

Research and Full Length Article:

Study of Physiognomy and Origin of Plant Species in Sarshiv Area of Marivan, Iran

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Abstract. Vegetation of each region is one of the most important phenomena of nature and is the best guide to judge about the ecological sciences of that region because the plants are resistant organisms that have endured the long term conditions of all kinds of environmental conditions for a long period of time and have adapted with environmental stresses. Therefore floristical investigation of each region is outmost importance for that region and it serves as a birth certification document. It also reviews geographical and floristical origins of each region which is the most effective method for managing and protecting the available genetic resources. The aim of this study was introducing flora, life form and plant chorotypes in Sarshiv rangelands, west of Marivan, Iran. The method of sampling was random- systematic with 76 plots. Floristical studies showed that there were 39 families, 116 genera and 139 plant species in this area. The most important families in this area were Asteraceae (20 species), Papilionaceae (Fabaceae) (16 species), Apiaceae (11 species) and Poaceae (10 species). Among all species identified in this region, one was endemic and the three other species were considered as rare. Investigation of life forms based on Raunkiaer method showed that there were various plants in different life form. Among all of them, Terophytes (35%) and Chamaephytes (3%) had the highest and the lowest plant species, respectively. The review of the geographical distribution of plants in the region showed that the species belonged to different Chorotypes and Irano-Turanian (50%) and European-Siberian (1%) had the highest and the lowest plant species of the region, respectively.

Key words: Flora, Life forms, Plant geography, Chorotypes, Sarshiv area

Introduction

The nature and quality of vegetation cover is an important factor for soil conservation because it plays a major role in reducing the erosive impact of precipitation in degraded areas in semi-arid regions (Turan and Filiz, 2011). Vegetation of each region is one of the most important phenomena of nature and the best judging guide to the ecological sciences of that region. Because the plants are resistant organisms they have endured in the long term conditions and events of all environmental and have adapted with environmental stresses (Atashgahi et al., 2009). Floristical investigation of each region is important for that region and it birth certification functions as а document. It also reviews it functions as a geographical and floristical origin of each regionwhich is the most effective method for managing and protecting the available genetic resources (Vaseghi et al., 2008). The life form of each plant is fixed character that is based on morphological adaptation to environment conditions. The important life forms in various communities are related to structure and there are many life form classifications but among them the practical system is Raunkiaer (Atashgahi et al., 2009).

The classification of plant species in Raunkiaer method is based on vegetative buds location after unfavorable season. Raunkiaer classification method assume that plants morphology are in relationship with climatic factors. On the basis of Raunkiaer classification, plants are classified into 6 categories: phanerophyte, chamaephyte, hemicryptophyte, terophyte, epiphyte and geophyte (Kent and Coker, 1992). Each species has unique ecological range and can tolerate a certain amount of changes in the environment. Any field distribution may be limited or extensive (Atashgahi et al., 2009). In order to better study the distribution area, scientists such as Takhtajan and Zohary, had divided the world territory into different kinds

(Takhtajan, 1986; Zohary, 1963). Iran has special geobotanic in the Middle East situation, so that as the bridge between the four major regional phytogeography i.e. Irano-Turanian, European-Siberian, the Sahara-Saudi Arabian and Sudan (Zohary, 1963).

The European-Siberian is characterized in the sub provenance hyrcanian. Irano-Turanian region include three-quarters of Iran's area (Zohary, 1963). Several studies on the flora, the introduction of flora and life forms has been done (Zohary, 1963; Zohary, 1973; Asri and Mehrnia, 2001; Asri and Eftekhari, 2002; Ashrafi et al., 2004; Vakili Shahre Babaki et al., 2001; Kashipazha et al., 2004, basiri et al., 2011; Rahimi and Atri, 2013). The aim of this study was to determine florist list, life forms and chorology of plants in the Sarshiv of rangelands Marivan area in Iran.

Materials and Methods Study area

The studied area (Marivan) in the West of Kordestan, is located between 45°16 '52" to 45°29'58" eastern longitude and 36°9'45" to 36°25'45" north latitude geographical range (Basiri and Mozayyan, 2010) (Fig. 1).



