Pseudo-steppic and aquatic flora of the Natura 2000 network site Limnes Vegoritida-Petron (North-Central Greece)

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Abstact. The aquatic flora of two natural calcareous lakes, Lakes Vegoritida and Petron and the terrestrial flora of the pseudo-steppic vegetation of the surrounding hills is presented. The study area represents a Natura 2000 network site located in north-central Greece and named Limnes Vegoritida-Petron (GR-1340004). The study is based on 2148 herbarium collections and on field observations concerning 664 plant taxa. The number of endemic species is considerably high (79 taxa, 11.9 % of the total flora). Two taxa are reported for the first time from Greece, five taxa are new to NC Greece.

Key words: calcareous grasslands, chorology, Greek flora, karstic hills, semi-natural dry grasslands

Introduction

The Greek vascular flora has attracted the interest of botanists for many decades (see Strid & Tan 1997). However, most botanical studies have been carried out in areas of high floristic interest, such as the high mountains (Strid 1986; Strid & Tan 1991), the Aegean islands and Crete. On the other hand, the lowlands and hilly areas of Greece have not been intensively studied yet, except for certain wetland and coastal habitats. In particular, grasslands occurring below the timberline still remain much less explored than the alpine and subalpine grasslands of Greece.

This study deals with the terrestrial and aquatic flora of the Greek Natura 2000 Network site Limnes Vegoritida-Petron (GR-1340004) located in North-Central Greece and including two natural calcareous lakes,:Lakes Vegoritida and Petron. The site also includes an extensive area with semi-natural, pseudo-steppic grassland vegetation that belongs to the phytosociological class of *Festuco-Brometea*. The occurrence of these grasslands, as well as of open structured *Quercus trojana* forests render to the area a considerable phytogeographical significance. The former vegetation is considered of the relict vegetation type (Horvat & al. 1974; Ellenberg 1988; Zgaga 2005), while the latter is characterized by a chorologically very restricted oak species which is distributed in the western parts of the Balkan Peninsula, the eastern regions of the Apennine Peninsula and W Anatolia (Yaltirik 1975).

The aquatic ecosystems of the study area have undergone intense degradation from uncontrolled exploitation of the water resources for agricultural and industrial uses (Lekkas & al. 2004; Mylopoulos & al. 1997; Tsitouridou & Anatolaki 2007). Some information on the aquatic flora and vegetation is given by Papastergiadou (1990) and Papastergiadou & Babalonas

(1993), but on the terrestrial ecosystems only restricted floristic information exists (e.g. Greuter & Raus 1999).

The present paper aims at providing a full floristic inventory of the terrestrial and aquatic ecosystems of the studied Natura 2000 Network site to serve as the basis for further monitoring and nature conservation activities.

Study area

The study area is (40°49' to 40°39' N, 21°40' to 21°50' E) has a surface of 12.077 ha, with altitudes ranging from about 500 m to almost 850 m a.s.l. (Fig. 1).

Two calcareous lakes, Lakes Vegoritida and Petron, are embedded into surrounding limestone hills. The natural environment is very degraded, mostly due to human interference (over-exploitation of the water resources, intense grazing, lumbering, fires).

The steep slopes with shallow, eroded soils determine the prevailing presence of grassland ecosystems. In the lowlands and at the foot of the hills the soil is rich in detritus formed by erosion of the surrounding slopes. In some places soil conditions (e.g. deeper soil) make possible the development of mixed deciduous oak forests.

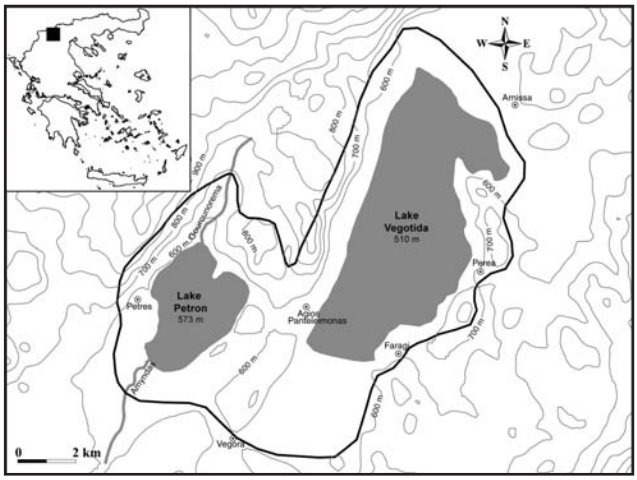

Fig. 1. Geographical position and a detailed map of the study area.

Table 1. Meteorological data of Amynteon station (1979–98).

Month	J	F	M	A	M	J	J	A	S	O	N	D
Mean temperature (°C)	2.46	3.56	6.75	11.24	15.60	20.66	22.90	22.47	18.55	13.45	7.50	3.50
Precipitation (mm)	21.6	22.1	23.7	38.7	55.7	28.5	27.3	26.7	29.4	48.7	61.9	42.9

Geologically, the entire study area consists more or less uniformly of marbles. Old and recent talus cones and screes are massed at the foothills, due to erosion of the calcareous substrate, and the aquatic ecosystems develop mainly on recent alluvial deposits around the lakes.

The climatic data are presented in Table 1 and originate from the meteorological station of Amynteon (40°42' N, 21°41' E, altitude 580 m, period 19 years: 1979–1998). Mean annual precipitation is about 427 mm. The lowest values of precipitation were measured in January, February and March, not in summer, a fact that may be attributed to the high values of snowfall in the three above-mentioned months.

According to Emberger's coefficient (Emberger 1955; Mavrommatis 1980), the bioclimate of the area is sub-humid, but transitional to semi-arid, with harsh winters. The dry period in the study area, according to the ombrothermic diagram of Bagnouls & Gaussen (1957), lasts four months, from early June to late September.

Material and methods

The floristic data presented here are based on collections and field observations during floristic and phytosociological sampling in the area carried out from 1999 to 2004. Specifically, 654 phytosociological relevés have been sampled, 495 in the terrestrial and 159 in the aquatic ecosystems. In addition to the phytosociological relevés, a thorough floristic sampling was conducted in order to cover microhabitats and to compile as far as possible a complete floristic inventory of the study area. In total, 2148 plant specimens were collected from both phytosociological and floristic samplings. For a better presentation of the results in the floristic list, the phytosociological relevés and the collecting localities were grouped into 15 major, geographically defined collecting localities (Table 2).

The floristic list is based on the first author's collections, which are deposited in the herbarium of the Institute of Systematic Botany and Phytogeography of Thessaloniki (TAU).

Families, genera and species are arranged alphabetically within the six major groups of plants, viz. *Phycophyta*, *Bryophyta*, *Pteridophyta*, *Gymnospermae*, *Dicotyledoneae*, and *Monocotyledoneae*.

Table 2. Codes and geographical position of the collecting localities.

Code	Geographical position
A	From village Vegora to village Agios Panteleimonas (40°42'10" N, 21°43'56" E), a hill SE of Lake Petron, altitude 530–700 m
B	NW side of Lake Petron, from village Petres to stream Gourounorema (40°44'24" N, 21°40'52" E), altitude 573–650 m
C	NE side of Lake Petron, from stream Gourounorema to village Agios Panteleimonas (40°44'14" N, 21°43'14" E), altitude 573–650 m
D	NW side of Lake Petron, from village Petres to stream Gourounorema (40°44'35" N, 21°40'47" E), altitude 650–850 m
E	NE side of Lake Petron, from stream Gourounorema to village Agios Panteleimonas (40°44'27" N, 21°43'24" E), altitude 650–850 m
F	S side of Lake Petron, from village Petres to stream Amyndas (40°43'17" N, 21°40'43" E), with aquatic and helophyte biotopes and surrounding damp grasslands, altitude 573 m
G	E side of Lake Petron (40°42'57" N, 21°42'46" E), with aquatic and helophyte biotopes and surrounding damp grasslands, altitude 573 m
H	W side of Lake Petron (40°44'22" N, 21°41'02" E), with aquatic and helophyte biotopes, altitude 573 m
I	N side of Lake Petron (40°44'16" N, 21°42'51" E), with aquatic and helophyte biotopes, altitude 573 m
J	Hills at NW side of Lake Vegoritida, from village Agios Panteleimonas to village Arnissa (40°46'43" N, 21°46'10" E), altitude 510–850 m
K	Hills at NE side of Lake Vegoritida, from village Arnissa to village Perea (40°45'39" N, 21°49'40" E), altitude 510–750 m
L	Hills at NE side of Lake Vegoritida, from village Perea to village Faragi (40°43'04" N, 21°48'16" E), altitude 510–750 m
M	S side of Lake Vegoritida (40°42'36" N, 21°45'19" E), with aquatic and helophyte biotopes, altitude 510 m
N	Aquatic and helophyte biotopes in Lake Vegoritida, from village Agios Panteleimonas to village Arnissa, (40°46'21" N, 21°46'15" E), altitude 510 m
O	Aquatic and helophyte biotopes, from village Arnissa to village Faragi, (40°45'05" N, 21°49'14" E), altitude 510 m

Determination of vascular plant specimens was made mainly according to Strid & Tan (1997, 2002), Tutin & al. (1968–80, 1993), Davis (1965–85), Strid (1986), Strid & Tan (1991), and Rilke (1999). Determination of *Chara* specimens was based on Wood & Imahori (1964--65).

The nomenclature of vascular taxa follows Strid & Tan (1997, 2002), Greuter & al. (1984–1989), Strid (1986), Strid & Tan (1991), and Tutin & al. (1968–1980, 1993), while the nomenclature of bryophyte taxa follows Hill & al. (2006).

Chorological type and life form are reported for each taxon in the plant list. Chorological types and life forms for the vascular taxa were taken from Pignatti (1982) and for the taxa that were not included there, distribution data from other sources and floras were used and evaluated (e.g. Meusel & al. 1965, 1978, 1992; Jalas & Suominen 1972–1996; Greuter & al. 1984–1989; Strid 1986; Strid & Tan 1991, 1997, 2002). Life forms for hydrophytes were taken from Hutchinson (1975). Chorological types and life forms of bryophyte taxa were taken from Düll (1991, 1995) and Sabovljević & al. (2008).

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

Life forms of vascular plants: see Table 5.

Life forms of bryophytes: **C** = chamaephyte, **E** = epiphyte, **A** = hydrophyte, **H** = hemicryptophyte.

Chorology: see Table 6.

(E): taxa endemic to the reported distribution area.

*: taxa already reported by Papastergiadou (1990).

obs.: observation only, no herbarium specimen collected.

(number): collection number of the plant samples (for some specimens the letter X is put before their numbers, indicating that they have been collected for the Greek habitat type mapping project; these specimens follow a different numeration).

