Article

Fl. Medit. 32: 79-98
https://doi.org/10.7320/FlMedit32.079
Version of Record published online on 12 July 2022

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The vascular flora of damp meadows and mires in W Rhodopi (NE Greece)

Abstract

Charalampidou, C., Eleftheriadou, E. & Theodoropoulos, K.: The vascular flora of damp meadows and mires in W Rhodopi (NE Greece). — Fl. Medit. 32: 79-98. 2022. — ISSN: 1120-4052 printed, 2240-4538 online.

The plant diversity of damp meadows and mires occurring in the Greek part of Rhodopi Mountain Range, at an elevation of above 1000 m, was investigated. The vascular flora of the investigated area consists of 340 taxa, which belong to 175 genera and 58 families. Seven taxa of vascular plants were recorded for the first time for the floristic region of North-East Greece. The most species-rich families are *Poaceae*, *Rosaceae*, *Asteraceae*, *Cyperaceae*, *Lamiaceae*, *Fabaceae* and *Juncaceae*, whereas 20 families contribute with only one taxon. The most species-rich genera are *Carex*, *Juncus* and *Ranunculus*, and 103 genera have only one taxon. Most of them are hemicryptophytes (203 taxa), followed by therophytes (51 taxa), geophytes (45 taxa), phanerophytes (27 taxa) and chamaephytes (14 taxa). The high percentage of hemicryptophytes reflects the continental character of the flora. The majority of the taxa (228 taxa) are Widespread (76 taxa Europaean-SW Asian, 53 taxa Euro-Siberian, 37 taxa European etc.), followed by the Mediterranean unit with 57 taxa (24 taxa Mediterranean, 22 taxa Mediterranean-European, etc.) and the Balkan unit with 53 taxa (31 taxa Balkan, 17 taxa Balkan-Anatolian, etc.).

Key words: floristic inventory, phytodiversity, Balkans, chorology, protected areas.

Introduction

In Europe, peat bogs have a tendency of becoming less and less frequent from north to south and they occur in areas where forests generally represent the natural plant community, where humans haven't interfered (Minelli 2004).

In Greece, peatlands are infrequent attributable to special characteristics, such as the warm/dry climate, the limestone bedrocks' predominance, which are combined with anthropogenic factors over numerous thousand years (Bouzinos & al. 1994, 1997; Papazisimou & al. 2002). Peatlands, primarily topogeneous fens are extant in various regions, specifically in country's north sectors (Botis & al. 1993; Bouzinos & al. 1997, 2000). Ombrotrophic peatlands are not known in Greek territory, although more oligotrophic mires are present in the uplands of northern Macedonia and Epirus (Payne & Mitchell 2007).

According to Tanneberger & al. (2017), the extent of mires in Greece amounts to 0.035% of the total area of the country.

The mountain range of Rhodopi sustains a rich variety of flora and vegetation. In Rhodopi, some habitat types meet their southernmost distribution limits, such as the "Transition mires and quaking bogs (7140)" habitat type that occurs in the National Park of Rhodopi Mountain range. This habitat type code replaced that of "*Sphagnum* acid bogs (7130, Blanket bogs)". Here we can find some species with their main distribution in N and high-montane Eurasia (extending occasionally to North America), which reach the Northeast or Northern part of the country, without extending southwards; e.g. *Drosera rotundifolia* (Athanasiadis & Gerasimidis 1978; Theodoropoulos & Eleftheriadou 2012).

Similar surveys in which floristic lists of this particular habitat type are presented, have been conducted in neighboring Bulgaria by Atanassova & Marinova (2005) and Dimitrov (2016). In Greece, knowledge of the vascular plants of these areas is provided by Sarika-Hatzinikolaou & al. (1996) and Eleftheriadou & Theodoropoulos (2015), with the latest study being the only one in the present research area. Thus, this study aims to fill the gap in knowledge of this habitat type by presenting a complete catalogue of all vascular plants.

Material and methods

***Study* area** – The research area is situated in the west and central parts of Greek Rhodopi, where four sites [GR1140001 – Dasos Fraktou, GR1140002 – Rodopi (Simida), GR1140003 – Periochi Elatia, Pyramis Koutra and GR1120003 – Oros Chaintou-Koula kai gyro koryfes] were included in the "Natura 2000" Network. The research area is located in the last three sites mentioned above (Fig 1). The surrounding vegetation consists of pure or mixed *Pinus sylvestris*, *Picea abies* and *Fagus sylvatica* stands.

Geologically, the area is part of the Rhodopi massif (Mountrakis 1985). The substrate in most of the study area consists of acid igneous (granites, granodiorites, monzonites) and acid to intermediate volcanic rocks (pyroclastics), whereas a small part has metamorphic rocks (amphibolites, gneisses, schists with marble intercalations and marble or crystalline limestones) (I.G.M.E. 1983).

The climate can be characterized as humid continental with a harsh winter, a short hot summer and a rather uniform distribution of rainfall during the year. The bioclimate can be characterized as axeric, montane and hyperhumid with strong winter (Mavrommatis 1980).

Data collection and analysis – The research was based on our own field collections, carried out during spring and summer of 2018-2020, as well as on herbarium specimens collected by Eleftheriadou, Theodoropoulos and Athanasiadis during summer of 1990 and 1992. In addition, unpublished material from the investigation region was used (leg. Eleftheriadou, Theodoropoulos, Athanasiadis, August 2000). Voucher specimens are deposited in the herbarium of the Laboratory of Forest Botany-Geobotany, Department of Forestry and Natural Environment, in the Aristotle University of Thessaloniki, Greece (TAUF). The collected plant specimens were determined following the main national and European floras (Jordanov & al. 1963-1995; Tutin & al. 1968-1980, 1993; Pignatti 1982, 2017-2019; Strid 1986; Strid & Tan 1991, 1997, 2002) as well as selected taxonomic lit-

erature (Erben 1985; Krendl 1986-1987). The nomenclature follows Dimopoulos & al. (2013, 2016). Families, genera, species and subspecies are arranged alphabetically within the major groups of vascular plants, viz. *Pteridophyta*, *Gymnospermae*, *Angiospermae* (*Dicotyledones* and *Monocotyledones*). Life-form categories are assorted in accordance with Raunkiaer's classification system as was modified by Dimopoulos & al. (2013). Chorological types of taxa derive from Dimopoulos & al. (2013).

The collection sites (Fig.1) and dates are coded as follows:

