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Original article

Introduced flora, and geographic distribution qalajeh protected area in Kermanshah province

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ABSTRACT

In this study, Flora Qalajeh protected area in the province of Kermanshah, was evaluated, the area along.. 33.56 N, and longitude 46.20. E. Is located. Study showed that, in the study area, 46 black, 156 genera, 243 species there. The most important families in the area, we can Asteraceae (34 species, 14%), papilionaceae (24 species, 10%), poaceae (19 species, 8/7 percent), Apiaceae (16 species, 5/6 percent), Lamiaceae (15, 6%), and Boraginaceae (13 species, 3/5 %) were noted. The largest genus of plants of the study area, can be made by Astraglus (10 species), centaurea (5 species) Silene, (5 species), Euphorbia (5 species) noted. The life form, 5/39 % of species Hemicryptophytes, 8/35 % of Men, 5/9 % phanerophytes, and 7/3 percent chamaephytes. Geographical distribution of flora survey showed that most geographical distribution, to the Irano - Turanian, with 130 species (5/35 percent), and Iran - Touran / Mediterranean, with 38 species (6/15 percent) is concerned. The high percentage of Irano - Turanian, shows, Qalajeh protected area, it belongs Fitocorion.

1. Introduction

Floristic studies, one of the important processes in plant systematic, providing quantitative and qualitative characteristics of vegetation composition, angles unknown aspects of the flora and vegetation of the area reveals (Yosofi, 2009), also, the study of plant geography and review of each plant floristic region, its position in the global network of nature protection areas (International union for conservation of nature, IUCN) made more specific (Irannejad Parizi et al, 2001), one of the most effective methods for cognitive capacities and environmental protection Toorasi those reserves, biodiversity is found (Akbarinia et al, 2004) examined the flora, especially for a protected area, in terms of providing information infrastructure, the carrying capacity of the region to evaluate the performance of governing the management, protection of endangered species and vulnerable, is of great importance (Najafi Tireh Shabankar et al, 2008). Cover surface and underground flow regulator, wild and domesticated animals provide food, shelter for wildlife, and it is important to keep the soil and prevent erosion. The vegetation is like an umbrella that keeps the earth, and the exquisite scenery of nature, in contrast, puts the human eye, the same values, vegetation and other advantages, it is our, you can value the gift of God, and to deal with claims (Mesdaghi, 2005) Thus, knowledge of the flora and vegetation of different regions is of particular importance. Flora of different regions of Iran, to understand the flora and vegetation of these areas is important. Flora of different regions of Iran, has a relatively long history, and since many areas of the big country vegetation, floristic method has been studied by various researchers (Yosofi, 2006), Iran is a vast country with an area of 1,648,000 square kilometers, has a variety of climatic is high, resulting in one of the areas of coverage, in terms of species diversity in the world (Mesdaghi, 2004), Qalajeh protected area in the province of Kermanshah, with an area of approximately 42,607.. acres protected in 1378 was called, and the areas adjacent to the town drunk, because of its forest cover of oak, a beautiful landscape is highly regarded area administered by the Environmental Protection Agency has Qalajeh. This protected area, due to the relatively large difference in altitude, the vegetation is very good (Fig. 1). The main objective of this study was to identify plant species and to investigate the biological and geographical distribution Qalajeh protected area is generally recognized, the introduction of a local herb, is especially important, as it can be accessed.

2. Materials and methods

2.1. Introduction to the study area

Qalajeh protected area, with an area of 42,607 hectares, the N3356, Latitude E4620, is located. (Figure 1) in the mountainous area of the Zagros mountain range, the vegetation of the oak Iran as the dominant species, and varieties of millet and various forms form. Elevation range of this zone is between 0.1160 to 2200. Average annual precipitation ranges Protected Area, based on contour map rain annually 72/414 mm is calculated, most of the annual rainfall during the three months of January, February and March are rarely rains in the summer falls. The average annual temperature is 49-13 ° C, and the average annual relative humidity, 24/47 percent.

