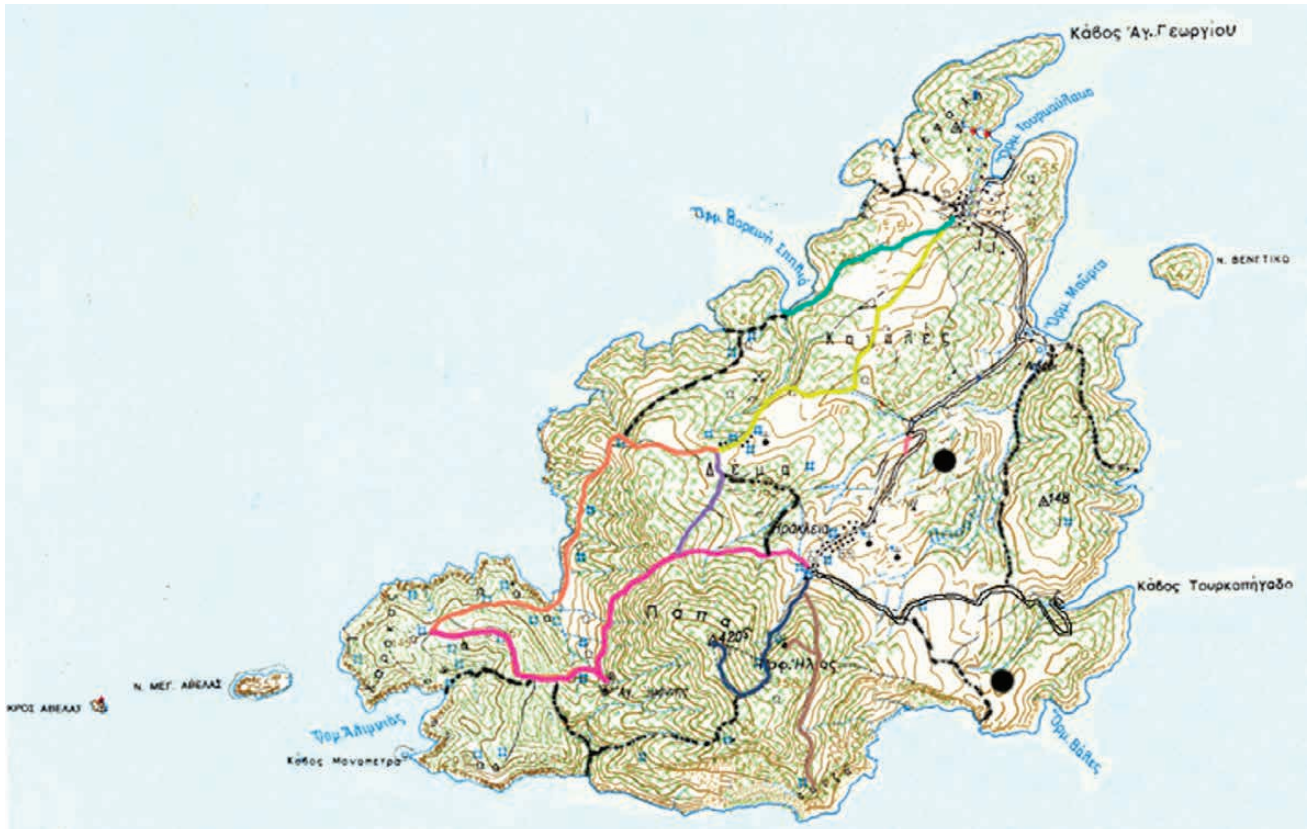


Fig. 9. Distribution of *Ophrys parvula* on Iraklia.

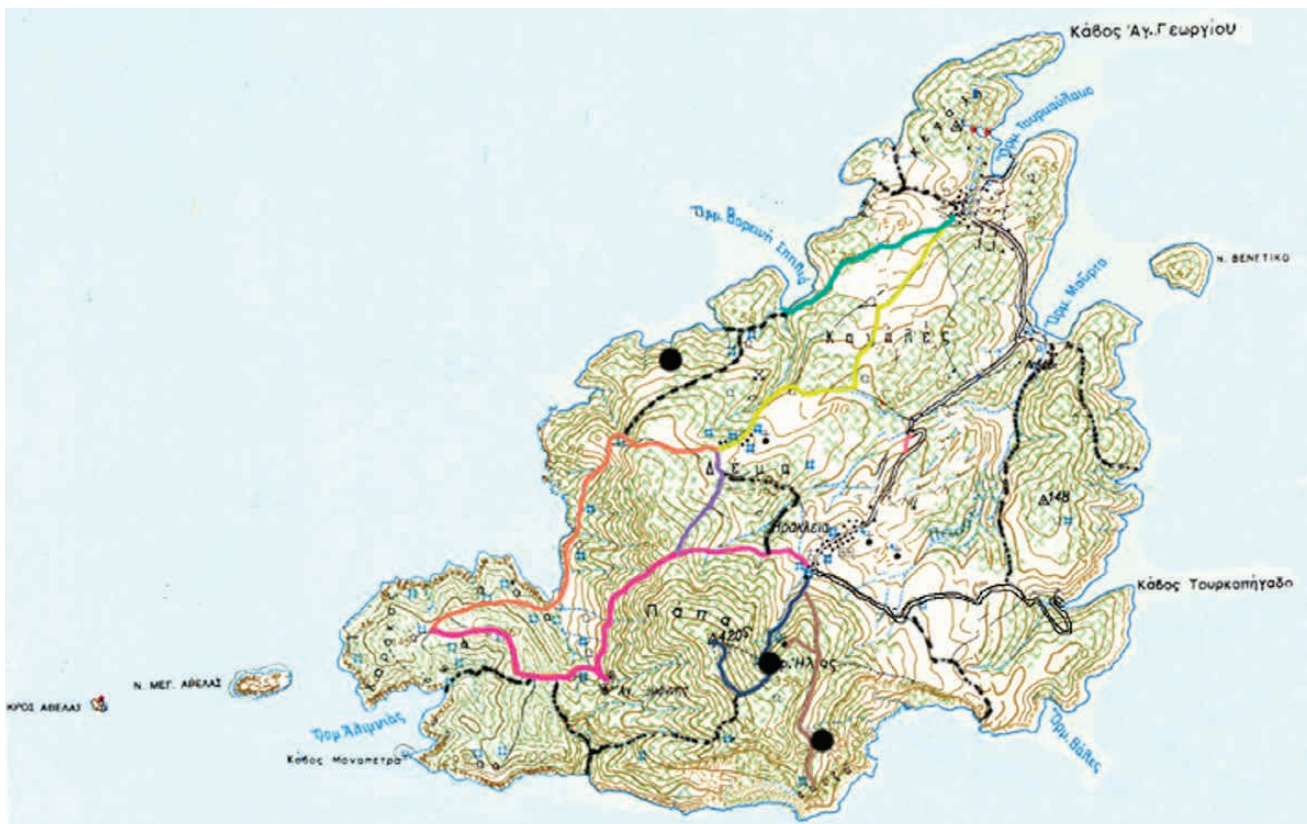


Fig. 10. Distribution of *Ophrys sitiaca* on Iraklia.



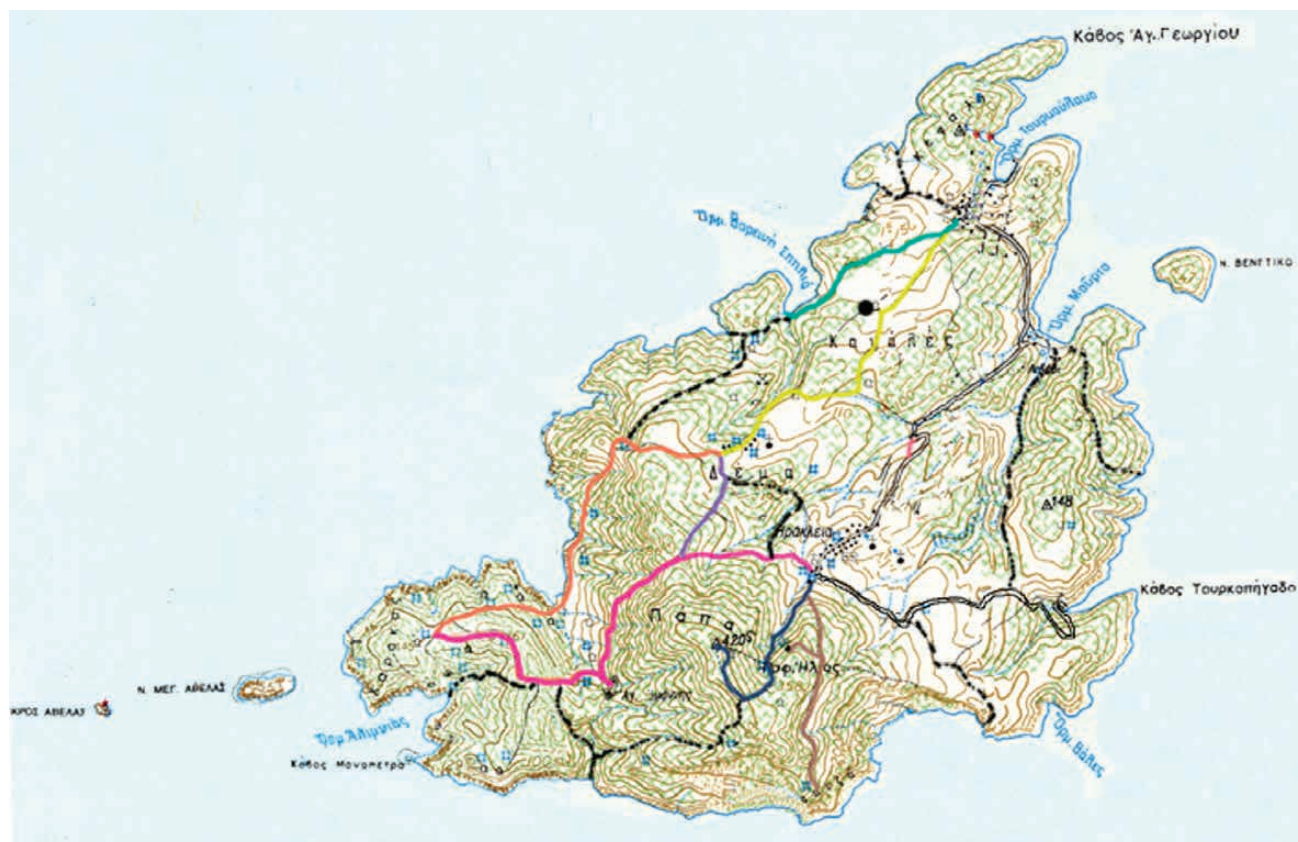


Fig. 11. Distribution of *Ophrys speculum* on Iraklia.

Flowering from late December to late February. Two localities with one plant far distant.

### 39. *Ophrys speculum* Link (Fig. 11)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 400 m W-SW of Plastiga, 50 m, phrygana, 36°51'14"N, 25°27'30"E, 25.03.2017, *Gavalas* obs. (photo).

Flowering from early March to early April. Single plant, found annually after 2017.

## Reports 40–101

### Ioannis Gavalas<sup>1</sup>, Kit Tan<sup>2</sup> & Ralf Jahn<sup>3</sup>

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A continuation of new floristic records for the island of Iraklia (Nomos Kikladon, Eparchia Thiras); the first part (Pteridophytes to *Fabaceae*) was presented

in *Phytologia Balcanica* 28(3): 410–420 (2022).

### Fagaceae

#### 40. *Quercus coccifera* L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 140 m E of Antliostasio, phrygana, 55 m, 36°50'45"N, 25°27'49"E, 17.06.2011, *Gavalas* 420.

Rare, two small populations in separate sites.

#### 41. *Quercus ithaburensis* subsp. *macrolepis* (Kotschy) Hedge & Yalt.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 200 m SE of Ag. Mamas church, stream, 100 m, 36°50'09"N, 25°27'43"E, 17.06.2011, *Gavalas* 424.