Collecting localities

1a: Dasiko chorio Elatias, 24.32714 E, 41.47914 N, 1535 m, 25.7.2019.
1b: idem, 24.32616 E, 41.47900 N, 1541 m, 5.8.2000.
1c: idem, 24.32600 E, 41.47883 N, 1540 m, 5.8.2000.
1d: idem, 24.32783 E, 41.47833 N, 1533 m, 5.8.2000.
1e: idem, 24.32816 E, 41.47800 N, 1530 m, 5.8.2000.
1f: idem, 24.32816 E, 41.47816 N, 1531 m, 5.8.2000.
2: Stravorema, 24.34388 E, 41.49295 N, 1310 m, 26.7.2019.
3: Aletras, 24.14254 E, 41.51633 N, 1320 m, 19.5.2020.
4a: Baklavas, 24.13769 E, 41.50552 N, 1300 m, 19.5.2020.
4b: idem, 24.13766 E, 41.50433 N, 1280 m, 6.8.2000.
5: Stamna, 24.57509 E, 41.42819 N, 1375 m, 8.6.2020.
6: Agkathoto, 24.66564 E, 41.29086 N, 1190 m, 7.6.2020.
7: Kalyvia Lepida, 24.68948 E, 41.40150 N, 1475 m, 14.6.2020.
8a: Klivanos, 24.69686 E, 41.41026 N, 1495 m, 14.6.2020.
8b: idem, 24.69833 E, 41.41166 N, 1510 m, 4.8.2000.
8c: idem, 24.69800 E, 41.4115 N, 1505 m, 4.8.2000.
8d: idem, 24.69783 E, 41.41133 N, 1505 m, 4.8.2000.
8e: idem, 24.69750 E, 41.4110 N, 1500 m, 4.8.2000.
8f: idem, 24.69716 E, 41.41083 N, 1495 m, 4.8.2000.
9a: Loxada river, 24.69649 E, 41.41029 N, 1500 m, 10.7.2020.
9b: idem, 24.67966 E, 41.41333 N, 1487 m, 4.8.2000.
9c: idem, 24.67866 E, 41.41283 N, 1483 m, 4.8.2000.
10a: Kreminari mandra, 24.63483 E, 41.42633 N, 1510 m, 4.8.2000.
10b: idem, 24.63450 E, 41.4285 N, 1515 m, 4.8.2000.
10c: idem, 24.6565 E, 41.43016 N, 1520 m, 4.8.2000.
11a: Southeast of the village Livaditis, 24.6945 E, 41.29783 N, 1365 m, 3.8.2000.
11b: idem, 24.69433 E, 41.29733 N, 1362 m, 3.8.2000.
11c: idem, 24.68466 E, 41.29550 N, 1340 m, 3.8.2000.
11d: idem, 24.68400 E, 41.29483 N, 1435 m, 3.8.2000.
11e: idem, 24.68800 E, 41.29500 N, 1345 m, 3.8.2000.
11f: idem, 24.68416 E, 41.29666 N, 1340 m, 3.8.2000.
11g: idem, 24.68383 E, 41.29866 N, 1335 m, 3.8.2000.
11h: idem, 1350 m, 6.8.1992.
12a: Kalyvia Kontogianni, 24.73933 E, 41.33300 N, 1450 m, 2.8.2000.
12b: idem, 24.73916 E, 41.33283 N, 1450 m, 2.8.2000.
12c: idem, 24.73983 E, 41.33350 N, 1460 m, 2.8.2000.
12d: idem, 24.73984 E, 41.33351 N, 1460 m, 2.8.2000.
13a: Dasiko chorio Erymanthou, 24.71153 E, 41.33129 N, 1320 m, 8.7.2018.
13b: idem, 1300 m, 2.7.1990.

13c: idem, 1320 m, 5.8.1992.
14: Livadotopos, 1140 m, 5.7.1990.
15: Kalyvia Kontolia, 1350 m, 5.7.1990.
16: Erymanthos, 1450-1560 m, 4.7.1990.
17: Kiougkia, 1280 m, 4.10.1990.

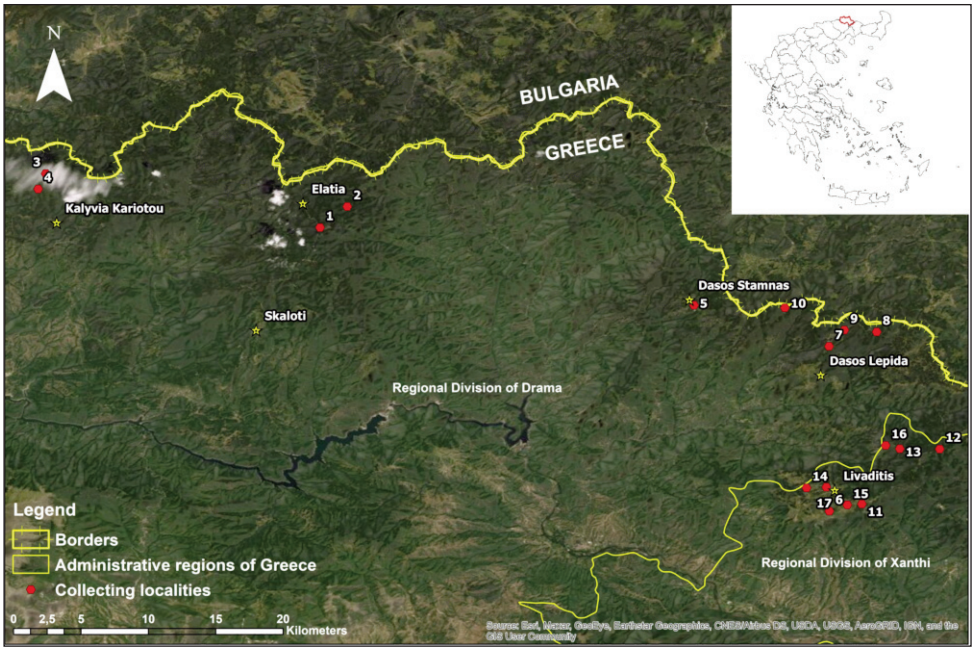

Fig. 1. Map of the study area and collection sites.

Results and discussion

Floristic catalogue – The following abbreviations and symbols are used in the floristic catalogue:

Char.: leg. Ch. Charalampidou (TAUF), followed by collection number and locality code (in brackets)

ETA: leg. E. Eleftheriadou, K. Theodoropoulos, N. Athanasiadis (TAUF), followed by locality code (in brackets)

TE: Theodoropoulos & Eleftheriadou 2012

CET: Charalampidou, Eleftheriadou & Theodoropoulos 2021

!: specimen seen

E: East of longitude (World Geodetic System 1984 in decimal degrees)

N: North of latitude (World Geodetic System 1984 in decimal degrees)

s.n.: sine numero, specimen without collection number

PTERIDOPHYTA

Aspleniaceae
Asplenium trichomanes L. subsp. *trichomanes* - H, Co, – ETA s.n. ! (13b).

Athyriaceae
Athyrium filix-femina (L.) Roth - G, Co – Char. 1198 (1a).

Cystopteridaceae
Cystopteris fragilis (L.) Bernh. - G, Co – ETA s.n. ! (13b).

Dennstaedtiaceae
Pteridium aquilinum (L.) Kuhn subsp. *aquilinum* - G, Co – ETA s.n. ! (13c).

Equisetaceae
Equisetum arvense L. – G, Ct – Char 1227 (2).
Equisetum fluviatile L. – G, Ct – ETA s.n. ! (11a), ETA s.n. ! (15).
Equisetum palustre L. – G, Ct – Char. 1226 (2), Char. 1606 (4a), ETA s.n. ! (1b), ETA s.n. ! (1c), ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.

GYMNOSPERMAE

Cupressaceae
Juniperus communis L. subsp. *communis* - P, Ct, – ETA s.n. ! (11h), TE 2012: 1409
Juniperus oxycedrus subsp. *deltoides* (R.P. Adams) N.G. Passal. - P, EM – ETA s.n. ! (14).

ANGIOSPERMAE - DICOTYLEDONES

Aceraceae
Acer opalus subsp. *obtusatum* (Willd.) Gams - P, MA – ETA s.n. ! (13c).

Apiaceae
Angelica sylvestris L. - H, ES – ETA s.n. ! (12a).
Chaerophyllum aureum L. - H, ME – ETA s.n. ! (13b).
Chaerophyllum hirsutum L. - H, Eu – ETA s.n. ! (9b), ETA s.n. ! (9c).
Oenanthe peucedanifolia Pollich - H, MA – ETA s.n. ! (9b), ETA s.n. ! (9c), ETA s.n. ! (11a).
Oenanthe pimpinelloides L. subsp. *pimpinelloides* - H, MS – ETA s.n. ! (15).
Oenanthe silaifolia M. Bieb. - H, MS – Char. 1208 (1a), Char. 1268 (2), Char. 1269 (2).
Pastinaca hirsuta Pančić - H, Bk – Char. 1213 (1a), Char. 1229 (2), Char. 1900 (8a).
Seseli peucedanoides (M. Bieb.) Koso-Pol. - H, ES – ETA s.n. ! (16).