Results and discussion

Floristic catalogue

Phycophyta

Cladophoraceae

Cladophora glomerata L. – Cosmop.; O(1981)

Characeae

**Chara hispida* L. var. *hispida* – Cosmop.; G(2115, 2118, 2164), I(2141, 2166), N(2167)

**Ch. vulgaris* L. var. *vulgaris* – Cosmop.; F(2160, 2163), G(2161, 2165), H(2162)

Bryophyta

Brachytheciaceae

Homalothecium lutescens (Hedw.) H. Rob. – C, (E); Temp.; O(2170)

Amblystegiaceae

Drepanocladus aduncus (Hedw.) Warnst. – C, (A); Temp.; F(2054), I(2139)

Ricciaceae

Ricciocarpos natans (L.) Corda – H, A; S.Temp.; O(1985)

Pteridophyta

Adiantaceae

Cheilanthes persica (Bory) Mett. – H ros; NE Medit-Turan; J(1917)

Aspleniaceae

Asplenium ceterach L. – H ros; Eurasian Temp.; A(34), B(508), D(91), J(1936)

A. ruta-muraria L. – H ros; Circumbor; J(1935)

Azollaceae

Azolla filiculoides Lam. – Hyd lemn; Neotropic; M(2169)

Spermatophyta

Gymnospermae

Cupressaceae

Juniperus oxycedrus L. subsp. *oxycedrus* – P caesp/P scap; Euri-Medit; B(134), L(1395)

Ephedraceae

Ephedra foeminea Forssk. – Ch frut; E Medit; J(1264), K(1550), L(972, 1489)

Angiospermae

Dicotyledonae

Aceraceae

Acer monspessulanum L. – P caesp/P scap; Euri-Medit; J(1233), K(1560, 1561

Amaranthaceae

Amaranthus albus L. – T scap; Nordamer.; J(1728)

A. retroflexus L. – T scap; Nordamer.; K(X256)

Anacardiaceae

Cotinus coggygria Scop. – NP (P caesp/P scap); S Europ-Turan; J(1038, 2006), L(1652)

Pistacia terebinthus L. subsp. *terebinthus* – P caesp (P scap); Medit-Balkan; J(1054, 1058, 1133, 1257), L(1267, 1268, 1464)

Rhus coriaria L. – P caesp; S Medit; D(434), J(2020)

Asclepiadaceae

Cionura erecta (L.) Griseb. – H scap; Balkan (Tu, An); J(951, 997, 1000, 1571), L(1286)

(**E**) *Vincetoxicum hirundinaria* Medik. subsp. *nivale* (Boiss. & Heldr.) Markgr. – H scap; Balkan; C(365, 528), D(67, 247), E(588, 655)

Betulaceae

Carpinus orientalis Mill. – P caesp (P scap); Pont.; C(367), J(1203)

Ostrya carpinifolia Scop. – P caesp/P scap; Circumbor; J(1040, 1274, 1942)

Boraginaceae

(**E**) *Alkanna graeca* Boiss. & Spruner subsp. *graeca* – H scap; Greece; D(113), L(1623)

(**E**) *A. pindicola* Hausskn. – H scap; S & SW Balkan; J(1035), L(1452, 1805)

Anchusa stylosa M. Bieb. – T scap; E Medit; A(635)

(**E**) *Echium arenarium* Guss. – H bienn (T scap); Steno-Medit; E(593, 652), J(1004)

E. italicum L. – H bienn; Euri-Medit; D(231), K(1518)

E. vulgare L. – H bienn; Europ; J(1231, 1720)

Heliotropium europaeum L. – T scap; Euri-Medit-Turan; L(985, 1898)

H. suaveolens M. Bieb. – T scap; E Medit; L(986)

Lappula patula (Lehm.) Gürke – T scap; Circumbor; C(341), D(93, 274, 828), J(1128), L(1363, 1635, 1644)

L. squarrosa (Retz.) Dumort. – T scap (H bienn); Paleotemp; L(1845, 1873, 1874)

Lithospermum officinale L. – H scap; Eurosib; A(603), B(501), C(535, 544), E(574), J(1583)

L. sibthorpianum Griseb. – T scap; Euri-Medit; A(603), B(501), C(535, 544), E(574), J(1583)

(**E**) *Myosotis incrassata* Guss. – T scap; Steno-Medit; A(25), B(494), C(534), E(549)

M. ramosissima Rochel subsp. *ramosissima* – T scap; Euri-Medit; J(1249, 1590)

(E) *Onosma heterophylla* Griseb. – H caesp; Balkan; D(94, 903), E(945), J(1197)

O. visianii Clementi – H bienn; SE Europ; D(128, 219, 220)

Campanulaceae

(**E**) *Asyneuma limonifolium* (L.) Janch. subsp. *limonifolium* – H scap; NE Medit; A(406), D(277, 316, 905), J(1060), K(1552), L(1818)

(**E**) *Campanula formanekiana* Degen & Dörfl. – H bienn; C & S Balkan; J(1977), L(967, 1290)

C. lingulata Waldst. & Kit. – H bienn; SE Europ; A(405), J(1031, 1204), L(1301, 1343, 1813)

C. patula L. – H bienn; Eurasian; J(1238, 1764), L(1279, 1351, 1396, 1779)

Legousia speculum-veneris (L.) Chaix – T scap; Euri-Medit; D(215, 813)

Cannabaceae

Humulus lupulus L. – P lian; Europ-Caucas; M(X344)

Caprifoliaceae

Lonicera etrusca Santi – P lian (P caesp); Euri-Medit; J(998, 1048), K(1562, 1563), L(1481)

L. xylosteum L. – P caesp; Europ-Caucas; L(1272)

Sambucus ebulus L. – G rhiz (H scap); Euri-Medit; J(1763)

Caryophyllaceae

Agrostemma githago L. – T scap; Europ-Centrosib; J(1022)

Arenaria serpyllifolia L. – T scap; Subcosmop.; A(605), B(756), D(273, 798), E(583)

Bufonia paniculata Dubois – T scap; Euri-Medit; B(464), F(2036)

Cerastium brachypetalum Pers. subsp. *roeseri* (Boiss. & Heldr.) Nyman – T scap; (Steno-) Medit-Atl; C(536), E(380, 576)

(**E**) *C. decalvans* Schloss. & Vuk. – H scap; Balkan; D(74, 75, 130), E(387, 682), J(1074, 1085), L(1632)

(**E**) *Dianthus gracilis* Sm. subsp. *gracilis* – H caesp; Balkan; A(400), D(897, 900), E(664, 1751), J(1078), L(1433)

D. monadelphus Vent. subsp. *pallens* (Sm.) Greuter & Burdet – H scap; E Medit; E(914), L(1413, 1460)

(**E**) *D. pinifolius* Sm. subsp. *pinifolius* – H caesp; Balkan-W Anatolia; E(1737), K(1557), L(1359, 1810)

Herniaria incana Lam. – H caesp; Euri-Medit; D(282), J(1576), L(1320, 1883)

Holosteum umbellatum L. – T scap; Paleotemp; A(19), B(489), E(579)

(**E**) *Minuartia glomerata* (M. Bieb.) Degen subsp. *macedonica* (Degen & Dörfl.) McNeill – H caesp; Balkan; A(396), B(883), C(197, 369), D(145, 783, 784), K(1541), L(1356, 1451)

M. hamata (Hausskn.) Mattf. – T scap; Medit; B(727), C(193), D(775), E(676), J(1155)

M. mediterranea (Link) K. Malý – T scap; NW Medit; B(507), C(487)

M. mesogitana (Boiss.) Hand.-Mazz. subsp. *mesogitana* – T scap; E Medit; A(24, 608), C(523), E(559), J(1076), L(1313, 1361, 1778, 1886)

M. verna (L.) Hiern subsp. *collina* (Neilr.) Domin – Ch suffr (Ch pulv); Eurasian; A(418, 620), C(183, 328), D(73, 106, 222), E(677)

Moehringia trinervia (L.) Clairv. – T scap/H scap; Eurasian; A(1)

Paronychia macedonica Chaudhri – H caesp; C & S Balkan; B(878), D(140, 227), J(1033, 1938, 1965)

Petrorhagia cretica (L.) P.W. Ball & Heywood – T scap; E Medit; B(881), D(861, 891)

P. illyrica (Ard.) P.W. Ball & Heywood subsp. *illyrica* – H caesp; Balkan; C(318), D(449), J(1971), L(1422, 1770)

P. prolifera (L.) P.W. Ball & Heywood – T scap; Euri-Medit; B(884), L(1334, 1446, 1846)

P. thessala (Boiss.) P.W. Ball & Heywood – H scap; Balkan; C(331), D(281, 447, 761), E(372), K(1535, 1538), L(1772, 1814)

Saponaria officinalis L. – H scap; Eurosib; D(109)

Silene chlorifolia Sm. – H scap; Irano-Turanian; J(1002, 1041, 1973), L(1661)

S. conica L. – T scap; Paleotemp; B(728), C(333), E(685), J(1588)

(**E**) *S. exaltata* Friv. – H ros; SE Europ; E(938, 939), L(1399, 1426)

S. gigantea subsp. *rhodopea* (Janka) Greuter – H bienn; E Medit; J(952, 1127, 1914), L(1414, 1773)

(**E**) *S. graeca* Boiss. & Spruner – H scap; S Balkan; C(177), D(874, 785), E(684), J(1192)

S. italica (L.) Pers. subsp. *italica* – H ros; Euri-Medit; J(1096, 1213, 1232), L(1369, 1613)

S. radicosa Boiss. & Heldr. – H caesp; Balkan; C(358, 361), J(1063, 1957), L(1401, 1819)

S. tenuiflora Guss. – T scap; E Medit; J(1243, 1410)

S. viridiflora L. – H ros; Sudeurop-Centro Asian; J(1259, 1260, 1761)

S. vulgaris (Moench) Garcke – H scap; Europ-NW Africa-Temp. Asia; L(1614)

Stellaria media (L.) Vill. – T rept/H bienn; Cosmop.; B(503)

Vaccaria hispanica (Mill.) Rauschert – T scap; W Asian; C(948)

Celastraceae

Euonymus verrucosus Scop. – P caesp; SE Europ-Pont.; J(1932)

Chenopodiaceae

Chenopodium album L. – T scap; Subcosmop.; L(X274)

Ch. botrys L. – T scap; Eurasian; J(1722), K(1578), L(1899)

Ch. multifidum L. – H scap; Sudamer.; L(1852, 1894)

Ch. vulvaria L. – T scap; Euri-Medit; L(X272)

Salsola tragus L. subsp. *tragus* – T scap; Paleotemp; A(393), H(2131)

Cistaceae

Cistus creticus L. – NP; Centro-Medit; L(1302)

Fumana ericoides (Cav.) Gaudin – Ch suffr; Steno-Medit; D(117, 216, 790), J(1068, 1069, 1087, 1937), L(1368, 1449)
F. procumbens (Dunal) Gren. & Godron – Ch suffr; Euri-Medit-Pont.; A(412, 421), C(325), D(150, 443), E(373, 374), L(1283)
Helianthemum ledifolium (L.) Mill. – T scap; Steno-Medit; C(542)
H. nummularium (L.) Mill. subsp. *nummularium* – Ch suffr; Europ-Caucas; C(531), D(285), J(1066), L(1345, 1651)
H. oelandicum (L.) DC. subsp. *canum* (L.) Bonnier – Ch suffr; Europ-Caucas; A(404), C(326, 514), D(95, 105, 872), E(586, 687, 924)
H. salicifolium (L.) Mill. – T scap; Euri-Medit; A(22, 606, 607), B(750), C(182, 186, 334), D(800), E(653), J(1067)