Rare, a small population of twelve old trees, with one locality in a dry stream bed.

### Frankeniaceae

#### 42. *Frankenia pulverulenta* L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Panagia old mill, phrygana, 139 m, 36°50'17"N, 25°27'39"E, 16.05.2011, *Gavalas* 253.

Rare, reported from islet of Venetiko, now found on main island.



**Fumariaceae****43. *Fumaria judaica* Boiss.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Livadi, 1 m, sandy shore, 36°51'06"N, 25°28'21"E, 02.04.2012, *Gavalas* 605.

Uncommon on sandy soil.

**Geraniaceae****44. *Geranium lucidum* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Road to Vrysi, on stone wall, 196 m, 36°50'05"N, 25°27'11"E, 25.05.2011, *Gavalas* 311.

Rare, single locality.

**Lamiaceae****45. *Mentha longifolia* subsp. *typhoides* (Briq.) Harley**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Panagia village, 145 m, roadside, 36°50'17"N, 25°27'25"E, 05.07.2011, *Gavalas* 442.

Planted and also escape from garden.

**46. *Salvia argentea* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 65 m SW of Plastiga, 47 m, unirrigated field, 36°51'18"N, 25°27'44"E, 18.05.2011, *Gavalas* 265.

Single locality. Reported from Amorgos, Antiparos, Paros, Naxos and Siros.

**47. *Rosmarinus officinalis* L.** [syn.: *Salvia rosmarinus* Schleid.]

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios church, 13 m, garden, 36°51'39"N, 25°28'06"E, 03.03.2008, *Gavalas* obs. (photo).

Planted and escape in residential land.

**48. *Salvia verbenaca* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 320 m SW of Vorini Spilia, 53 m, unirrigated field, 36°51'05"N, 25°26'58"E, 12.04.2012, *Gavalas* 725.

Single locality in abandoned terraced field.

**Linaceae****49. *Linum bienne* Mill.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 300 m W-NW of Taxiarchis church, 33 m, phrygana, 36°51'40"N, 25°27'48"E, 18.04.2008, *Gavalas* obs. (photo).

Single plant found once.

**Lythraceae****50. *Lythrum hyssopifolia* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 29.04.2008, *Gavalas* obs. (photo).

Single plant found once.

**Malvaceae****51. *Malva cretica* Cav.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 600 m W of Panagia church, 156 m, dry streambed, 36°50'17"N, 25°26'50"E, 19.04.2012, *Gavalas* 763.

In small area.

**52. *Malva setigera* K.F. Schimp. & Spenn.** [syn.: *Althaea hirsuta* L.]

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 50 m SW of Cave Ag. Ioannis, 108 m, small rocky stream, 36°49'43"N, 25°26'12"E, 16.04.2019, *Gavalas* obs. (photo).

Within a small area.

**53. *Malva sylvestris* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 500 m NW of Tourkopigado, 100 m, roadside, 36°50'02"N, 25°28'08"E, 14.05.2011, *Gavalas* 210.

Uncommon in open habitats.

**Orobanchaceae**

**54. *Bellardia latifolia* (L.) Cuatrec.** [syn.: *Parentucellia latifolia* (L.) Caruel]

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 50 m SW of Dexameni, macchie, 90 m, 36°50'50"N, 25°27'28"E, 29.03.2012, *Gavalas* 576.

Uncommon in open habitats.

**55. *Orobanche minor* Sm.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 100 m WNW of Tourkopigado, 6 m, dry stream bed, 36°50'01"N, 25°28'23"E, 29.03.2014, *Gavalas* 1206.

Uncommon in open habitats.

**56. *Orobanche sanguinea* C. Presl**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Livadi, 1 m, sandy shore, 36°51'06"N, 25°28'21"E, 24.03.2018, *Gavalas* 1254.

Single locality on sandy shore.

**57. *Phelipanche olbiensis* (Coss.) Carlón & al.** [syn.: *Orobanche olbiensis* Coss.] (Fig. 12)



Fig. 12. *Phelipanche olbiensis* (photo I. Gavalas).



Fig. 13. *Glaucium corniculatum* (photo I. Gavalas).

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Livadi, 1 m, sand dune, 36°51'01"N, 25°28'29"E, 11.04.2020, *Gavalas* 1275.

Single locality on sand dune. Second report for Kiklades, the first being from Milos (confirmed by H. Uhlich, Feb. 2023).

#### *Oxalidaceae*

##### 58. *Oxalis corniculata* L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 15.05.2011, *Gavalas* 228.

Uncommon in open habitats.

#### *Papaveraceae*

##### 59. *Glaucium corniculatum* (L.) Rudolph (Fig. 13)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 20.02.2012, *Gavalas* 515.

Rare in fields, not appearing every year.

##### 60. *Glaucium flavum* Crantz

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Hotel Meltemi, 76 m, open phrygana, 36°51'23"N, 25°28'11"E, 03.12.2015, *Gavalas* photo.

Rare, single plant noted.

##### 61. *Papaver purpureomarginatum* Kadereit

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 50 m SW of Cave Ag. Ioannis, 108 m, small rocky stream, 36°49'43"N, 25°26'12"E, 05.04.2019, *Gavalas* 1267.

Single locality.

#### *Plumbaginaceae*

##### 62. *Limonium aegaeum* Erben & Brullo

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 400 m NE of the port, 6 m, rocky shore, 36°51'54"N, 25°28'29"E, 20.06.2012, *Gavalas* 889.

Rocky shores.

##### 63. *Limonium ocymifolium* (Poir.) Kuntze.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Alimia, 1m, sandy shore, 36°49'44"N, 25°25'25"E, 23.08.2011, *Gavalas* 453.

In littoral zone.

#### *Polygalaceae*

##### 64. *Polygala monspeliaca* L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 600 m W of Panagia church, 156 m, dry stream bed, 36°50'18"N, 25°26'52"E, 19.04.2012, *Gavalas* 761.

Uncommon in open habitats.

#### *Polygonaceae*

65. *Polygonum aviculare* subsp. *neglectum* (Besser) Arcang.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Hotel Meltemi, 76 m, garden, 36°51'23"N, 25°28'11"E, 15.05.2011, *Gavalas* 222.

As weed in gardens, rare.

**66. *Rumex pulcher* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 24.05.2011, *Gavalas* 293.

Uncommon in open habitats.

**67. *Rumex pulcher* L. subsp. *pulcher***

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 03.04.2010, *Gavalas* obs. (photo).

Uncommon in open habitats.

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

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 200 m S-SE of Panagia church, 155 m, roadside, 36°50'08"N, 25°27'20"E, 01.05.2018, *Gavalas* obs. (photo).

Uncommon in open habitats.

**69. *Rumex pulcher* subsp. *woodsii* (De Not.) Arcang.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 200 m S-SE of Panagia church, 155 m, roadside, 36°50'08"N, 25°27'20"E, 16.04.2019, *Gavalas* 1269.

Uncommon in open habitats.

**Portulacaceae**

**70. *Portulaca oleracea* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 16.06.2011, *Gavalas* 418.

Common weed in gardens.

**Rafflesiaceae**

**71. *Cytinus hypocistis* (L.) L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 300 m SW of Dexameni, 115 m, phrygana, 36°50'45"N, 25°27'19"E, 14.04.2012, *Gavalas* 738.

Uncommon under *Cistus salviifolius*. Reported from Naxos, Milos, Antiparos, Donoussa.

**Ranunculaceae**

**72. *Anemone pavonina* Lam.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 120 m E of Tourkopigado beach, 12 m, phrygana, 36°49'59"N, 25°28'22"E, 05.03.2012, *Gavalas* 539.

Common in open habitats.

**73. *Nigella degenii* Vierh. subsp. *degenii***

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 50 m N of Panagia old mill, 135 m, stony path, 36°50'18"N, 25°27'39"E, 28.05.2012, *Gavalas* 868.

In a small area on stony path.

**74. *Nigella doerfleri* Vierh. subsp. *doerfleri***

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ftero Dematou, 120 m, phrygana, 36°49'11"N, 25°27'57"E, 15.05.2011, *Gavalas* 230.

Common in open habitats.

**75. *Ranunculus asiaticus* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 120 m SW of Taxiarchis church, 36 m, macchie, 36°51'32"N, 25°28'00"E, 02.04.2011, *Gavalas* obs. (photo).

Single plant with white flowers perhaps originating from Kalantos on Naxos 8 km to the north, seed probably transported by migrating bird. Reported from Amorgos and Astipalea.

**76. *Ranunculus bullatus* L. subsp. *bullatus* (Fig. 14)**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 1100 m SE of Panagia church, 135 m, phrygana, 36°49'49"N, 25°27'49"E, 12.12.2011, *Gavalas* 486.

Uncommon in open habitats. Second report for the Kiklades, the first being from Naxos.

**Resedaceae**

**77. *Reseda alba* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 40 m W of Panagia old mill, 135 m, unirrigated field, 36°50'17"N, 25°27'37"E, 30.03.2012, *Gavalas* 1255.

Rare in unirrigated fields and roadsides.



Fig. 14. *Ranunculus bullatus* L. subsp. *bullatus* (photo I. Gavalas).



**Rubiaceae****78. *Galium tricornutum*** Dandy

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 250 m SE of Panagia church, 130 m, unirrigated field, 36°50'11"N, 25°27'26"E, 22.05.2011, *Gavalas* 277.

Uncommon in fields.

**79. *Galium verrucosum*** Hudson (Fig. 15)

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 200 m SE of Ag. Mamas church, 95 m, unirrigated field, 36°50'10"N, 25°27'44"E, 14.02.2014, *Gavalas* 554.

Uncommon in fields.

**Rutaceae****80. *Ruta chalepensis*** L. subsp. *chalepensis*

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 200 m S-SW of the port, roadside, 6 m, 36°51'42"N, 25°28'11"E, 13.06.2011, *Gavalas* 395.

Single locality at roadside.

**Santalaceae****81. *Thesium humile*** Vahl

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia is-

land, 150 m W-SW of Dexameni, 100 m, macchie, 36°50'48"N, 25°27'24"E, 18.04.2011, *Gavalas* 71.

Uncommon in open macchie.

**Scrophulariaceae****82. *Scrophularia peregrina*** L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 430 m SW of Tourkopigado, 50 m, ruderal place, 36°49'50"N, 25°28'15"E, 22.03.2020, *Gavalas* obs. (photo).

Approximately ten plants noted.

**83. *Verbascum sinuatum*** L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 280 m SW of Panagia church, 180 m, small field, 36°50'06"N, 25°27'12"E, 21.07.2018, *Gavalas* 1263.

Two plants found twice, both later eaten by goats.

**Solanaceae****84. *Datura stramonium*** L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Hotel Meltemi, 76 m, garden, 36°51'23"N, 25°28'11"E, 09.08.2007, *Gavalas* obs. (photo).



**Fig. 15.** *Galium verrucosum* (photo I. Gavalas).

Rare weed in gardens.

**85. *Nicotiana glauca*** R. C. Graham

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 35 m SW of Ag. Georgios church, 20 m, abandoned garden, 36°51'38"N, 25°28'06"E, 19.06.2011, *Gavalas* 433. Naturalized in villages.

**86. *Solanum elaeagnifolium*** Cav.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 130 m S-SE of Ag. Georgios church, 29 m, dry garden, 36°51'35"N, 25°28'07"E, 30.11.2020, *Gavalas* obs. (photo).

Single locality.

**87. *Solanum nigrum*** L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 09.10.2011, *Gavalas* 458.

Gardens and shady places in fields.

***Tropaeolaceae***

**88. *Tropaeolus majus*** L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island,

50 m SW of Ag. Georgios beach, 5 m, by stream, 36°51'42"N, 25°28'07"E, 23.03.2008, *Gavalas* photo.

Cultivated, also naturalized in stream bed.

***Urticaceae***

**89. *Parietaria judaica*** L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 50 m N of Ag. Georgios church, 9 m, dry stream bed, 36°51'40"N, 25°28'06"E, 30.03.2018, *Gavalas* 1256.

Single locality in stream bed.

