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Plant Biodiversity of Wetland Habitats in Dry Steppes of Central Alborz Mts., N. Iran

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Abstract: The dry southern slopes of Alborz Mountains include 'green islands' of wetland. These wetland habitats distribute from 1486 to 3730 m a.s.l. A checklist of all plants collected in the current study (45 wetland sites) and other previous studies (8 wetland sites) is presented. There are 323 vascular plant taxa, in 159 genera and 51 families. The largest families are Asteraceae (13%), Poaceae (12.1%), and Cyperaceae (8.4%). Genera represented by the greatest number of species are *Veronica*, *Carex*, *Taraxacum* and *Cirsium*. Moreover, 23 bryophytes were also determined in the wetland sites. From the chorological point of view, the largest proportion of the flora belongs to the pluriregional elements (ca. 30%). Almost seven percent of plants are endemic or subendemics. Classification based on life form indicates that the hemicryptophytes comprise the largest proportion of the plants in the study area. The main habitats in the area include wet meadows, open water areas, streams or rivulets. Frequencies calculations indicated that 226 collected plant taxa (ca. 70%) occur in lower than 10% of wetland sites. *Mentha longifolia, Juncus inflexus, Carex orbicularis* and *Juncus articulatus* have the highest frequency percentage across the sites respectively.

Key words: Alborz Mts., Chorotype, Flora, Iran, Life-form, Wetland.

INTRODUCTION

The Alborz Mountains range, the second largest mountain range in Iran, form a gently sinuous east–west range across northern Iran, south of the Caspian Sea. Steppic plant communities associated with the dry climate on the south-facing slopes of the Alborz Mountains (e.g. Klein, 2001) are much different from the forest vegetation associated with the wet climate of the north-facing aspects (e.g. Zohary, 1973; Frey & Probst, 1986). There is a large number of green island-like wetlands within this dry steppe of southern slopes. Despite the many general floristic and vegetation studies of the Alborz ranges (e.g. Gilli, 1939; Zohary, 1973; Klein, 2001; Attar, 1992; Nazarian *et al.,* 2004; Noroozi, 2005; Mahdavi, 2007), and more recent work focussing on wetland habitats (Klein and Lacoste, 1995), floristic diversity in the mountain wetland sites are little known. Nevertheless, many aquatic freshwater wetlands have been floristically studied in both Hyrcanian and Irano-Turanian areas (e.g. Karami *et al.,* 2001; Asri and Eftekhari, 2002; Ghahreman and Attar, 2003; Ejtehadi *et al.,* 2003; Shokri *et al.,* 2004; Ghahreman *et al.,* 2004; Akhani, 2005; Naqinezhad *et al.,* 2006, Asri *et al.*, 2007).

The present authors (Naqinezhad *et al.*, 2009) had surveyed the variation of floristic data across altitudinal gradient using ordination and statistic methods. The current study provides a floristic checklist for all wetland sites and their life forms and chorotypes investigated by present authors and by Gilli (1939) and Klein and Lacoste (1995). The findings should provide insights into: (1) a checklist of all vascular plants and bryophytes found in the wetland sites, (2) spectrum of life form and phytogeographic data across the whole wetland sites together with detailed information about the habitats, life form and chorology for each species and (3) a comparison between the results of Alborz wetlands and other mountainous wetlands.

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MATERIALS AND METHODS

Study Area:

The study area selected corresponds to a west–east belt transect across the southern part of the Central Alborz Mountains, located between 51º05′ and 52º59′ E and between 35º40′ and 36º10′ N (Fig. 1). This sector, which is nearly 55 km long and 45 km wide, separates Mazandaran province to the north from the Tehran province to the south and rises on Mount Damavand to 5756 m high. The area lies between two main roads, the Karaj-Chalus road in the west and the Firuzkuh road in the east that crosses the Alborz Mountains and leads towards the Caspian Sea.

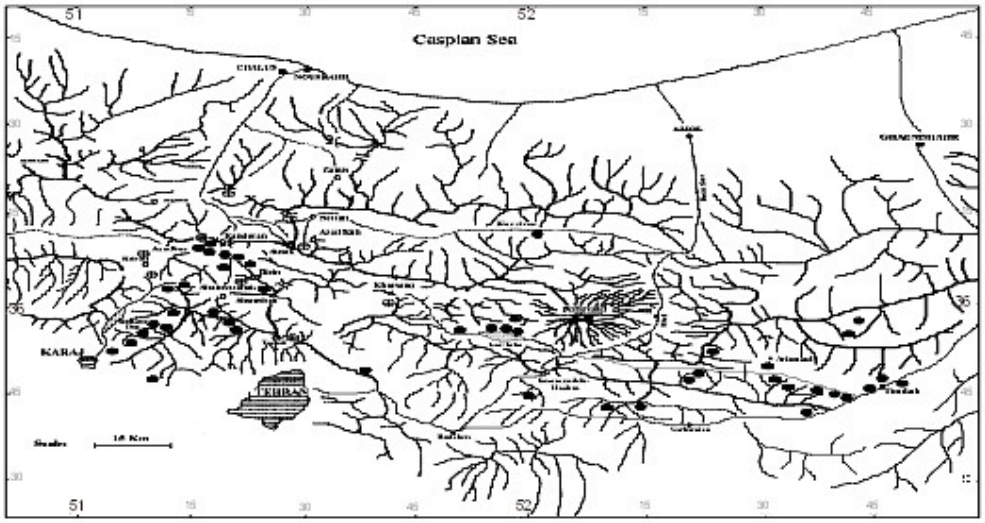

Fig. 1: Location of the studied wetland sites (●) in the Alborz Mts. (+ = the position of Klein's wetland sites (Klein & Lacoste, 1995), X = the position of Gilli (1939)'s wetland sites).

Eocene volcanic and volcaniclastic rocks form the most prominent geological feature of the southern section of the Alborz Mountains. However, in northern section of the Alborz, Midlle Jurassic to Upper Cretaceous limestone formations become much more important and form some very high rock cliffs along the East-West directed thrust fault zones (Stöcklin, 1974). Within the southern foothills of Alborz, the Mio-Pliocene Upper Red Formation and Plio-Pleistocene Conglomerates are the dominant geological features.

The precipitation amounts and the length of the drought period vary across the region. Stations located at lower altitudes have a more extended period of drought, rather lower precipitation and higher mean annual temperatures than is found at higher stations. All these values decrease with altitude.