Compositae

Achillea ageratifolia (Sm.) Boiss. subsp. *aizoon* (Griseb.) Heimeri – H caesp; C & S Balkan; A(39, 616), D(87), E(572, 671)
A. chrysocoma Friv. – H scap; Balkan; B(736), C(353), D(139, 283), J(1107), L(1440)
(**E**) *A. fraasii* Sch.Bip. – H scap; Balkan peninsula, NW Anatolia; D(278)
(**E**) *A. holosericea* Sm. – H scap; W Balkan; A(411), J(1217), L(1786)
A. millefolium L. – H scap; Eurosib; J(1119, 1151)
A. cf. *pindicola* Hausskn – H scap; W Balkan peninsula; D(804)
Anthemis arvensis L. subsp. *cyllenea* (Halácsy) R. Fern. – T scap (H scap); S & W Balkan; E(670), L(1836, 1862)
A. arvensis L. subsp. *incrassata* Nyman – T scap (H scap); Steno-Medit; J(1129), L(1318)
A. cretica L. subsp. *cretica* – H scap (Ch suffr); Orof. S Europ-W Asian; C(342)
A. tinctoria L. subsp. *tinctoria* – H bienn/Ch suffr; Centro-Europ-Pont.; J(954, 1165, 1694)
A. tomentosa L. subsp. *tomentosa* (L.) Hayek – T scap; NE Medit; A(631), B(461), C(164, 309), D(152)
A. triumfettii (L.) DC. – H scap; S Europ; B(757)
Artemisia alba Turra – Ch suffr; S Europ; B(483), D(151, 428, 430)
A. campestris L. – Ch suffr; Circumbor; A(991)
A. vulgaris L. – H scap; Circumbor; L(X77)
Bellis perennis L. – H ros; Europ-Caucas; J(1608)
Bombycilaena erecta (L.) Smoljan – T scap; Europ-Siberian; C(208, 323), D(142), J(1208), L(1780, 1801)
Calendula officinalis L. – T scap/H bienn; Euri-Medit; D(143, 859, 812), J(1136, 1147), L(1322)
Carduus tmoleus aggr. – T scap; Balkan; L(1827)
Carlina corymbosa L. – H scap; Steno-Medit; C(359), D(457), E(377)
Carthamus lanatus L. – T scap; Euri-Medit; B(475, 760)
(**E**) *Centaurea graeca* Griseb. – H scap; S & W Balkan; D(92, 218), E(390), J(2017, 2027), L(1485)
(**E**) *C. grisebachii* (Nyman) Heldr. – H scap; S Balkan; C(352, 471), J(1056), L(1367, 1411, 1487)
(**E**) *C. psilacantha* Boiss. & Heldr. – H scap; C & N Greece; B(980)
C. salonitana Vis. – H scap; Eurosib; B(979), C(363), K(1556)
Chamaemelum mixtum (L.) All. – T scap; Steno-Medit; J(1103)
Chondrilla juncea L. – H scap; Euri-Medit-S Siber; D(424), L(1870)
Cichorium intybus L. – H scap; Cosmop.; D(266)
Cirsium arvense (L.) Scop. – G rad; Eurasian Temp.; G(2099)
C. candelabrum Griseb. – H bienn; Balkan; K(1527)
C. creticum (Lam.) d'Urv. – H bienn; NE Medit; L(X285)
C. vulgare (Savi) Ten. – H bienn; Paleotemp; L(X280)
Conyza bonariensis (L.) Cronquist – T scap; naturalised; L(X90)
C. canadensis (L.) Cronquist – T scap; naturalised; J(1934)
Crepis foetida L. – T scap (H bienn); Euri-Medit; C(987), L(1472)
C. neglecta L. – T scap; Euri-Medit-Nordorient; J(1131, 1239), L(969, 1314, 1316, 1327)
C. sancta (L.) Babc. – T scap; Euri-Medit-Turan; A(14, 623), C(172, 181, 529, 540), D(137), E(547, 569, 570), J(1585), K(1668), L(1647)
C. setosa Haller – T scap; Euri-Medit-Orient; C(171), J(955), K(1506), L(1465, 1466, 1493, 1834, 1835, 1838, 1876, 1884)
C. vesicaria L. subsp. *vesicaria* – T scap/H bienn; Submedit-Subatl; J(X100)
Crupina crupinastrum (Moris) Vis. – T scap; Steno-Medit; B(742), C(185, 322), E(911, 1745), L(1425)
C. vulgaris Cass. – T scap; Subsiber-Euri-Medit; C(161), D(126, 251, 261)
Cyanus depressus (M. Bieb.) Soják – T scap; naturalised; D(135)
Echinops microcephalus Sm. – H scap; Medit; D(458)
E. sphaerocephalus L. subsp. *albidus* (Boiss. & Sprun-

er) Kožuharov – H scap; Paleotemp; C(362), D(459), E(379)
Erigeron acer L. – H scap/H bienn; Circumbor; F(2045)
Filago pyramidata L. – T scap; Euri-Medit; B(843)
F. vulgaris Lam. – T scap; Paleotemp; L(1892)
Galactites tomentosa Moench – H bienn; Steno-Medit; K(1526), L(1826, 1901)
Gnaphalium luteo-album L. – T scap; Subcosmop.; K(1508, 1581)
Hieracium alpicola Schleich. – H ros; Orof. SE Europ; E(919)
H. bauhini Besser – H scap; S Europ-Sudsiber; D(133, 873), J(1215), L(1287)
H. cymosum L. subsp. *sabinum* (Sebast. & Mauri) Nägeli & Peter – H scap; Europ; L(1793)
H. hoppeanum Schult. subsp. *troicum* Zahn – H ros; NE Medit-Mont; A(407), C(338), D(850), L(1284)
H. pannosum Boiss. – H ros (H scap); SE Medit-Caucas; D(217, 809), E(930), K(1539)
Hypochaeris cretensis (L.) Bory & Chaub. – H scap; Orof. NE Medit; B(743), J(1162, 1667), L(1863)
Inula conyzae DC. – H bienn (H scap); Europ-W Asian; L(X105)
I. oculus-christi L. – H scap; SE Europ-Pont.; A(409), D(271), E(926)
(**E**) *I. verbascifolia* (Willd.) Hausskn. subsp. *aschersoniana* (Janka) Tutin – Ch suffr; C & S Balkan; C(339)
(**E**) *Jurinea mollis* (L.) Rchb. subsp. *mollis* – H scap; SE Europ; C(205), D(132, 289, 896)
Lactuca saligna L. – T scap/H bienn; Euri-Medit-Turan; L(X107)
L. viminea (L.) J. Presl & C.Presl – H bienn; Euri-Medit-W Asian; A(395)
Leontodon crispus Vill. – H ros; S Europ; B(706), D(63, 267, 831), E(658), F(2040), J(1941, 2009), L(1333)
Onopordum illyricum L. subsp. *cardunculus* (Boiss.) Franco – H bienn/H scap; Steno-Medit; D(294)
O. tauricum Willd. – H bienn; SE Europ-Pont.; J(1001, 1949)
Pallenis spinosa (L.) Cass. – T scap/H bienn; Euri-Medit; J(1236)
Picnomon acarna (L.) Cass. – H scap; Steno-Medit; B(984), K(1525), L(1900)
Ptilostemon afer (Jacq.) Greuter – H bienn; Balkan; K(X79)
Pulicaria dysenterica (L.) Bernh. – H scap; Euri-Medit; G(2089)
Scolymus hispanicus L. – H bienn; Euri-Medit; J(1687), L(1825)
Scorzonera laciniata L. – H bienn; Paleotemp; E(699)
S. mollis M. Bieb. subsp. *mollis* – H scap; Balkan; A(410), D(112, 876, 789), E(386, 585)
Senecio squalidus L. – H bienn/H scap; C & S Europ; A(16), B(733), C(180, 513), E(568), J(1584, 1610)
S. vernalis Waldst. & Kit. – T scap; Cosmop.; A(622), B(495)
Sonchus asper (L.) Hill – T scap/H bienn; Eurasian; L(1837)
S. oleraceus L. – T scap (H bienn); Eurasian; L(X281)
Steptorhamphus tuberosus (Jacq.) Grossh. – H scap; E Medit; D(293, 902), L(1783, 1811)
Tanacetum vulgare L. – H scap; Eurasian; J(1730)
Taraxacum officinale agg. – H ros; Circumbor; B(467), K(1517)
(**E**) *Tragopogon balcanicus* Velen. – H bienn; Balkan; E(1738)
T. dubius Scop. – H bienn; S Europ-Caucas; J(1174)
(**E**) *T. petrodes* Petrović – H bienn; C Balkan; D(287, 849), E(382)
T. porrifolius L. subsp. *porrifolius* – H bienn/T scap; Euri-Medit; J(1684)
Tussilago farfara L. – G rhiz; Paleotemp; L(1478)
Xanthium spinosum L. – T scap; Sudamer.; L(1823)
X. strumarium L. – T scap; naturalised; J(1732), L(1841)
Xeranthemum inapertum (L.) Mill. – T scap; S Europ-Pont.; A(394), C(350), L(1458)

Convolvulaceae
Convolvulus arvensis L. – G rhiz; Paleotemp; B(719), L(1341, 1833)
C. cantabrica L. – H scap; Euri-Medit; B(731), D(90, 288, 781, 826), J(1042)
Cuscuta epithymum (L.) L. subsp. *kotschyi* Arcang. – T par; Eurasian Temp.; B(977), J(1733, 1918), K(1505)

Cornaceae
Cornus mas L. – P caesp/P scap; SE Europ-Pont.; J(1234)

Crassulaceae
Sedum dasyphyllum L. – Ch succ; Euri-Medit; K(1569)
S. ochroleucum Chaix – Ch succ; SE Europ; C(356), D(229, 291), J(1572, 2015)
S. sediforme (Jacq.) Pau – Ch succ; Steno-Medit; J(1926)

S. urvillei DC. – Ch succ; Eurosib; B(735), C(204, 355), D(96, 250), E(388), J(1141, 2011)

Cruciferae

Aethionema saxatile (L.) R. Br. subsp. *graecum* (Boiss. & Spruner) Hayek – Ch suffr; Medit-Mont; A(618), B(724), D(786), E(551), J(1198), L(1627)

Alyssum alyssoides (L.) L. – T scap; Euri-Medit; J(1209)

(**E**) *Alyssum corymbosoides* Form. – Ch suffr; S & E Balkan; B(711, 712), D(279, 848, 806), E(941, 1748), J(1014)

A. minus (L.) Rothm. – T scap; Medit-Turan; J(1124), L(1346)

A. montanum L. subsp. *montanum* – Ch suffr; Pont.-Centroeurop; A(638, 639), E(587, 690), J(1083), L(1625)

A. sibiricum Willd. – Ch suffr; Balkan-Pont.; C(317), D(454, 455, 456), E(381), J(1919, 1956)

A. strigosum Banks & Sol. – T scap; E Medit-Mont; J(1193)

A. turkestanicum Regel & Schmalh. – T scap; Submedit; A(18, 35), C(187), E(555)

Arabis auriculata Lam. – T scap (H bienn); Orof. Medit; A(12, 23, 27, 609), J(1242)

A. collina Ten. – H scap; Medit-Mont; D(68)

A. sagittata (Bertol.) DC. – H bienn/H scap; SE Europ; J(1137, 1600, 1601, 1980), K(1553, 1565), L(1362, 1429, 1430, 1771, 1789)

A. turrita L. – H bienn/H scap; S Europ; L(1276, 1617, 1618)

Aurinia saxatilis (L.) Desv. subsp. *orientalis* (Ard.) T.R.Dudley – Ch suffr; NE Medit-Mont; A(630), C(485), D(65, 72, 121, 226), J(1606, 1958, 2007), L(1307)

Barbarea vulgaris R. Br. subsp. *arcuata* (Opiz) Hayek – H scap; Eurasian-NW Africa; K(1672)

Camelina microcarpa Andrz. – H bienn; Euri-Medit; A(646), B(885), J(1065)

Capsella bursa-pastoris (L.) Medik. – H bienn; Cosmop.; B(496, 504, 505), J(1120)

Cardamine graeca L. – T scap; N Medit; J(1188)

Clypeola jonthlaspi L. subsp. *jonthlaspi* – T scap; Steno-Medit; A(28), B(500), C(188), D(144)

Descurainia sophia (L.) Webb – T scap/H bienn; Paleotemp; J(1682)

Diplotaxis tenuifolia (L.) DC. – H scap; Submedit-Subatl; B(X56)

Draba lasiocarpa Rochel – H ros; Orof. Centro-S Europ; A(2)

Erophila praecox (Steven) DC. – T scap; Medit-C Europ; A(5, 32), B(491, 499), C(537)

Erysimum crassistylum C. Presl – H bienn; NE Medit; B(473, 738, 888, 978), C(162, 169), D(146, 258, 810), F(2050), J(1021, 1092, 1689, 1959), L(1335, 1372, 1403, 1775, 1843, 1880, 1881)

E. cuspidatum (M. Bieb.) DC. – Ch suffr; Serbia to Iran; L(1398)

Hesperis laciniata All. subsp. *laciniata* – H scap; N Medit-Mont; E(592)

H. theophrasti Borbás subsp. *theophrasti* – H scap; C Balkan; L(1292, 1616, 1626)

Hornungia petraea (L.) Rchb. – T scap; Euri-Medit; A(26, 600), B(502), E(567)

Lepidium campestre (L.) R. Br. – T scap; Europ-Caucas; J(1670)

L. graminifolium L. – H scap; Euri-Medit; B(X292)

Lunaria annua L. subsp. *pachyrhiza* (Borbás) Hayek – H scap; Balkan- Italy; J(1053)

(**E**) *Malcolmia graeca* Boiss. & Spruner – T scap; S & W Balkan; A(609), J(1187), L(1629)

Matthiola fruticulosa (L.) Maire subsp. *valesiaca* (J. Gay) P.W. Ball – Ch suffr; Alp.-C & S Europ; A(413, 612, 613), D(83, 275, 764), E(589), J(1075), L(1338)