**90. *Urtica pilulifera*** L.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 09.07.2011, *Gavalas* 445.

In gardens and fields.

***Valerianaceae***

**91. *Valeriana italica*** Lam.

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Nikolis farm, 122 m, unirrigated field, 36°50'02"N, 25°27'50"E, 07.04.2012, *Gavalas* 659.

Uncommon in open habitats.



**Fig. 16.** *Linaria simplex* (photo I. Gavalas).

**92. *Valerianella echinata* (L.) DC.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 50 m SW of Dexameni, macchie, 90 m, 36°50'50"N, 25°27'28"E, 29.03.2012, *Gavalas* 579.

Common in open habitats.

**Verbenaceae****93. *Verbena officinalis* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 280 m SW of Panagia church, 180 m, small unirrigated terraced field, 36°50'06"N, 25°27'12"E, 11.08.2010, *Gavalas* obs. (photo).

Single plant once found, later eaten by goat.

**Veronicaceae****94. *Antirrhinum majus* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 50 m N of Ag. Georgios church, 9 m, dry stream bed, 36°51'40"N, 25°28'06"E, 16.01.2015, *Gavalas* obs. (photo).

Planted in gardens, naturalized in stream bed and roadsides.

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

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island,

120 m SE of Agia Paraskevi church, 130 m, unirrigated field, 36°50'15"N, 25°27'32"E, 02.04.2012, *Gavalas* 598.

Common in unirrigated fields.

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

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Islet Megalos Avelas, rocky ground, 20 m, 36°49'44"N, 25°24'37"E, 27.14.2019, *Gavalas* 1270.

Single plant on islet.

**97. *Linaria micrantha* (Cav.) Hoffmanns. & Link.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 20.03.2012, *Gavalas* 551.

Not common in unirrigated fields.

**98. *Linaria simplex* Desf. (Fig. 16)**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ftero Mericha, S-point, 283 m, phrygana, 36°49'21"N, 25°27'09"E, 23.02.2013, *Gavalas* 1033.

In a small area on open rocky ground.

**99. *Veronica arvensis* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 20.03.2012, *Gavalas* 549.



**Fig. 17.** *Veronica polita* (photo I. Gavalas).



Uncommon in open habitats.

**100. *Veronica polita* Fr. (Fig. 17)**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, Ag. Georgios village, 38 m, garden, 36°51'31"N, 25°28'06"E, 17.02.2014, *Gavalas* 1188.

Uncommon in open habitats.

**Zygophyllaceae**

**101. *Tribulus terrestris* L.**

**Gr** Nomos Kikladon, Eparchia Thiras: Iraklia island, 230 m NE of Agia Paraskevi church, 122 m, near a farm, 36°50'25"N, 25°27'33"E, 08.06.2013, *Gavalas* 1161.

Naturalized, spreading in the two localities noted.

## Reports 102–104

**Rayna Natcheva<sup>1</sup>, Daniella Ivanova<sup>1</sup> & Krasimir Lakovski<sup>2</sup>**

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**Thelypteridaceae**

**102. *Thelypteris palustris* Schott**

**Bu** Forebalkan (*Eastern*): on southern banks of the karst swamp Nanovitsa, northeastwards of the quarry near Nanovitsa village, Yablanitsa Municipality, Lovetch district, ca. 430 m, KH66, 43.041895°N, 24.151829°E, 04.10.2022, coll. *D. Ivanova* & *R. Natcheva* (SOM 178008) (Fig. 18).

— Mt Strandzha: on eastern slopes of peak Papiya, in a beech forest, close to a water catchment, 338 m, NG76, 42.111412°N, 27.852082°E, 12.08.2017, coll. *K. Lakovski* (SOM 178007) (Fig. 19).

This is the first report of *Thelypteris palustris* for the floristic region of Eastern Forebalkan and the first recent report for Mt Strandzha.

At the Nanovitsa karst swamp, the population size of the Marsh Fern was very small: it occupied a little more than 1 m<sup>2</sup> and was scattered amongst *Typha angustifolia* L. The population in Mt Strandzha was also extremely small and only a few single plants



**Fig. 18.** *Thelypteris palustris* in the locality in Eastern Forebalkan floristic region (photo D. Ivanova).



**Fig. 19.** *Thelypteris palustris* in the locality in Mt Strandzha floristic region (photo K. Lakovski).

have been noticed near a spring catchment. No other localities have been confirmed in the vicinity. The locality at the Black Sea Coast (Tzonev & al. 2022) was far from that population. The only known locality in Mt Strandzha has been near Kosti village, but *T. palustris* was collected there in 1936. Several attempts by various botanists to find that plant there have been so far unsuccessful, though efforts should continue in other parts of Mt Strandzha.

In Bulgaria, *T. palustris* has been evaluated as 'Vulnerable' under B2ab(iii,iv) criteria (Ivanova 2009). It is included in Annex 3 of the Bulgarian Biodiversity Act. The Marsh Fern generally grows in wet, marshy or swampy places and on the periphery of marshes and lakes. So far, the Bulgarian herbaria have stored materials from about 20 localities in the following floristic regions: Black Sea Coast (*North-*

ern) (SOA 567; SOM 309 – 313), Northeast Bulgaria (SOM 308, 125724, 125725; SO 510, 512, 515, 516; the herbarium of Plovdiv Natural History Museum 00028), Danubian Plain (SOM 125722, 125723; SO 32558), Balkan Range (*Central*) (SOA 566), Znepole Region (SO 513; SOA 568, 569); Valley of River Struma (*Southern*) (SOM 155173, 155174; DI-88.03; SOM 306, 307, 91982, 91985; SO 509), Rila Mts (SO 508, 514), Rhodopi Mts (*Western*) (SOA 565a), and Mt Strandzha (SO 511, SO 517). However, many of these localities have been already destroyed due to anthropogenic interference and the species is extinct there. Furthermore, there are reports in literature for localities in the Western Rhodopi Mts, above Peshtera town (Širjaev 1928), Central Rhodopi Mts, Debelyanovo village (Kozhuharov 1968), and Thracian Lowland, near Sadovo town (Velenovský 1898), which have never been confirmed. The locality of the herbarium sample from the Central Balkan Range, near Tryavna town (SOA 566), has not been reconfirmed since 1902.

Yet, new localities have been reported recently for the Danubian Plain, near Pleven town (Tzonev & al. 2022).

In conclusion, *T. palustris* still grows in several localities in the floristic regions of the Black Sea Coast (*Northern*), Northeast Bulgaria, Danubian Plain, Forebalkan (*Eastern*), Valley of River Struma (*Southern*), and Mt Strandzha. Efforts should be directed at searching for new populations of the species in suitable locations in the known floristic regions.

### **Lentibulariaceae**

#### **103. *Utricularia minor* L.**

**Bu** Balkan Range (*Western*): S slopes of peak Malak Kom, locality Golyamo Mochuriste, in the mud in and at the edge of spring areas, as well as in shallow water in flushes in *Sphagnum*-dominated mires, often associated with the bryophytes *Riccardia incurvata* Lindb. and *Drepanocladus trifarius* (F.Weber & D.Mohr) Broth. ex Paris, ca. 1784 m, 43.16792419°N, 23.07386771°E, 18.10.2022, R. Natcheva (obs.).

At the time of observation, the plants had already started to form turions for overwintering. No signs

of fruiting have been observed.

The species has been reported for the floristic regions of Balkan Range (*Central*, Hájek & al. 2005), Pirin Mts (Velčev & al. 1960), Rhodopi Mts (*Western*, Iordanoff 1929), Rila Mts, Sofia Region (Koeva-Todorovska 1971/1972), Vitosha Region (Mt Vitosha, Iordanoff 1929, Dimitrov & al. 2015), and Znepole Region (Iordanoff 1929).

Some localities in the lowlands have been destroyed, others have not been confirmed since the turn of 20<sup>th</sup> century (Ivanova 2015). Thus, *U. minor* has been evaluated as 'Endangered' under B2ab(ii,iii,iv,v) criteria (Ivanova 2009) and included in Annex 3 of the Bulgarian Biodiversity Act. The species is probably wider spread in the mountainous areas, along mires and muddy springs but possibly overlooked in these habitats due to its small size and because it generally grows semi-hidden in the mud.

### **Rosaceae**

#### **104. *Comarum palustre* L.**

**Bu** Balkan Range (*Western*): NE slopes of peak Kurtski Vrah, S of peak Kom, in a mire dominated by *Sphagnum flexuosum* Dozy & Molk. and *S. fallax* (H.Klinggr.) H. Klinggr., ca. 1710 m, 43.16273102°N, 23.06573975°E, 18.10.2022, R. Natcheva (obs.)

This is the first report of *C. palustre* for the floristic region of the Balkan Range. The population covered ca. 100 m<sup>2</sup> and consisted of numerous vegetative and generative shoots (at the time of observation, with ripe fruits). So far, this boreal species has been reported for the floristic regions of the Rhodopi Mts (*Western* and *Central*), Vitosha Region (Urumov 1930, Dimitrov & al. 2015), and Znepole Region (Iordanoff 1929). The largest number of populations has been located in the Rhodopi Mts (Hayek & al. 2008). The report from the Rila Mts (Hájek & al. 2005) should be treated as one from the floristic region of Rhodopi Mts (*Western*), since the borders of the geographic and floristic regions of Rila and Rhodopi do not coincide (cf. Jordanov 1966).

The species has been evaluated as 'Vulnerable' under B1ab(ii,iii)+2ab(ii,iii) criteria (Sopotlieva 2009). It is included in Annex 3 of the Bulgarian Biodiversity Act.



## Reports 105–117

### Kostas Polymenakos<sup>1</sup>, Kit Tan<sup>2</sup> & Vasilis Pantavos<sup>3</sup>

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#### Ephedraceae

**105. *Ephedra nebrodensis* subsp. *procera*** (Fisch. & C.A. Mey) K. Richt. (Fig. 20)

**Gr** Nomos Attikis, Eparchia Megaridos: Mt Kitheronas, summit area 0.2 km SE of peak Profitis Ilias, stony slope with scattered *Abies cephalonica* trees, limestone, 1330 m, 38°11'N, 23°15'E, 10.08.2022, *Polymenakos & Pantavos* 1176 (ATH).

New for eparchia and Mt Kitheronas. Only seven plants noted, not flowering or fruiting.

#### Apiaceae

**106. *Daucus broteri*** Ten.

**Gr** Nomos & Eparchia Samou: Samos, 1.9 km N-NE of village Asprochorti, rocky seashore, 1 m, 37°47'N, 26°59'E, 07.07.2022, *Polymenakos & Pantavos* obs. (photo).

New for Samos. Only ripe fruits collected, as the plants have dried up.

**107. *Laser trilobum*** (L.) Borkh.

**Gr** Nomos & Eparchia Samou: Samos, Mt Karvounis, 0.34 km W-SW of Agios Ioannis Theologos, shady places along stream, limestone, 600 m, 37°46'N, 26°46'E, 08.07.2022, *Polymenakos & Pantavos* 1161 (ATH).

New for Samos; from E Aegean, reported only from Lesvos. Found together with *Euphorbia kotschyana*, rare on Samos. Thanks to Georgios Fakas who indicated the locality.

#### Asteraceae

**108. *Centaurea iberica*** Spreng. subsp. *iberica*

**Gr** Nomos & Eparchia Samou: Samos, 0.67 km NE of archaeological site of Ireon, ruderal place along road passing through wetland Potokaki, 2 m, 37°40'N, 26°53'E, 14.07.2022, *Polymenakos & Pantavos* 1175 (ATH).

New for Samos, from E Aegean reported from Kos and Rodos.

**109. *Cirsium steirolepis*** Petr. (Fig. 21)

**Gr** Nomos & Eparchia Samou: Samos, W of Agioi Theodori, along main road from Karlovasi to Marathokampos, roadside, schist, 600 m, 37°44'N, 26°43'E, 09.07.2022, *Polymenakos & Pantavos* 1164 (ATH); Mt Karvounis, 2.3 km SE of peak 'Adzaret Aloni', roadsides and openings in *Pinus nigra* forest, 900 m, 37°46'N, 26°48'E, 28.08.2021, *Polymenakos & Pantavos* obs. (photos).