Data Collection:

Forty four wetland study sites on the southern slopes and one site on the northern slopes of the Central Alborz Mountains were selected from the study area (Fig. 1) and sampled within the period 2005-6. In addition, to include all places with previously studied relevés, eight sites studied by Klein and Lacoste (1995) and one study site by Gilli (1939) were included in this study (Fig. 1). Study sites were situated between 1486 up to 3730 m a.s.l. and varied in area from 16 m^2 to more than 10 ha. The vascular and bryophyte flora of all wetland sites were recorded in 566 relevés across the sites. To provide a taxonomic record, all specimens collected were incorporated into the TUH and TARI herbariums after identification using Flora Iranica (Rechinger, 1963–2005), Flora of Turkey (Davis, 1965–1985) and Flora of Iran (Assadi *et al.* 1988–2003). Moss species were determined according to Smith (2004) and Akhani and Kürschner (2004). The Raunkiaer life-forms were used (Raunkiaer 1934). The geographical distribution of each species was extracted from Flora Iranica (Rechinger 1963-2005). The terminology and delimitation of the main phytogeographic areas relates to standard reference works (Zohary 1973, Takhtajan 1986). Frequency data are presented in two separate columns, one related to mean frequency percentage of the occurrence of each plant across the relevés per site (MFP) and another one is related to frequency percentage of each plant per total sites (FP).

RESULTS AND DISCUSSION

A total of 323 vascular plants and 23 bryophytes and one macroscopic alga (totally 347 plant taxa) were recorded across all wetland sites studied in the current project and the previous investigations (Appendix 1). Ninety-five plant taxa collected by Klein and Gilli were evaluated. Of these plant taxa, 16 plant taxa (13 vascular plants and 3 bryophytes) were different from wetland flora in our study. The vascular flora of the wetlands includes species from 159 genera and 51 families. Five Pteridophytes (from three families) were recorded and 318 spermatophytes of which 108 taxa (from 13 families and 50 genera) are monocotyledons and 210 taxa (from 34 families and 105 genera) are dicotyledons. The best-represented families were Asteraceae (42 taxa, 13.0 %), Poaceae (39 taxa, 12.0 %), Cyperaceae (27 taxa, 8.3%), Scrophulariaceae (23 taxa, 7.1%) and Papilionaceae (22 taxa, 6.8 %). The families with most taxa recorded in the studied sites are also among the richest families of Iran (Rechinger 1963–2005; Ghahreman & Attar 1999). The genera with the greatest number of taxa were *Veronica* (13), *Carex* (12), *Taraxacum* (11), *Cirsium* (9). The occurrence of 347 plant taxa indicates that despite the relatively small area of wetlands, they are extremely important contributors to species-richness within the dry steppic southern slopes of the Alborz Mountains. In the assessment of life form spectrum, the dominant life forms are hemicryptophytes, which constitute 34% (110 taxa) of studied flora, followed by the rhizomatous geophytes (27.2%) (Fig. 2).

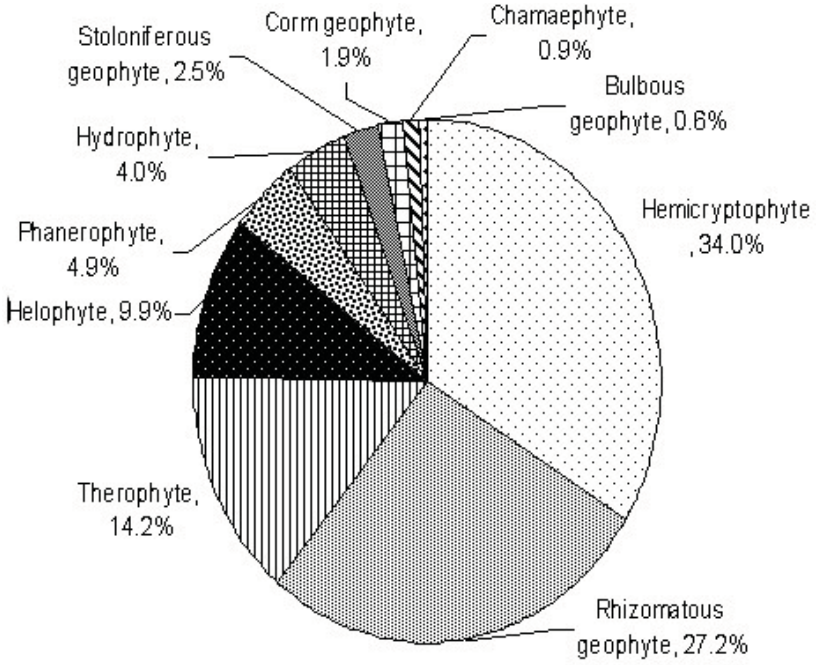

Fig. 2: Life form spectrum across the wetland study sites.

From 323 vascular plant taxa, 128 taxa (39.5%) grow only in one wetland site. Likewise, 46 plant taxa grow only in two wetland sites. Totally, 226 plant taxa (ca. 70%) occur within lower than 10 percent of wetland sites. Our results indicate that *Mentha longifolia* occur in 83 percent of total wetland sites and considered as the most frequent plant in our database. Moreover, *Primula auriculata, Dactylorrhiza umbrosa, Poa pratensis, Agrostis stolonifera, Blysmus compressus, Juncus articulatus, Carex orbicularis, Juncus inflexus* and *Mentha longifolia* present in more than 50% of studied sites. These plants are considered to be indicators of many plant communities in wetland vegetation here (Naqinezhad, unpublished data) and in other geographical areas (e.g. Vural, 1996; Klein, 2001; Onipchenko, 2002). There is a highly significant positive correlation (Pearson correlation = 0.31; $p<0.001$) between frequency percentage of each plant in total sites and mean frequency percentage of each plant per site. This significant correlation result indicates that the most frequent plants are also frequent in each site and visa versa. Plants such as *Carex distans, Potentilla szovitsii, Ranunculus constantinopolitanus* and *Thymelaea passerine* are found in only one relevé of each site and also found in just one site. They are considered as rare plant.

Table 1: Moss flora of studied wetland sites (* Plants exclusively collected by Klein and Gilli).

Moss species within the families	Moss species within the families
Amblystegiaceae	**Funariaceae**
Hygroamblystegium tenax (Hedw.) Jenn.	*Funaria hygrometrica* Hedw.
Bartramiaceae	**Helodiaceae**
Philonotis calcarea (Bruch & Schimp.) Schimp.*	*Palustriella commutata* (Hedw.) Ochyra
Philontis fontana (Hedw.) Brid.	**Hypnaceae**
Brachytheciaceae	*Calliergonella cuspidata* (Hedw.) Loeske
Brachytecium mildeanum (Schimp.) Schimp.	**Leskeaceae**
Cirriphyllum crassinervium (Taylor) Loeske & Fleisch.	*Pseudoleskiella catenulata* (Schwägr.) Kindb.
Eurhynchium striatum (Hedw.) Schimp.	**Marchantiaceae**
Kindbergia praelonga (Hedw.) Ochyra	*Marchantia polymorpha* L.
Bryaceae	**Orthotrichaceae**
Bryum capillare Hedw.	*Orthotrichum rivulare* Turner
Bryum cirratum (Hedwig) With.*	**Plagiotheciaceae**
Bryum pallens Sw.	*Isopterygiopsis pullchella* (Hedw.) Z. Iwats.
Bryum pseudotriquetrum (Hedw.) Gaertn. et al.*	*Plagiothecium curvifolium* Limpr.
Bryum schleicheri Schwägr.	**Pottiaceae**
Bryum sp.	*Trichostomum brachydontium* Bruch
Campyliaceae	
Hamatocaulis vernicosus (Mitt.) Hedenäs	

Table 2: Chorotypes spectrum across all wetland sites in C Alborz Mts. (abbreviations according to Appendix 1.).