Neslia apiculata Fisch. – T scap; Medit-SW & C Asia; A(15, 17, 621), C(184, 191, 533, 543), E(556, 701), J(1148), L(1619)

**Rorippa sylvestris* (L.) Besser – H scap; Eurasian; H(2136), I(2142)

Sisymbrium loeselii L. – T scap; CentroAsian; A(645), D(114, 116), E(661)

S. officinale (L.) Scop. – T scap; Paleotemp; L(968)

Thlaspi perfoliatum L. subsp. *perfoliatum* – T scap; Paleotemp; A(619), E(550), J(1586)

Cucurbitaceae

Ecballium elaterium (L.) A. Rich. – G bulb; Euri-Medit; K(X340)

Dipsacaceae

Cephalaria transsylvanica (L.) Roem. & Schult. – T scap; SE Europ-Caucas; J(1734, 1998, 1999)

Knautia arvensis (L.) Coult. – H scap/H bienn; Eurasian; J(1709, 1710)

Lomelosia argentea (L.) Greuter & Burdet – H bienn (H scap); S Europ-Subsiber; C(319, 354), E(376), K(1507), L(1911)

(**E**) *L. brachiata* (Sm.) Greuter & Burdet – T scap; Steno-Medit; E(1743), J(956, 1146, 1166, 1708, 1711)

L. divaricata (Jacq.) Greuter & Burdet – T scap; E Medit; L(970)
Pterocephalus plumosus (L.) Coult. – T scap; E Medit-Turan; D(223, 772, 780), E(916, 1753), J(1227)
Scabiosa ochroleuca L. – H scap (H bienn); SE Europ-Subsiber; C(357), D(238)
(**E**) *S. triniifolia* Friv. – H scap; Balkan; L(971)
(**E**) *S. webbiana* D. Don – H caesp; Eurasian; A(399), D(446, 827), E(689), J(1961), L(1288, 1321, 1416, 1428)

Ericaceae
Arbutus andrachne L. – P; E Medit; J(1930)

Euphorbiaceae
Andrachne telephioides L. – Ch suffr/NP; Euri-Medit; J(1142)
(**E**) *Euphorbia barrelieri* Savi – Ch suffr; NE Medit; E(915), J(1223, 1717)
E. chamaesyce L. – T rept; Euri-Medit; L(X305)
(**E**) *E. characias* L. subsp. *wulfenii* Sm. – NP; Steno-Medit; L(1298, 1664, 1665)
E. cyparissias L. – H scap; Europ; C(176), D(100)
E. falcata L. – T scap; Euri-Medit-Turan; C(520), E(566)
E. helioscopia L. – T scap; Cosmop.; A(30), D(125)
E. maculata L. – T rept; Nordamer.; J(1573, 1574)
E. myrsinites L. – Ch rept; S Europ-Pont.; A(4, 11), C(538), D(78)
E. nicaeensis All. – G rhiz/Ch suffr; W Stenomedit; L(1646)
E. taurinensis All. – T scap; N Euri-Medit; A(31), B(741), C(210, 518, 519), D(815), E(564), J(1018, 1130)

Fagaceae
Quercus ilex L. – P scap (P caesp); Steno-Medit; J(X309)
Q. trojana Webb subsp. *trojana* – P scap; NE Medit; C(366), D(53, 232), L(1655)

Gentianaceae
Centaurium pulchellum (Sw.) Druce – T scap; Paleotemp; F(2042)

Geraniaceae
Erodium absinthoides Willd. – Ch suffr; E Medit; A(41, 392, 628)
(**E**) *E. acaule* (L.) Bech. & Thell. – H ros; Medit-Mont; B(497)
E. ciconium (L.) L'Hér – T scap/H bienn; Euri-Medit-Pont.; L(1645)
E. cicutarium (L.) L' Hér. – T scap (T caesp/H ros); Subcosmop.; A(33), C(516), E(562), J(1230)
Geranium lucidum L. – T scap; Euri-Medit; J(1196)
G. robertianum L. subsp. *purpureum* (Vill.) Nyman – T scap; Euri-Medit; D(794), E(571), J(1117, 1176), K(1544), L(1278, 1281, 1311, 1373, 1497, 1633)
G. rotundifolium L. – H scap; Paleotemp; B(740), J(1108, 1110, 1179, 1244, 1589), K(1524), L(1424, 1895)

Globulariaceae
Globularia punctata Lapeyr. – H scap; S Europ; J(1703, 1923)

Guttiferae
Hypericum perforatum L. – H scap; Paleotemp; J(1164, 1714, 1760)
(**E**) *H. rumeliacum* Boiss. – H caesp; Balkan; B(758), C(170, 304), D(156, 246, 441, 799, 893), E(389), J(1071, 1104, 1163, 1170), L(1300)

Haloragaceae
**Myriophyllum spicatum* L. – Hyd myrioph; Subcosmop.-Temp.; G(2111), H(2128, 2134), I(2140), M(2151), O(1828, 1903, 1983, 2154)

Labiatae
Ajuga chamaepitys (L.) Schreb. subsp. *chia* (Schreb.) Arcang. – T scap (H bienn, H scap); Euri-Medit; B(744), C(166), D(89), E(673), J(1181), L(1807)
(**E**) *Ballota macedonica* Vandas – Ch suffr; W Balkan; D(444), J(1261, 1262, 1762, 1940)
(**E**) *B. nigra* L. subsp. *sericea* (Vandas) Patzak – H scap; S & W Balkan; L(1859, 1864)
Lamium amplexicaule L. – T scap; Paleotemp; A(13), B(490), C(525), E(565, 694)
L. garganicum L. – H scap; Medit-Mont; K(1558)
L. maculatum L. – H scap; Eurasian Temp.; L(1296)
Lycopus europaeus L. – Hyd herb/H scap; Paleotemp; F(2059), G(2095), I(2138)
Marrubium peregrinum L. – H scap; SE Europ; B(482), D(56), K(1510), L(1861)
M. vulgare L. – H scap; Euri-Medit; K(1502), L(974, 1858)
Melissa officinalis L. – H scap; W Asian; K(1503, 1515)
**Mentha aquatica* L. – Hyd herb/H scap; Paleotemp; F(2073)
M. spicata L. subsp. *condensata* (Briq.) Greuter & Burdet – H scap; Euri-Medit; F(2039), K(1519, 1520), L(1857, 1865)

(**E**) *Nepeta spruneri* Boiss. – H scap; S & SW Balkan; C(340, 1742), K(1511), L(1851, 1871)
Origanum vulgare L. – H scap; Eurasian; B(492), J(1729)
Prunella laciniata (L.) L. – H scap; Euri-Medit; J(1713)
Salvia aethiopis L. – H scap; Medit-Sudsiber; J(1688)
(**E**) *S. officinalis* L. – Ch suffr; N Medit-Mont; J(958, 1008), L(1280, 1420)
S. ringens Sm. – Ch suffr; Balkan; D(153, 244, 245)
S. sclarea L. – H bienn; Euri-Medit; D(907), E(937)
S. verticillata L. – H scap; Orof. S Europ-Caucas; J(1701)
S. virgata Jacq. – H scap; SE Europ; J(1134, 1702)
S. viridis L. – T scap; Steno-Medit; J(1093, 1094)
(**E**) *Satureja cremnophila* (Boiss. & Heldr.) Briq. – Ch suffr; SW Balkan; B(717), C(202), D(265, 438), J(1968), K(1536, 1547), L(1355, 1438, 1443, 1448, 1450, 1482, 1483, 1821)
(**E**) *S. cristata* (Hampe) Nyman – Ch suffr; E Medit; D(108, 235)
(**E**) *S. cuneifolia* Ten. – Ch frut; N Medit; B(983)
(**E**) *S. montana* L. subsp. *variegata* P.W. Ball – Ch suffr; C Balkan-Italy; J(1922)
S. myrtifolia (Boiss. & Hohen.) Greuter & Burdet – Ch suffr; E Medit; D(435)
S. nepeta (L.) Scheele – H scap (Ch suffr); Medit-Mont; D(432), K(1521)
S. suaveolens (Sm.) Watzl-Zemann – Ch suffr; NE Medit; D(88), E(563), J(1084, 1171), K(1675), L(1304, 1379, 1402, 1444)
S. vulgaris (L.) Fritsch subsp. *vulgaris* – H scap; Circumbor; J(1704), K(1501), L(1366)
Scutellaria altissima L. – H scap; SE Europ; J(1240)
S. orientalis L. subsp. *pinnatifida* Edmondston – Ch suffr; Medit-Pont.; D(48, 286, 295, 765)
(**E**) *S. rupestris* Boiss. & Heldr. subsp. *parnassica* (Boiss.) Greuter & Burdet – H scap; Greece; J(994, 1007), L(1293, 1417, 1491)
Sideritis montana L. subsp. *montana* – T scap; Medit-Turan; C(179), D(122, 895), J(1183), L(1352)
Stachys annua (L.) L. – T scap; Euri-Medit; J(1715)
(**E**) *S. germanica* L. subsp. *heldreichii* (Boiss.) Hayek – H scap; E Medit; J(1707)
(**E**) *S. iva* Griseb. – H caesp; C & S Balkan; C(337), D(85, 296, 805, 429)
S. officinalis (L.) Trevis. – H scap; Europ-Caucas; B(476)
S. palustris L. – Hyd herb/H scap; Circumbor; G(2085, 2092)
(**E**) *S. plumosa* Griseb. – H scap; C & S Balkan; J(995)
S. recta L. subsp. *recta* – H scap; Europ-Caucas; J(1252)
Teucrium capitatum L. – Ch suffr; Steno-Medit; C(327)
T. chamaedrys L. – Ch suffr; Euri-Medit; B(745), D(120, 237), F(2044), J(1190), L(1285)
T. montanum L. – Ch suffr; Orof. S Europ; D(898), E(931)
T. scordium L. subsp. *scordioides* (Schreb.) Arcang. – H scap; Europ-Caucas; F(2075), G(959, 2093)
(**E**) *Thymus atticus* Čelak. – Ch rept; E Medit; C(211), D(115, 123, 234), E(1749), L(1787, 1800)
(**E**) *T. boissieri* Halácsy – Ch suffr; Balkan-Pont.; D(451, 857, 791), E(591, 651), J(1088, 1089), L(1418)
(**E**) *T. sibthorpii* Benth. – Ch suffr; Balkan; A(636), B(752), F(2046), J(1206), L(1315, 1628)
Ziziphora capitata L. – T scap; SE Europ-W Asian; B(732), D(802, 890), J(1138)

Leguminosae

(**E**) *Anthyllis aurea* Host – Ch suffr; Balkan; E(922, 923), J(1052)
A. vulneraria L. subsp. *scardica* (Wettst.) Bergmeier – H scap (H bienn, T scap); S & W Balkan; A(640), C(192), D(243), E(656), L(1436)
(**E**) *Astragalus lacteus* Boiss. – H ros; S & W Balkan; C(511), E(595)
A. monspessulanus L. subsp. *monspessulanus* – H ros, H scap; Euri-Medit; A(43), C(515), E(594), L(1330, 1658)
A. odoratus Lam. – H scap; E Medit-Turan; J(966)
A. onobrychis L. – H scap (Ch suffr); Subsiber-N Medit; B(754), D(814)
(**E**) *A. sericophyllus* Griseb. – H caesp; S & W Balkan; B(465), C(949), D(99, 157, 236, 801), E(657, 1755), L(1408)
(**E**) *A. vesicarius* L. subsp. *carniolicus* (A. Kern.) Chater – H scap/Ch suffr; SW Balkan-Italy; E(925)
Bituminaria bituminosa (L.) C.H. Stirt. – H scap; Euri-Medit; J(1051, 1691)
Chamaecytisus austriacus (L.) Link – Ch suffr; Eurosib; J(1674)
Colutea arborescens L. subsp. *arborescens* – P caesp; Euri-Medit; J(999)
Coronilla scorpioides (L.) W.D.J. Koch – T scap; Euri-Medit; C(190), D(782, 851), E(548, 700), J(1086, 1191), L(1365)
C. valentina L. subsp. *glauca* (L.) Batt – NP; SW Medit; D(154, 242), E(698)