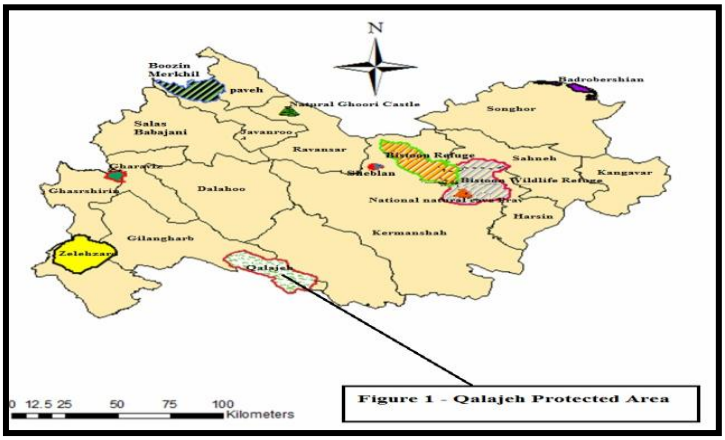

Fig. 1. Qalajeh protect are.

After mapping (scale , 1,25000), and view photos, and designated geographic area, collecting plants in late winter, as well as all the months of spring and summer 1390 study, collected samples, as under conventional dry pressing, and on board any barium, were attached. Each sample was assigned a herbarium label, then the series Flora Iranica (Rechinger, 1963), Flora of Turkey (Davis,1965-1988), Flora of Iraq (Townsendetal,1966-1980), Flora of Iran (Assadi, 2010-1988), colored flora of Iran (Qahraman,1998 -1978) and the taxonomy of plants (Mozaffarian, 2004), was performed to identify the plants. Barium detected in any samples, and each time, Yom " PNU Gilangharb placed on vegetative type Raunkier (1934), and the geographical distribution of species based on vegetative division by (Takhtajan) was determined.

3. Results

In the present study, a total of 243 species belonging to 46 deep, and 156 genera were identified (Table 1), a total of 156 genera, 28 genera (18 %) and 33 species (13/6 percent), belonging to monocots, and 128 genera (82 %) and 210 species (86/4 percent), belonging to the dicot hosts. The scientific name of plants have been identified, the biological and geographical distribution, are presented in Table 1. Most families in this area can be sunflower family (Asteraceae) (34 species, 14%), Pea or Fabaceae (Papilionaceae) (24 species, 10%), grasses (Poaceae) (19 species, 7/8 percent), Apiaceae (Apiaceae) (16 species, 6/5 percent), Lamiaceae (Lamiaceae) (15 species and 6%), borage (Boraginaceae) (13 species, 5/3 %) in the range (Fig. 2), is the largest genus in the area, the number of species in the genus Astragalus, which is 10 species of this genus is one of the prominent and dominant sex in determining the vegetation of the region is among the most used materials in the later stages , Centaurea 5 species, Silene with 5 species and 5 species of Euphorbia are. (Fig. 3) examine the shape of botany Raunkiaer method indicated. Among the plants studied, phanerophytes with 23 species (9/5 percent), Men with 87 species (35/8 percent), with 27 species of cryptophytes (11/2 percent), with 96 Hemicryptophytes (5/39 percent), and chamaephytes 9 species (3/7 percent) (Figure 4), in terms of geographical distribution, 53/5% of the Irano - Turanian, 15/6 percent, Iran - Touran / Mediterranean, 9%, Iranian, Turanian / Mediterranean / Europe - Siberia, 8/3 percent, the Irano - Turanian / Europe - Siberia, and 7 percent are distributed in multiple areas. Abundance of elements in Iran - Touran / Europe - Siberia, who represents Qalajeh protected area, it is Fitocorion (Figure 5)