Asclepiadaceae
Vincetoxicum hirundinaria subsp. *nivale* (Boiss. & Heldr.) Markgr. - H, BA – Char. 407 (13a), Char. 411 (13b).

Asteraceae
Achillea millefolium L. - H, ES – Char. 1270 (2).
Achillea setacea Waldst. & Kit. - H, MS – ETA s.n. ! (14).
Antennaria dioica (L.) Gaertn. - C, ES – ETA s.n. ! (11h).

Anthemis austriaca Jacq. - T, MS – Char. 1615 (3), Char. 1616 (3).
Anthemis chia L. - T, Me – Char. 1899 (8a).
Anthemis cretica L. - H, ME – Char. 1820 (5).
Anthemis macedonica Boiss. & Orph. subsp. *macedonica* - T, Bk – Char. 2062 (9a).
Centaurea affinis Friv. subsp. *affinis* - H, Bk – ETA s.n. ! (14), ETA s.n. ! (16).
Centaurea grisebachii subsp. *confusa* (Hayek) Dostál - H, • – ETA s.n. ! (14).
Centaurea phrygia subsp. *stenolepis* (A. Kern.) Gugler - H, MS – ETA s.n. ! (16).
Cichorium intybus L. - H, MS – ETA s.n. ! (14).
Cirsium appendiculatum Griseb. - H, Bk – Char. 1244 (2).
Doronicum austriacum Jacq. - H, ME – Char. 1228 (2).
Gnaphalium sylvaticum L. - H, ES – Char. 1230 (2).
Hieracium olympicum Boiss. - H, BA – ETA s.n. ! (11b), ETA s.n. ! (13c).
Hieracium pannosum subsp. *friwaldii* (Rchb. f.) Freyn - H, Bk – ETA s.n. ! (16).
Hypochaeris maculata L. - H, ES – Char. 1219 (2), Char. 1231 (2), Char. 408 (13a), Char. 412 (13a).
Inula hirta L. - H, ES – ETA s.n. ! (14), ETA s.n. ! (16).
Pilosella cymosa (L.) F.W. Schultz & Sch. Bip. subsp. *cymosa* - H, Eu – ETA s.n. ! (15).
Pilosella cymosa subsp. *sabina* (Sebast.) H. P. Fuchs - H, MS – ETA s.n. ! (16).
Pilosella leucopsilon (Arv.-Touv.) Gottschl. - H, MS – ETA s.n. ! (11h).
Pilosella officinarum Vaill. - H, ES – ETA s.n. ! (16).
Pilosella onegensis Norrl. - H, ES – Char. 391 (13a), Char. 395 (13a), Char. 1207 (1a), Char. 1242 (2), Char. 1279 (2), ETA s.n. ! (4b), ETA s.n. ! (9b), ETA s.n. ! (9c), ETA s.n. ! (12c), ETA s.n. ! (12d).
Scorzoneroides autumnalis (L.) Moench - H, ES – Char. 1245 (2), Char. 1249 (2), Char. 1276 (2).
Senecio viscosus L. - T, MS – ETA s.n. ! (14).
Tanacetum corymbosum subsp. *cinereum* (Griseb.) Grierson - H, Bk – ETA s.n. ! (14).
Tragopogon porrifolius L. - T, Me – Char. 1630 (3).
Tripleurospermum tenuifolium (Kit.) Freyn - H, MS – Char. 415 (13a).

Betulaceae
Betula pendula Roth - P, ES – Char. 1649 (3).
Carpinus orientalis Mill. subsp. *orientalis* - P, MS – ETA s.n. ! (16).
Ostrya carpinifolia Scop. - P, MS – ETA s.n. ! (11h).

Boraginaceae
Anchusa thessala Boiss. & Spruner - T, MS – ETA s.n. ! (15).
Buglossoides arvensis subsp. *sibthorpiana* (Griseb.) R. Fern. - T, MS – Char. 1576 (3), Char. 1623 (3).
Myosotis nemorosa Besser - H, ES – Char. 1187 (1a), Char. 1890 (8a), ETA s.n. ! (8c), ETA s.n. ! (11b), ETA s.n. ! (12b), TE 2012: 1409.
Myosotis sylvatica subsp. *subarvensis* Grau - T, Me – Char. 1581 (3).
Pulmonaria officinalis L. - H, Eu – Char. 1573 (3), Char. 1603 (4a).
Symphytum ottomanum Friv. - H, BA – Char. 1237 (2).

Brassicaceae
Alyssum alyssoides (L.) L. - T, Eu – Char. 1627 (3).
Alyssum murale Waldst. & Kit. - H, ME – ETA s.n. ! (14).
Arabis glabra (L.) Bernh. - H, Eu – Char. 1619 (3).
Arabis hirsuta (L.) Scop. - H, ME – Char. 1631 (3).
Barbarea sicula C. Presl - H, Me – Char. 1824 (5).
Capsella bursa-pastoris (L.) Medik. - T, Co – Char. 1618 (3), Char. 1624 (3).
Descurainia sophia (L.) Prantl - T, ES – Char. 1574 (3), Char. 1636 (3).

Raphanus raphanistrum L. subsp. *raphanistrum* - T, MS – ETA s.n. ! (15).
Rorippa pyrenaica (All.) Rchb. - H, Eu – Char. 1640 (3).
Rorippa thracica (Griseb.) Fritsch - H, BA – ETA s.n. ! (13b).
Thlaspi arvense L. - T, Co – Char. 1582 (3).

Campanulaceae
Campanula lingulata Waldst. & Kit. - H, BA – ETA s.n. ! (14).
Campanula macrostachya Willd. - H, BC – ETA s.n. ! (16).
Campanula patula subsp. *epigaea* (Degen) Hayek - H, Bk – ETA s.n. ! (13b), ETA s.n. ! (8c).
Campanula persicifolia L. - H, ES – ETA s.n. ! (16).
Campanula sparsa subsp. *sphaerothrix* (Griseb.) Hayek - T, Bk – Char. 1195 (1a).
Campanula spatulata subsp. *spruneriana* (Hampe) Hayek - G, Bk – ETA s.n. ! (14).
Jasione heldreichii Boiss. & Orph. - H, BA – ETA s.n. ! (14).

Caryophyllaceae
Cerastium holosteoides Fr. - T, Eu – ETA s.n. ! (13b).
Dianthus deltoides L. subsp. *deltoides* - H, ES – Char. 1223 (2).
Dianthus gracilis subsp. *drenowskianus* (Rech. f.) Strid - H, Bk – ETA s.n. ! (16).
Dianthus stenopetalus Griseb. - C, Bk – ETA s.n. ! (14).
Gypsophila muralis L. - H, ES – ETA s.n. ! (14).
Lychnis coronaria (L.) Desr. - H, MS – ETA s.n. ! (14).
Sagina procumbens L. - H, Ct – ETA s.n. ! (14).
Scleranthus annuus subsp. *polycarpos* (L.) Thell. - T, Eu – Char. 1590 (4a).
Scleranthus perennis subsp. *marginatus* (Guss.) Nyman - H, Me – ETA s.n. ! (14).
Spergula arvensis L. - T, Co – ETA s.n. ! (15).
Stellaria alsine Grimm - H, ES – Char. 1197b (1a).
Stellaria graminea L. - H, ES – ETA s.n. ! (13b).
Stellaria media (L.) Vill. - T, Co – Char. 1907 (7).