Cytisus procumbens (Willd.) Spreng. – Ch suffr; EC Europ and Balkan; A(632, 633)
Dorycnium herbaceum Vill. – H scap/Ch suffr; S Europ-Pont.; J(1247), L(1383, 1412)
(**E**) *D. hirsutum* (L.) Ser. – Ch suffr; Euri-Medit; J(1112, 1979)
Genista sessilifolia DC. subsp. *romanica* (Prodán) P.E. Gibbs – Ch frut; Balkan; E(929)
(**E**) *Hippocrepis ciliata* Willd. – T scap; Steno-Medit; A(601), B(749), C(195, 512), E(573, 672), J(1081), L(1310, 1442)
H. comosa L. – H caesp; S & C Europ; L(1270, 1271, 1812)
H. emerus (L.) Lassen subsp. *emeroides* (Boiss. & Spruner) Lassen – NP; E Medit-Pont.; D(62), J(1070), L(1660)
H. multisiliquosa L. – T scap; Steno-Medit; D(829), E(942)
Lathyrus cicera L. – T scap; Euri-Medit; A(625), B(506, 708, 755), D(118, 796), E(703), J(1029, 1139)
L. inconspicuus L. – T scap; Euri-Medit; L(1630)
(**E**) *L. saxatilis* (Vent.) Vis. – T scap; Euri-Medit; C(530), E(552, 702), J(1082, 1972)
L. setifolius L. – T scap; Euri-Medit; J(1023, 1073), L(1385)
L. sphaericus Retz. – T scap; Euri-Medit; J(1111)
Lens nigricans (M. Bieb.) Godron – T scap; Steno-Medit; B(753), E(681), J(1028), L(1347)
Lotus aegaeus (Griseb.) Boiss. – H scap; Irano-Turanian; L(1319, 1344)
L. corniculatus L. – H scap; Paleotemp; B(886), J(1177, 1180), L(1336, 1354, 1377)
Medicago aculeata Gaertn. – T scap; Steno-Medit; E(669)
M. coronata (L.) Bartal. – T scap; Steno-Medit; B(739), E(817), L(1324)
M. falcata L. – H scap; C Eurasian; J(961, 1025, 1693, 2031), L(1423)
M. lupulina L. – T scap (H scap); Paleotemp; J(960), L(1337, 1364, 1439, 1486, 1795)
M. medicaginoides (Retz.) E.Small – T scap; Eurasian; D(280, 852)
M. minima (L.) L. – T scap; Medit-CentroAsian; B(723), C(200), D(98, 136, 795), E(668), J(1109, 1184), L(1306, 1339, 1867)
M. monspeliaca (L.) Trautv. – T scap; Euri-Medit; B(747), D(788), E(692), F(2041), L(1342)
M. orbicularis (L.) Bartal. – T scap; Euri-Medit; D(811)
M. sativa L. subsp. *sativa* – H scap; Eurasian; J(1727), L(1391, 1844)
M. tuberculata (Retz.) Willd. – T scap; Steno-Medit; B(722, 845), C(545), E(582)
Melilotus albus Medik. – T scap; Eurasian; K(1513), L(1427, 1893)
M. indicus (L.) All. – T scap; Medit-Turan; C(189), E(1752), J(2004), L(1328, 1360, 1624)
M. officinalis (L.) Lam. – H bienn; Subcosmop.; J(962)
Onobrychis aequidentata (Sm.) d'Urv. – T scap; E Medit; L(1441)
(**E**) *O. alba* (Waldst. & Kit.) Desv. subsp. *alba* – H scap/Ch suffr; Euri-Medit; D(138, 241, 779), E(660, 909, 1754)
(**E**) *O. arenaria* (Kit.) DC. subsp. *lasiostachya* (Boiss.) Hayek – H scap; S Europ-Subsiber; A(419), C(174, 311), D(762, 871), E(665, 910)
O. gracilis Besser – H scap; E Medit; J(1167, 1699), L(1386, 1387)
O. pusilla L. – H scap; Euri-Medit; B(751), C(203), D(97, 239, 768, 819, 855), E(383), J(1013), L(1374, 1640)
O. spinosa L. – Ch suffr; Euri-Medit; L(X290), F(X271)
Securigera varia (L.) Lassen – H scap; SE Europ; D(257), J(1015, 1027), L(1340, 1384, 1822)
Trifolium angustifolium L. – T scap; Euri-Medit; L(1376)
T. arvense L. – T scap; Paleotemp; J(1106)
T. campestre Schreb. – T scap; W Paleotemp; B(846), J(1132, 1719), L(1348)
T. cherleri L. – T scap; Euri-Medit; C(213)
(**E**) *T. dalmaticum* Vis. – T scap; Balkan; J(1173, 1207)
T. physodes Steven – H scap; E Medit; J(1679)
(**E**) *T. pignantii* Fauché & Chaub. – H scap; Balkan; J(1718)
T. repens L. – H rept; Paleotemp; G(963), L(1832)
T. scabrum L. – T rept/T scap; Euri-Medit; B(842), E(1746), L(1305, 1358, 1455)
(**E**) *Trigonella balansae* Boiss. & Reut. – T scap; Greece & Anatolia; B(705, 840), J(1090), L(1479)
T. gladiata Steven – T scap; Steno-Medit; A(627), C(517), E(679)
Vicia cracca L. – H scap; Eurasian; L(1866)
V. narbonensis L. – T scap; Euri-Medit; J(1202)
V. peregrina L. – T scap; Medit-Turan; J(1241, 1681)

Lentibulariaceae

**Utricularia vulgaris* L. – Hyd utr; Circumbor; F(2053, 2066), G(2116, 2121), H(2130)

Linaceae

Linum bienne Mill. – H bienn/H scap (T scap); Euri-Medit-Subatl; A(417), B(844, 887), D(228)

L. hirsutum L. – H scap; SE Europ-Pont.; J(1228, 1945)

L. nodiflorum L. – T scap; Euri-Medit; D(860), J(1205)

L. tenuifolium L. – Ch suffr; Submedit-Pont.; C(214, 329, 349), D(119, 290, 793), E(371, 659, 944), J(1011, 1194, 1222, 2005), L(1294, 1295, 1400, 1457)

Loranthaceae

Arceuthobium oxycedri (DC.) M. Bieb. – P ep; Paleo-subtrop; L(1803)

Lythraceae

**Lythrum salicaria* L. – Hyd herb/H scap; Subcos-mop.; F(2067), G(2088)

Malvaceae

Alcea heldreichii (Boiss.) Boiss. – H scap; Balkan-Pont.; K(1540)

Althaea officinalis L. – H scap; SE Europ-Subsiber; G(2090)

Lavatera thuringiaca L. – H scap; Subsiber; B(474)

Malva sylvestris L. – H scap (T scap); Eurosib; J(1113), L(1869)

Moraceae

Ficus carica L. – P scap; Medit-Turan; J(1009, 1954, 1955, 2028, 2029, 2030)

Oleaceae

Fraxinus ornus L. – Pscap (P caesp); Euri-N Medit-Pont.; D(77), E(654), J(1043, 2019), L(1495, 1659)

Jasminum fruticans L. – P caesp; E Medit; D(61), J(1216), L(1657)

Phillyrea latifolia L. – P caesp (P scap); Steno-Medit; J(1229), L(1282, 1662)

Onagraceae

Epilobium dodonaei Vill. – H scap (Ch frut); Orof. S Europ-Caucas; J(1575, 2016)

**E. hirsutum* L. – Hyd herb/H scap; Paleotemp; J(X287)

Orobanchaceae

Orobanche purpurea Jacq. – T par; Europ-Subsiber; D(111, 803, 875), E(442, 450), K(1555), L(1303)

Papaveraceae

Fumaria officinalis L. subsp. *officinalis* – T scap; Paleotemp; A(36, 634), B(509), J(1245)

Hypecoum imberbe Sm. – T scap; Paleotemp; D(51)

Papaver dubium L. subsp. *lecoqii* (Lamotte) Syme – T scap; E Medit-Turan; A(629), C(527), D(822)

P. rhoeas L. – T scap; E Medit; C(160, 521), E(560), J(1255), L(1879)

Plantaginaceae

Plantago crassifolia Forssk. – H ros; Steno-Medit; F(X323)

P. lagopus L. – T scap; Steno-Medit; K(1522), L(1849, 1868)

P. lanceolata L. – H ros; Eurasian; F(2051), J(1189), L(1804, 1878), O(1996)

P. major L. subsp. *intermedia* (Gilib.) Lange – Hyd herb/H ros; Eurasian; F(2063)

Platanaceae

Platanus orientalis L. – P scap; E Europ; J(1097), L(1273)

Plumbaginaceae

(**E**) *Goniolimon heldreichii* Halácsy – H ros; Greece; E(423), L(1459)

Plumbago europaea L. – Ch frut (G rad); Steno-Medit; C(348)

Polygalaceae

Polygala nicaeensis W.D.J. Koch subsp. *mediterranea* Chodat – H scap; Steno-Medit; J(1224)

P. supina Schreb. subsp. *supina* – H scap; Eurosib; B(462), C(524), D(101, 773), J(1080), L(1484, 1637)

Polygonaceae

Fallopia convolvulus (L.) Á. Löve – T scap; Circumbor; J(1235, 1724), L(1621)

**Persicaria amphibia* (L.) Gray – Hyd natopot/G rhiz; Subcosmop.; F(2076), H(2123)

P. hydropiper (L.) Spach – T scap; Circumbor; M(X342), I(X343)

P. lapathifolia (L.) Gray subsp. *lapathifolia* – Hyd herb/T scap; Paleotemp; J(1721), O(1991)

Polygonum aviculare L. subsp. *neglectum* (Besser) Arcang. – T rept; Cosmop.; B(463)

P. equisetiforme Sm. – NP/Ch suffr; Eurasian; L(X324)

Rumex palustris Sm. – Hyd herb/T scap; Eurasian; G(2101), N(2023, 2024), O(1992, 1993)

R. pulcher L. subsp. *pulcher* – H scap (T scap); Euri-Medit; J(1705)

R. thyrsiflorus Fingerh. – H scap; Eurosib; J(1673), L(1790, 1796)

Primulaceae

Anagallis arvensis L. – T rept; Euri-Medit; J(1123, 1201)

Androsace maxima L. – T ros; S Europ-Subsiber; A(7), D(904)
Asterolinon linum-stellatum (L.) Duby – T scap; Steno-Medit; A(8), C(526)
Cyclamen hederifolium Aiton – G bulb; N Medit; J(1246)

Ranunculaceae

Adonis flammea Jacq. – T scap; Europ-Caucas; A(615), D(854), E(580), J(1596)
Anemone pavonina Lam. – G bulb; N Medit; J(1587)
Clematis vitalba L. – P lian; Europ-Caucas; D(57, 248), J(1144), L(1431)
Consolida hellespontica (Boiss.) Chater – T scap; Irano-Turanian; E(913)
C. regalis Gray – T scap; Euri-Medit; B(481), C(306), E(433), J(1149)
(**E**) *Delphinium balcanicum* Pawł. – T scap; C & E Balkan; C(351), J(1757), K(1554), L(1767)
Nigella arvensis L. subsp. *arvensis* – T scap; Euri-Medit; C(360), E(912)
N. damascena L. – T scap; Euri-Medit; D(240), J(1156, 1218)
Ranunculus sceleratus L. – Hyd herb/T scap; Paleotemp; O(1990)
R. sprunerianus Boiss. – H scap; E Medit; A(40), D(66, 833), E(647), J(1079, 1220, 1591, 1593)
R. trichophyllus Chaix – Hyd myrioph; Europ; H(2124), O(1499, 1904)
Thalictrum minus L. subsp. *saxatile* DC. – H scap; Submedit-Subatl; D(47, 297, 867), J(1050), K(1549)

Resedaceae

Reseda lutea L. – H scap (T scap); Europ; A(397, 398, 641, 642), D(79, 255, 821), J(1072, 1258), L(1634, 1854)
R. luteola L. – H scap/T scap; Eurasian; K(1523), L(975, 1848)