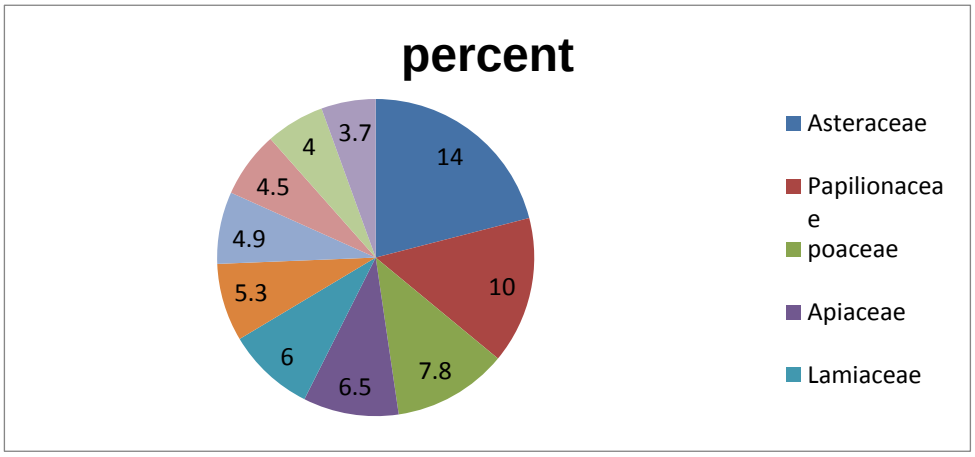

Fig. 2. Percentage of 10 species of large, dark, area, and compare them with other families in the area

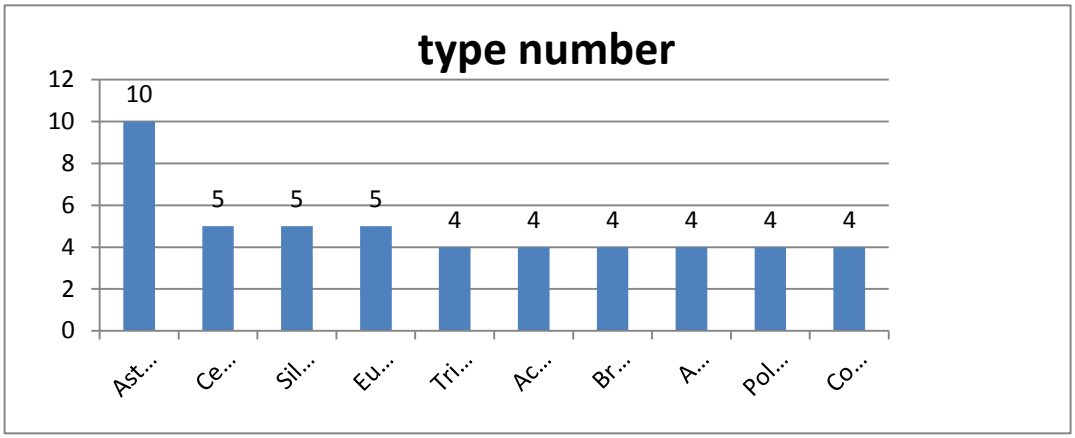

Fig. 3. Diagram of large genus**,** with the largest number of plant species .

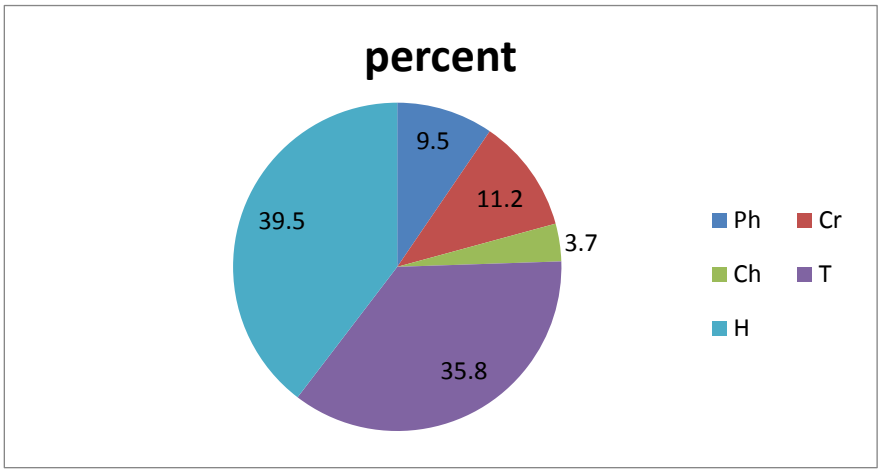

Fig. 4. Percent abundance of life forms, plants of the study area.