New for Samos, reported from Chios; otherwise known only from the type locality in adjacent Anatolia.

**110. *Picris hieracioides*** subsp. *spinulosa* (Guss.) Arcang.

**Gr** Nomos & Eparchia Samou: Samos, W of Agioi Theodori, along main road from Karlovasi to Marathokampos, roadside, schist, 600 m, 37°44'N, 26°43'E, 09.07.2022, *Polymenakos & Pantavos* 1165 (ATH).

New for E Aegean islands.

#### Brassicaceae

**111. *Odontarrhena samia*** (T.R. Dudley & Christod.) Španiel & al. [syn.: *Alyssum samium* T.R. Dudley & Christod.] (Fig. 22)

**Gr** Nomos & Eparchia Samou: Samos, Mt Karvounis, summit area of peak Lazaros, 1000 m, 37°45'N, 26°50'E, 11.07.2022, *Polymenakos & Pantavos* obs. (photo).

New locality for this E Aegean endemic, a single plant found in rock crevice. The *locus classicus* is Mt Kerkis, Samos where all previous collections had been made.



Fig. 20. *Ephedra nebrodensis* subsp. *procera* (photo K. Polymenakos).

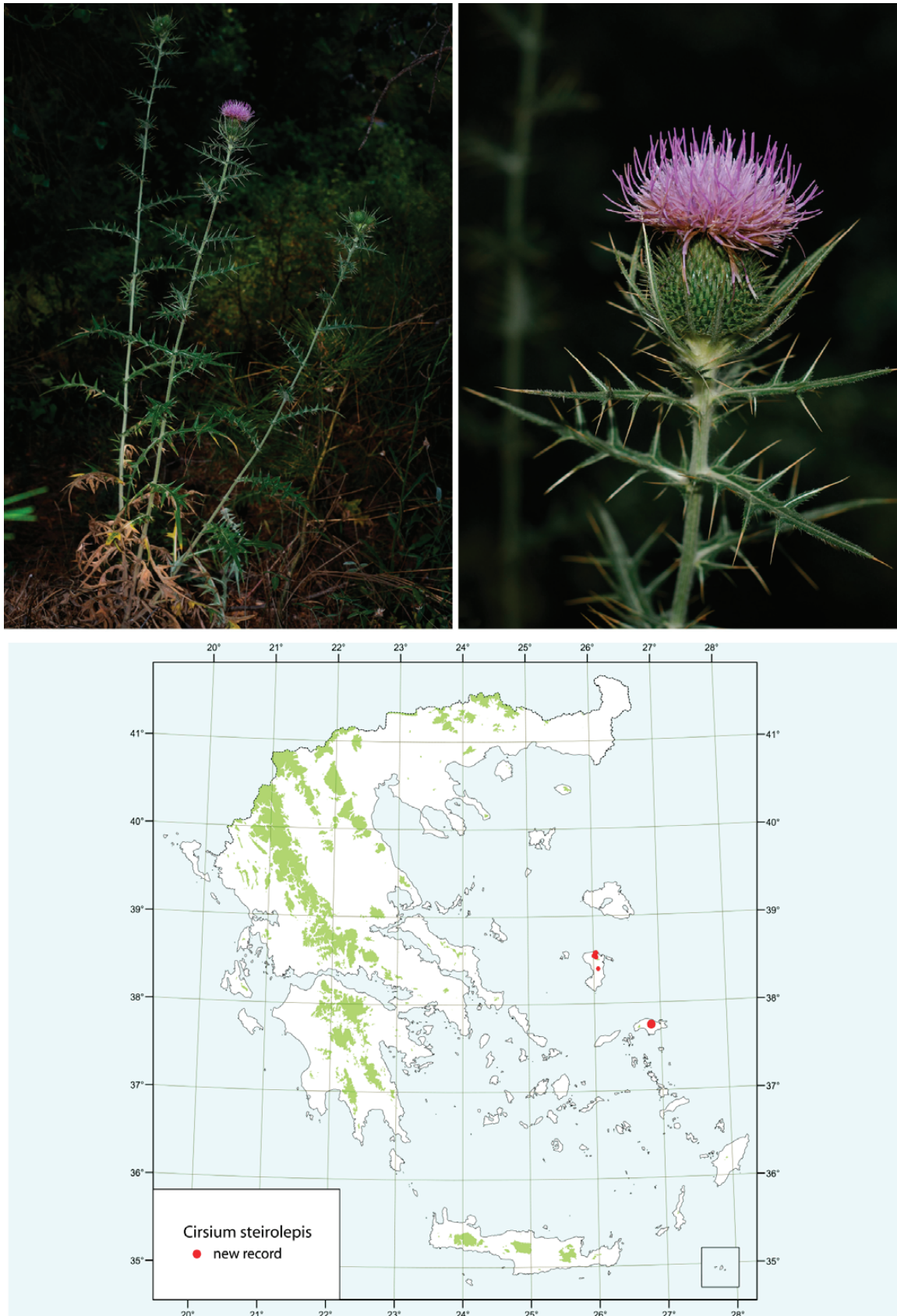


Fig. 21. *Cirsium steirolepis* (photo V. Pantavos).





Fig. 22. *Odontarrhena samia* (photo V. Pantavos).

### Capparaceae

#### 112. *Cleome iberica* DC.

Gr Nomos & Eparchia Samou: Samos, Mt Karvounis, 1.2 km SE of peak Profitis Ilias, road sides, 935 m, 37°44'N, 26°50'E, 06.07.2022, *Polymenakos & Pantavos* 1158 (ATH).

New for Samos. In the East Aegean, known only from Rodos.

### Euphorbiaceae

#### 113. *Euphorbia stricta* L.

Gr Nomos & Eparchia Samou: Samos, Mt Karvounis: 0.3 km N of peak Lazaros, shady and wet places along roads and streams, limestone, 810 m, 37°45'N, 26°50'E, 06.07.2022, *Polymenakos & Pantavos* 1159 (ATH).

New for all Greek islands (Aegean and Ionian). Common on Mt Karvounis.

### Fabaceae

#### 114. *Trifolium latinum* Sebast. (Fig. 23)

Gr Nomos & Eparchia Samou: Samos, Mt Karvounis, 0.2 km E of Agios Ioannis Theologos, wet places along forest road crossing stream, limestone, 685 m, 37°46'N, 26°46'E, 08.07.2022, *Polymenakos & Pantavos* 1160 (ATH).

New for all Greek islands (Aegean and Ionian). Described from Rome (central Italy) but apparently has not been reported in Italy for more than a century. It is a distinct species well differentiated from two rather similar taxa (*T. echinatum* M. Bieb. and *T. leucanthum* M. Bieb.) by its dichotomous inflorescence.

#### 115. *Trifolium squamosum* L.

Gr Nomos & Eparchia Samou: Samos, in wetland of Potokaki, 2 m, 37°40'N, 26°53'E, 14.07.2022, *Polymenakos & Pantavos* obs. (photos).

New for Samos. In the E Aegean, reported from Kos, Rodos and Lesvos. Found together with *Trifolium echinatum* and *T. lappaceum*.

### Oleaceae

#### 116. *Fraxinus excelsior* L. (Fig. 24)

Gr Nomos & Eparchia Samou: Samos, Mt Karvounis, summit area of peak Profitis Ilias, rocky slope, 1130 m, 37°45'N, 26°50'E, 11.07.2022, *Polymenakos & Pantavos* 1170 (ATH).

New for E Aegean. Two non-flowering, non-fruiting individuals were seen at the summit area, not planted.

### Alliaceae

#### 117. *Allium dentiferum* Webb. & Berthel.

Gr Nomos & Eparchia Samou: Samos, foothills of Mt Kerkis, 0.3 km NE of Drakei, edge of fallow field, limestone, 320 m, 37°45'N, 26°36'E, 10.07.2022, *Polymenakos & Pantavos* 1166 (ATH).

New for Samos.

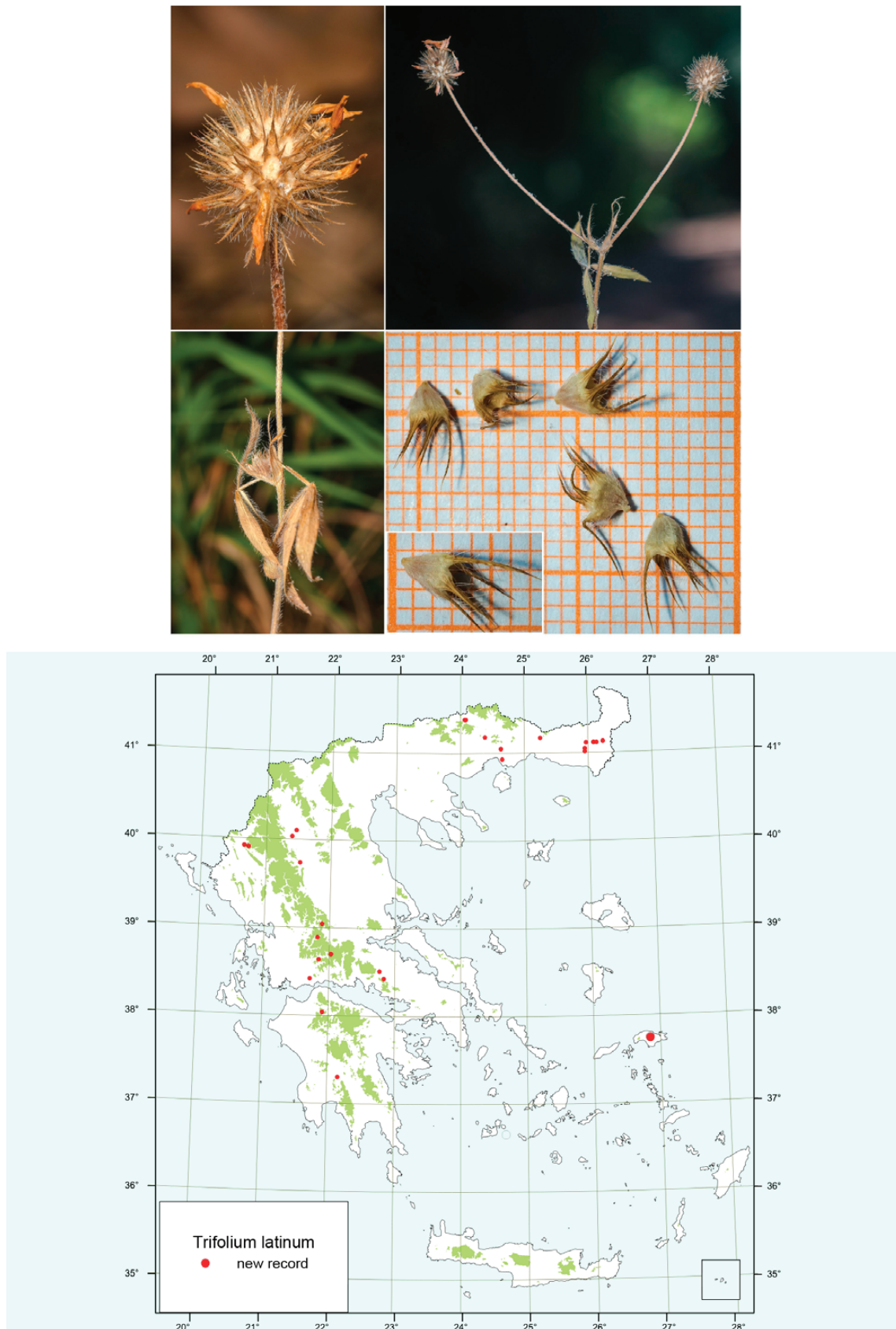


Fig. 23. *Trifolium latinum* (photo V. Pantavos).