Fig. 1. Geographical location of study area (Sarshiv of Marivan, Iran)

The area of this region is 243 ha and the area within the high 1400 to 1950 m above sea level. For description of the climate, the stations closest to the watershed were used. The method is based on regional climate Amberger, is wet-cold (Anonymous, 1997).

Research methods

Plant samples were collected by randomsystematic in 76 plots (Okland, 1990). Sampling consists of 9 transect that the first one was random and the others were collected in 200 m far of each other in south and north in comparison with the first sampling. In present study a square releve with an area of 1 m^2 was regularly considered on each transect. The plant species were identified using valid sources such as Flora Iranica (Rechinger, 1998). Flora of Iraq (Townsend and Guest, 1985), Flora of Turkey (Davis, 1984), Flora of Iran (Assadi et al., 1987). Also Zohary classification (Zohary, 1963) was used for the geographical distribution and the Raunkiaer method was used for life form classification (Raunkiaer, 1934). Biological reference of Iranian species was used for identification of native, rare and endangered species (Ghahraman and Attar, 1998).

Results

The results showed that the region consists of 39 families, 116 genera and 139 species of plants (Table 1). 23 species and 116 species belong to monocotyledon and dicotyledon angiosperms, respectively. The main families were Asteraceae, Fabaceae, Apiaceae and Poaceae, with 20, 16, 11 and 10 percent species, respectively.

The most important families are listed 2A). Terophytes (35%). (Fig. Hemicryptophytes (34%), Phanerophytes (9%). Geophytes (19%)and Chamaephytes (3%) were included in life forms (Fig. 2B). Among 139 species identified, 1 and 3 species were endemic and species respectively. rare Geographical area analysis showed the Irano- Turanian (50%), Mediterranean (1.5%), Europe and Siberian (2%), Polyregional (1/5%), Irano Turanian and Mediterranean (17%), Irano-Turanian and Europe and Siberian (10%).Mediterranean and Europe and Siberian (1%) and Mediterranean and Europe and Siberian and Irano-Turanian (17%) (Fig. 2C). The only endemic species was Astragalus (Caprini) piranshahricus and rare regional species are: Helianthemum ledifolium var. ledifolium, Rosularia sempervivoides and Valerianella carinata.

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A) Frequency of different families in terms of number of species in study area

Ap: Apiaceae, Li: Liliaceae, Fa: Fabaceae, Po: Poaceae, La: Lamiaceae, Ra: Ranunculaceae and As: Asteraceae



B) Frequency of life forms of plants in study area Th= Therophytes, Ge= Geophytes, Ph= Phanerophytes, Ch=Chamaephytes, He=Hemicryptophytes



C) Various Chorotypes of plant species in study area

IT: Irano-Turanian, IT-M: Irano-Turanian and Mediterranean, M-ES-IT: Mediterranean and Europe and Siberian and Irano-Turanian, IT-ES: Irano-Turanian and Europe and Siberian, ES: Europe and Siberian, M: Mediterranean, M-ES: Mediterranean and Europe and Siberian

Fig. 2. Families (A), life forms (B) and chrotypes (C) in terms of number of species in Sarshiv of Marivan region, Kurdestan province, Iran

Table 1.	. List c	of species.	life forms	s and choro	types in S	Sarshiv of I	Marivan region