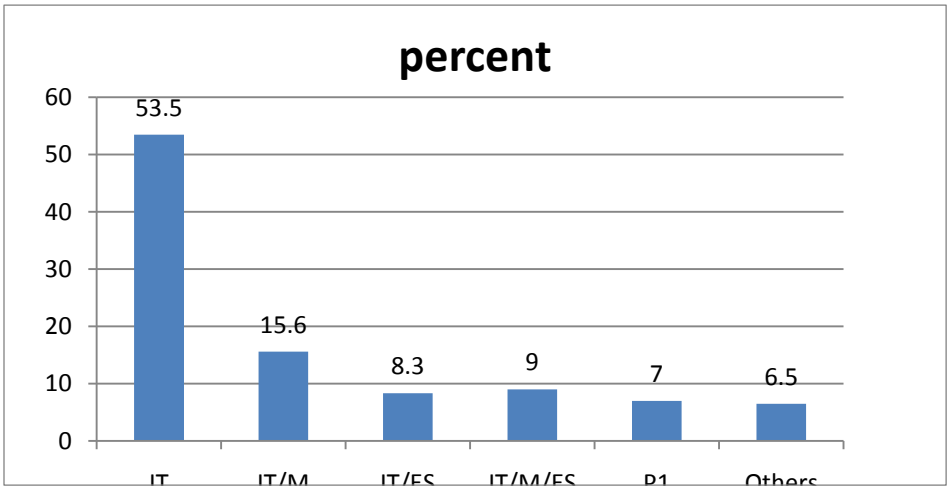

Fig. 5. Frequency of geographical distribution of plants in the region.

Table1

List of plant species, life form and geographic distribution,Ph, phanerophytes, cr, cryptophytes, H, Hemicryptophytes, T, Men, Ch, Kamomfiyt, G, geophytes IT, Iranian, Turanian, Es, Europe, Siberia, M, Mediterranean, SA, Desert Arabic, SS, Sahara, Sandy, P1, Several area.

Geographical istribution	**The scientific name of the plant species**	**Form Biological**
Aceraceae		
Acer cinerascens Boiss	Ph	IT
Acer monspessulanuml	Ph	IT/ES
Amaranthaceae		
Amaranthus graecizansl	T	IT
Amary LLidaceae		IT
Ixiolirion tataricum Herb	Cr	
Anacardiaceae		
Pistacia atlantica Desf	Ph	IT
Pistacia khinjuk stocks	Ph	IT
Rhus coriaria L	Ph	IT
Apiaceae		
Bunium luristanicum Rech f	Cr	IT
Bunium rectangulum H Wolff	Cr	IT
Bupleurum exaltatum M Bieb	H	IT
Bupleurum Lancifolium Hornem	T	IT
Eryngium billardieri F Delaroche	H	IT /M

Geographical distribution Aceraceae	**The scientific name of the plant species**	**Form Biological**
Eryngium noeanum Boiss	H	IT
Eryngium thyrsoideum Boiss	T	IT /M
Ferula haussknechtii Wolff ex Rech f	H	IT /ES
Ferulago angulata Subsp.carduchorum (Boiss&Hausskn)D.F chamb	H	IT /ES
Johreniopsis seseloides (C.A.Mey)Pimenov	T	IT /M
Lagoecia cuminoides L	T	IT /SS
Pimpinella deverroides Boiss	H	IT
Pimpinella tragium Vill	H	IT
Prangos ferulacea Lindl		
Prangos ferulacea Lindl	H	IT /M
Prangos uloptera DC	H	IT /M
Scandix Pectin-Venerisl	T	IT /ES
Araceae		
Arum giganteum Ghahre	cr	IT
Aristolochiaceae		
Aristtolochia bottae jaub & Spach	H	IT
Asteraceae		
Achillea biebersteinii Afanasiev	H	IT
Achillea eriophora DC	H	IT
Achillea wilhelmsii K.Koch	G	IT /M/ES