Chenopodiaceae
Chenopodiastrum hybridum (L.) S. Fuentes & al. - T, Ct – Char. 1905 (7).
Chenopodium album L. - T, Co – ETA s.n. ! (11h).

Cistaceae
Helianthemum nummularium (L.) Mill. subsp. *nummularium* - C, Me – Char. 393 (13a), Char. 400 (13a), Char. 420 (13a), ETA s.n. ! (14).
Helianthemum nummularium subsp. *tomentosum* (Scop.) Schinz & Thell. - C, Me – ETA s.n. ! (16).

Dipsacaceae
Knautia ambigua Boiss. & Orph. - H, Bk – ETA s.n. ! (11h).
Scabiosa columbaria L. subsp. *columbaria* - H, MS – ETA s.n. ! (13b).
Scabiosa webbiana D. Don - H, MS – ETA s.n. ! (14).
Succisa pratensis Moench - H, ES – ETA s.n. ! (11b), ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.

Droseraceae
Drosera rotundifolia L. - H, Bo – ETA s.n. ! (11h), ETA s.n. ! (14), ETA s.n. ! (15), – ETA s.n. ! (16), ETA s.n. ! (17), TE 2012: 1409.

Ericaceae
Bruckenthalia spiculifolia (Salisb.) Rchb. – C, BA – TE 2012: 1409.
Vaccinium vitis-idaea L. subsp. *vitis-idaea* - C, Bo – ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.

Euphorbiaceae
Euphorbia amygdaloides L. subsp. *amygdaloides* - H, MS – Char. 1902 (8a).
Euphorbia cyparissias L. - H, Eu – Char. 1579 (3), Char. 1596 (4a).
Euphorbia seguieriana subsp. *niciciana* (Novák) Rech. f. - H, BA – ETA s.n. ! (14).
Euphorbia stricta L. - T, MS – ETA s.n. ! (11e).

Fabaceae
Dorycnium herbaceum Vill. - H, ME – ETA s.n. ! (14).
Genista carinalis Griseb. - C, BA – Char. 394 (13a), Char. 403 (13a), Char. 410 (13a), Char. 1224 (2).
Genista januensis subsp. *lydia (Boiss.)* Kit Tan & Ziel. - C, BA – ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.
Lathyrus niger (L.) Bernh. - H, ME – Char. 1280 (2).
Lathyrus pratensis L. - H, Pt – Char. 1260 (2), Char. 1597 (4), ETA s.n. ! (11b).
Melilotus neapolitanus Ten. - T, MS – Char. 1621 (3).
Securigera varia (L.) Lassen - H, MS – ETA s.n. ! (16).
Trifolium alpestre L. - G, MS – Char. 402 (13a), ETA s.n. ! (13b), ETA s.n. ! (14).
Trifolium hybridum subsp. *elegans* (Savi) Asch. & Graebn. - H, Me – Char. 1202 (1a), Char. 1222 (2), ETA s.n. ! (9b), ETA s.n. ! (9c), ETA s.n. ! (11e), ETA s.n. ! (12a), ETA s.n. ! (12d).
Trifolium ochroleucon Huds. - H, ME – ETA s.n. ! (8c).
Trifolium patens Schreb. - T, ME – ETA s.n. ! (4b), ETA s.n. ! (15).
Trifolium spadiceum L. - H, ES – Char. 1215 (1a), Char. 1257 (2).
Vicia angustifolia L. - T, Pt – ETA s.n. ! (15).
Vicia grandiflora Scop. - T, ME – Char. 1639 (3).
Vicia incana Gouan - H, ME – ETA s.n. ! (16).
Vicia sepium L. - H, ES – Char. 1602 (4a).

Fumariaceae
Fumaria vaillantii Loisel. - T, MS – Char. 1626 (3).

Gentianaceae
Centaurium erythraea Rafn subsp. *erythraea* - H, MS – ETA s.n. ! (14).

Geraniaceae
Erodium ciconium (L.) L'Hér. - T, MS – Char. 1628 (3).
Geranium dissectum L. - T, MS – Char. 1642 (3).
Geranium lanuginosum Lam. - T, Me – Char. 1637 (3).
Geranium pusillum Burm. f. - T, MS – Char. 1201 (1a).
Geranium sanguineum L. - G, MS – ETA s.n. ! (14).

Globulariaceae
Globularia bisnagarica L. - H, Eu – ETA s.n. ! (17).

Hippocastanaceae
Aesculus hippocastanum L. - P, Bk – ETA s.n. ! (13c).

Hypericaceae
Hypericum maculatum subsp. *immaculatum* (Murb.) A. Fröhl. - H, Bk – Char. 1203 (1a), ETA s.n. ! (11b), ETA s.n. ! (11e), ETA s.n. ! (12a).
Hypericum perforatum subsp. *veronense* (Schrank) Ces. - H, Pt – ETA s.n. ! (11e).

Lamiaceae
Acinos alpinus subsp. *hungaricus* (Simonk.) Soják - H, BA – ETA s.n. ! (16).
Ajuga genevensis L. - G, MS – Char. 1647 (3).
Ajuga reptans L. - G, MS – ETA s.n. ! (10a), ETA s.n. ! (10b).
Betonica officinalis L. - H, MS – Char. 398 (13a), ETA s.n. ! (11h), ETA s.n. ! (14).
Galeopsis bifida Boenn. - T, ES – Char. 1267 (2), ETA s.n. ! (15).
Galeopsis speciosa Mill. - T, MS – ETA s.n. ! (1b), ETA s.n. ! (1c).
Lamium garganicum subsp. *laevigatum* Arcang. - H, Me – ETA s.n. ! (13b).
Mentha longifolia (L.) Huds. - H, Pt – Char. 385 (13a), ETA s.n. ! (13c).
Mentha spicata L. - H, MS – Char. 1210 (1a), ETA s.n. ! (1b), ETA s.n. ! (1c), ETA s.n. ! (4b), ETA s.n. ! (11a).
Mentha spicata subsp. *condensata* (Briq.) Greuter & Burdet - H, Me – Char. 1580 (3).
Prunella laciniata (L.) L. - H, Me – ETA s.n. ! (14).
Prunella vulgaris L. - H, MS – ETA s.n. ! (14), ETA s.n. ! (1e).
Sideritis scardica Griseb. - H, Bk – ETA s.n. ! (13c).
Stachys alpina L. - H, Eu – ETA s.n. ! (16).
Stachys angustifolia M. Bieb. - H, Eu – ETA s.n. ! (14).
Stachys recta L. subsp. *recta* - H, ME – ETA s.n. ! (16).
Stachys sylvatica L. - H, ES – Char. 1255 (2).
Teucrium chamaedrys L. - C, Me – ETA s.n. ! (14).
Thymus degenii Heinr. Braun - C, Bk – Char. 406 (13a), Char. 1238 (2).
Thymus praecox subsp. *polytrichus* (Borbás) Jalas - C, Eu – ETA s.n. ! (14).
Thymus sibthorpii Benth. - C, BA – ETA s.n. ! (14).

Linaceae
Linum catharticum L. - T, Me – ETA s.n. ! (14).
Linum hologynum Rchb. - H, Bk – ETA s.n. ! (14).

Malvaceae
Malva neglecta Wallr. - T, MS – ETA s.n. ! (14).

Oleaceae
Fraxinus ornus L. - P, ME – ETA s.n. ! (14).