Chorotypes	Frequency	Percentage
Pl	93	29.8
WIT, EH	36	11.5
Eurasia	22	7.1
ES, IT, M	20	6.4
ES, WIT, M	18	5.8
ES, IT	15	4.8
WIT	13	4.2
IT, EH	12	3.8
IT	11	3.5
EIT	10	3.2
ES, WIT	7	2.2
WIT, M, EH	7	2.2
WIT, M	7	2.2
IT, M, EH	4	1.3
IT, M	4	1.3
EIT, EH	4	1.3
ES, EIT, M	2	0.6
ES, EIT	1	0.3
ES, M	1	0.3
ES (EH)	1	0.3
Em (Alborz)	7	2.2
Em (Iran)	8	2.6
SEm (Iran, Iraq)	4	1.3
SEm (Iran, Turco.)	2	0.6
SEm (Iran ,Talish)	2	0.6
SEm (Iran and Afgh.)	1	0.3

The floristic analysis of the vegetation from a life form point of view is widely used as a criterion for describing it (Raunkiaer, 1934). The occurrence of high proportions of hemicryptophytes and geophytes in studied sites is typical of a cold mountainous climate (Klimeš, 2003). Although the proportion of geophytes recorded in subalpine or alpine steppe areas in Alborz Mts. is lower than 10% (Noroozi *et al.,* 2008), the occurrence of a relatively high proportion of geophytes in the studied wetlands reflects the long period of wetness in wetland sites during the growing season and the frequent covering by snow (cf. Danin and Orshan, 1990). However, geophytes can occur in many habitats (Esler *et al.,* 1999; Proches *et al.,* 2006). Therophytes have highest proportions after geophytes and hemicryptophytes proportions. This can be partly explained by the occurrence of intermittent seepages around the most studied sites suffering from drought period during the summer. This seasonality of water supply can support the occurrence of annual plants, which are more resistant to summer drought than the other life forms (Danin and Orshan, 1990; Floret *et al.,* 1990; Archibald, 1995). These parts of wetland ecosystems mostly occur at the margins where the effects of grazing and other destructive pressures provide habitats suitable for the presence of many ruderal annual plants (Grime, 2001). Chorotypes of all plants are shown in detail in Table 2. Pluriregional elements are constituted well in wetland sites, in contrast to steppes surrounding these wetlands mainly dominated by Irano-Turanian elements (e.g. Zohary, 1973; Klein, 1991, 2001; Noroozi *et al.,* 2008). Of total endemic and subendemic taxa, 15 taxa are restricted in Iran of which seven taxa are narrowly occurring in the Alborz Mts.

The main body of the wetland sites can be classified into stagnant open water areas (SOW), wet meadow habitats (WM) and streams and rivulets originated from mountain springs (ST). Some plants are considered as emergent in open water (EM). The peripheral parts of wet meadows are normally drier (DWM) and possess plants which are considered as intermediates between wetland habitats and surrounding steppes. Majority of wetland plants grow on wet meadow habitats.

Conservation Note:

The occurrence of interesting wetland sites in dry or semidry environments of Alborz Mts., create a new issue of conservation on such dry habitats. Although a great number of these wetland sites are very far from the human settlements and their agricultural activities, they are still under the threat of damage and destruction by making of reservoirs, abstraction of groundwater for drinking water supply and intensive grazing by sheep. Some other wetland sites are also under the drainage of agricultural land and other aspects of agricultural intensification such as high fertilization which have a marked negative effect on the amount and composition of water in wetland areas. Conservational issues must be seriously considered especially for sites and species in the upper and middle altitudinal belts.

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Appendix 1: Floristic list of Alborz wetland sites.

Symbols and abbreviations used in the table:

1. Life form: CH (chamaephyte)**,** GR (rhizomatous geophyte), GS (stoloniferous geophyte), GB (bulbous geophyte), GC (geophyte with corm), HL (helophyte), HM (hemicryptophyte), HD (hydrophyte), PH (phanerophyte), TH (therophyte); **2. Chorotype:** ES (Euro-Sibirian), EH (Euxino-Hyrcanian), IT (Irano-

Turanian), M (Mediterranean), PL (pluriregional), Afgh. = Afghanistan, Turco. = Turcomanistan, Em (endemics), SEm (subendemics). **3. Habitat:** DWM (dry parts of a wet meadow), Em (emergent plant around stagnant open water areas), SOW (stagnant open water as submerged or floating), ST (within stream or small rivulets originated from springs), WM (wet meadow). * Plants exclusively collected by Klein and Gilli (Gilli, 1939; Klein and Lacoste, 1995). (1,2): Naqinezhad *et al.* (2008a); (3): Naqinezhad *et al.* (2008 b). MFP = mean frequency percentage of each plant in each site; FP = frequency percentage of each plant in total sites; TUH = Tehran University Herbarium.