Families	Species	Life Forms	Chorotypes
Spermatophyte	s/Angiospermae/Dicotyledonae		
Aceraceae	Acer monspessulanum L. subsp. cinerascens (Boiss.)Yaltiric	Ph	IT
Anacardiaceae	Pistacia atlantica Desf.	Ph	IT
	Bunium elegans (Fenzl) Freyn	Cr	IT-M
	Chaerophyllum macrospermum (Spreng.) Fisch. & C.A.Mey	Life Forms Ph Ph Cr He He	ES-IT-M
	Chaerophyllum macropodon Boiss.	He	IT
	Falcaria vulgaris Bernh.	He	ES-IT-M
Aniagona	Ferula orientalis L.	He	IT
Apraceae	Ferulago stellata Boiss.	He	IT
(Unidemera)	Prangos ferulacea (L.) Lindl.	He	ES, M, IT
	Scandix pecten-veneris L.	Th	ES, M, IT
	Smyrniopsis aucheri Boiss.	He	IT
	Smyrnium cordifolium Boiss.	He	IT
	Torilis leptophylla (L.) Reichenb.	Th	M-IT-ES
Aristolochiaceae	Aristolochia bottae Jaub. & Spach	He	IT
	Achillea millefolium L. subsp. millefolium	He	ES-IT
	Anthemis haussknechtii Boiss. & Reut. var. calva Eig	Th	IT
	Centaurea behen L.	Th	IT
	Chamaegeron oligocephalus Schrenk	Th	IT
	Chardinia orientalis (L.) O. Kuntze	Th	IT
Asteraceae	Crepis sancta (L.) Babcock subsp. sancta	Th	IT
(Compositae)	Rhaponticum insigne (Boiss.) Wagenitz	He	IT
(Compositae)	Echinops orientalis Trautv.	He	IT
	Gundelia tournefortii L.	He	IT
	Inula thapsoides (M. B. ex Willd.) Spreng.	Cr	IT
	Lactuca serriola L.	Ch	IT-ES-M
	Onopordon acanthium L.	He	IT
	Picnomon acarna (L.) Cass.	Th	IT, M
	Senecio vernalis Waldst. & Kit.	Th	IT-ES-M
	Serratula cerinthifolia (Sm.) Boiss.	He	IT, M
	Sonchus asper (L.) Hill subsp. glaucescens (Jordan) Ball.	Th	IT, M
	Steptorrhamphus persicus (Boiss.) O. & B. Fedtsch	He	IT

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Families	Species	Life Forms	Chorotypes
	Galium aparine L.	Th	ES, M, IT
C	Scrophularia nervosa Benth. subsp. nervosa	He	IT
Scrophulariaceae	Veronica polita Fries	Th	Polyregional
Valerianaceae	Valerianella carinata Loisel.	Th	IT
N7: 1	Viola modesta Fenzl.	Th	IT
violaceae	Viola odorata L.	Ge	IT,ES
Spermatophytes	s/Angiospermae/Monocotyledonae		
A 11:	Allium eriophyllum Boiss. var. eriophyllum	Ge	Polyregional
Amaceae	Allium scabriscapum Boiss. & Ky.	Ge	IT
Araceae	Arum conophalloides Ky. ex Schott.	Ge	IT
Colchicaceae	Colchicum specoisum Steven	Ge	ES
Iridaceae	Gladiolus kotschyanus Boiss.	Ge	IT
	Bellevalia longistyla (Miscz.) Grossh.	Ge	IT
	Eremurus spectabilis M. B. subsp. spectabilis	Ge	IT, M
Liliagona	Fritillaria persica L.	Ge	IT, M
Linaceae	Muscari caucasicum (Griseb.) Baker.	Ge	IT
	Ornithogalum cuspidatum Bertol	Ge	IT
	Ornithogalum oligophyllum E. D. Clarke	Ge	IT, M
Orabidagaga	Dactylorhiza umbrosa (Kar. & kir.) Nevski	Ge	IT
Orchitaceae	Comperia comperiana (Stev.) Ascherson & Graebner	Ge	IT
	Alopecurus myosuroides Hudson var. myosuroid	Th	ES,IT,M
	Agropyron panormitanum Parl.	Ge	ES,M
	Bromus tectorum L. var. tectorum	Th	ES,IT,M
	Dactylis glomerata L. subsp. glomerata	Не	ES,IT,M
Poaceae (Graminea)	Eremopoa persica (Trin.) Roshev. var. persica	Th	IT, M
	Gaudinopsis macra (M.B.) Eig.	Th	ES,IT,M
	Hordeum bulbosum L.	Ge	ES,IT,M
	Melica persica Kunth. subsp. persica	Не	IT, M
	Milium pedicellare (Bornm.) Roshev. ex Melderis	Th	М
	Poa bulbosa L. var. vivipara Koel.	Ge	ES,IT,M

Life form: Th= Therophytes, Ge= Geophytes, Ph= Phanerophytes, Ch= Chamaephytes, He= Hemicryptophytes Chorotype: IT= Irano-Turanian, IT-M= Irano-Turanian and Mediterranean, M-ES-IT= Mediterranean and Europe and Siberian and Irano-Turanian, IT-ES= Irano-Turanian and Europe and Siberian, ES= Europe and Siberian, M= Mediterranean, M-ES= Mediterranean and Europe and Siberian