Onagraceae
Epilobium lamyi F. W. Schultz - H, Pt – ETA s.n. ! (4b).
Epilobium lanceolatum Sebast. & Mauri - H, MS – ETA s.n. ! (11h).
Epilobium montanum L. - H, MS – Char. 1266 (2).
Epilobium palustre L. - H, Bo – Char. 1211 (1a), ETA s.n. ! (8b), ETA s.n. ! (11a), ETA s.n. ! (12a), ETA s.n. ! (12b), ETA s.n. ! (12d).
Epilobium parviflorum Schreb. - H, Pt – ETA s.n. ! (11a).
Epilobium tournefortii Michalet - H, Bk – ETA s.n. ! (15).

Orobanchaceae
Euphrasia hirtella Reut. - T, ES – Char. 1251 (2).
Euphrasia liburnica Wettst. - T, BI – ETA s.n. ! (12d).
Euphrasia pectinata Ten. - T, ES – ETA s.n. ! (13c).
Rhinanthus rumelicus Velen. - T, BC – ETA s.n. ! (15).

Parnassiaceae
Parnassia palustris L. - H, ES – Char. 1234 (2), ETA s.n. ! (12d), TE 2012: 1409.

Plantaginaceae
Plantago atrata Hoppe - H, Eu – Char. 1595 (4a).
Plantago holosteum Scop. - H, Eu – ETA s.n. ! (14).
Plantago lanceolata L. - H, Co – Char. 392 (13a), Char. 399 (13a), ETA s.n. ! (14).
Plantago major subsp. *intermedia* (Gilib.) Lange - H, MS – Char. 2057 (9a).
Plantago major L. subsp. *major* - H, MS – Char. 389 (13a).
Plantago media L. subsp. *media* - H, ES – Char. 1252 (2), Char. 1599 (4a).

Polygalaceae
Polygala comosa Schkuhr - H, Eu – Char. 1604 (4a), Char. 1648 (3).

Polygonaceae
Persicaria bistorta (L.) Samp. - G, ES – Char. 1895 (8a), Char. 2055 (9a).
Persicaria maculosa Gray - T, [Co] EA – ETA s.n. ! (15).
Rumex acetosella subsp. *acetoselloides* (Balansa) Nijs - H, MS – ETA s.n. ! (13b).
Rumex acetosella subsp. *multifidus* (L.) Schübl. & G. Martens - H, BI – Char. 1191 (1a).
Rumex arifolius All. - H, Eu – Char. 1271 (2).
Rumex conglomeratus Murray - H, MS – ETA s.n. ! (4b).
Rumex obtusifolius subsp. *subalpinus* (Schur) Rech. f. - H, MS – Char. 1578 (3).

Primulaceae
Lysimachia nummularia L. - H, MS – ETA s.n. ! (14).
Lysimachia punctata L. - H, Eu – ETA s.n. ! (14).
Lysimachia vulgaris L. - H, MS – ETA s.n. ! (4b).

Ranunculaceae
Clematis vitalba L. - P, MS – ETA s.n. ! (14).
Ranunculus acris L. subsp. *acris* - H, ES – Char. 1204 (1a), Char. 1205 (1a).
Ranunculus fontanus C. Presl – T, Me – Char. 1189 (1a), ETA s.n. ! (12b), ETA s.n. ! (12c).
Ranunculus illyricus L. - H, MS – ETA s.n. ! (14).
Ranunculus polyanthemos L. subsp. *polyanthemos* - H, MS – ETA s.n. ! (15).
Ranunculus polyanthemos subsp. *polyanthemoides* (Boreau) Ahlfv. - H, Eu – Char. 1607 (4a), Char. 1646 (3).
Ranunculus repens L. - H, Pt – Char. 1893 (8), ETA s.n. ! (1d), ETA s.n. ! (9b) ETA s.n. ! (9c), ETA s.n. ! (11a), ETA s.n. ! (12c).
Ranunculus serbicus Vis. - G, BI – ETA s.n. ! (1b), ETA s.n. ! (1c).
Thalictrum aquilegiifolium L. - G, Eu – Char. 1777 (6).

Rosaceae
Alchemilla glabra Neygenf. - H, Eu – ETA s.n. ! (1f), ETA s.n. ! (8c).

Alchemilla lanuginosa Rothm. - H, Bk – ETA s.n. ! (16).
Alchemilla mollis (Buser) Rothm. - H, BA – ETA s.n. ! (14).
Alchemilla monticola Opiz - H, ES – Char. 1235 (2), ETA s.n. ! (8c), ETA s.n. ! (9b), ETA s.n. ! (9c), ETA s.n. ! (11e).
Alchemilla straminea Buser - H, Eu – ETA s.n. ! (15).
Cotoneaster integerrimus Medik. - P, MS – ETA s.n. ! (11h).
Cotoneaster tomentosus (Aiton) Lindl. - P, ME – ETA s.n. ! (16).
Crataegus monogyna Jacq. - P, Pt – Char. 1591 (4a).
Crataegus rhipidophylla Gand. - P, MS – Char. 1632 (3), Char. 1773 (6).
Filipendula ulmaria (L.) Maxim. - H, ES – Char. 1259 (2).
Filipendula vulgaris Moench - H, ES – ETA s.n. ! (14).
Fragaria vesca L. - H, MS – ETA s.n. ! (13b).
Geum coccineum Sm. - H, BA – Char. 1776 (6), Char. 1822 (5), TE 2012: 1409.
Geum rhodopeum Stoj. & Stef. - H, Bk – Char. 1233 (2).
Malus sylvestris (L.) Mill. - P, Eu – ETA s.n. ! (14).
Potentilla argentea L. - H, ES – ETA s.n. ! (13b), ETA s.n. ! (14).
Potentilla erecta (L.) Raeusch. - H, ES – Char. 1190 (1a), Char. 1897 (8a), ETA s.n. ! (12a), TE 2012: 1409.
Potentilla reptans L. - H, Pt – ETA s.n. ! (14).
Prunus cerasifera Ehrh. - P, MS – ETA s.n. ! (13c).
Prunus cocomilia Ten. - P, EM – Char. 1593 (4a).
Prunus domestica L. subsp. *domestica* - P, MS – ETA s.n. ! (14).
Prunus domestica subsp. *insititia* (L.) Bonnier & Layens - P, MS – ETA s.n. ! (13c).
Pyrus communis L. - P, MS – ETA s.n. ! (14).
Rosa arvensis Huds. - P, Me – ETA s.n. ! (14).
Rosa spinosissima L. - P, Pt – ETA s.n. ! (16).
Sanguisorba officinalis L. - H, Bo – ETA s.n. ! (11b), TE 2012: 1409
Sanguisorba minor subsp. *balearica* (Nyman) Muños Garm. & C. Navarro - H, MS – ETA s.n. ! (15).
Sorbus aucuparia L. subsp. *aucuparia* - P, MS – ETA s.n. ! (13c).
Sorbus umbellata (Desf.) Fritsch subsp. *umbellata* - P, Bk – ETA s.n. ! (11h).