Species	Life form	Chorotype	Habitat	MFP	FP	TUH
Alliaceae						
Allium schoenoprasum L.	GB	Pl	WM	35.9	5.7	36067
Allium sp.	GB		WM	14.9	5.7	36776
Apiaceae						
Anthriscus nemorosus (M.B.) Spreng.	HM	ES, IT, M	WM, ST	5.2	3.8	36059
Berula angustifolia (L.)						
Mertens & W.D. Koch	HL	Pl	ST	22.7	20.8	36088
Carum carvi L.	HM	ES, IT	WM	16.3	18.9	36058
Heracleum pastinacifolium C. Koch	HL	WIT, EH	ST	20.0	1.9	36779
Heracleum persicum Desf. ex Fischer	HL	WIT	WM	57.4	18.9	36953
Pimpinella affinis Ledeb.	HM	WIT, EH	WM	18.2	13.2	36976
Pimpinella sp.	HM		DWM	50.0	1.9	36777
Sium sisaroideum DC.	HL	ES, WIT	ST, EM	24.4	7.5	36089
Xanthogalum purpurascens Ave-Lall.*	HM	IT, EH	WM	11.1	1.9	
Aspleniaceae						
Cystopteris fragilis (L.) Bernh.	GR	Pl	WM	50.0	1.9	36778
Asteraceae						
Achillea millefolium L.	HM	ES, IT	DWM	20.0	1.9	36780
Arctium sp.	HM		DWM	75.0	3.8	s.n.
Bidens tripartita L.	TH	Pl	DWM	7.7	1.9	36809
Cichorium intybus L.	HM	Pl	DWM	5.9	3.8	36781
Cirsium aff. *glaberrimum* (Petrak) Petrak	HM		ST	17.6	1.9	s.n.
Cirsium arvense (L.) Scop.						
var. *incanum* (S.G.Gmelin) Ledeb.	GR	Pl	WM	31.4	32.1	36784
Cirsium creticum (Lam.) d'Urv.	HM	WIT, M	WM	9.5	1.9	36783
Cirsium glaberrimum (Petrak) Petrak	HL	SEm (Iran, Turco.)	ST	44.2	20.8	36785
Cirsium hygrophilum Boiss.	HL	WIT, EH	ST	52.4	3.8	36782
Cirsium libanoticum DC.*	HM	ES, IT, M	ST	50.0	1.9	
Cirsium obvallatum (M.B.) M.B.	HM	IT (Alborz), EH	ST	43.8	17.0	36786
Cirsium rhizocephalum C.A. Mey.	HM	WIT, EH	WM	31.0	15.1	36787
Cirsium sp.	HM		WM	8.3	45.3	s.n.
Crepis sp.	HM		DWM	18.2	1.9	36789
Erigeron acer L.	HM	Pl	WM	9.1	5.7	36790
Inula britannica L.	HM	Pl	DWM	15.4	1.9	36791
Inula oculus-christi L.	GR	ES, IT	WM	23.3	20.8	36792
Inula salicina L.						
subsp. *aspera* (Poir.) Hayek	GR	Pl	WM	60.0	1.9	36793
Lactuca serriola L.	TH	Pl	WM	25.0	1.9	s.n.
Lapsana communis L.	HM	ES, IT	WM	68.2	3.8	36788
Leontodon hispidus L.	GR	ES, WIT, M	WM	50.7	18.9	36794
Ligularia persica Boiss.	HM	Em (Alborz)	WM	45.5	26.4	36795
Scorzonera laciniata L.	HM	ES, WIT	WM	2.7	1.9	36796
Scorzonera parviflora Jacq.	GR	ES, IT	WM	28.5	13.2	36797
Senecio vernalis Waldst. & Kit.	TH	ES, WIT, M	DWM	9.1	1.9	36798
Sonchus asper (L.) Hill.						
subsp. *glaucescens* (Jordan) Ball	HM	WIT, M	DWM	100.0	1.9	s.n.
Tanacetum balsamita L.						
subsp. *balsamitoides* (Schultz Bip.)Grierson	GR	WIT	DWM	8.3	1.9	36799
Tanacetum parthenium (L.) Schultz Bip.	GR	Pl	DWM	47.7	11.3	36800
Taraxacum afghanicum v. S.	HM	WIT	WM	9.1	1.9	37011
Taraxacum azerbaijanicum v. S.	HM	Em (Iran)	WM	8.7	1.9	37012
Taraxacum crepidiforme DC.	HM	WIT, M, EH	WM	10.1	5.7	37013
Taraxacum microcephaloides v. S.	HM	WIT, M	WM	19.0	5.7	37014
Taraxacum oliganthum Hand.-Mzt.	HM	WIT	WM	3.2	1.9	37015
Taraxacum pseudo-calocephalum v. S.	HM	WIT	WM	47.1	9.4	37016
Taraxacum serotinum (Waldst. & Kit.) Poir.	HM	ES, WIT, M	WM	9.5	1.9	37017
Taraxacum sp.						
(sect. *Erythrocarpa* Hand.-Mzt.)	HM		WM	42.7	18.9	s.n.

Taraxacum sp. (sect. *Spuria* DC.)	HM		WM	21.6	1.9	s.n.
Taraxacum syriacum Boiss.	HM	IT	WM	9.1	1.9	36801
Taraxacum transjordanicum v. S.	HM	WIT, M	WM	13.9	3.8	37018
Tripleurospermum disciforme						
(C.A. Mey.) Sch. Bip.	TH	WIT, EH	WM	22.0	15.1	36802
Tussilago farfara L.	GR	Pl	DWM	7.7	1.9	36803
Xanthium strumarium L.	TH	ES, IT, M	DWM	25.0	1.9	s.n.
Boraginaceae						
Myosotis alpestris F. W. Schmidt*	HM	Pl	WM	41.0	3.8	
Myosotis koelzii H. Riedl	TH	Em (Iran)	WM	8.3	1.9	36805
Myosotis pseudopropinqua M. Pop.	TH	WIT, EH	WM	25.0	1.9	36806
Myosotis sylvatica Ehrh. ex Hoffm.						
ssp. *rivularis* Vestergren	HL	WIT	ST	47.8	26.4	36807
Brassicaceae						
Alliaria petiolata (M.B.) Cavara & Grande	HM	Pl	DWM	9.1	1.9	36808
Arabis sagittata (Bertol.) DC.	HM	ES, WIT, M	DWM	8.3	1.9	36810
Barbarea plantaginea DC.	HM	WIT, EH	WM, ST	7.7	18.9	36037
Capsella bursa-pastoris (L.) Medicus	HM	Pl	DWM	9.1	1.9	36811
Cardamine uliginosa M.B.	HL	WIT, M, EH	WM, ST	53.5	39.6	36038
Crambe orientalis L.	HM	IT	DWM	29.6	3.8	36812
Descurainia sophia (L.) Prantl	TH	Pl	DWM	18.2	1.9	36813
Lepidium cartilagineum (J. Mayer) Thell.						
ssp. *pumilum* (Boiss. & Bal.) Hedge	HM	WIT, M	DWM	2.7	1.9	36814
Lepidium latifolium L.	GS	Pl	DWM	5.4	1.9	36816
Lepidium perfoliatum L.	TH	Eurasia	DWM	2.7	1.9	36815
Nasturtium officinale R. Br.	HL	Eurasia	ST	20.0	3.8	36036
Rorippa sylvestris (L.) Besser	GS	Eurasia	WM	9.1	1.9	36818
Sisymbrium loeselii L.	HM	Eurasia	DWM	18.2	1.9	36817
Turritis glabra L.	HM	Eurasia	DWM	5.0	1.9	36039
Campanulaceae						
Campanula glomerata L.	HM	Eurasia	WM	58.3	18.9	36819
Campanula sclerotricha Boiss.	HM	WIT	ST	36.4	1.9	36820
Caryophyllaceae						
Arenaria serpyllifolia L. var. *serpyllifolia*	TH	Pl	DWM	9.5	1.9	36065
Cerastium cerastioides (L.) Britt.*	HM	Pl	WM	55.5	3.8	
Cerastium dubium (Bastard) Guépin*	TH	ES, IT, M	WM	55.4	5.7	
Cerastium glomeratum Thuill.	TH	Pl	WM	20.0	3.8	36063
Cerastium holosteoides Fries						
subsp. *triviale* (Link) Möschl*	HM	Pl	DWM	11.1	1.9	
Cerastium persicum Boiss.	HM	Em (Iran)	WM	18.3	5.7	36061
Minuartia hybrida (Vill.) Schischk.						
ssp. *hybrida*	TH	ES, WIT, M	DWM	5.9	1.9	s.n.
Silene latifolia Poir.*	HM	ES, IT, M	DWM	100.0	1.9	
Stellaria media (L.) Vill.	TH	Pl	DWM	9.1	1.9	36822
Stellaria persica Boiss.	GR	WIT, EH	WM	43.5	15.1	36062
Characeae						
Chara sp.	HD	Pl	SOW	17.5	17.0	s.n.
Colchicaceae						
Colchicum kotschyi Boiss.	GC	WIT	WM	5.9	1.9	36832
Colchicum speciosum Steven	GC	WIT, EH	WM	11.7	3.8	36825
Colchicum szovitsii Fisch. & C.A. Mey.	GC	IT, M, EH	WM	3.0	3.8	36824
Colchicum trigynum (Adams) Stearn	GC	IT, EH	WM	7.9	3.8	36823
Convolvulaceae						
Convolvulus arvensis L.	HM	Pl	DWM	24.6	3.8	36827
Cucurbitaceae						
Bryonia aspera Stev. ex Ledeb.	HM	IT, EH	DWM	9.1	1.9	36829
Cyperaceae						
Blysmus compressus (L.) Panzer						
subsp. *compressus*	GR	ES, IT	WM	55.0	56.6	36082
Bolboschoenus affinis (Roth) Drob.	HL	Eurasia	WM	26.0	3.8	36831
Bolboschoenus maritimus (L.) Palla	HL	Pl	EM	47.1	1.9	36081
Carex caucasica Stev.	GR	IT, EH	WM	5.6	1.9	36083
Carex demissa Hornem.						
subsp. *iranica* Kukkonen	GR	EIT	WM	52.3	9.4	36076
Carex diluta M.B.	GR	Pl	WM	29.8	35.8	36075
Carex distans L.	GS	ES, WIT, M	WM	2.0	1.9	36821
Carex divisa Huds.	GR	ES, IT, M	WM	20.2	26.4	36828
Carex melanostachya M.B. ex Willd.	GR	ES, IT	WM	29.4	1.9	36833
Carex microglochin Wahlenb.	GR	ES, IT	WM	42.5	7.5	36834