Geographical distribution	The scientific name of the plant species	Form Biological
Anthemis odontostephana Boiss	H	IT /M
Anthemis tinctoria L	H	M
Artemisia aucheri Boiss	H	IT /ES
Artemisia haussknechtii Boiss	H	IT
Calendula Persica C.A.mey	T	IT
Carthamus glaucus Mbieb	T	IT/M/ES
Carthamus oxyacantha M.bieb	T	IT
Centaurea gaubae (Bornm) wagenitz	H	IT
Centaurea sosnowshkyi Grossh	T	IT
Centaurea solstitialis L	T	IT /M/ES
Centaurea triuemfettii All	H	IT
Centaurea virgata Lam	H	IT
Cirsium arvense (L) scop	H	IT
Cirsium congestum fisch &C.A.mey.exDC.	H	IT
Cirsium spectabile DC	H	IT
CnicusbenedictusL	T	IT
Cousinia cylindracea Boiss	H	IT
Cousinia haussknechtii C winkl	H	IT
Cousinia jacobsii Reach f	H	IT
Cousinia Multi Loba DC	H	IT

Geographical distribution	The scientific name of the plant species	Form Biological
Echinops kotschyi Boiss	H	IT
Gundelia tournefortii L	H	IT
Picnomon acarna (L)Cass	T	IT/M
Scariola orentalis (Boiss)sojak	H	IT /M
Scoyzonera tortusis sima boiss	H	IT
Senecio vernalis Waldst .&Kit	T	IT /M/ES
Silybum marianum(L)Gaerten	H	P1
Tanacetum polycephalum Sch.Bip	H	IT /M/ES
Tragopogon buphthalmoides(DC)Boiss	H	IT
Xanthium spinosum L	T	P1
Xanthium strumarium L	T	IT
Boraginaceae		
Anchusa italic Retz	H	IT /ES
Asperugo procumbens L	T	IT /M/ES
Echium italicum L	T	IT /ES
Heliotropium europaeum L	T	IT /ES
Heliotropium noeanum Boiss	T	IT
Lappula barbata Gurke	T	IT
Lappula sinaica (A.DC.) Asch .&schweinf	T	IT
Myosotis refracta Boiss	T	IT /M
Geographical distribution		
Form Biological		
The scientific name of the plant species		
Nonea persica Boiss	H	IT

Onosma bulbotrichum DC	H	IT
Onosma microcarpum DC	H	IT
Onosma microcarpum DC	H	IT
Onosma platyphyllum Bornm	H	IT
Solenanthus circinatus Ledeb	T	IT
Brassicaceae		
Brassicaceae nigra (L)W.D.J.Koch	T	M
Capsella bursa-pastoris(L)Medik	T	P1
Crambe orientalis L	Ph	IT /ES
Conringia persica Boiss	T	IT
Descurainia Sophia (L) webb ex prantl	T	P1(cosm)
Erophila minima C.A Mey	Ch	IT /ES
Eruca stiva Mill	T	IT /M/ES
Nasturtium officinale R.Br	Cr	IT /M/ES
Sameraria stylophora Boiss	T	IT
Sinapis arvensis L	T	IT
Thlaspi perfoliatum L	T	IT /M
Campanulaceae		
Campanula humillima A.DC	H	IT /M
Campanula perpusilla A.DC	H	IT
Geographical distribution		
Form Biological		
The scientific name of the plant species		
Capparidaceae		
Capparis spinosal	Ch	IT /M/ss
Cleome iberica DC	H	IT
Cleome quinquenervia DC	H	IT /M
Lonicera persica Jaub & Spach	Ph	IT /M
Caryophyllaceae		
Acanthophyllum microcephalum Boiss	C	IT
Dianthus orientalis subsp aphanoneurus Rech	H	IT
Dianthus szowitisianus Boiss	H	IT
Silene araratica Schischkin	H	IT /M
Silene aucheriana Boiss	T	IT /M
Silene caesarea Boiss & Balansa	H	IT /M/Es
Silene conoideaL	T	P1
Silene Lagenocalyx Fenzlex Boiss	T	IT
Vaccaria oxyodonta Boiss	H	IT /M/ES
Chenopodiaceae		
Atriplex lasiantha Boiss	T	I
Chenopodium album L	T	P1
Chenopodium foliosum Asch	T	IT
Salsola canescens Boiss	T	IT