Rubiaceae
Asperula aristata subsp. *nestia* (Rech. f.) Ehrend. & Krendl - H, Bk – Char. 2058 (9a).
Asperula purpurea subsp. *apiculata* (Sm.) Ehrend. - C, BA – ETA s.n. ! (14).
Asperula purpurea (L.) Ehrend. subsp. *purpurea* - C, ME – ETA s.n. ! (16).
Cruciata laevipes Opiz - H, MS – Char. 1232 (2), Char. 1644 (3), ETA s.n. ! (8c).
Cruciata verna (Scop.) Gutermann & Ehrend. - H, MS – ETA s.n. ! (8c), ETA s.n. ! (9b), ETA s.n. ! (9c), ETA s.n. ! (10a), ETA s.n. ! (10b), ETA s.n. ! (10c), ETA s.n. ! (12a).
Galium macedonicum Krendl - H, Bk – ETA s.n. ! (14).
Galium palustre L. - H, MS – Char. 1194 (1a), Char. 1243 (2), ETA s.n. ! (11a), ETA s.n. ! (12b).
Galium rivale (Sm.) Griseb. - H, ES – ETA s.n. ! (13c).
Galium uliginosum L. - H, ES – ETA s.n. ! (4b), CET 2021: 364.
Galium verum L. subsp. *verum* - H, Pt – Char. 409 (13a), Char. 1248 (2), ETA s.n. ! (8c).

Salicaceae
Populus tremula L. - P, Ct – ETA s.n. ! (16).
Salix amplexicaulis Bory & Chaub. - P, Me – ETA s.n. ! (13c).
Salix fragilis L. - P, MS – ETA s.n. ! (15).

Santalaceae
Arceuthobium oxycedri (DC.) M. Bieb. - P, MS – ETA s.n. ! (14).
Thesium alpinum L. - H, AA – ETA s.n. ! (14).
Thesium linophyllon subsp. *montanum* (Schrad.) Čelak. - H, Eu – ETA s.n. ! (16).

Saxifragaceae
Saxifraga bulbifera L. - H, ME – Char. 1575 (3).
Saxifraga rotundifolia L. subsp. *rotundifolia* - H, ME – Char. 1250 (2).

Scrophulariaceae
Verbascum banaticum Schrad. - H, Bk – ETA s.n. ! (14).
Verbascum phlomoides L. - H, MS – ETA s.n. ! (13c).

Valerianaceae
Valeriana officinalis L. subsp. *officinalis* - H, MS – Char. 1239 (2), Char. 2063 (9a).
Valerianella carinata Loisel. - T, MS – Char. 1586 (4a).

Veronicaceae
Digitalis lanata Ehrh. subsp. *lanata* - H, BA – ETA s.n. ! (13c).
Digitalis viridiflora Lindl. - H, Bk – Char. 1199 (1a).
Veronica acinifolia L. - T, ME – Char. 1258 (2).
Veronica beccabunga L. - H, MS – ETA s.n. ! (4b).
Veronica chamaedrys L. subsp. *chamaedrys* - H, ES – ETA s.n. ! (8c).
Veronica serpyllifolia L. subsp. *serpyllifolia* - H, Ct – Char. 1594 (4a).
Veronica urticifolia Jacq. - H, Eu – Char. 1625 (3).

Violaceae
Viola macedonica Boiss. & Heldr. - H, Bk – Char. 1823 (5).

ANGIOSPERMAE – MONOCOTYLEDONES
Alliaceae
Allium flavum L. subsp. *flavum* - G, Me – ETA s.n. ! (14).

Anthericaceae
Anthericum liliago L. - G, ME – ETA s.n. ! (14).

Cyperaceae
Blysmus compressus (L.) Link - G, ES – ETA s.n. ! (4b).
Carex buekii Wimm. - H, MS – ETA s.n. ! (15).
Carex canescens L. - H, Co – Char. 1225 (2).
Carex caryophyllea Latourr. - H, ES – Char. 1588 (4a), Char. 1770 (6).
Carex echinata Murray - H, Ct, – Char. 1214 (1a), ETA s.n. ! (10a), ETA s.n. ! (10b), ETA s.n. ! (11c), ETA s.n. ! (12b), TE 2012: 1409.
Carex flacca Schreb. subsp. *flacca* - G, Eu – Char. 1577 (3), Char. 1600 (4a), Char. 1605 (4a), Char. 1883 (8a), Char. 1885 (8a).
Carex flava L. - H, Ct – ETA s.n. ! (1e).
Carex hirta L. - G, MS – Char. 1192 (1a), Char. 1273 (2), ETA s.n. ! (4b), ETA s.n. ! (10a), ETA s.n. ! (10b), ETA s.n. ! (12a).

Carex leporina L. - H, ES – Char. 1274 (2), ETA s.n. ! (8c), ETA s.n. ! (11a), ETA s.n. ! (12a), ETA s.n. ! (12d).
Carex nigra (L.) Reichard - G, Ct – Char. 1884 (8a), Char. 1886 (8a), ETA s.n. ! (8b), ETA s.n. ! (8d), ETA s.n. ! (8e), ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.
Carex pallescens L. - H, Ct – ETA s.n. ! (8c), ETA s.n. ! (10a), ETA s.n. ! (10b), ETA s.n. ! (11b), ETA s.n. ! (11f), ETA s.n. ! (11g).
Carex punctata Gaudin - H, ME, – Char. 1240 (2), Char. 1901 (8a), ETA s.n. ! (15).
Carex remota L. - H, MS – Char. 1247 (2).
Carex rostrata Stokes - G, Bo – ETA s.n. ! (1b), ETA s.n. ! (1c), ETA s.n. ! (1d), ETA s.n. ! (1e), ETA s.n. ! (8b), ETA s.n. ! (8d), ETA s.n. ! (8e), ETA s.n. ! (4b), ETA s.n. ! (10a), ETA s.n. ! (11a), ETA s.n. ! (11c), TE 2012: 1409.
Carex spicata Huds. - H, ES – Char. 1888 (8a).
Carex viridula Michx. - H, MS – ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.
Eleocharis palustris (L.) Roem. & Schult. subsp. *palustris* - G, Co, – Char. 1236 (2), ETA s.n. ! (15).
Eleocharis quinqueflora (Hartmann) O. Schwarz - G, Bo – ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.
Eriophorum angustifolium Honck. - G, Bo – Char. 2054 (9a), ETA s.n. ! (8b), ETA s.n. ! (11c), ETA s.n. ! (11d), ETA s.n. ! (12b), TE 2012: 1409.
Eriophorum latifolium Hoppe - H, MS – Char. 1212 (1a), Char. 1592 (4a), Char. 1610 (4a).
Isolepis cernua (Vahl) Roem. & Schult. - T, Co – ETA s.n. ! (14).
Scirpus sylvaticus L. - G, MS – Char. 1264 (2), Char. 1611 (4a), Char. 1894 (8a), ETA s.n. ! (11b).

Hyacinthaceae
Muscari comosum (L.) Mill. - G, ME – ETA s.n. ! (14).
Ornithogalum collinum Guss. subsp. *collinum* - G, Me – Char. 1772 (6), Char. 1880 (8a).
Ornithogalum kochii Parl. - G, Me – Char. 1629 (3).
Ornithogalum pyrenaicum subsp. *sphaerocarpum* (A. Kern.) Hegi - G, MS – ETA s.n. ! (14).

Iridaceae
Iris reichenbachii Heuffel - G, Bk – ETA s.n. ! (16).