Carex orbicularis Boott subsp. *kotschyana* (Boiss. & Hohen.) Kukkonen	GR	WIT, EH	WM	70.1	66.0	36069
Carex pseudofoetida Kuk. subsp. *acrifolia* (V. Krecz.) Kukkonen	GR	WIT (Alborz, EH)	WM	47.3	24.5	36073
Carex pycnostachya Kar. & Kir. (1)	GR	EIT	EM	14.0	3.8	36933
Carex songorica Kar. & Kir.	GR	EIT, EH	WM	23.1	28.3	36835
Carex stenophylla Wahlenb. subsp. *stenophylloides* (V. Krecz.) Egor.	GR	EIT, EH	WM	5.9	1.9	36072
Cyperus distachyos All.	GR	ES, IT, M	WM	25.0	1.9	36078
Cyperus glaber L.	TH	ES, IT, M	WM	25.0	1.9	36079
Eleocharis palustris (L.) Roemer & Schultes ssp. *iranica* Kukkonen	HL	WIT	ST	6.5	1.9	37019
Eleocharis palustris (L.) Roemer & Schultes subsp. *palustris*	HL	Pl	WM, EM	18.0	17.0	36087
Eleocharis quinqueflora (F.X. Hartmann) O. Schwarz	GR	Pl	WM	17.1	30.2	36086
Eleocharis uniglumis (Link) Schultes	HL	Pl	WM, EM	20.1	45.3	36085
Isolepis setacea (L.) R.Br.	TH	Pl	WM	9.2	7.5	36837
Pycreus flavidus (Retz.) Koyama	TH	Pl	WM	25.0	1.9	36838
Schoenoplectus lacustris (L.) Palla subsp. *tabarnaemontani* (Gmelin) A. & D. Löve	HL	Eurasia	ST, EM	27.5	11.3	36084
Scirpoides holoschoenus (L.) Soják subsp. *australis* (Murr.) Soják	GR	ES, IT, M	WM	41.6	9.4	36074
Trichophorum alpinum (L.) Persoon*	GR	Pl	WM	77.0	7.5	
Trichophorum pumilum (Vahl) Schinz & Thellung	GR	Pl	WM	26.7	35.8	36080
Eleagnaceae						
Hippophae rhamnoides L.	PH	Eurasia	WM	31.8	7.5	36839
Equisetaceae						
Equisetum arvense L.	GR	Pl	WM	49.6	37.7	36840
Equisetum cf. *palustre* L.	GR		WM	43.9	13.2	36841
Equisetum ramosissimum Desf.	GR	Pl	WM	25.3	32.1	36842
Euphorbiaceae						
Euphorbia sp.	HM		WM	15.1	7.5	s.n.
Frankeniaceae						
Frankenia hirsuta L.	CH	IT, M	DWM	2.7	1.9	36843
Gentianaceae						
Centaurium erythraea Rafn	HM	ES, IT, M	WM	12.3	11.3	36844
Gentiana pontica Soltokovic	HM	WIT, EH	WM	23.4	11.3	36845
Gentiana septemfida Pall.	HM	WIT, EH	WM	33.4	26.4	36846
Gentianella ciliata (L.) Borkh. ssp. *blepharophora* (Bordz.) Pritchard	HM	WIT, EH	WM	5.0	7.5	36848
Gentianella umbellata (M.B.) Holub	HM	WIT, EH	WM	7.8	3.8	36847
Swertia longifolia Boiss.	HM	SEm (Iraq, Iran)	WM	52.0	20.8	36849
Geraniaceae						
Geranium collinum Steph. ex Willd.	GR	ES, IT	WM	22.9	20.8	36850
Hippuridaceae						
Hippuris vulgaris L.	HD	Pl	SOW	21.2	9.4	36851
Hypericaceae						
Hypericum perforatum L.	HM	Eurasia	DWM	12.2	5.7	36852
Iridaceae						
Iris spuria L. ssp. *musulmanica* (Fomin) Takht.	GR	WIT, EH	WM	16.0	5.7	36066
Juncaceae						
Juncus alpinus Vill.*	GR	Pl	WM	25.0	1.9	
Juncus articulatus L.	GR	Pl	WM	51.2	56.6	36853
Juncus cf. *alpigenus* C.Koch	GR	ES, WIT	WM	10.0	1.9	36927
Juncus gerardi Loisel. ssp. *libanotia* (Thiébaut) Snog.	GR	WIT	WM	35.0	3.8	36854
Juncus gerardi Loisel. ssp. *persicum* (Boiss.) Snog.	GR	Em (Iran)	WM	24.4	11.3	36855
Juncus inflexus L.	HL	Pl	WM	73.8	69.8	36856
Juncus turkestanicus V. Krecz. & Gontsch.	TH	IT	WM	8.3	1.9	36857
Juncaginaceae						
Triglochin maritima L.	HL	Pl	WM	28.7	18.9	36096
Triglochin palustre L.	GR	Pl	WM	37.3	39.6	36097
Lamiaceae						
Lycopus europaeus L.	GR	Pl	WM	45.5	1.9	s.n.
Mentha longifolia (L.) L.	HL	Eurasia	WM	62.7	83.0	36859