Geographical distribution	The scientific name of the plant species	Form Biological
Salsola kali L	T	IT /ES
Convolvulaceae		
Convolvulus arvensis L	T	P1
Convolvulus pilosellifolius Desr	T	IT /M
Convolvulus gonocladus-Boiss	H	IT
Dipsacaceae		
Pterocephalus kurdicus Vatke	T	IT /M/ES
Euphorbiaceae		
Euphorbia amygdaloides L.	H	ES/M
Euphorbia cheiradenia Boiss &Hohen	H	IT
Euphorbia denticulate Lam	T	IT
Euphorbia macroclada Boiss	H	IT /M
Euphorbia macrostegia Boiss	H	IT
Fagaceae		
Quercus brantii Lindl	Ph	IT
Fumariaceae		
Corydalis verticullaris DC. Subsp verticullaris	Cr	IT
Fumaria bracteosa Pomel	T	P1
Gentianaceae		
Gentiana olivieri Griseb	H	IT /ss

Geographical distribution	The scientific name of the plant species	Form Biological
Geraniaceae		
Geranium tuberosum L	Cr	IT
Hypericaceae		
Hypericum perforatuml	H	IT /ES
Hypericum scabrum L	H	IT
Hypericum triquetrifolium Turra	H	IT
Iridaceae		
Crocus haussknechtii Boiss & Reut ex Boiss	T	IT
GladioLus segetum ker Gawl	Cr	IT
Gynandriris sisyrinchium Parl	Cr	IT /M
Lamiaceae		
Eremostachys laevigata Bunge	H	IT
Lamium amplexicaule L	T	IT
Mentha longifolia L Huds	H	P1
Nepeta persica Boiss	T	IT
Phlomis olivieri Benth	H	IT
Phlomis persica Boiss	H	IT
Salvia bracteata Banks & Sol	H	IT
Salvia virgata Jacq	H	IT
Scutellaria condensate Rech F	H	IT /M/ES
Stachys benthamiana Boiss	T	IT

Geographical distribution	The scientific name of the plant species	Form Biological
Stachys Multicaulis Benth	H	IT
Stachys setifera C.A.Mey	Cr	IT
Thymus daenensis Celak	Ch	IT
Ziziphora clinopodioides Lam	H	IT /M
Ziziphora tenuir L	T	IT /ES
Liliaceae		
Allium schoenoprasuml	Cr	IT
Allium stamineum Boiss	Cr	IT
Colchicum kotschyi Boiss	Cr	IT
Fritillaria imerialis L	Cr	IT /M
Fritillaria persica L	Cr	IT
Fritillaria zagrica stapf	Cr	IT
Muscari caucasicum Baker	Cr	IT /M/ES
Muscari neglectumGuss ex Ten	Cr	IT /M
Ornithogalum brachystachys K .Koch	Cr	IT /M
Scilla bisotunensis Speta	Cr	IT
Tulipa clusiana DC	Cr	IT
Tulipa stylosa Fisch ex Fisch & C.A.Mey	Cr	IT
Malvaceae		
Alcea kurdica (Schlen)Aleff	T	IT