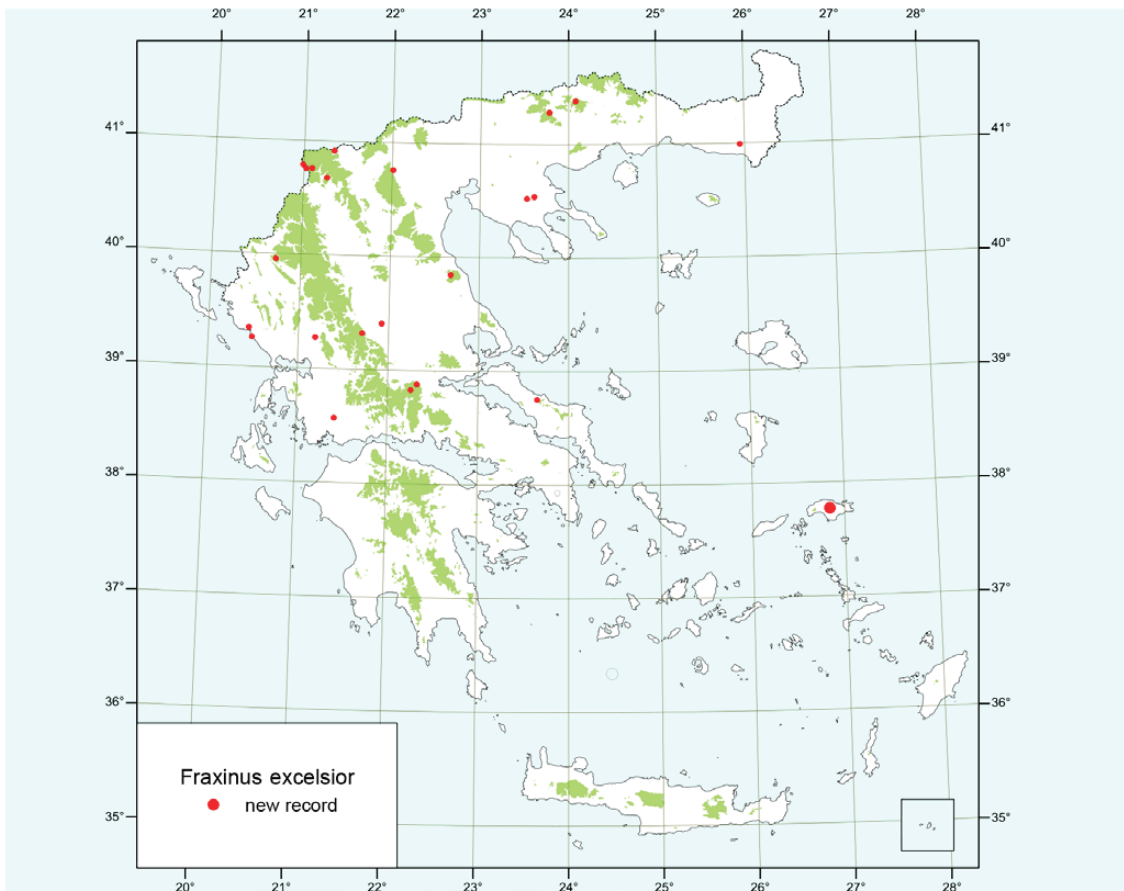


Fig. 24. *Fraxinus excelsior* (photo V. Pantavos).



## Reports 118–122

### Kit Tan<sup>1</sup> & Giannis Kofinas<sup>2</sup>

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#### Asteraceae

#### 118. *Centaurea johnseniana* Kit Tan & Strid (Fig. 25)

**Gr** Nomos Serron, Eparchia Sintikis: Mt Agkistro, summit at Psila Korfi, 1025 m, 41°20'N, 23°28'E, 09.08.2022, *Kofinas* s.n.; *loc. ibid.*, 825–829 m, 41°20'N, 23°29'E, *Kofinas* obs. (photo, with *Melitaea ornata*, the Eastern Knapweed fritillary).

New locality for this rarely collected pinkish-purple flowered species; all gatherings so far are from the type locality at a low altitude of 200–300 m in the Siderokastro area where it is abundant on gravelly sand and rocky limestone outcrops. Forms with numerous, smaller, darker-brown capitula and longer-spined phyllaries also occur at Siderokastro. White or cream-flowered plants were noted along the road and before the ridge on Mt Agkistro. A collection from a higher altitude of *ca.* 1100 m on Mt Tzena and growing on schist (Nomos Pellis) has not been checked. It may belong to *C. johnseniana*.

#### 119. *Inula bifrons* (L.) L. [syn.: *Pentanema bifrons* (L.) D.Gut.Larr. & al.]

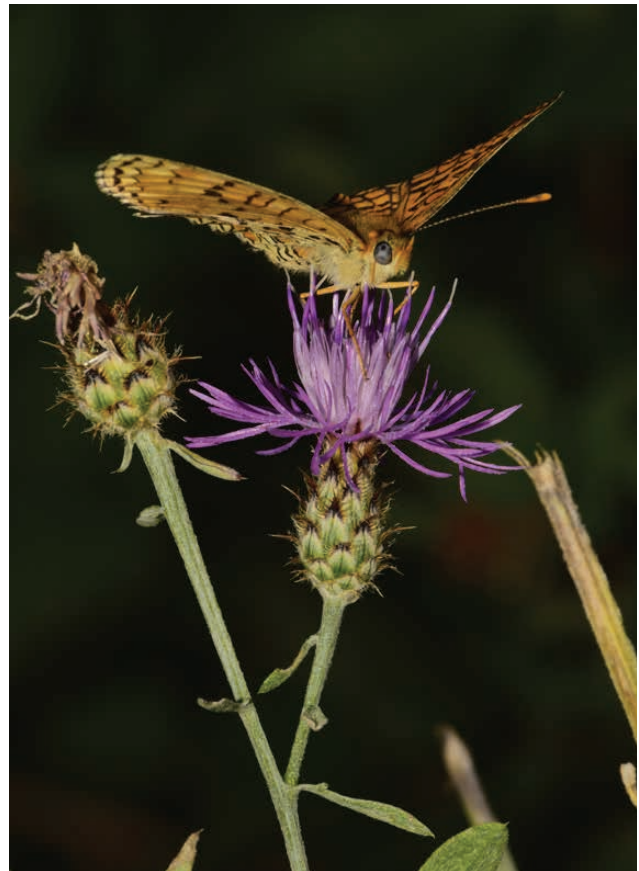
**Gr** Nomos Pellis, Eparchia Almopias: Mt Tzena, shady places in dense *Fagus* forest, 1290 m, 41°07'N, 22°12'E, 13.08.2022, *Kofinas* obs. (photo).

New for Mt Tzena, nomos and eparchia. Approximately seven species of *Inula* have been reported from Tzena but not *I. bifrons*. It had previously been noted in 2011 and 2014 at Zografou spring in Frakto area, 1245–1345 m (Nomos & Eparchia Dramas), at the roadside before the forest reserve. The species was first reported in Greece from the Rodopi (Eleftheriadou 1992: 83) based on a specimen collected by her in October 1986.

#### Brassicaceae

#### 120. *Iberis carnososa* Willd. (Figs. 26 & 27)

**Gr** Nomos Serron, Eparchia Sintikis: SE of Agkistro, open rocky places at summit of mountain



**Fig. 25.** *Centaurea johnseniana* with *Melitaea ornata*, the Eastern Knapweed fritillary (photo G. Kofinas).

and along road from Promachonas to Achladochori, 980–1050 m, 41°20'N, 23°28'E, 09.08.2020, *Kofinas* s.n. (photos taken by Nun Pachomia); *loc. ibid.*, 495–515 m, 09.08.2022, *Kofinas* obs. (photos).

— Nomos Ioanninon, Eparchia Konitsis: Mt Trapezitsa, limestone, 980–1010 m, 40°03'N, 20°47'E, 17.08.2022, *Kofinas* s.n.

Large populations on roadside gravel in the first locality. Collected as *I. pruitii* Tineo by E. Willing southeast of Mt Tsingéli in Serron.

New for Mt Trapezitsa. *Iberis carnososa* is very variable in habit, occurring as annuals or taller, multi-stemmed, suffruticose perennials. Dimorphic siliques with long or short styles, narrow or wider sinuses were found in the same infructescence, or they may all be monomorphic.

#### Caryophyllaceae

#### 121. *Silene italica* subsp. *peloponnesiaca* Greuter





Fig. 26. *Iberis carnosa* and *Campanula lingulata* (photo Nun Pachomia).



Fig. 27. *Iberis carnosa* infructescences (photo G. Kofinas).



**Gr** Nomos Achaïas, Eparchia Egialias: Mt Klokos, along road to summit, limestone, 1685 m, 38°08'N, 22°02'E, 28.05.2022, *Kofinas* s.n. (photos).

New for Mt Klokos. Widespread in Peloponnisos and distinguished from *S. i.* subsp. *italica* (widespread on the mainland, rare in Peloponnisos) by the short vegetative shoots, shorter calyx and antherophore.

#### **Alliaceae**

**122. *Nothoscordum gracile*** (Aiton) Stearn (Fig. 28)

**Gr** Nomos & Eparchia Attikis: Ilioupoleos Avenue, Imittos, Athens, growing spontaneously in cracks on roof terraces as well as in plant pots, 130 m, 37°56'N, 23°44'E, 02.05.2023, *Kofinas* obs. (photos).

New for nomos and eparchia. Well established locally in Greece, especially on street pavements and at damp roadsides. Native to warm-temperate S America.

## **Reports 123–124**

### **Ioannis T. Tsialtas<sup>1</sup> & Kit Tan<sup>2</sup>**

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#### **Solanaceae**

**123. *Datura ferox*** L.

**Gr** Nomos Thessalonikis, Eparchia Lagada: Liti, ca. 113 m, 40°44'47"N, 22°59'11"E, 18.10.2022, *Tsialtas* obs. (photos, det. Kit Tan, June 2022).

New for nomos and eparchia, reported from nomi Dramas, Evrou and Serron in the northeast. Found in a harvested field of durum wheat (*Triticum turgidum* subsp. *durum*), to the left of the road from Liti to Asiros. Numerous plants in fruit together with *D. stramonium* f. *tatula*, *D. stramonium* f. *stramonium* and



**Fig. 28.** *Nothoscordum gracile* in concrete cracks of roof terrace (photo G. Kofinas).



their interspecific hybrids (Tsialtas & al. 2014). Other species in the field were *Sorghum halepense*, *Solanum elaeagnifolium*, *Setaria* spp. and *Amaranthus* spp.

#### Poaceae

124. *Hordeum vulgare* subsp. *spontaneum* (K. Koch) Thell. (Fig. 29)

Gr Nomos & Eparchia Thessalonikis: Thermi, ca. 64 m, 40°33'57"N, 22°59'42"E, 01.05.2023, Tsialtas obs. (photos, det. Kit Tan, May 2023).

Apparently new for northern Greece. Although well-documented from the Aegean islands, it was not reported from mainland Greece (coastal Attiki) until as recent as 2019. Along road connecting the Thessaloniki-Moudania national road to the old road Thessaloniki-Thermi, east of the American Farm School of Thessaloniki. Numerous plants, together with *Avena sterilis*, *Malva sylvestris*, *Hordeum marinum* and *Bromus* spp.

### Reports 125–144

Rossen Tzonev<sup>1</sup>, Chavdar Gussev<sup>2</sup>, Valeri Georgiev<sup>2</sup>, Sonya Tsoneva<sup>2</sup> & Kalina Pachedjieva<sup>1</sup>

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#### Apiaceae

125. *Peucedanum arenarium* Waldst. & Kit. subsp. *arenarium*

Bu Danubian Plain: Kozloduy town, Vratsa district, GP15, 43.79039°N, 23.66082°E, 08.10.2022, coll. R. Tzonev (SOM 178001, 178002).

The species was found in the floristic composition of typical loess steppes above Danube River, near the Atomenergoremont Hotel, westwards of Kozloduy town. According to the latest revision of *P. arenarium* agg. (Ostroumova & al. 2016), it is a separate genus *Taeniopetalum*, with three species: *T. arenarium*



Fig. 29. *Hordeum vulgare* subsp. *spontaneum* (photo I.T. Tsialtas).