Juncaceae
Juncus acutiflorus Hoffm. - G, Eu – Char. 1253 (2).
Juncus articulatus L. - G, Bo – ETA s.n. ! (8c), ETA s.n. ! (11c), ETA s.n. ! (11d), ETA s.n. ! (12b), ETA s.n. ! (12d), TE 2012: 1409.
Juncus bufonius L. - T, Co – ETA s.n. ! (14), ETA s.n. ! (15).
Juncus conglomeratus L. - H, Eu – ETA s.n. ! (14).
Juncus effusus L. subsp. *effusus* - H, Eu – ETA s.n. ! (1b), ETA s.n. ! (1c), ETA s.n. ! (11a), ETA s.n. ! (12a).
Juncus sphaerocarpus Nees - H, Pt – ETA s.n. ! (14).
Juncus tenuis Willd. - H, [N-Am.] – Char. 1892 (8a).
Juncus thomasii Ten. - G, Eu – Char. 1200 (1a), Char. 1265 (2), ETA s.n. ! (1b), ETA s.n. ! (1c), ETA s.n. ! (10c), ETA s.n. ! (12d).
Luzula campestris (L.) DC. subsp. *campestris* - H, MS – ETA s.n. ! (14).
Luzula forsteri (Sm.) DC. - H, Me – ETA s.n. ! (8c).
Luzula luzulina (Vill.) Dalla Torre & Sarnth. - H, Eu – Char. 1197a (1a), Char. 1585 (4a).
Luzula luzuloides (Lam.) Dandy & Wilm. subsp. *luzuloides* - H, Eu – Char. 1587 (4a), Char. 1601 (4a), Char. 1612 (4a), Char. 1896 (8a), ETA s.n. ! (12a).

Luzula multiflora (Ehrh.) Lej. subsp. *multiflora* - H, Ct – Char. 1241 (2), Char. 1584 (4a), Char. 1609 (4a), Char. 1774 (6), Char. 1881 (8a).
Luzula sudetica (Willd.) DC. - H, AA – ETA s.n. ! (10a), ETA s.n. ! (10b), ETA s.n. ! (10c), ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.

Melanthiaceae
Veratrum lobelianum Bernh. - G, MS, – Char. 387 (13a), ETA s.n. ! (15), TE 2012: 1409.

Orchidaceae
Anacamptis morio subsp. *caucasica* (K. Koch) H. Kretzschmar & al. - G, MS – Char. 1613 (4a).
Cephalanthera longifolia (L.) Fritsch - G, MS – ETA s.n. ! (1e).
Dactylorhiza cordigera (Fr.) Soó subsp. *cordigera* - G, Bk – Char. 1206 (1a), Char. 1256 (2), Char. 1614 (4a), Char. 1898 (8a), ETA s.n. ! (1e), ETA s.n. ! (4b), ETA s.n. ! (10c), ETA s.n. ! (11c), ETA s.n. ! (11d), ETA s.n. ! (12d), TE 2012: 1409.
Epipactis palustris W. Rossi - G, MS – Char. 1188 (1a).
Gymnadenia frivaldii Griseb. - G, Bk – ETA s.n. ! (1e).
Neotinea ustulata (L.) R.M. Bateman & al. - G, Eu – ETA s.n. ! (14).

Poaceae
Agrostis canina L. subsp. *canina* - H, ES – Char. 1209 (1a), Char. 1275 (2), Char. 1278 (2), Char. 382 (13a), ETA s.n. ! (8c), ETA s.n. ! (8d), ETA s.n. ! (8e), ETA s.n. ! (11b), ETA s.n. ! (11c), ETA s.n. ! (11d), ETA s.n. ! (11e), ETA s.n. ! (12a), TE 2012: 1409.
Agrostis capillaris L. - H, ES – ETA s.n. ! (8c).
Agrostis stolonifera L. - H, ES – ETA s.n. ! (4b).
Agrostis vinealis Schreb. - H, ES – Char. 1262 (2), ETA s.n. ! (15).
Aira elegans Roem. & Schult. - T, MS – ETA s.n. ! (14).
Anthoxanthum odoratum L. - H, Co – Char. 1589 (4a), ETA s.n. ! (8f).
Avenella flexuosa (L.) Drejer - H, Co – ETA s.n. ! (14).
Brachypodium pinnatum (L.) P. Beauv. - H, ES – ETA s.n. ! (14).
Briza media L. subsp. *media* - H, ES – ETA s.n. ! (14).
Bromus hordeaceus L. subsp. *hordeaceus* - T, Co – Char. 1620 (3), Char. 1634 (3), Char. 1635 (3).
Bromus squarrosus L. subsp. *squarrosus* - T, Pt – ETA s.n. ! (15).
Bromus tectorum L. - T, Pt – Char. 1633 (3), Char. 1645 (3).
Calamagrostis epigejos (L.) Roth - H, ES – ETA s.n. ! (11a), ETA s.n. ! (11b).
Chrysopogon gryllus (L.) Trin. - H, MS – ETA s.n. ! (14).
Cynosurus cristatus L. - H, MS – ETA s.n. ! (4b), ETA s.n. ! (15).
Danthonia alpina Vest - H, Eu – ETA s.n. ! (14).
Danthonia decumbens (L.) DC. - H, Eu, – ETA s.n. ! (11c), ETA s.n. ! (11d), TE 2012: 1409.
Deschampsia cespitosa (L.) P. Beauv. subsp. *cespitosa* - H, Co, – ETA s.n. ! (11a), ETA s.n. ! (12a), TE 2012: 1409.
Elytrigia campestris (Godr. & Gren.) Kerguélen - H, Eu – ETA s.n. ! (14).
Elytrigia repens (L.) Nevski - G, ES – ETA s.n. ! (11h).
Festuca arundinacea subsp. *interrupta* (Desf.) Tzvelev - H, Me – ETA s.n. ! (15).
Festuca cyllenica Boiss. & Heldr. - H, BA – ETA s.n. ! (14).
Festuca drymeja Mert. & W.D.J. Koch - G, Me – ETA s.n. ! (14).
Festuca macedonica J. Vetter - H, Bk – ETA s.n. ! (14).
Festuca peristerea (J. Vetter) Markgr.-Dann. - H, Bk – Char. 1771 (6), Char. 1882 (8a), Char. 1887 (8a), Char. 1889 (8a).

Festuca rubra L. subsp. *rubra* - H, Ct – ETA s.n. ! (1b), ETA s.n. ! (1c), ETA s.n. ! (1d), ETA s.n. ! (1e), ETA s.n. ! (8c), ETA s.n. ! (8f), ETA s.n. ! (12a), ETA s.n. ! (12b), ETA s.n. ! (12c), TE 2012: 1409.
Glyceria notata Chevall. - G, Co – ETA s.n. ! (13c), ETA s.n. ! (15).
Holcus lanatus L. - H, ES – Char. 383 (13a), ETA s.n. ! (11c), ETA s.n. ! (11d), ETA s.n. ! (12a), TE 2012: 1409.
Holcus mollis L. subsp. *mollis* - G, Eu – ETA s.n. ! (16).
Hordeum murinum L. subsp. *murinum* - T, MS – Char. 1572 (3), Char. 1622 (3), Char. 1638 (3).
Koeleria macrantha (Ledeb.) Schult. - H, Bo – ETA s.n. ! (14).
Molinia caerulea (L.) Moench - H, ES – ETA s.n. ! (8c), ETA s.n. ! (11c), ETA s.n. ! (11d), ETA s.n. ! (11e), TE 2012: 1409.
Nardus stricta L. - H, ES – ETA s.n. ! (8f), ETA s.n. ! (12b), ETA s.n. ! (12c), ETA s.n. ! (12d), TE 2012: 1409.
Phleum nodosum L. - H, ME – ETA s.n. ! (4b).
Poa annua L. subsp. *annua* - T, Co – Char. 1641 (3), Char. 1903 (7).
Poa nemoralis L. subsp. *nemoralis* - H, ES – Char. 1571 (3), Char. 1583 (4a).
Poa palustris L. subsp. *palustris* - H, Ct – ETA s.n. ! (15).
Poa pratensis L. subsp. *pratensis* - G, Ct – Char. 1643 (3), Char. 1906 (7), ETA s.n. ! (1b), ETA s.n. ! (1c), ETA s.n. ! (12a).
Poa timoleontis Boiss. - H, EM – Char. 1598 (4a), Char. 1617 (3).
Poa trivialis subsp. *sylvicola* (Guss.) H. Lindb. - H, MS – ETA s.n. ! (1b), ETA s.n. ! (1c).