Rhamnaceae

Frangula rupestris (Scop.) Schur – NP; NE Medit-Mont; J(1037, 2021)
Paliurus spina-christi Mill. – P caesp; SE Europ-Pont.; C(368), D(50), J(1153), L(1291)
Rhamnus alaternus L. subsp. *alaternus* – P caesp; Steno-Medit; D(64), J(1933), L(1462, 1463)

Rosaceae

Agrimonia eupatoria L. – H scap; Subcosmop.; K(1548)
Amelanchier ovalis Medik. subsp. *ovalis* – P caesp; E Medit; J(1928), L(1467, 1799)
Cotoneaster integerrimus Medik. – NP; Orof. Eurasian; D(76), J(1226), L(1393)
Crataegus monogyna Jacq. var. *monogyna* – P caesp (P scap); Paleotemp; K(1559)
Fragaria vesca L. – H rept; Eurosib; J(1199)
Potentilla detommasii Ten. – H scap; Orof. SE Europ; D(129, 894), E(667), J(1100, 1118, 1157, 1221), L(1435, 1453, 1781)
P. recta L. – H scap; NE Medit-Pont.; C(206), D(767, 856), E(932)
P. reptans L. – H ros; Paleotemp; F(2062)
P. supina L. – T scap (H scap); Pont.; J(992)
Prunus armeniaca L. – P scap; C Asian; J(1975, 2022), L(1650)
P. cerasifera Ehrh. – P caesp/P scap; W Asian-Pont.; A(45), J(1607)
P. mahaleb L. – P caesp (P scap); S Europ-Pont.; J(1095, 1150, 1602, 1976, 2018), L(1656)
P. spinosa L. – P caesp; Europ-Caucas; E(1735), J(1102), K(1568) , L(1394, 1469, 1782)
P. webbii (Spach) Vierh. – P caesp; E Medit; A(597, 599), L(1266)
Pyrus spinosa Forssk. – P caesp (P scap); Steno-Medit; A(598), C(364)
Rosa nitidula Besser – NP; Paleotemp; A(9, 416), D(221), J(1248), L(1289)
Rubus sanctus Schreb. – NP; C & S Europ; J(1947, 1948, 1997), L(1784)
Sanguisorba minor Scop. subsp. *minor* – H scap; Paleotemp; D(124)
S. minor Scop. subsp. *muricata* Briq. – H scap; Paleotemp; A(401), D(149), L(1445)

Rubiaceae

Asperula aristata L. – H scap/Ch suffr; S Europ; A(422), C(320), D(233), E(384, 431, 921), F(2037), J(1962)
A. arvensis L. – T scap; Euri-Medit; J(1185), L(1620)
A. purpurea (L.) Ehrend. subsp. *purpurea* – Ch suffr; Orof. SE Europ; C(332), D(268), J(2033), K(1545, 1567), L(1404, 1437, 1468, 1475)
(**E**) *Crucianella graeca* Boiss. – T scap; S Balkan; B(472, 837, 880), C(212), D(863), E(427)
C. latifolia L. – T scap; Steno-Medit; J(1143)
Cruciata laevipes Opiz – H scap; Eurasian; J(1611)
C. pedemontana (Bellardi) Ehrend. – T scap; Euri-Medit; B(721), C(201), D(797), E(554), J(1105, 1122, 1974), L(1325)
Galium incanum Sm. subsp. *incanum* – H caesp; E Medit; J(1967)

(**E**) *Galium intricatum* Margot & Reut. – T scap; Greece & S. Albania; K(1677)
G. mollugo agg. – H scap; Euri-Medit; C(198, 321, 346), K(1683), L(1794, 1798, 1816, 1889)
G. oreophilum Krendl – H scap; C & S Balkan; L(X336)
G. parisiense L. – T scap; Euri-Medit; E(917), L(1802)
G. spurium L. – T scap; Eurasian; J(1253), L(1636)
G. verum L. – H scap; Eurasian; D(110), J(1030, 1135), K(1537), L(1371, 1388, 1389, 1474)
Sherardia arvensis L. – T scap; Euri-Medit; A(604), C(541), E(680)

Rutaceae
Dictamnus albus L. – Ch suffr; Europ-Subsiber; D(835), J(1046)
(**E**) *Haplophyllum coronatum* Griseb. – Ch suffr; Balkan; C(175), D(52, 830), J(1172), L(1638, 1774)

Salicaceae
Populus tremula L. – P scap; Eurosib; J(1929)
Salix alba L. – P scap; Paleotemp; L(1480)
S. triandra L. – P caesp; Eurosib; J(X338)

Santalaceae
Osyris alba L. – NP; Euri-Medit; J(1039, 1049, 1237, 1577, 1952, 2000), L(1470)
Thesium arvense Horv. – H scap; Europ-CentroAsian; D(86, 278)
T. divaricatum Jan – H scap/Ch suffr; Euri-Medit; B(466)
T. humile Vahl – T scap; Medit-Atl; D(864, 892), L(1447, 1454, 1769, 1785, 1788)
T. linophyllon L. – G rad/H scap; C & SE Europ; B(748, 882), D(107, 301, 774, 776, 777), E(928), F(2043), J(1020, 1716, 1913, 1915, 1916), K(1531, 1532), L(1496)
(**E**) *T. macedonicum* Hendrych – H scap; C & S Balkan; C(324), D(868), E(448)

Saxifragaceae
Saxifraga tridactylites L. – T scap; Euri-Medit; A(29), C(486)

Scrophulariaceae
Gratiola officinalis L. – H scap; Circumbor; F(2071)
(**E**) *Linaria hellenica* Turrill – T scap; Greece; J(1912)
(**E**) *L. peloponnesiaca* Boiss. & Heldr. var. *parnassica* (Boiss. &Heldr.) Halácsy – H scap; S & W Balkan; D(225, 792), J(1963), L(1308, 1639)
L. simplex (Willd.) DC. – T scap; Euri-Medit; A(614, 624), B(707), C(522), D(155, 269, 818), E(553, 557, 693), J(1064), L(1791, 1809, 1872)
Melampyrum arvense L. – T scap; Eurasian; J(996, 1017), L(1473, 1808)
Parentucellia latifolia (L.) Caruel – T scap; Euri-Medit; A(617)
Scrophularia scopolii Hoppe var. *scopolii* – H scap; Eurasian; J(1016), K(1534)
(**E**) *Verbascum adenanthum* Bornm. – H scap; S & W Balkan; J(964, 2014)
V. banaticum Schrad. – H scap; E Medit; J(1706)
(**E**) *V. graecum* Heldr. & Sart. – H scap; S Balkan; D(284), E(378, 918), J(1005, 1044, 1950, 1951)
(**E**) *V. leucophyllum* Griseb. – H bienn; S & SW Balkan; B(737), D(46, 224), E(649, 1736)
V. sinuatum L. – H bienn; Euri-Medit; L(1831)
(**E**) *V. undulatum* Lam. – H scap; S & W Balkan; D(131), J(1006, 1045, 1666)
Veronica agrestis L. – T scap; Europ; B(488)
V. anagalloides Guss. – Hyd herb/T scap; Euri-Medit; G(2100), H(2126, 2133, 2135)
V. arvensis L. – T scap; Subcosmop.; B(838)
V. chamaedrys L. – H scap; Eurosib; L(1615)
V. praecox All. – T scap; Europ; D(148)
V. triloba (Opiz) Wiesb. – T scap; Eurasian; B(493)

Simaroubaceae
Ailanthus altissima (Mill.) Swingle – P scap; naturalised; K(1514, 1528, 1529, 1530)

Solanaceae
Hyoscyamus niger L. – T scap/H bienn; Eurasian; L(1815)
Solanum nigrum L. – T scap; Cosmop.; G(2096)

Tamaricaceae
Tamarix parviflora DC. – P caesp/P scap; E Medit; J(1026)

Ulmaceae
Celtis australis L. – P scap; Euri-Medit; D(54), J(1098, 1145, 1605)
Ulmus minor Mill. – P caesp/P scap; Europ-Caucas; K(1546), L(1277)

Umbeliferae
(**E**) *Bupleurum praealtum* L. – T scap; S & SC Europ; B(841), D(104), E(674), J(1254), L(1323, 1353)
Carum multiflorum (Sm.) Boiss. – H scap; E Medit; E(1739), J(1061), L(1792)
Caucalis platycarpos L. – T scap; Euri-Medit-Turan; B(720), J(1114, 1175)
(**E**) *Chaerophyllum coloratum* L. – T scap; W Balkan; J(1692)

Daucus guttatus Sm. subsp. *guttatus* – T scap; E Medit; C(950), F(2049)
Eryngium amethystinum L. – H scap; NE Medit; A(415)
E. campestre L. – H scap; Euri-Medit; C(158)
Ferulago nodosa (L.) Boiss. – H scap; NE Stenomedit; J(1055)
Malabaila involucrata Boiss. & Spruner – H bienn; E Medit; J(1003, 1057, 1059, 1140)
Oenanthe aquatica (L.) Poir. – Hyd herb/H scap; Eurasian; G(2084, 2102, 2103)
Orlaya daucoides (L.) Greuter – T scap; Steno-Medit; A(611), B(726), C(310), D(71, 102, 256, 770), E(688), J(1211, 1598), L(1332)
Scaligeria cretica (Mill.) Boiss. – H bienn; SW Balkan; J(1690)
Scandix australis L. – T scap; Steno-Medit; D(807), E(453), J(1169, 1678)
Seseli pallasii Besser – H scap (H bienn); Pont.; E(920, 947), J(1946)
Tordylium maximum L. – T scap; Euri-Medit; K(1542)
Torilis arvensis (Huds.) Link subsp. *arvensis* – T scap; S Medit; L(X251, X252)
T. arvensis subsp. *purpurea* (Ten.) Hayek – T scap; Medit; J(X253), L(X247, X248)
T. ucranica Spreng. – T scap; SE Europ; J(1161)
Trinia glauca (L.) Dumort. – H scap; SE Europ; B(889), D(81, 816), E(662), J(1582), L(1641)

Urticaceae
Parietaria officinalis L. – H scap; Centro-Europ-W Asian; L(1477)
Urtica dioica L. – H scap; Subcosmop.; L(1896)

Valerianaceae
Valeriana officinalis L. subsp. *officinalis* – H scap; Europ; L(1653, 1654)
Valerianella carinata Loisel. – T scap; Euri-Medit; A(21), C(173, 199, 532), E(561, 666, 691), J(1597), L(1631)
V. rimosa Bastard – T scap; Euri-Medit; B(725), D(70), J(1032)

Verbenaceae
Verbena officinalis L. – H scap; Paleotemp; K(1516), L(1498, 1855), O(1987)

Violaceae
Viola arvensis Murray – T scap; Eurasian; J(1680), L(1312)
V. kitaibeliana Schult. – T scap; Medit-Caucas; A(38), B(498), D(147), E(575)
V. odorata L. – H ros; Euri-Medit; J(1186)

Vitaceae
Vitis vinifera L. – P lian; Cultivated; J(1099)

Monocotyledonae

Alismataceae
**Alisma gramineum* Lej. – Hyd sagitt; Eurasian; G(2104, 2106, 2107)
**A. plantago-aquatica* L. – Hyd sagitt; Subcosmop.; G(2094)

Araceae
Arum italicum Mill. – G rhiz; Steno-Medit; J(1609), K(1564)

Butomaceae
Butomus umbellatus L. – Hyd gramin; Eurasian; G(2105)