Geographical distribution	The scientific name of the plant species	Form Biological
Malva rotundifolia L	H	P1
Moraceae		
Ficus rupestris (Husskn ex Boiss)Azizian	Ph	IT
Oleaceae		
Fraxinus rotuidfolia Mill	Ph	IT
orchidaceae		
Orchidaceae Collina Bank & Sol	H	IT
Papaveraceae	H	IT
Papaver bornmuelleri Fedde		
Papaver dubium L	T	IT /M
Roemeria hybrid (L)DC	T	IT
Papilionaceae		
Astragalus abnormalis Rech f	T	IT
Astragalus adscendens Boiss & Hausskn ex Boiss	T	IT /M
Astragalus ecbatanus Bunge	H	IT
Astragalus microcephalus Willd	T	IT /M/ES
Astragalus myriacanthus Boiss	T	IT
Astragalus octopus C.C Towns	H	IT
Astragalus ovinus Boiss	H	IT
Astragalus ovinus Boiss	H	IT /M/ES
Astragalus rhodosemius Boiss & Hausskn	H	IT /ES

Geographical distribution	The scientific name of the plant species	Form Biological
Astragalus siliquosus Boiss	H	IT
Astragalus verus Olivier	C	IT
Ebenus stellata Boiss	Ph	IT /ss
Glycyrrhiza glabra L	H	IT /M/ES
Lathyrus cicera L	T	IT
Lathyrus inconspicuous L	T	IT
Lotus corniculatus L	H	IT /M/ES
Medicago Laciniata(L) Mill	T	IT
Medicago scutellata Mill	T	IT
Onobrychis (L) Desv	H	IT /SA
Trifolium campestre Schreb	H	IT /M
Trifolium echinatum M.Bieb	H	IT /ES
Trifolium grandiflorum Scherb	H	IT /ES
Trifolium repens L	H	IT
Trigonella persica Boiss	H	IT
Vicia stival	T	IT /M/ES
Plumbaginaceae		
Acantholimon brachystachyum Boiss ex Bunge	Ch	IT
Acantholimon bromifolium Boiss ex Bunge	Ch	IT
Acantholimon erinaceum (Jaub & Spach)Lincz	Ch	IT
Acantholimon scorpius(Jaub & Spach)Boiss	Ch	IT

Geographical distribution	The scientific name of the plant species	Form Biological
Poaceae		
Aegilops triuncialis L	T	IT /M
Agropyrum repens (L).P.Beauv	T	IT
Alopecurus arundinaceus Poir	T	IT /ss
Arrhenatherum kotschyi Boiss	H	IT /ES
Avena wiestii Steud	T	P1
Bromus danthoniae trin ex C.A.Mey	T	IT
Bromus sterilis L	T	IT /M
Bromus tectorum L	T	IT /M
Bromus tomentellus Boiss	T	IT /M
Cynodon dactylon(L).Pers	H	P1
Enneapogon persicus Boiss	H	IT
Festuca ovina L	H	IT /M
Hordeum bulbosum L	T	IT /M/ES
Hordeum vulgare L	T	IT
Melica persica Kunth Subsp .persica	Cr	IT
Poa annua L	Cr	IT /M
Poa bulbosa L	Cr	IT /M/ES
Stipa pennata L	H	IT
Taeniatherum crinitum (Schreb) Nevski	T	IT /M
Polygonaceae		

Geographical distribution	The scientific name of the plant species	Form Biological
Atraphaxis spinosa L	Ph	IT
Polygonum alpestre C.A.Mey	T	IT /ES
Polygonum aviculare L	T	P1
Polygonum luzuloides Jaub & Spach	T	IT /ES
Polygonum paronychioides C.A.Mey	H	IT
Rheum ribes L	Cr	IT /M
Rumex ephedroides Bornm	H	IT/M/ES
Ranunculaceae		
Adonis aestivalis L	T	IT
Anemone biflora DC	T	IT /M
Ceratocephalus falcate (L) Pers	T	IT/M/ES
Consolida rugulosa schrodgr	T	IT
Delphinium jacobsii Iranshahr	H	IT
Ranunculus oxyspermus Willd	T	IT
Thalictrum sultanabadense Stapf	H	IT /M/ES
Rhamanaceae		
Rhamnus pallasii Fisch & C.A.Mey	Ph	IT
Rosaceae		
Amygdalus Arabica Olivier	Ph	IT
Amygdalus elaeagnifolia subsp . leiocarpa (Boiss) Browicz	Ph	IT