Fig. 30. Fruits and pedicels from *Peucedanum arenarium* subsp. *arenarium* (photo R. Tzonev).

(with several subspecies), *T. urbani* and *T. obtusifolium*. However, according to the latest information (Ostroumova & Stoyanov 2016; Ostroumova & al. 2016), only *T. obtusifolium* and *T. arenarium* subsp. *neumayeri* are present in Bulgaria. This record disagrees with the species description in the Bulgarian Flora (Kuzmanov & Andreev 1982), where both subspecies *P. a.*



Fig. 31. *Peucedanum arenarium* subsp. *arenarium* in the loess steppes westwards of Kozloduy town, Vratsa district (photo R. Tzonev).

subsp. *arenarium* and *P. a.* subsp. *neumayeri* are given as occurring in Bulgaria, and the populations along the Black Sea Coast have been referred to the nominate subspecies.

In this new locality, the typical *Peucedanum* (*Taeniopetalum*) *arenarium* subsp. *arenarium* has been found. In the identified population, the plants are with obovoid or slightly ellipsoid fruits, pedicels are 4 mm long, leaf segments are 3 mm broad, which is in accordance (see Fig. 30) with the subspecies description given by Ostroumva & al. (2016). Therefore, it should be accepted that there are three taxa of *Peucedanum* (*Taeniopetalum*) *arenarium* agg. in Bulgaria: *P. obtusifolium* (only at the Black Sea Coast), *P. arenarium* subsp. *neumayeri* (widespread in Bulgaria, but mostly as a chasmophytic plant) and *P. a.* subsp. *arenarium* (in this single locality). The latter is represented only by a

small population (less than 100 individuals) (Fig. 31) on a steep loess slope near Kozloduy town. Vegetation is typical of the loess steppes and includes such species like *Festuca valesiaca*, *Artemisia campestris*, *Chamaecytisus hirsutus*, *Dianthus carthusianorum*, *Campanula sibirica*, etc. The population is endangered by different anthropogenic activities: road renovation very close to the locality, sport motorcycles trailing the slope, etc. It also raises the question of assessment of the conservation status of this subspecies and possible measures for its conservation.

#### **Asclepiadaceae**

##### **126. *Asclepias syriaca* L.**

**Bu** Danubian Plain: Dolni Tsibar village, Vratsa district, FP95, 43.83119°N, 23.46792°E, 03.09.2021, R. Tzonev, V. Georgiev, S. Tsoneva & Ch. Gushev obs.;





**Fig. 32.** *Achillea ochroleuca* on a sand dune near Dolni Tsibar village, Vratsa district (photo R. Tzonev).

— Thracian Lowland: Mirovo village, Stara Zagora district, LG47, 42.16026°N, 25.13420°E, 23.08.2022, R. Tzonev, V. Georgiev & Ch. Gussev obs.

These are new localities of this invasive alien plant in Bulgaria. The population near Dolni Tsibar is still small, forming several patches in a moist area amongst *Amorpha fruticosa* shrubs. The one along river Maritsa is numerous and covers a large area.

### **Asteraceae**

#### **127. *Achillea ochroleuca* Ehrh.**

**Bu** Danubian Plain: Dolni Tsibar village, Vratsa district, GP05, 03.09.2021, 43.82329°N, 23.50808°E, R. Tzonev, V. Georgiev, S. Tsoneva & Ch. Gussev obs.

The species has been comparatively recently identified in the Bulgarian flora and assessed as 'Critically Endangered' (Nedelcheva & Tzonev 2006). Only the locality close to Archar village, Vidin district, has been known so far. The new locality lies about 50 km eastwards of it. The identified new population (Fig. 32) is small and with limited distribution on an alluvial dune, close to the cemetery of Dolni Tsibar village. The grasslands are strongly overgrazed, mostly by horses. Some urgent measures are called for to protect this population, which grows at the southeasternmost margin of the entire species range.

#### **128. *Artemisia pontica* L.**

**Bu** Danubian Plain: Kashin village, Pleven district, LJ00, 43.38126°N, 24.59030°E, 26.09.2022, R. Tzonev obs.; Belene town, Pleven district, LJ53,



**Fig. 33.** *Artemisia pontica* southwards of Belene town, Pleven district (photo R. Tzonev).

43.61176°N, 25.16670°E, 25.09.2021, R. Tzonev, V. Georgiev, Ch. Gussev & S. Tsoneva obs.

The species is comparatively rare on the territory of Bulgaria and has been indicated for the Danubian Plain, only at Oryahovo town, Vratsa district (Gussev 2012). However, according to the authors' personal observations in the Central Danubian Plain, it is distributed in many small localities (probably clonal populations) near the settlements around Pleven town, and also in the former Belene floodplain (Fig. 33).

#### **129. *Helichrysum arenarium* (L.) Moench. subsp. *arenarium***

**Bu** Danubian Plain: Dobri Dol village, Montana district, FP65, 43.77463°N, 23.02170°E, 22.06.2022, R. Tzonev, V. Georgiev & Ch. Gussev obs.; Archar village, Vidin district, FP55, 43.80294°N, 22.92962°E, 21.06.2022, R. Tzonev, V. Georgiev & Ch. Gussev obs.

This species is a valuable medicinal and comparatively rare plant, distributed in isolated localities, mostly in North Bulgaria (Yankova-Tsvetkova & al. 2021). According to Urumov (1935), it was found in the Danubian Plain (at Kozloduy, Dolni Vadim, Harlets, and Saraevo villages, and Oryahovo town); however, subsequently (Kuzmanov & Gussev 2012; Yankova-Tsvetkova & al. 2021) it has not been confirmed for the flora of that region.

The new localities have been identified on stabilized sandy loess near Archar village, as well as on the alluvial inland dunes between Orsoya and Dobri Dol



(Fig. 34) villages. The species exists with several micro populations on some pioneer sands, in depressions formed even after abandoned excavation activities. It has also been found in the Ostrov lowland (Dimitar Dimitrov, pers. communication). However, massive ploughing out of vast stretches of these dunes probably was the reason for extinction of that locality.

### **Brassicaceae**

#### **130. *Crambe tataria* Sebeók**

**Bu** Black Sea Coast (*Northern*): Balchik town, Dobrich district, NJ90, 43.38641°N, 28.11485°E, 25.05.2021, R. Tzonev & Ch. Gussev obs.; Kavarna town, Dobrich district, PJ00, 43.41030°N, 28.36160°E, 26.05.2021, R. Tzonev obs.

— Danubian Plain: Ovcha Mogila village, Veliko Tarnovo district, LJ61, 43.46133°N, 25.32584°E, 24.05.2021, R. Tzonev & Ch. Gussev obs.

This is an endangered species in the Bulgarian flora, included in Annex II of the Habitat Directive. However, recent information (Tzonev 2006; Petrova & al. 2007; Goranova & Anchev 2015) on the distribution and population sizes of the species in the country is very limited. The known localities (from literature, but also from unpublished information provided by Stoyan Stoyanov and Antoaneta Petrova) have been visited in 2021 for preparation of an Action Plan for the conservation of this species.

In the locality of Novgrad village, Ruse district (Tzonev 2006), only one vegetative plant was found. In the locality between the villages of Ovcha Mogila and Kozlovets, Veliko Tarnovo district, three vegetative plants were found. In the locality near Kavarna town, only one vegetative plant was found. Most important, especially at national level, has been the population in Karamanli locality, eastwards of Balchik town. Altogether, 43 vegetative and 11 generative individuals (Fig. 35) were found and counted, most of which between the Black Sea and the road between Balchik town and Albena Resort.

### **Cactaceae**

#### **131. *Opuntia humifusa* (Raf.) Raf.**

**Bu** Danubian Plain: Ostrov village, Vratsa district, KJ63, 43.66892°N, 24.10022°E, 28.09.2019, R. Tzonev, Ch. Gussev & K. Pachedjieva obs.; Pleven town,



**Fig. 34.** *Helychrisum arenarium* on the dunes near Dobri Dol village, Montana district (photo R. Tzonev).



**Fig. 35.** *Crambe tataria* on a slope over Black Sea near Balchik town, Dobrich district (photo R. Tzonev).



**Fig. 36.** *Opuntia humifusa* on the dunes near Ostrov village, Vratsa district (photo R. Tzonev).



Pleven district, LJ00, 05.02.2022, 43.40612°N, 24.58447°E, R. Tzonev obs.

— Thracian Lowland: Gorna Mahala village, Plovdiv district, on the road between the village and Voden Kamak chalet, LH10, 42.46198°N, 24.74813°E, 06.08.2022, K. Pachedjieva obs.

This is a new invasive alien species for the Danubian Plain floristic region and a new locality in the Thracian Lowland (cf. Tashev 2012; Natcheva & Ivanova 2022). In the region of Ostrov village (Fig. 36), this cactus invades aggressively alluvial dunes in the lowlands. It has numerous populations and increasing area of occupation.

The plant was also planted close to Pleven town, between the road Pleven-Kartozhabene and the fence of a private summerhouse. It was observed for the first time in the early 1990s there and, in spite of abandonment of the summerhouse, it was completely viable in the former yard.

In the vicinities of Gorna Mahala village, the cactus grows in an open and disturbed steppe grassland, dominated by *Chrysopogon gryllus*, with participation of *Teucrium polium*, *Cotinus coggygria*, *Sanguisorba minor* and some ruderal or alien plants.

#### Caprifoliaceae

##### 132. *Sambucus deborensis* (Košanin) Košanin

**Bu** Forebalkan (Western): Yablanitsa town, Lovech district, in a farm yard on the road to Lukovit town, KH66, 43.03497°N, 24.10262°E, 21.10.2013, Ch. Gussev obs. (Fig. 37).

— Thracian Lowland: Skobelevo village, Haskovo district, LJ66, 42.10238°N, 25.36793°E, 26.08.2022, R. Tzonev, V. Georgiev & Ch. Gussev obs. (Fig. 38).

These are new localities of this Critically Endangered species (cf. Dimitrova 2015). Already reported from the Thracian Lowland (cf. Assyov & Petrova 2012). The populations are formed by several specimens. The one near Skobelevo village is located close to a former drainage canal, now dry and occupied mostly by shrub and tree vegetation of *Robinia pseudoacacia*, *Prunus cerasifera*, *Rubus sanguineus*, etc. The locality in Yablanitsa town is in a farm yard.

#### Caryophyllaceae

##### 133. *Dianthus pontederiae* A. Kern. subsp. *kladovanus* (Degen) Stoj. & Stef.



Fig. 37. *Sambucus deborensis* in Yablanitsa town, Lovech district (photo Ch. Gussev).



Fig. 38. *Sambucus deborensis* in the area of Skobelevo village, Haskovo district (photo R. Tzonev).

**Bu** Danubian Plain: Konunski Dol locality, northwards of Knezha town, Pleven district, KJ62, 43.55929°N, 24.14497°E, 05.05.2017, R. Tzonev obs. This is a new locality for this endangered species in the Bulgarian flora. In the last decades, its localities have been confirmed only in the region of Varna town

(Pobitite Kamani) (Petrova 2015). The population (Fig. 39) in the new locality is numerous and consists of several hundred individuals in loess steppe communities dominated by *Chrysopogon gryllus* and *Festuca valesiaca*. Unfortunately, great stretches of the area were ploughed out and destroyed in the period 2013-2017.

**134. *Gypsophila paniculata* L.**

**Bu** Danubian Plain: Dolni Vadin village, Vratsa district, KJ83, 43.66256°N, 24.30830°E, 31.07.2020, R. Tzonev obs.; Ostrov village, Vratsa district, KJ63, 43.67742°N, 24.09866°E, 31.07.2020, R. Tzonev obs. This species (Fig. 40) is not common in Bulgaria. It is distributed sporadically in the Thracian Lowland, Northeast Bulgaria and Danubian Plain (Stoyanov & al. 2021), but only in the vicinities of Oryahovo town in the latter floristic region (Vulev 1966). The species is typical for the alluvial sand dunes and common in the Orsoya lowland (Valcheva & al. 2021). The locality of Dolni Vadin is on a steppe slope with southern ex-



**Fig. 39.** *Dianthus pontederiae* subsp. *kladovanus* in Konunski Dol locality, northwards of Knezha town (photo R. Tzonev).

position, situated between the villages of Krushovene and Dolni Vadin, in the Brestovete area.