Cyperaceae
Carex distans L. – H caesp; Euri-Medit; F(X301, X302)
C. extensa Gooden. – H caesp; Medit-Atl; L(X299)
C. flacca Schreb. subsp. *serrulata* (Biv.) Greuter – G rhiz; Medit; J(X297, X298)
C. halleriana Asso – H caesp; Euri-Medit; L(1622)
C. hirta L. – G rhiz; Europ-Caucas; L(1349)
C. hostiana DC. – H caesp; Europ; B(X303)
C. liparocarpos Gaudin subsp. *liparocarpos* – G rhiz; SE Europ; A(420, 610), C(347), D(84, 763), E(936), J(1599), L(1269, 1350, 1909)
C. punctata Gaudin – H caesp; Euri-Medit-Subatl; F(X300)
C. serotina Mérat – H caesp; Eurasian; F(2061)
Eleocharis palustris (L.) Roem. & Schult. – Hyd gramin/G rhiz; Subcosmop.; H(X296)
E. quinqueflora (Hartm.) O. Schwarz – Hyd gramin/G rhiz; Circumbor; F(2060)
E. uniglumis (Link) Schult. – Hyd gramin/G rhiz; Subcosmop.; F(2078)
Scirpus holoschoenus L. – Hyd gramin/G rhiz; Medit-Atl; J(1101), L(1390, 1415)
S. lacustris L. – Hyd gramin/G rhiz; Subcosmop.; F(2077)
S. litoralis Schrad. – Hyd gramin/G rhiz; Paleosubtrop; H(2129)
S. maritimus L. – Hyd gramin/G rhiz; Cosmop.; G(2087), O(2156, 2157)

Gramineae
Achnatherum bromoides P. Beauv. – H caesp; Steno-Medit; J(957, 1570)
Aegilops neglecta Req. – T scap; Medit-Turan; J(1168)

A. triuncialis L. – T scap; Euri-Medit; B(718), D(252), J(1982), L(1897)
Agrostis capillaris L. – H caesp; Circumbor; F(2055, 2056, 2057, 2064)
A. stolonifera L. – Hyd gramin/H rept; Circumbor; F(2034)
Anthoxanthum ovatum Lag. – T scap; Steno-Medit; C(X341)
Apera spica-venti (L.) P. Beauv. – T scap; Eurosib; B(981), N(2025)
Arrhenatherum palaestinum Boiss. – H caesp; E Medit; B(716), D(60, 262, 276, 820), E(683), J(1126)
Avena barbata Link subsp. *barbata* – T scap; Euri-Medit-Turan; B(480), C(990), E(697), J(1407), L(1432)
A. fatua L. – T scap; Eurasian; B(469), E(375)
Brachypodium distachyon (L.) P. Beauv. – T scap; Steno-Medit-Turan; C(546), E(696)
B. pinnatum (L.) P. Beauv. – H caesp; Eurasian; L(1908)
B. sylvaticum (Huds.) P. Beauv. subsp. *sylvaticum* – H caesp; Eurasian-S Medit; J(1696, 2001)
Bromus benekenii (Lange) Trimen – H caesp; Paleotemp; C(315, 477), E(391, 436), J(1036)
B. diandrus Roth – T scap; Euri-Medit; E(1726), J(2003)
(**E**) *B. erectus* Huds. subsp. *transsilvanicus* (Steud.) Asch. & Graebn. – H caesp; SE Europ; C(165, 314), D(58, 59)
B. fasciculatus C. Presl – T scap; S Medit; L(973)
B. intermedius Guss. – T scap; Euri-Medit; B(470, 715), C(194, 209), D(808), E(1750)
B. ramosus Huds. – H caesp; Eurasian; B(704), D(253, 300, 865), F(2048), J(1944)
B. rubens L. – T scap; S Medit-Turan; J(1019), L(1326)
B. scoparius L. – T scap; Steno-Medit; L(1840), O(1988)
B. squarrosus L. – T scap; Paleotemp; B(714), C(308), D(270, 901)
B. sterilis L. – T scap; Euri-Medit-Turan; L(1381)
B. tectorum L. – T scap; Paleotemp; B(710), C(163), D(249), J(1024), L(1877)
Calamagrostis epigejos (L.) Roth – H caesp; Eurosib; L(1842)
Catapodium rigidum (L.) C.E. Hubb. – T scap; Euri-Medit; D(272, 787), E(695, 1747), J(2012)
Chrysopogon gryllus (L.) Trin. – H caesp; S Europ-Subsiber; D(125, 254)
Cleistogenes serotina (L.) Keng subsp. *serotina* – H caesp; N Medit-Subsiber; E(425, 426)
Cynodon dactylon (L.) Pers. – G rhiz/H rept; Termo-Cosmop.; B(982)
Cynosurus echinatus L. – T scap; Euri-Medit; J(1160, 1225), K(1509, 1533, 1566), L(1380)
Dactylis glomerata L. – H caesp; Paleotemp; L(1829), J(2008)
Dasypyrum villosum (L.) P. Candargy – T scap; Euri-Medit-Turan; B(713), C(178, 307), D(263), E(440), J(1152)
Dichanthium ischaemum (L.) Roberty – H caesp; Termo-Cosmop.; C(313)
Echinaria capitata (L.) Desf. – T scap; Steno-Medit; B(730), D(766), E(581)
Echinochloa crus-galli (L.) P. Beauv. – T scap; Subcosmop.; O(1994, 2158, 2159)
Elymus elongatus (Host) Runemark subsp. *elongatus* – H caesp; Euri-Medit; C(1741), E(940), H(2127), L(1768)
E. repens (L.) Gould – G rhiz; Circumbor; F(X310)
Eragrostis minor Host – T scap; Subcosmop.; C(988), L(1890)
(**E**) *Festuca hirtovaginata* (Acht.) Markgr.-Dann. – H caesp; C & S Balkan; L(1392)
F. jeanpertii (St.-Yves) Markgr. – H caesp; NE Medit-Mont; D(298, 778, 825), J(1960), K(1543)
F. valesiaca Schleich. – H caesp; SE Europ-Subsiber; C(168, 305), D(69, 769), E(578, 686)
Helictotrichon convolutum (C. Presl) Henrard – H caesp; Orof. NE Medit; J(1612, 1978), L(1777)
Hordeum murinum L. – T scap; Circumbor; J(1121)
Koeleria cristata (L.) Pers. – H caesp; Circumbor; B(709), C(330, 335), D(260, 264, 299, 858, 877, 906), E(437), F(2035, 2072), G(2091), J(1697, 1698, 1700), L(1329, 1409)
Lolium rigidum Gaudin subsp. *rigidum* – T scap; Paleosubtrop; J(1125, 1182, 1210, 1695)
L. temulentum L. – T scap; Subcosmop.; O(1989)
Melica ciliata L. subsp. *ciliata* – H caesp; Euri-Medit-Turan; D(259, 908), L(1471)
M. transsilvanica Schur – H caesp; SE Europ-Subsiber; E(946)
M. uniflora Retz. – H caesp; Paleotemp; J(1251)
Milium effusum L. – G rhiz; Circumbor; J(965), L(1492)
Paspalum paspalodes (Michx.) Scribn. – Hyd gramin/G rhiz; Neotropic; I(2125)
Phalaris arundinacea L. – Hyd gramin; Circumbor; F(2063), G(2109)

Phleum graecum Boiss. & Heldr. – T scap; E Steno-medit; C(336), G(2083), J(1158, 1159), L(1860, 1887)
Ph. phleoides (L.) H. Karst. – H caesp; Eurosib; B(479), J(1725), L(1378)
**Phragmites australis* (Cav.) Steud. – Hyd gramin/G rhiz; Cosmop.; (obs.) F, G, H, I, M, O
Piptatherum holciforme (M. Bieb.) Roem. & Schult. – H caesp; SE Europ; L(1643)
P. miliaceum (L.) Coss. – H caesp; Steno-Medit-Turan; J(1723, 1731), L(1839, 1850, 1853, 1885)
Poa bulbosa L. – H caesp; Paleotemp; A(37, 602, 626), B(478, 759), C(312), D(292, 862), E(577), J(1115)
P. compressa L. – H caesp; Circumbor; J(1256, 1685)
P. timoleontis Heldr. – H caesp; Balkan; E(935), J(1939), L(1910)
Polypogon monspeliensis (L.) Desf. – T scap; Paleo-subtrop; L(1882), N(2026)
Psilurus incurvus (Gouan) Schinz & Thell. – T scap; Euri-Medit; E(675)
Rostraria cristata (L.) Tzvelev – T scap; Paleotemp; B(729), J(1964)
(**E**) *Sesleria rigida* Heuff. – H caesp; Orof. Rm, N & C part of Balkan; E(934), J(1925), L(1642)
Setaria viridis (L.) P. Beauv. – T scap; Subcosmop.; K(1579, 1580)
Stipa capillata L. – H caesp; Eurasian Temp.; A(414), B(836), C(302, 303), D(824, 847, 853, 869), E(370, 439, 933, 1740), F(2052), L(1405, 1406, 1766)
S. joannis Čelak. – H caesp; S Europ-Subsiber; C(167)
(**E**) *S. cf. endotricha* Martinovský – H caesp; C & S Greece; A(644, 648), D(82, 823, 870), E(596, 663, 1756), J(1010, 1077, 1091, 1669)
Tragus racemosus (L.) All. – T scap; Termo-Cosmop.; C(989)
Ventenata macra (M. Bieb.) Boiss. – T scap; Krym, once recorded from S Greece; B(839, 879)
Vulpia ciliata Dumort. – T caesp; Euri-Medit; B(734), D(771), E(678), J(1012), L(1888)

Hydrocharitaceae
**Vallisneria spiralis* L. – Hyd vall; Cosmop.; M(2152), N(2148), O(1907)

Iridaceae
Crocus cancellatus Herb. subsp. *mazziaricus* (Herb.) B.Mathew – G bulb; C & S Balkan; J(993)
(**E**) *Iris reichenbachii* Heuff. – G rhiz; Balkan; A(44), E(590), L(1648, 1649)

Juncaceae
Juncus articulatus L. – Hyd gramin/G rhiz; Circumbor; F(2058, 2068, 2069), G(2097)
J. bufonius L. – Hyd gramin/T caesp; Cosmop.; G(2098)
J. compressus Jacq. – G rhiz; Eurasian; O(X318)
J. effusus L. – H caesp (G rhiz); Cosmop.; G(2086)
J. gerardi Loisel. – Hyd gramin/G rhiz; Circumbor; F(2070)
J. inflexus L. – H caesp (G rhiz); Paleotemp; O(X319)

Lemnaceae
Lemna minor L. – Hyd lemn; Subcosmop.; H(2137), M(2168), O(1986)
L. trisulca L. – Hyd lemn; Cosmop.; G(2119)

Liliaceae
Allium cupani Raf. subsp. *hirtovaginatum* (Kunth) Stearn – G bulb; Medit; J(1966), L(1820)
(**E**) *A. macedonicum* Zahar. – G bulb; NC & NE Greece; D(834), E(452)
A. moschatum L. – G bulb; S Europ; A(408)
A. paniculatum L. – G bulb; Paleotemp; L(1776)
A. sphaerocephalon subsp. *arvense* (Guss.) Arcang. – G bulb; Paleotemp; C(344), E(943), J(2032)
A. sphaerocephalon L. subsp. *spaerocephalon* – G bulb; Eurosib; L(1421, 1765)
A. stamineum Boiss. – G bulb; E Medit; C(343, 345), E(927), J(1970), L(1797)
Anthericum liliago L. – G bulb; Submedit-Subatl; D(103, 832)
Asparagus acutifolius L. – G rhiz/NP; Steno-Medit; A(10), J(1920), L(1265, 1397)
A. officinalis L. – G rhiz; Euri-Medit; D(141), J(1116)
Asphodeline liburnica (Scop.) Rchb. – G rhiz; NE Medit; J(X204), L(X203)
A. lutea (L.) Rchb. – G rhiz; E Medit; A(643), L(1434, 1663)
Colchicum hungaricum Janka – G bulb; SE Europ; A(6), B(510)
Gagea arvensis (Pers.) Dumort. – G bulb; Eurasian; A(3)
Muscari neglectum Guss. – G bulb; Euri-Medit; A(42, 637), C(539), E(584), J(1595)
Ornithogalum divergens Boreau – G bulb; Euri-Medit; D(196, 899), E(650), J(1154, 1212)
Ruscus aculeatus L. – G rhiz/Ch frut; Euri-Medit; J(1195, 1686), L(1275)
Scilla autumnalis L. – G bulb; Euri-Medit; A(402), E(460)

Najadaceae
**Najas marina* L. – Hyd parvopot; Cosmop.; F(2081), M(2149), N(2147)

Orchidaceae

Anacamptis pyramidalis (L.) Rich. – G bulb; Euri-Medit; J(1219)

Ophrys cornuta Steven – G bulb; SE Europ; J(1712, 1927)

O. mammosa Desf. – G bulb; SE Europ; J(1594), L(1806)

Potamogetonaceae

**Potamogeton pectinatus* L. – Hyd parvopot; Subcosmop.; F(2079), G(2110, 2112), N(2143, 2144)

**P. perfoliatus* L. – Hyd magnopot; Subcosmop.; F(2080, 2082), H(2132), N(2145, 2146), O(1512, 1830, 1906, 1984, 2155)

P. pusillus L. – Hyd parvopot; Subcosmop.; M(2150), O(1905)

Sparganiaceae

**Sparganium erectum* L. – Hyd gramin; Eurasian; G(2108)

Typhaceae

Typha angustifolia L. – Hyd gramin/G rhiz; Circumbor; F(X270), I(2117)

Zannichelliaceae

Zannichellia palustris L. – Hyd parvopot; Cosmop.; G(2114)

Richness of taxa

Temperate grasslands are considered the most species-rich communities in the world (Korneck & al. 1998; Van Swaay 2002; WallisDe Vries & al. 2002). The flora of the study area consists of 664 taxa, the majority of which grow in calcareous grasslands at the hills around the lakes. The taxa recorded in the study area belong to 92 families, 355 genera, 558 species, 101 subspecies and five varieties. Three taxa are phycophytes, another three are bryophytes, four are pteridophytes, and 654 are spermatophytes. The Gymnosperms constitute 0.3 %, the Monocotyledones 19.6 % and Dicotyledones 78.6 % of the total flora (Table 3).