Geographical distribution	The scientific name of the plant species	Form Biological
Amygdalus haussknechtii C.K.Schneider ex Bornm	Ph	IT
Amygdalus orientalis Mill	Ph	IT
Cerasus mahaleb (L)Mill	Ph	IT
Cerasus microcarpa Boiss	Ph	IT /M
Cotoneaster luristanicus G.Klotz	T	IT /M
Crataegus ponitca K.Koch	Ph	IT /ES
Rubus anatolicus focke	Ph	IT
Rosa elymaitica Boiss &Hausskn	Ph	IT
Rubiaceae		
Galium verum L	H	P1
Scrophulariaceae		
Odontites aucheri Boiss	H	IT
Scrophularia frigid Boiss	T	IT
Scrophularia striata Boiss	T	IT /M
Solanaceae		
Datura stramonium L	T	P1
Tamaricaceae		
Tamarix aphylla (L) H.Karst	Ph	IT /ss
Typhaceae		
Typha domingensis Pers	Cr	IT /ES

Geographical distribution	The scientific name of the plant species	Form Biological
Urticaceae		
Parietaria alsinifolia Delile	H	IT
Parietaria judaica L	H	IT
Valerianaceae		IT /M
Valerianella vesicaria (L) Monench	T	
Violaceae		IT /M
Viola modesta Fenzl	T	
Zygophyllaceae		
Peganum harmala		
Peganum harmala	H	IT /M/ss
Tribulus terrestris L	T	P1

4. Discussion

Furthermore, the identification and study of geographical distribution of plants in an area of vegetation, according to studies and research in the area of ecology is appropriate to determine the carrying capacity of the various aspects as well. However, factor in the assessment and evaluation of the current situation, and predict the future state is considered, and it is very important to apply the proper management of the area (Razavi, Hassan Abbasi, 2009), due to climate variability and climatic and topographic factors, Kermanshah province, the vegetation is relatively good, in the short period of the year, and the second half of March to late June, it occurs in the study area, there are 243 species, belonging to 46 dark, and 156 sex Qalajeh protected area represents a relatively high species diversity and extinction, in the conservation area Qalajeh, Dark of the Asteraceae, papilionaceae, poaceae, Apiaceae, Lamiaceae, Boraginaceae, the largest component of the dark current in the area are the highest plant elements forming them, with the vegetative hemi Kripofit (39/5%) and Men's (35/8 percent), the geographical distribution of Irano - Turanian, the number of species identified in the area compared to protected areas, Manesht and Qalarang, with an area of 33,000 hectares, and 231 species (Darvishnia et al, 2012), is relatively higher, indicating greater habitat diversity, and higher potential biodiversity in the region, most the vegetative conservation area Qalajeh, to arrange Hemicryptophytes and Men have formed, indicating the cold climate and mountainous terrain in the area, results in other similar areas, such as Qian Skinheads (42 and 35%) by Safi Khani et al, 1386, Mount Bafgh (43/3 and 23/7 percent) by Karimian, 2005 is also obtained. Also, in this study, high species diversity and dominance Hemicryptophytes plants showed significant, probably due to the high altitude and extreme cold governing region, the season is unfavorable. Men also have an abundance of species, height, area and severely damaged, and the obvious result of overgrazing, deforestation is linked by ranchers. To protect plant diversity, seem to create the enclosure to prevent grazing is required. Considering the importance and sensitivity of the ecosystem, we hope, a more serious effort to keep the national capital to be done.

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