**Fabaceae**

**135. *Caragana frutex* subsp. *mollis* (M. Bieb.) Kuzmanov**

**Bu** Danubian Plain: Hadzhidimitrovo village, Smradlikata locality, near some fishponds, Veliko Tarnovo district, LJ71, 43.49077°N, 25.47586°E, R. Tzonev, S. Stanchev & S. Kotzeva obs., 09.08.2019.

This also is a new locality for the priority habitat 40C0 \*Ponto-Sarmatic deciduous thickets, a target object of conservation in the protected zone BG0000233 Studena Reka. This species and the habitat are already known from the Studena Reka river valley (Petrova & al. 2012), 9 km southwards of the present locality, near Gorna Studena village. In the newly found locality, there is a small patch of about 25 m<sup>2</sup> with a community of *Caragana frutex*, in a grassland area only 5 m from the end of arable crops.

**Geraniaceae**

**136. *Geranium divaricatum* Ehrh.**

**Bu** Danubian Plain: Pleven town, Martvata Dolina locality, Chernelka Nature Reserve, Pleven district, LJ00, 43.39143°N, 24.60407°E, 43.33587°N, 24.54955°E, 26.05.2020, coll. R. Tzonev (SOM 177999).

This is a new species for the floristic region of Danubian Plain. It was recorded way back by Urumov (1935) for this floristic region (Knezha town, Medk-



**Fig. 40.** *Gypsophila paniculata* on the dunes near Ostrov village, Vratsa district (photo R. Tzonev).





**Fig. 41.** *Geranium divaricatum* in *Robinia pseudoacacia* plantation between Pleven town and Kashin village, Pleven district (photo R. Tzonev).

ovets village), but subsequently was not confirmed. The species is semiruderal and inhabits shady places: forest plantations of *Robinia pseudoacacia* (Fig. 41) and shrub margins.

#### **Lamiaceae**

##### **137. *Nepeta parviflora* M. Bieb.**

**Bu** Danubian Plain: Orehovitsa village, Pleven district, KJ92, 43.56640°N, 24.42921°E, 22.06.2019, coll. R. Tzonev (SOM 178000).

This species is assessed as ‘Vulnerable’ (Genova 2009) at national level. It is already known from the Danubian Plain, but this new locality is the westernmost in the country. The area eastwards of Orehovitsa village (Fig. 42) consists of loess steppes, where other species of steppe origin grow, namely, *Adonis vernalis*, *Phlomis tuberosa*, *Ph. herba-venti* subsp. *pungens*, *Crocus danubensis*, etc.

#### **Nymphaeaceae**

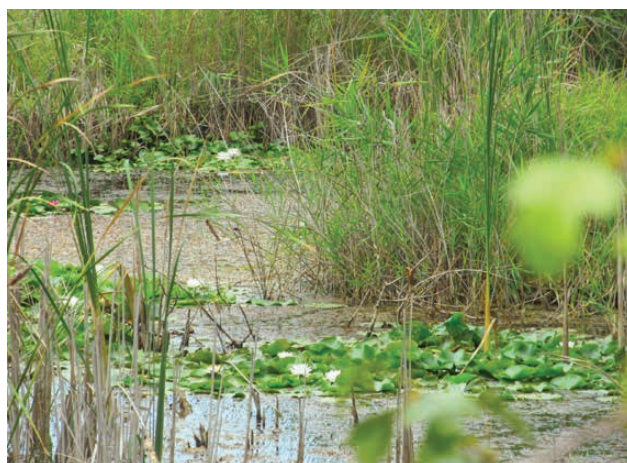
##### **138. *Nymphaea alba* L.**

**Bu** Danubian Plain: Yasen village, Pleven district, KJ91, 43.41381°N, 24.52394°E, 26.08.2021, R. Tzonev, V. Georgiev, S. Tsoneva & Ch. Gushev obs.

This is an endangered species (Peev & Tsoneva 2015) in the Bulgarian flora. In the new locality (Fig. 43), the population has inhabited a small lake formed by old riverbeds and gravel excavations near the Tobacco Factory, Yasen village. One specimen had a red flower (*N. a. f. rosea*) and probably the population has been of artificial origin. In recent years, the Water Lily



**Fig. 42.** *Nepeta parviflora* in a steppe area, eastwards of Orehovitsa village, Pleven district (photo R. Tzonev).



**Fig. 43.** *Nymphaea alba* in a small lake close to Yasen village, Pleven district (photo R. Tzonev).

has been cultivated *en masse* and released freely into the wild. There is a farm for Water Lilies and other aquatic plants (see <https://www.facebook.com/profile.php?id=100044479253577>) near Pleven town. Small populations of white Water Lilies, incl. some with red flowers, have been distributed in the Kaylaka Protected Site: at Kaylaka Hotel, Totlebenov Val dam, etc. Such a process is rife with a risk of genetic erosion of the native populations of this species in Bulgaria.

#### **Rosaceae**

##### **139. *Duchesnea indica* (Jacks.) Focke**

**Bu** Danubian Plain: Pleven town, Byalo More Str., Pleven district, LJ00, 43.40784°N, 24.61509°E, 08.08.2022, R. Tzonev obs.





**Fig. 44.** *Duchesnea indica* on a street in Pleven town, Pleven district (photo R. Tzonev).



**Fig. 45.** *Potentilla anserina* on the riverbank of Danube River, Pozharevo village, Silistra district (photo S. Tsoneva).

This is a new alien species for the floristic region (*cf.* Stoyanov & al. 2021). Several plants (Fig. 44) have been found in the sidewalk cracks near the Institute of Viticulture and Winery, Pleven.

**140. *Potentilla anserina* L.**

**Bu** Northeast Bulgaria: Pozharevo village, Silistra district, MJ77, 44.06502°N, 26.71912°E, 09.09.2021, R. Tzonev, V. Georgiev, S. Tsoneva & Ch. Gushev obs. The species has a very limited distribution in Bulgaria: only in Mt Sredna Gora, Danubian Plain and North-east Bulgaria (Stoyanov & al. 2021). However, only the alluvial banks of Danube River provide habitats for this species in North Bulgaria. The newly identified locality (Fig. 45) is also on the muddy banks of Danube River, in a floristic composition of communities from the class *Isoeto-Nanojuncetea*.



**Fig. 46.** *Solanum elaeagnifolium* on a street of Asenovgrad town, Plovdiv district (photo Ch. Gushev).



**Fig. 47.** *Trapa natans* in a small inlet, westwards of Kozloduy town, Vratsa district (photo R. Tzonev).

***Solanaceae***

**141. *Solanum elaeagnifolium* Cav.**

**Bu** Rhodopi Mts (*Central*): Asenovgrad town, Hristo Botev 9 Street, in a roadside strip, *ca.* 262 m, LG25, 42.00679°N, 24.88148°E, 15.07.2016, with flowers; Ch. Gushev, V. Georgiev & S. Tsoneva obs.

This extremely invasive alien plant (Fig. 46) native to Central America has been so far reported only from two localities in the Valley of River Struma (*Southern*) (Vladimirov & al. 2015; Vladimirov 2020).

***Trapaceae***

**142. *Trapa natans* L.**

**Bu** Danubian Plain: Kozloduy town, Vratsa district, GP15, 43.79841N, 23.67784E, 01.09.2021, R. Tzonev, V. Georgiev, S. Tsoneva & Ch. Gushev obs.





Fig. 48. *Eleusine indica* on the riverbank of Danube River, near Ostrov village (photo R. Tzonev).

This is an endangered species in the Bulgarian flora (Peev & Tsoneva 2015). Fast and temporary development of monodominant communities is typical of it. The locality (Fig. 47) is in a small inlet (*zaton*), near the Radetski Ship tourist site. The population is numerous and the community occupies half of the inlet.

#### Poaceae

##### 143. *Eleusine indica* (L.) Gaertn.

**Bu** Danubian Plain: Ostrov village, Vratsa district, KJ64, 43.68403°N, 24.14762°E, 04.09.2022, R. Tzonev obs.;

— Forebalkan (*Eastern*): Gorna Oryahovitsa town, Veliko Tarnovo district, LH97, 43.12205°N, 25.69039°E, 23.08.2021, R. Tzonev & V. Georgiev obs. This is an invasive species in Bulgaria, so far known from many regions in the country, as well as from the Forebalkan, in its western part – Montana town (Vladimirov 2013). The species has been observed on the streets in the central part of Gorna Oryahovitsa town, in the eastern part of this floristic region. The

locality at Ostrov village (Fig. 48) is the second one in the Danubian Plain (after those at Pleven town), in the northernmost part of the country.

##### 144. *Festuca vaginata* Willd.

**Bu** Danubian Plain: Dolni Tsibar village, Vratsa district, FP95, 43.81773°N, 23.47046°E, 04.09.2021, R. Tzonev & S. Tsoneva obs.; Dobri Dol village, Montana district, FP64, 43.77429°N, 23.02756°E, 29.09.2018, coll. R. Tzonev (SOM 177998).

This endangered species in the Bulgarian flora has been already published for the Danubian Plain – in the vicinities of Archar village, Vidin district (Nedelcheva & Tzonev 2006; Tzonev 2015). However, its distribution in this floristic region has not been reflected in the more thorough taxonomic and chorological sources (Aysov & Petrova 2012; Stoyanov & al. 2021). It inhabits sporadically the inland alluvial dunes and participates in small monodominant communities in the Orsoya lowland (Dobri Dol and Orsoya villages, Montana district), as well as in the Tsibar lowland (Dolni Tsibar village, Vratsa district).



## Reports 145–147

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The following are new plant records based on floristic investigations in the prefecture of Korinthias in north Peloponnese.

### Apiaceae

145. *Bunium bulbocastanum* L. [syn.: *B. mediterraneum* (A. Albert) A. Albert; *Bulbocastanum mediterraneum* A. Albert; *Bulbocastanum linnaei* Schur] (Figs. 49–51)

Provenance “Habitat in Germania, Anglia, Gallia”, as described by Linnaeus in *Species Plantarum* 1: 243 (1753).

Lectotype designated by Reduron & Jarvis in Jarvis & al. (ed.), *Regnum Veg.* 127: 27 (1993): Herb. Burser VIII: 78 (UPS).

**Gr** Nomos & Eparchia Korinthias: E of the village of Sofiko, edge of uncultivated field, deep red clay over limestone, 342 m, 37°47'N, 23°05'E, 13.04.2020 & 20.12.2021, Zarkos obs. (photos); *loc. ibid.*, 18.04.2022, Kit Tan & G. Vold 33216 (ATH, C).