Table 3. Floristic composition of the study area.

Systematic unit	Families	Genera	Species	Subsp.	Var.	Total no. of taxa	Percentage (%)
Phycophyta	2	2	1	–	2	3	0.45
Bryophyta	3	3	3	–	–	3	0.45
Pteridophyta	3	3	4	–	–	4	0.6
Gymnospermae	2	2	2	–	–	2	0.3
Monocotyledonae	16	72	117	13	–	130	19.6
Dycotyledonae	66	273	431	88	3	522	78.6
Total	**92**	**355**	**558**	**101**	**5**	**664**	**100.0**

The ten richest families (10.9 % of the total number of recorded families) in the study area are presented in Table 4. Eight families are dicotyledonous and two are monocotyledonous. These ten families comprise together 415 taxa, which constitute 62.5 % of the total flora.

Regarding the three richest families (*Compositae, Graminae* and *Leguminosae*), our results support the conclusions of earlier floristic studies made in insular and continental Greece (e.g. Karagiannakidou & al. 1995; Brofas & al. 2001; Vlachos & al. 2002; Panitsa & al. 2004), according to which the above-mentioned families are among the most species-rich in the Greek flora.

Life form analysis

In the life form spectrum of the flora of the study area, hemicryptophytes predominate with 39.4 %, followed by therophytes (32.5 %). The proportion of the other life forms are: chamaephytes 7.7 %, geophytes 6.1 %, phanerophytes 7.7 %, and hydrophytes 6.6 % (Table 5).

In terms of the life form spectrum, our results well reflect the bioclimate of the study area. Furthermore, in grass heaths on more or less dry sunny slopes, such as the hills around the lakes, the dominant life form is the slow-growing hemicryptophytes (Ellenberg 1988). Consequences of disturbances caused mainly by human activities (e.g. agriculture, over-grazing) are also evident in the life form spectrum of the flora. Dominance of hemicryptophytes may be attributted to the harsh winters that characterize the bioclimate of the area, while the relatively high percentage of therophytes may be a result of the semi-arid bioclimate and the intensive human acitivities in the area. Invasion of

Table 4. The ten richest in taxa families in the flora of the study area.

No.	Families	No. of taxa
1.	*Compositae*	86
2.	*Gramineae*	71
3.	*Leguminosae*	63
4.	*Labiatae*	49
5.	*Cruciferae*	37
6.	*Caryophyllaceae*	34
7.	*Rosaceae*	19
8.	*Scrophulariaceae*	19
9.	*Umbelliferae*	19
10.	*Liliaceae*	18
	Total number of taxa	**415**

therophytes across the Mediterranean ecosystems (regardless of the altitude or ecosystem type) has been regarded by Barbero & al. (1990) as an indication of hyperdegradation caused mainly by overgrazing. Furthermore, the base-rich dry habitats of the submontane areas abound in early-flowering therophytes (mostly winter annuals such as *Alyssum alyssoides, Arenaria serpyllifolia, Medicago minima, Hornungia petraea)* (Frey 1934).

Table 5. Life form analysis of the vascular flora.

Life forms	No. of taxa	Percentage (%)
Therophytes (T)	214	32.5
T scap: scapose t.	204	
T caesp: caespitose t.	1	
T ros: rosulate t.	1	
T rept: reptant t.	6	
T par: parasite t.	2	
Hemicryptophytes (H)	259	39.4
H bienn: biennial h.	38	
H scap: scapose h.	143	
H caesp: caespitose h.	55	
H ros: rosulate h.	21	
H rept: reptant h.	2	
Chamaephytes (Ch)	51	7.7
Ch frut: fruticose ch.	4	
Ch rept: reptant ch.	2	
Ch succ: succulent ch.	4	
Ch suffr: suffruticose ch.	41	
Geophytes (G)	40	6.1
G bulb: bulbose g.	20	
G rad: radicigemmate g.	2	
G rhiz: rhizomatose g.	18	
Phanerophytes (P)	51	7.7
NP: Nano-p.	11	
P scap: scapose p.	10	
P caesp: caespitose p.	25	
P ep: epifite p.	1	
P lian: lianose p.	4	
Hydrophytes	43	6.6
Hyd herb: herbaceous	11	
Hyd gramin: graminids	17	
Hyd lemn: lemnids	3	
Hyd magnopot: magnopotamids	1	
Hyd myrioph: myriophyllids	2	
Hyd parvopot: parvopotamids	4	
Hyd sagitt: sagittariids	2	
Hyd utr: utriculariids	1	
Hyd vall: vallisneriids	1	
Hyd natopot: natopotamids	1	
Total	**658**	**100.0**

Chorological analysis

Seven different types were distinguished in the chorological spectrum (Table 6). This spectrum reveals clearly dominance of the Mediterranean species, which comprise 222 taxa (33.4 % of the total flora). Eurasian species present the next highest percentage (177 taxa, 26.7 %), while the proportion of Balkan and Multizonal elements (75 taxa, 11.3 % and 87 taxa, 13.1 %, respectively) is remarkably high. European (7.2 %) and Circumboreal (6.8 %) chorological types occur with smaller percentages, and Atlantic species comprise a minor component of the spectrum (less than 2 %).

The percentage of endemic species in the study area is rather high (79 taxa, 11.9 % of the total flora) and emphasizes its floristic and phytogeographical significance. Out of the 79 taxa, 42 are endemic to the Balkan Peninsula, 16 to the Mediterranean region, seven to Greece, and the remaining 14 to different regions (see Tables 7 and 8).

Comments on the flora

In the present floristic inventory two taxa, namely *Tragopogon petrodes* (Bulgaria, Jugoslavia), and *Chaerophyllum coloratum* (Albania, W Jugoslavia), are reported for the first time for Greece. Moreover, *Alyssum sibiricum* is a rare species in Greece.

The following five taxa are reported for the first time for NC Greece: *Linaria hellenica* (known only from SE Lakonia), *Petrorhagia cretica* (collected twice in Greece from Sterea Ellas & Southern Pindos), *Silene chlorifolia* (known only from two localities on ophiolithic rocks, or screes in Northern Pindos and the East Aegean Islands), *Consolida hellespontica* (known from scattered localities in other parts of the Greek mainland), and *Ventenata macra* (once recorded from S Greece).

The results of this study show a remarkably high plant diversity in the Natura 2000 Greek site Limnes Vegoritida – Petron. Taking into account the fact that the study area is geologically uniform, its high floristic diversity may be attributed to its geographical position, the microclimatic differentiation and the disturbances of moderate intensity. The high portion of endemic species indicates the importance of the study area in terms of nature conservation. However, it should be noted that an important part of the site suffers from intense human interference (overgrazing, fires, alteration of land use for cultivation), which threatens the local floristic diversity.

Table 6. Chorological analysis of the flora.

Chorological unit	Chorological types	No. of taxa	Percentage (%)
Balkan	Balkan(C-,W-,S-,SW-,W&C-,S&W-, S&E-, S&SW-,NC&NE-,C&S-,C&E-, C&N-); Balkan (Tu, An); Balkan-Italy(C-, SW-); Greece(N & C-,NC& NE); Orof. Rm, Greece & S Albania	75	11.3
Mediter-ranean	Medit(N-,E-,S-,NE-,NW-,SW-); Steno-Medit(E-,W-,NE-); Euri-Medit(N-); Medit-Mont(E-,N-,NE-); Euri-Medit-S-Siber; Euri-Medit-Nordorient; Euri-Medit-Orient; Centro-Medit; Medit-Balkan; Medit-C Europ; Orof. Medit; Orof. NE Medit; Submedit	222	33.4
European	Europ(S-,E-,SE-,S&SC-,C&S-, C&SE-); Alp.-C & S Europ; Centro-Europ-W Asian; EC Europ and Balkan; Orof. Centro-S Europ; Orof. S-,SE Europ	48	7.2
Eurasian	Eurasian; Eurasian-Temp; Eurasian-NW Africa; Eurasian-S Medit; Pont.; Pont.-Centroeurop; Medit-Pont(E-NE-); Euri-Medit-Pont.; Euri-Medit-S Siber; Euri-Medit-W Asian; Euri-N Medit-Pont.; Europ-Caucas; Europ-CentroAsian; Europ-Centrosib; Europ-NW Africa-Temp. Asia; Europ-Siberian; Europ-Subsiber; Europ-W Asian; Greece & Anatolia; Krym, once recorded from S Greece; Medit-Caucas; Medit-CentroAsian; Medit-Pont.; Medit-Sudsiber; Medit-SW & C Asia; N Medit-Subsiber; Orof. Eurasian; Orof. S Europ-Caucas; Orof. S Europ-W Asian; S Europ.-Turan; S Europ-Caucas; S Europ-Pont.; S Europ-Subsiber; SE Europ-Caucas; SE Europ-Pont.; SE Europ-Subsiber; SE Europ-W Asian; SE Medit-Caucas; Serbia to Iran; Steno-Medit-SW Asian; Subsiber; Subsiber-Euri-Medit; Subsiber-N Medit; Sudeurop-Centro Asian; W Asian; W Asian-Pont.; Balkan-Pont.; Balkan & NW Anatolia; Balkan-W Anatolia; C Asian; C Eurasian; CentroAsian; Centro-Europ-Pont; S.-Temp; W-Paleotemp; Submedit-Pont.	177	26.7
Circumboreal	Circumbor; Eurosib; Temp(S-)	45	6.8
Atlantic	Euri-Medit-Subatl; Medit-Atl; Submedit-Subatl; (Steno-) Medit-Atl	10	1.5
Multizonal	Cosmop.; Medit-Turan(E-,S-,NE-); Euri-Medit-Turan; Steno-Medit-Turan; S Europ-Turan; Irano-Turanian; Cultivated; Naturalised; Neotropic; Nordamer.; Paleosubtrop.; Subcosmop.; Subcosmop.-Temp.; Sudamer.; Termo-Cosmop.	87	13.1
Total		**664**	**100**

Table 7. Categories of endemic taxa in the study area.

Endemics	No. of taxa
Balkan	42
Mediterranean	16
Balkan-Anatolian, Balkan-Italian, Balkan-Romanian, Greek-Albanian, Greek-Anatolian	8
Greek	7
European	4
European-South Siberian	1
Eurasian	1
Total	**79**

Table 8. Greek endemic taxa.

Alkanna graeca Boiss. & Spruner. subsp. *graeca*
Allium macedonicum Zahar.
Centaurea psilacantha Boiss. & Heldr.
Goniolimon heldreichii Halácsy
Linaria hellenica Turrill
Scutellaria rupestris Boiss & Heldr. subsp. *parnassica* (Boiss.) Greuter & Burdet
Stipa cf. endotricha Martinovský

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