Discussion and Conclusion

Life forms have close relationships with environmental factors (Muller-Dombois and Ellenberg, 1974), and frequency of terophytes was due to the completion of vegetative plants during the short period before the start of the dry period. In agreement with the current study the terophytes life form was also the dominant life form of the Kotli district in Pakistan (Amjad, 2012). According to Archibold the frequency (1995).of hemicryptophytes in a region represents the cold and mountainous climate. Note that the regional climate is cold and wet based Amberger, and on hemicryptophytes plants have been influenced by the climate and are abundant. Other trees and shrubs of the Irano-Turanian elements can be found in this area such as Pistacia atlantica, Crataegus pontica, Sorbus persica and Acer monspessulanum subsp. cinerascens Irano-Turanian noted. elements in brushwood and semi brushwood that can grow normally among the oak species

Salvia suffruticosa, Astragalus were compactus and Astragalus (carpini) piranshahricus. **Phlomis** olivieri, Tuecrium polium and Dactylis glomerata subsp. glomerata were semi steppe and steppe plants, which were grown patchy formed in this area. Because the Sarshiv of Marivan region is located in Irano-Turanian area, most of the plants in this area (50%) form vegetative elements of the Irano-Turanian. Also Because of the vicinity of vegetative European-Syberian and Mediterranean to Marivan region, part of the plants in this region was similar to Irano-Turanian. Mediterranean and European-Syberian. The similarity of the Irano-Turanian and Mediterranean is more than Irano-Turanian and European-Syberian in the studied area. Trees and shrubs, which are accompanied by oak species in different parts of Marivan region, are Pyrus syriaca, Rosa canina and Cotoneaster nummularifolia. Ahmadi et al. (2013) reported among all the species identified in heir study area, 52.2 % species (93 species) belong to the