Floristic analysis – As a result of the investigations, 340 plant species from 58 families and 175 genera have been distinguished in the study area (Table 1).

The most species-rich family of the vascular flora of the study area is *Poaceae*, which accounts 40 taxa (11.76% of all species). Next most species-rich families are *Rosaceae* (29 taxa), *Asteraceae* (28), *Cyperaceae* (22), *Lamiaceae* (21), *Fabaceae* (16), *Juncaceae* (14), *Caryophyllaceae*, *Brassicaceae* and *Rubiaceae*. The ten most taxa-rich families together include 204 species representing the 60% of the total vascular flora of the study area. Most of these families are consistently the richest in number of taxa in several similar surveys (Sarika-Hatzinikolaou & al. 1996; Atanassova & Marinova 2005; Eleftheriadou & Theodoropoulos 2015; Dimitrov 2016). At the other end of the scale, 21 families contribute with only one taxon. The most species-rich genera are *Carex* (15 taxa), *Juncus* (8 taxa), *Ranunculus* (7 taxa) and *Luzula, Festuca, Poa, Campanula, Epilobium, Plantago*

Table 1. Numbers of plant families and genera in the four main taxonomic groups of the vascular flora of the study area.

	Families	Genera	Species[1]	Subspecies	Taxa
Pteridophytes	5	5	7	2	7
Gymnosperms	1	1	2	2	2
Angiosperms - Dicotyledons	43	127	233	62	241
Angiosperms - Monocotyledons	9	42	90	25	90
Total	**58**	**175**	**332**	**91**	**340**

1. are comprised of (a) species that have no subspecies and (b) species that have one or more subspecies

(with 6 taxa each), which account for 19.41% of the total species of the study area, whereas 103 genera have only one taxon. The first three genera appear as prevalent in Eleftheriadou & Theodoropoulos (2015) too and specifically *Carex* in the same ranking.

Six taxa of vascular plants were identified for the first time for the floristic region of North-East Greece. The presence of an additional species (*Barbarea sicula*), previously considered doubtful in the area, is confirmed by us. All those mentioned above are presented alphabetically in Table 2. Also important is the presence of *Galium uliginosum* that was recorded for the first time in Greece by Charalampidou & al. (2021).

Spectra analysis – The life-form spectrum shows that hemicryptophytes prevail (59.71%) followed by therophytes (15%). Geophytes, phanerophytes and chamaephytes follow with 13.24%, 7.94% and 4.12% respectively (Table 3). Hemicryptophytes usually prevail in similar habitats according to Sarika-Hatzinikolaou & al. (1996) and Eleftheriadou & Theodoropoulos (2015). The prevalence of hemicryptophytes, which is attributed to temperate zone and mountainous Mediterranean areas (Emberger 1966), reflects the intensely mountainous nature of the research area.

The analysis of the chorological spectrum shows that the most prevalent chorological group of plants are the Widespread taxa (228 taxa – 66.06%), followed by the Mediterranean (57 taxa – 16.76%) and the Balkan taxa (53 taxa – 15.59%). Although the percentage of Greek endemics (0.29%) seems very low at first, this is reasonably justified, according to Dimopoulos & al. (2013), by the fact that taxa occurring in small areas on both sides of the border with neighbouring countries have been classified simply as Balkan endemics rather than Greek endemics. Finally, the low rate of 0.29% is recorded also for the Alien taxa (Table 4). Widespread taxa also prevail in similar habitats according to Eleftheriadou & Theodoropoulos (2015), namely, the European-SW Asian & Euro-Siberian floristic elements are first in ranking. Although a different classification system was followed in similar studies, the European – SW Asian floristic element also prevailed according to Atanassova & Marinova (2005).

Table 2. Taxa reported for the first time or confirmed for the floristic region of North-East Greece are indicated with **"!"** under the NE column**.**

Taxon	**Family**	**Chorology**	**Floristic regions***					
			NE	**NC**	**NPi**	**SPi**	**EC**	**StE**
Alchemilla mollis	*Rosaceae*	BA	!	+		+		
Barbarea sicula	*Brassicaceae*	Me	!	+	+	+	+	+
Blysmus compressus	*Cyperaceae*	ES	!	+	+	+	+	+
Eleocharis quinqueflora	*Cyperaceae*	Bo	!	+	+			+
Equisetum fluviatile	*Equisetaceae*	Ct	!	+	+			
Oenanthe peucedanifolia	*Apiaceae*	MA	!	+		?		?
Tanacetum corymbosum subsp. *cinereum*	*Astearaceae*	Bk	!			+		

*****Floristic regions of Greece according to Strid & Tan (1997)

Table 3. Life-form spectrum of the vascular flora of the study area.

Life-forms	Number of taxa	Percentage (%)
Chamaephytes (C)	14	4.12
Geophytes (Cryptophytes) (G)	45	13.23
Hemicryptophytes (H)	203	59.71
Phanerophytes (P)	27	7.94
Therophytes (T)	51	15.00
Total	**340**	**100.00**

Table 4. Chorological spectrum of the vascular flora of the study area. The chorotypes are classified into 5 wide chorological groups.

Chorological group/category	NUMBER OF TAXA	%
1. Widespread taxa	**228**	**66.06**
European (Eu)	37	10.88
European-SW Asian (EA)	76	22.35
Euro-Siberian (ES)	53	15.59
Paleotemperate (Pt)	14	4.12
Circumtemperate (Ct)	16	4.71
(Circum-)Boreal (Bo)	9	2.65
Arctic-Alpine (AA)	2	0.59
Cosmopolitan (Co)	20	5.88
[Cosmopolitan], European-SW Asian	1	0.29
2. Mediterranean taxa	**57**	**16.76**
East Mediterranean (EM)	3	0.88
Mediterranean (Me)	24	7.06
Mediterranean-Atlantic (MA)	1	0.29
Mediterranean-European (ME)	22	6.47
Mediterranean-SW Asian (MS)	7	2.06
3. Balkan taxa	**53**	**15.59**
Balkan (Bk)	31	9.12
Balkan-Anatolia (BA)	17	5.00
Balkan-Central Europe (BC)	2	0.59
Balkan-Italy (BI)	3	0.88
4. Endemic taxa	**1**	**0.29**
Greek endemic (•)	1	0.29
5. Alien taxa	**1**	**0.29**
[North American] (N-Am.)	1	0.29
Total	**340**	**100.00**

Conclusion

The damp meadows and mires in the Greek part of Rhodopi Mountain Range, despite their limited extent, present high plant diversity. The vascular flora of the investigated areas consists of 340 taxa, which belong to 175 genera and 58 families. Seven taxa were identified for the first time for the floristic region of North-East Greece. The most species-rich family of the vascular flora is *Poaceae*, which accounts for 40 taxa (11.76% of all species). The most species-rich genus is *Carex* with 15 taxa. Hemicryptophytes and therophytes are the most abundant plant life forms with 59.71% and 15% respectively, while the most abundant chorological category consists of the Widespread plants with 228 taxa belonging to this category.

Acknowledgements

This research is co-financed by Greece and the European Union (European Social Fund- ESF) through the Operational Programme «Human Resources Development, Education and Lifelong Learning» in the context of the project "Strengthening Human Resources Research Potential via Doctorate Research" (MIS-5000432), implemented by the State Scholarships Foundation (IKY).

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