Prunella vulgaris L.	GR	Pl	WM	26.3	13.2	36860
Stachys pubescens Ten.	HM	WIT, M, EH	DWM	7.7	1.9	36861
Stachys setifera C.A. Mey.						
subsp. *iranica* (Rech.f.) Rech. f.	GR	SEm (Iran, Turco.)	DWM	34.7	5.7	36862
Lemnaceae						
Lemna minor L.	HD	Pl	SOW	21.8	3.8	36863
Lentibulariaceae						
Utricularia australis R. Br.	HD	Pl	SOW	3.3	1.9	36864
Utricularia minor L.	HD	Pl	SOW	14.4	7.5	36865
Linaceae						
Linum catharticum L.	TH	ES, WIT, M	WM	51.4	26.4	36060
Lythraceae						
Lythrum hyssopifolia L.	TH	Pl	WM	25.0	1.9	36868
Lythrum salicaria L.	HM	Pl	WM	26.5	7.5	36869
Onagraceae						
Epilobium algidum M.B.	GR	WIT, EH	WM	32.9	17.0	36870
Epilobium frigidum Hausskn.	GR	WIT, EH	WM	20.0	1.9	36871
Epilobium hirsutum L.	HL	Pl	ST	19.3	9.4	36872
Epilobium minutiflorum Hausskn.	GR	IT, EH	WM	11.4	17.0	36873
Epilobium parviflorum Schreb.	GR	Pl	WM	30.0	11.3	36874
Epilobium roseum Schreb.						
subsp. *subsessile* (Boiss.) Raven	GR	WIT, M, EH	WM	5.9	7.5	36875
Epilobium tetragonum L.	GR	Pl	WM	32.5	3.8	36876
Ophioglossaceae						
Botrychium lunaria (L.) Sw.*	GR	Pl	WM	44.2	7.5	
Orchidaceae						
Dactylorrhiza umbrosa (Kar. & Kir.) Nevski GC	IT	WM	49.3	50.9	36830	
Epipactis palustris (L.) Crantz	HL	ES, WIT, M	WM	16.1	3.8	36877
Epipactis veratrifolia Boiss. & Hohen.	GR	Pl	WM	50.0	1.9	36068
Ophrys scolopax Cav.	GC	ES, M	WM	7.7	1.9	36878
Orchis palustris Jacq.	HL	ES, IT, M	WM	9.1	1.9	36879
Papilionaceae						
Astragalus firuzkuhensis Podlech	HM	Em (Alborz)	DWM	2.7	1.9	36880
Astragalus odoratus Lam.	HM	WIT, EH	DWM	3.9	3.8	36881
Astragalus pinetorum						
subsp. *declinatus* Podlech	HM	WIT, EH	DWM	2.7	1.9	36882
Coronilla varia L. ssp. *varia*	HM	ES, WIT, M	DWM	43.2	7.5	36883
Lathyrus pratensis L.	GR	Pl	WM	24.9	13.2	36884
Lotus corniculatus L. ssp. *Corniculatus*						
var. *corniculatus*	HM	ES, EIT, M	WM	44.0	45.3	36885
Lotus michauxianus Ser.						
var. *glabratus* Chrtkova-Zertova	HM	SEm (Iran, Talish)	DWM	2.7	1.9	36886
Lotus tenuis Walst. & Kit.	HM	ES, WIT, M	DWM	16.2	1.9	36887
Medicago lupulina L.	TH	Pl	DWM	33.6	11.3	36888
Medicago sativa L.	HM	IT	DWM	7.6	5.7	36889
Melilotus albus Medicus	TH	Pl	DWM	54.0	3.8	36890
Melilotus officinalis (L.) Pall.	HM	Pl	DWM	14.3	9.4	36891
Onobrychis altissima Grossh.	HM	WIT, EH	DWM	11.4	3.8	36892
Ononis spinosa L.						
ssp. *leiosperma* (Boiss.) Sirj.	CH	WIT, M	DWM	17.9	15.1	36893
Oxytropis glabra (Lam.) DC. (2)	HM	ES, EIT	WM	10.1	3.8	36895
Trifolium badium Schreb.	HM	ES, WIT	WM	14.8	11.3	36896
Trifolium fragiferum L.						
var. *pulchellum* Lange	HM	ES, WIT, M	WM	3.7	5.7	36898
Trifolium hybridum L.						
var. *elegans* (Savi) Boiss.	HM	ES, WIT	WM	14.9	3.8	36899
Trifolium pratense L. var. *pratense*	HM	ES, WIT, M	WM	17.9	20.8	36901
Trifolium pratense L. var. *sativum* Schreb.	HM	Pl	WM	67.5	9.4	36902
Trifolium repens L. var. *repens*	GR	ES, EIT, M	WM	35.1	43.4	36905
Trifolium tumens Stev. ex M.B. var. *tumens*	GR	WIT, EH	WM	50.0	1.9	36906
Plantaginaceae						
Plantago gentianoides Sibth. & Sm.						
subsp. *griffithii* (Decne.) Rech.f.	HM	EIT	WM	57.0	9.4	36907
Plantago lanceolata L.	HM	ES, WIT, M	WM	58.1	32.1	36908
Plantago major L.	HM	Eurasia	DWM	33.6	18.9	36909
Plantago maritima L.						
subsp. *salsa* (Pall.) Rech.f.	HM	ES, IT	DWM	10.8	1.9	36910
Poaceae						
Agrostis gigantea Roth	GR	Pl	DWM	6.7	5.7	36053