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Families	Species	Life Forms	Chorotypes
	Taraxacum montanum (C.A.Mey.) DC.	Не	IT
	Tragopogon graminifolius DC.	He	IT, M
	Tragopogon reticulatus Boiss. & Huet	He	IT, ES
	Echium italicum L. var. italicum	He	IT, M
р :	Onosma microcarpum DC.	He	IT
Boraginaceae	Onosma sericeum Willd.	He	IT
	Symphytum kurdicum Boiss. & Hausskn.	He	IT
	Aethionema membranaceum DC.	He	IT
	Alyssum linifolium Steph. ex Willd. var. linifolium	Th	IT, M
	Arabis caucasica Willd. subsp. caucasica	He	IT,M
Brassicaceae	Conringia perfoliata (C.A.Mey.) Busch	Th	IT, ES
	Fibigia macrocarpa (Boiss.) Boiss.	He	IT
	Hesperis kurdica Dvorak et Hadac	He	IT
	Nasturtium officinale (L.) R. Br.	Cr	IT, ES
Campanulaceae	Campanula involucrata Auch.ex DC.	He	IT
Caprifoliaceae	Lonicera nummulariifolia Jaub. & Spach	Ph	IT, M
	Cerastium inflatum Link ex Desf.	Th	IT
	Holosteum umbellatum L.	Th	IT. M
Carvophyllaceae	Lenvrodiclis holostegides (C & Mey.) Fenzl ex Fisch & C & May	Th	ĨŤ
	Silene ampullata Boiss	He	IT
	Silene chlorifolia Sm	Не	IT
Cistaceae	Helianthemum ladifolium (L.) Miller var ladifolium	Th	IT M
Crassulacana	Resularia sampanyinoidas (Eisch.) Boriss		IT.
Dimensional	Rosularia sempervivolaes (Fiscil.) Boliss.	Th	II IT ES M
Dipsacaceae	Fieroceptatus plumosus (L.) Coult.	Th	11-ES-M IT
Euphorhissee	Euphorbia azerbajaznanica Bordz.	In	
Eupnorbiaceae	Eupnorbia conaylocarpa M.B.	не	11, ES IT
	Eupnorbia denticulata Lam.	He	
	Astragaius tortuosus DC.	Ch	11, ES
	Astragalus caryolobus Bunge	He	IT m
	Astragalus (Caprini) piranshahricus Maassoumi & Podl.	Ch	
	Astragalus compactus Lam.	Ch	
	Lathyrus cicera L.	Th	II, M
	Lens cyanea (Boiss, & Honen.) Aler.	In Th	
F 1	Lens orientalis (Boiss.) HandMzt.	In	II, ES
Fabaceae	Medicago rigidula (L.) var. rigidula	In	II, M
	Trifolium arvense L. var. arvense	Th	IT-ES-M
	Trifolium campestre Schreb.	Th	IT-ES-M
	Trifolium dasyurum C. Presl	Th	
	Trifolium pilulare Boiss.	In	11, M
	Trijolium stellatum L. var. stellatum	In Th	M
	Vicia narbonensis L. var. narbonensis	1h	II,ES
	Vicia variabilis Freyn & Sint.	He	II,ES
	Quercus brantu Lindl. var. persica (Jaub. & Spach) Zohary	Ph	IT m
Fagaceae	Quercus infectoria Oliv. subsp. boissieri (Reut.) O. Schwartz	Ph	
<i>a</i> :	Quercus libani Oliv.	Ph	11
Gentianaceae	Gentiana olivieri Griseb.	Ge	11
Geraniaceae	Geranium rotundifolium L.	Th	IT-ES-M
	Geranium tuberosum L. subsp. micranthum Schonbeck-Teme	Ge	IT
Hypericaceae	Hypericum scabrum L.	He	IT
	Eremostachys laciniata (L.) Bunge	He	IT
	Lallemantia peltata (L.) Fisch. & C.A.Mey.	Th	IT m r c
	Lamium album L. subsp. album	He	IT,ES
Lamiaceae	Mentha longifolia (L.) Hudson	Ge	IT-ES-M
(Labiatae)	Phlomis olivieri Benth.	He	
(Salvia suffruticosa Montbr. & Auch. ex Benth.	Ph	
	Teucrium polium L.	He	II, M
	Ziziphora capitata L. subsp. capitata	Th	<u> </u>
Malvaceae	Alcea kurdica (Schlecht.) Aleff	Th	ES,IT, M
Orobanchaceae	Orobanche aegyptiaca Pers.	Th	ES,IT, M
Papaveracea	Papaver dubium L.	Th	ES,IT, M
Podophyllaceae	Bongardia chrysogonum (L.) Boiss.	Ge	IT
Polygonaceae	Rumex conglomeratus Murr.	He	IT,ES
	Adonis sp.	Th	ES,IT,M
	Anemone coronaria L.	Ge	IT, M
	Ceratocephalus testiculatus (Crantz) Roth.	Th	IT, M
Ranunculaceae	Ficaria kochii (Ledeb.) Iranshahr & Rech. f.	Ge	IT
капипсиласеае	Ranunculus arvensis L.	Th	ES,IT,M
	Ranunculus cicutarius Schlechtend.	Th	ES
	Ranunculus pinardi (Stev.) Boiss.	Th	ES,IT,M
	Thalictrum sultanabadense Stapf	He	IT
	Cerasus microcarpa (C.A.Mey.) Boiss. subsp. microcarpa	Ph	ES
	Cotoneaster nummularifolia Pojark.	Ph	IT
Possessa	Crataegus pontica C.Koch	Ph	IT
Rosaceae	Pyrus syriaca Boiss.	Ph	IT, M
	Rosa canina L.	Ph	ES,IT
	Sorbus persica Hedl.	Ph	IT
Rubiaceae	Callipeltis cucullaris (L.) Rothm.	Th	IT, S
	Cruciata taurica (Pallas ex Willd.) Ehrend.	Не	IT

regions of Irano-Turanian and other species belong to other chorotypes. The result of this study is similar to their findings and mostly this is due to regional similarity such as climate condition and topography and micro relief (Leutner et al., 2012) that has an effect on vegetation. Rahimi and Atri (2013) in a research on flora of Miandasht Wildlife Refuge in Khorassan Province, Northern Iran, reported that the most of identified species were Irano-Turanian. Basiri et al. (2011) also mentioned that a large number of plant species in River Forest Behbahan, Iran, belonging to the regions of Irano-Turanian and common areas of Irano-Turanian and Mediterranean eruption, were the most important ecological groups.