Herbaceous perennial with a subglobose tuber 1.5–4 cm diam. Flowering stems ascending-erect, 20–60 cm, moderately branched; subterranean part flexuous. Basal leaves long-petiolate, glabrous; petiole inflated and sheathing at base. Lamina broadly triangular in outline, 3-pinnatisect, ultimate lobes linear-lanceolate to oblong, mucronate; middle cauline leaves 2-pinnatisect, ultimate lobes entire to pinnately divided; upper cauline leaves trisect to entire, ultimate lobes linear. Umbels of hermaphrodite flowers 3.5–8

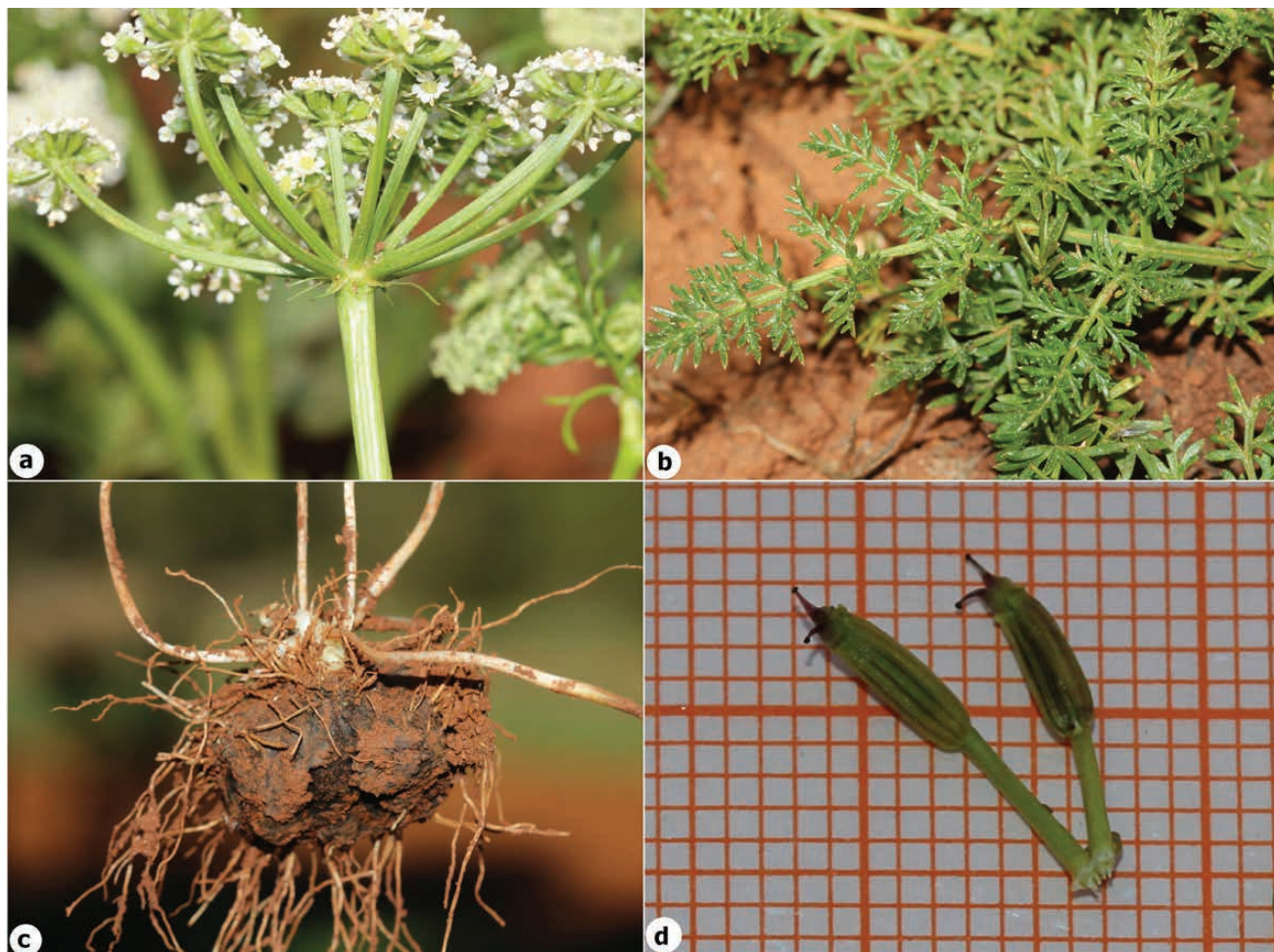


Fig. 49. *Bunium bulbocastanum* showing inflorescence, leaves, tuber and immature fruits (photo G. Zarkos).





Fig. 50. *Bunium bulbocastanum* in flower (Kit Tan & G. Vold 33216).



Fig. 51. *Bunium bulbocastanum* with tuber (Kit Tan & G. Vold 33216).



cm across, with 8–16 subequal rays  $20\text{--}40 \times 0.6\text{--}1$  mm, papillate on inner edge, not thickened in fruit. Peduncles  $40\text{--}100$  ( $-150$ )  $\times 1\text{--}2$  mm. Bracts 5–10, up to ca. 6 mm long, lanceolate, acuminate. Bracteoles 5–10, similar to bracts but smaller. Flowers epigynous, 15–20 per umbellule. Pedicels short, subequal,  $2\text{--}3.5 \times 0.2\text{--}0.5$  mm, often papillate on inner edge, not greatly thickened in fruit. Sepals absent or inconspicuous. Petals 1–1.3 mm (outer ones of outer flowers somewhat larger), obcordate, deeply notched, apex of middle lobe inflexed, white with reddish-brown midvein. Anthers ca. 0.5 mm, cream. Stylopodium ca. 0.5 mm, broadly conical, not contiguous with mericarp; styles 0.2–0.4 mm, elongating to ca. 1 mm in fruit, linear, deflexed. Mature fruits 3–6 mm, ellipsoid; ribs of mericarps slender; valecellular vitta solitary; commissural vittae 2. Carpophore not thickened, split along entire length.

Uncultivated field with many weeds in deep reddish-brown clay, ca. 350 m. Flowering April to May, fruiting June and July.

New for Greece. Native to W and S Europe, extending from south England and northeast of the Iberian Peninsula to central Germany and northwest of the Balkan Peninsula (Croatia); introduced and naturalized in C Europe (Austria, Czech Republic, Slovakia), Denmark and Japan. In the Iberian Peninsula, occurring only in Serra de Rodes.

Distinguished from *B. pachypodium* P.W. Ball endemic to SW Europe by its acute-mucronate ultimate leaf lobes (vs. subobtusate), absent or inconspicuous sepals (vs. distinct), and styles shorter or equalling stylopodium at anthesis (vs. longer).

This interesting geophyte is cultivated for its edible tubers which are eaten raw or cooked, with the taste likened to that of sweet chestnuts (*Castanea sativa*). Known as *castanyola* (Spanish), *jordkastanie* (Danish), *Erdkastanie* (German) and earth nut or pig nut (English). The leaves and seeds are used as a flavouring.

This is the first report of its occurrence in Greece, the nearest locality in the Balkan Peninsula is in Croatia – Central Dalmatia: surroundings of the city of Split, *Pittoni-Dannenfeldt* (ZA-Herbarium Croaticum 75454); Dalmatia, exact locality not given, *K. Schloss-*

*er* (ZA-Herbarium Croaticum 75452). It has also been collected near the Croatian border, in the Reka valley ca. 30 km by road from the East Adriatic (LJU). In Greece, there is no evidence it is a remnant of a cultivated crop. This was confirmed by the owner of the land who stated that only cereals have been grown in the area and he is not familiar with the plant or its uses. The *Bunium* plants were found in deep reddish-brown clay together with taxa frequently encountered in similar habitats of traditionally managed cultivated fields such as *Leontice leontopetalum*, *Orlaya platycarpus*, *Agrostemma githago*, *Scandix australis*, *Allium cyrilli*, *Vicia pannonica* subsp. *striata*, *Bellevalia ciliata*, *Tulipa undulatifolia*, *Gladiolus italicus*, etc. As with *Bongardia* and *Leontice*, when the aerial parts die down the plants are difficult to locate. And when in full flower it resembles several other white-flowered *Apiaceae*.

In W and C Europe it is found particularly on arable land with past disturbance, where cultivation has ceased and reverting back to pasture. The tubers survive shallow ploughing. It prefers open calcareous ground and is ungrazed on by sheep, goats and other herbivores. It is now rare in several countries and is legally protected in Germany. Its chromosome number has been noted as  $2n = 22$ , diploid with base number  $x = 11$  (Schulz-Gaebel 1930).

We thank Boštjan Surina (Rijeka, Croatia) and Nina Vuković (Zagreb, Croatia) for their kind help in providing scans of *B. bulbocastanum* specimens kept in ZA.

### **Brassicaceae**

**146. *Teesdalia coronopifolia*** (J.P. Bergeret) Thell. [syn.: *Thlaspi coronopifolium* Bergeret] (Figs. 52–53)

**Gr** Nomos & Eparchia Korinthias: NW of the village of Krioneri, near Mougosto forest, cultivated vineyard with many weeds, limestone, 836 m,  $37^{\circ}58'N$ ,  $22^{\circ}36'E$ , 10.03.2023, *Zarkos* obs. (photos).

New for nomos and eparchia. Occurring in all regions of Greece including north central and southern Peloponnese.

### **Crassulaceae**

**147. *Phedimus stellatus*** (L.) Raf. [syn.: *Sedum stellatum* L.]



Fig. 52. *Teesdalia coronopifolia* inflorescence (photo G. Zarkos).

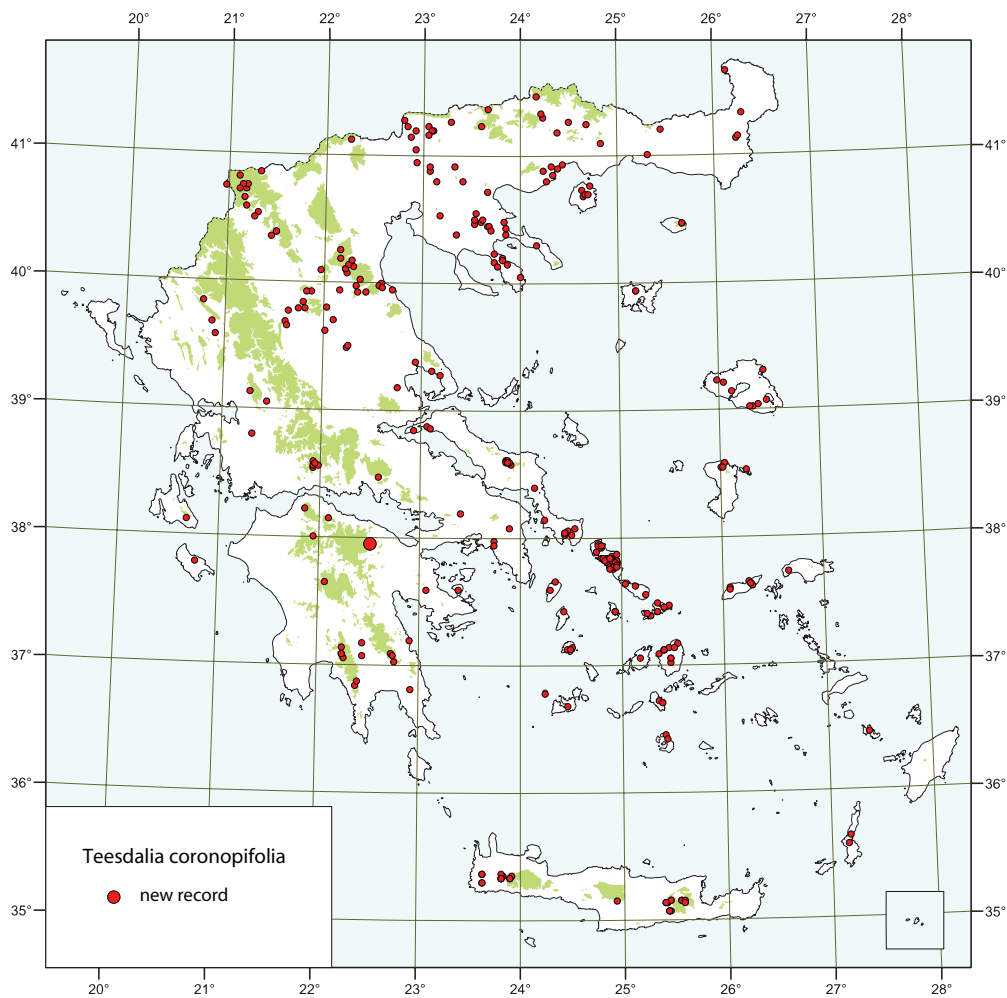


Fig. 53. Distribution of *Teesdalia coronopifolia* in Greece.



**Gr** Nomos & Eparchia Korinthias: on the side of the road from Isthmus of Corinth to Corinth, 60 m, 37°55'N, 22°59'E, 18.04.2023, *Zarkos* obs. (photo). New for nomos and eparchia. Mainly on the Ionian islands and adjacent mainland, rare in the Peloponnese (recorded at Kalogria in NW Peloponnese).

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