Agrostis olympica (Boiss.) Bor	GR	IT, EH	WM	52.4	13.2	36911
Agrostis stolonifera L.	GS	ES, IT, M	WM	32.0	52.8	36912
Alopecurus arundinaceus Poir.						
var. *arundinaceus*	GR	Pl	DWM	26.6	20.8	36046
Brachypodium sylvaticum (Hudson) P. Beauv.HM	Pl	WM	56.9	9.4	36043	
Bromus gracillimus Bge.	TH	WIT	WM	9.1	1.9	36914
Bromus stenostachyus Boiss.	GR	WIT	WM	9.1	1.9	36049
Bromus tectorum L.	TH	Pl	DWM	9.1	1.9	36915
Calamagrostis epigejos (L.) Roth	GR	Pl	DWM	11.7	7.5	36916
Calamagrostis pseudophragmites						
(Hall.f.) Koel.	GR	ES, IT, M	DWM	55.2	15.1	36052
Catabrosa aquatica (L.) P. Beauv.	HL	Pl	WM	20.8	20.8	36041
Colopodium parviflorum Boiss. & Buhse	HM	WIT, EH	DWM	2.7	1.9	36919
Cynodon dactylon (L.) Pers.	GR	Pl	DWM	13.5	3.8	s.n.
Dactylis glomerata L.	HM	Pl	DWM	20.3	7.5	36920
Deschampsia caespitosa (L.) P. Beauv.	GR	Pl	WM	49.2	28.3	36921
Deyeuxia parsana Bor	HM	Em (Alborz)	WM	27.9	7.6	36922
Elymus elongatiformis (Drobow) Assadi	GR	ES, IT	WM	3.5	3.8	36923
Elymus hispidus (Opiz) Melderis						
var. *hispidus*	GR	ES, IT, M	WM	9.1	1.9	36924
Eremopoa bellula (Regel) Roshev.	TH	EIT	WM	7.4	5.7	36045
Eremopoa persica (Trin.) Roshev.						
var. *persica*	TH	IT, M	WM	4.8	1.9	36044
Festuca arundinacea Schreb.	HM	Eurasia	WM	23.8	7.5	36926
Festuca pratensis Hudson	GR	ES, IT, M	WM	32.2	22.6	36047
Festuca rubra L.	HM	Pl	WM	47.9	37.7	36042
Glyceria plicata Fries	HL	ES, IT	EM	45.2	15.1	36040
Hordeum bogdanii Wilensky	HM	EIT	WM	2.7	1.9	36928
Hordeum violaceum Boiss. & Huet	HM	WIT, EH	DWM	24.9	11.3	36929
Phalaris arundinacea L.	GR	Pl	ST	42.5	20.8	36930
Phleum alpinum L.	GR	Pl	WM	37.0	5.7	36931
Phragmites australis (Cav.) Steud.						
var. *australis*	HL	Pl	WM, SOW	49.3	43.4	36051
Poa nemoralis L.	GS	Eurasia	DWM	50.0	1.9	36935
Poa pratensis L.	GR	Pl	WM	38.7	50.9	36934
Poa trivialis L.	GS	Pl	WM	15.0	26.4	36048
Polypogon monspeliensis (L.) Desf.	TH	Pl	DWM	5.9	1.9	36938
Polypogon semiverticillatus (Forssk.) Hyl.*	TH	Pl	DWM	50.0	1.9	
Puccinellia gigantea (Grossh.) Grossh.	HM	WIT, EH	DWM	8.1	1.9	36939
Puccinellia koeieana Melderis	HM	SEm (Iran, Afgh.)	DWM	29.7	1.9	36940
Trisetum rigidum (M.B.) Roemer & Schultes GR	WIT, EH	DWM	9.1	1.9	36942	
Vulpia myuros (L.) C. C. Gmelin	TH	IT, M, EH	DWM	100.0	1.9	36943
Zingeria trichopoda (Boiss.) P. Smirn.	TH	WIT, M, EH	WM	5.9	1.9	36944
Polygonaceae						
Polygonum barbatum L.	GR	Pl	WM	8.5	3.8	36945
Polygonum lapathifoliaum L.						
subsp. *brittingeri* (Opiz) Rech.f.	TH	ES, WIT, M	DWM	28.6	1.9	36946
Rumex elborsensis Boiss.	HM	Em (Iran)	WM	14.3	1.9	36948
Rumex kandavanicus (Rech. F.) Rech.f.	HM	Em (Alborz)	WM	18.2	1.9	36952
Rumex obtusifolius L.						
subsp. *subalpinus* (Schur) Čelak.*	HM	ES, IT, M	WM	22.2	1.9	
Rumex patientia Boiss.						
subsp. *pamiricus* (Rech.f.) Rech. f.	HM	EIT	WM	10.0	24.5	36949
Rumex patientia Boiss.						
subsp. *tibeticus* (Rech.f.) Rech.f.	HM	EIT	WM	27.2	1.9	36947
Rumex scutatus L.	GR	ES, WIT, M	WM	29.6	3.8	36951
Potamogetonaceae						
Potamogeton amblyophyllus C.A. Mey.	HD	IT, M, EH	ST	29.1	5.7	36955
Potamogeton berchtoldii Fieb.	HD	Pl	SOW	2.7	1.9	36956
Potamogeton lucens L.	HD	Pl	SOW	18.2	1.9	36954
Potamogeton pectinatus L.	HD	Pl	SOW	17.4	3.8	36957
Potamogeton perfoliatus L.	HD	Pl	SOW	47.1	1.9	36958
Potamogeton pusillus L.	HD	Pl	SOW	8.3	3.8	36959
Primulaceae						
Glaux maritima L.	GS	Pl	WM	22.4	9.4	36960
Primula auriculata Lam.	HM	IT, EH	WM	64.1	50.9	36050
Ranunculaceae						
Aquilegia olympica Boiss.	GR	WIT, EH	ST	13.6	3.8	36961
Batrachium rionii (Lagger) Nym.	TH	Eurasia	ST	5.2	3.8	36962

Batrachium trichophyllum (Chaix) Bosch	HD	Pl	ST	10.1	3.8	36054
Ranunculus amblyolobus Boiss. & Hohen.	GR	Em (C Alborz)	WM	52.1	43.4	36057
Ranunculus brachylobus Boiss. & Hohen.	GR	WIT, EH	WM	50.4	18.9	36963
Ranunculus constantinopolitanus (DC.) d'Urv.GR	WIT, M, EH	WM	2.0	1.9	36964	
Ranunculus grandiflorus L.	GR	WIT, EH	WM	6.2	5.7	36056
Ranunculus kotschyi Boiss.	HM	Em (Iran)	WM	19.8	11.3	36055
Ranunculus polyanthemos L.	GR	ES, WIT	WM	33.6	9.4	36965
Ranunculus repens L.	HM	ES, WIT, M	WM	100.0	1.9	36966
Thalictrum minus L.	GR	Eurasia	DWM	9.1	1.9	36967
Rosaceae						
Alchemilla kurdica Rothm. ex Bornm.*	GR	SEm (Iran, Iraq)	WM, ST	100.0	1.9	
Alchemilla persica Rothm.	GR	WIT, EH	WM, ST	45.9	20.8	36968
Alchemilla sedelmeyeriana Juz.*	GR	ES (EH)	WM, ST	22.2	1.9	
Cotoneaster nummularia						
Fisch. & C.A. Mey.	PH	IT, EH	DWM	7.7	1.9	36969
Crataegus pseudoheterophylla A. Pojark.	PH	WIT, EH	DWM	28.9	3.8	36970
Geum rivale L.	GR	Pl	WM	61.1	3.8	36971
Potentilla anserina L.	HM	Pl	WM	27.0	13.2	36972
Potentilla recta L.	HM	Pl	WM	6.3	1.9	36974
Potentilla reptans L.	HM	ES, IT, M	WM	35.6	18.9	36973
Potentilla szovitsii Th. Wolf	HM	WIT, EH	WM	2.0	1.9	36975
Rosa sp.	PH		DWM	100.0	1.9	s.n.
Rubus caesius L.	PH	Eurasia	DWM	62.5	7.5	36977
Sanguisorba minor Scop.	HM	Eurasia	WM	57.7	11.3	36978
Rubiaceae						
Asperula setosa Jaub. & Spach	TH	EIT, EH	DWM	9.1	1.9	36979
Galium anguineum Ehrend. & Schönb.	GR	SEm (Iran, Iraq)	WM	69.4	13.2	36980
Galium diplopion Boiss. & Hohen.	GR	Em (Iran)	WM	50.0	3.8	36981
Galium humifusum M.B.	GS	ES, IT, M	WM	9.1	1.9	36982
Galium spurium L.						
ssp. *ibicinum* (Boiss. & Hausskn.) Ehrend.	TH	IT, M	WM	53.9	3.8	36983
Galium subvelutinum (DC.) C. Koch.*	HM	IT	WM	100.0	1.9	
Galium verum L. ssp. *glabrescens* Ehrend.	GR	WIT	DWM	33.5	11.3	36984
Galium verum L. ssp. *verum*	GR	Eurasia	DWM	20.0	1.9	36985
Salicaceae						
Salix acmophylla Boiss.	PH	Pl	WM	5.0	1.9	36986
Salix alba L.	PH	ES, WIT, M	WM	56.1	5.7	36987
Salix elbursensis Boiss.	PH	WIT, EH	WM	41.1	11.3	36988
Salix excelsa S. G. Gmelin	PH	IT, EH	WM	5.0	1.9	36989
Salix pycnostachya N. J. Andersson	PH	EIT	WM	9.1	1.9	36990
Salix triandra L. subsp. *triandra*	PH	ES, IT, M	WM	11.9	3.8	36991
Salix wilhelmsiana M.B.	PH	IT, EH	WM	7.7	1.9	36992
Santalaceae						
Thesium arvense Horvatovsky	GR	ES, IT	WM	6.0	1.9	36866
Scrophulariaceae						
Euphrasia cf. *secundiflora* Pennell*	TH		WM	45.3	5.7	
Euphrasia hirtella Jordan ex Reut.	TH	ES, WIT	WM	12.8	3.8	36993
Euphrasia pectinata Ten.	TH	ES, IT	WM	18.5	15.1	36994
Pedicularis cf. *schugnana* B. Fedtsch.	HM		WM	2.8	1.9	36995
Pedicularis condensata M.B.*	HM	WIT, EH	WM	11.1	1.9	
Pedicularis rhinanthoides Schrenk						
ssp. *rotundata* Vved.	HM	EIT	WM	34.0	11.3	36996
Pedicularis sibthorpii Boiss.	HM	WIT, EH	WM	24.3	13.2	36090
Rhynchocorys maxima C.Richter	HM	SEm (Iran ,Talish)	WM	50.0	1.9	36997
Scrophularia amplexicaulis Benth.	GR	WIT, EH	WM	5.9	1.9	36095
Scrophularia umbrosa Dumort.	GR	Eurasia	WM	30.1	17.0	36094
Veronica anagallis aquatica L.						
ssp. *lysimachioides* (Boiss.) M.A. Fischer	TH	WIT, M	WM, EM	21.6	9.4	36998
Veronica anagallis-aquatica L.						
ssp. *michauxi* (Lam.) A. Jeten.	TH	IT	WM, EM	32.7	11.3	36999
Veronica anagallis-aquatica L.						
ssp. *oxycarpa* (Boiss.) A. Jelen.	HL	IT, M, EH	WM, EM	19.8	32.1	37000
Veronica anagalloides Guss.						
ssp. *heureka* M.A. Fischer	TH	IT	WM	13.1	20.8	37001
Veronica arvensis L.	TH	ES, WIT, M	WM	25.0	1.9	37002
Veronica aucheri Boiss.	HM	Em (Alborz)	WM	9.1	1.9	37003
Veronica beccabunga Boiss.						
ssp. *abscondita* M.A. Fischer	HL	WIT, M, EH	ST	44.6	9.4	36092
Veronica beccabunga Boiss.						

ssp. *beccabunga*	HL	Pl	ST	18.8	17.0	s.n.
Veronica biloba Schreb.	TH	IT	DWM	18.2	1.9	36091
Veronica campylopoda Boiss.	TH	IT, M	DWM	4.8	1.9	36093
Veronica chionantha Bornm.	CH	Em (Alborz)	DWM	9.1	1.9	37004
Veronica hispidula Boiss. & Huet	TH	IT	DWM	6.6	3.8	37005
Veronica pusilla Kotschy & Boiss.	TH	IT	DWM	27.4	3.8	37006
Solanaceae						
Solanum persicum Roemer & Schultes	PH	EIT, EH	EM	100.0	1.9	37007
Tamaricaceae						
Myricaria germanica (L.) Desv.	PH	ES, IT	ST	24.0	15.1	37008
Tamarix ramosissima Ledeb.	PH	Pl	DWM	52.3	7.5	37009
Tamarix szowitsiana Bge.	PH	EIT	DWM	9.1	1.9	37010
Thymelaeaceae						
Thymelaea passerina (L.) Cosson & Grem.	TH	ES, IT, M	WM	2.0	1.9	36867
Typhaceae						
Typha angustifolia L.	HL	Pl	EM	26.1	3.8	s.n.
Typha domingensis (Pers.) Steud.	HL	Pl	EM	27.4	3.8	36900
Typha grossheimii Pobed.	HL	IT, EH	WM	50.0	1.9	36904
Typha lugdunensis P. Chabert	HL	Eurasia	WM	84.9	5.7	36903
Typha minima Hoppe	HL	Eurasia	WM	8.4	1.9	36077
Urticaceae						
Urtica dioica L. subsp. *kurdistanica* Chrtek	GR	SEm (Iran, Iraq)	WM	21.8	18.9	36941
Lamiaceae						
Verbena officinalis L.	HM	Pl	DWM	75.0	1.9	36804
Zannichelliaceae						
Zannichellia palustris L.	HD	Pl	SOW	8.7	5.7	36925