Investigations of the vegetation diversity in this area, revealed that a number of plants were endemic and rare. The presence of endemic species was among the fundamental criteria for characterizing biodiversity of a territory (Giuseppe, 2013). There were an endemic (Astragalus species (carpini) piranshahricus) and three rare species (Helianthemum ledifolium (L.) Miller var. Ledifolium, Rosularia sempervivoides Although Boriss (Fisch.). and Valerianella carinata Loisel in this region have small areas, there are a lot of genetic resources that should be Protected and reserved and because of the importance of plants (their production and other applications), it is necessary to establish certain laws and regulations in order to protect some of the rare species or sensitive ecosystem. In a Northernareas of Khorassan 11.6% (29 of all 256) plant species were endemic (Rahimi and Atri, 2013). Plants resources are a valuable genetic pool that should be protected. Although they may not be used today. there may be a fundamental need for them in near future. And should be considered that knowledge and identify is necessary before any action about using plants.

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Literature Cited

- Ahmadi, F., Mansory, F., Maroofi, H., Karimi, K., 2013. Study of flora, life form and chorotypes of the forest area of West Kurdistan (Iran). Bulletin of Environment, *Pharmacology and Life Sciences*, 2(9): 11-18.
- Amjad, M. Sh., 2012. Life form and leaf size spectra of vegetation in Kotli Hills, Azad Jammu and Kashmir (Pakistan). *Greener. Jour. Agric. Scie.*, 2(7): 345-350.
- Anonymous, 1997. Detailed executive studies of forest resources management in watershed Chenareh Marivan (Studies of forest cover, weather and climate and geology). The Remote Sensing Consultants, Publication of Research Institute of Forests and Rangeland, No.20, 350pp. Tehran, Iran. (In Persian).
- Archibold, O. W., 1995. Ecology of world vegetation. Chapman and Hall Inc., London.
- Ashrafi, K., Assadi, M., Najahi, R., 2004. Introduced flora, life form and geographical distribution of plants Varamin, Iran. *Jour. Pajoohesh and Sazandegi*, 62: 51-63. (In Persian).
- Asri, Y., Eftekhari, T., 2002. Introduced flora and wetland vegetation Siahkeshim. *Jour. Environment*, 54(4): 423-443. (In Persian).
- Asri, Y., Mehrnia, M., 2001. Plant communities of the central part of the White Mountains Protected Area. *Iranian Jour. Natural Resources*, 54(4): 423-443. (In Persian).
- Assadi, M., Maasoomi, A. A., Khatamsaz, M., Mozafaryan, 1987-1993. V., Flora of Iran. Research Institute of Forests and Rangeland publication. No.1, pp.38. Tehran, Iran. (In Persian).
- Atashgahi, Z., Ejtehadi, H., Zare, H., 2009. Introduced flora, the life form and geographical distribution of plants in the forests of East Dodangeh Sari, Mazandaran Province. *Iranian Jour. Biology*, 22(2): 193-203. (In Persian).
- Basiri, R.. Mozayyan, M., 2010. Statistical evaluation of some topographic indices in ecological researches (Case study in West

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Azerbaijan, Iran). International Jour. Applied Environmental Sciences, 5(1): 103-114.

- Basiri, R., Taleshi, H., Poorrezaee, J., Hassani, S. M., Gharehghani, R., 2011. Flora, life form and chorotypes of plants in river forest Behbahan, Iran. *Middle-East Jour. Scientific Research*, 9 (2): 246-252.
- Davis, P. H., 1984. Flora of Turkey. Vols 1-10. Edinburgh Univ. Press, Edinburgh.

Ghahraman, A., Attar, F., 1998. Biodiversity of plant species in Iran. Tehran University Press. Tehran, Iran, 1212pp. (In Persian).

- Giuseppe, B., 2013. Adaptive management as a tool to improve the conservation of endemic floras: the case of Sicily, Malta and their satellite islands. *Biodivers. Conserv.*, 22(6-7): 1317-1354.
- Kashipazha, A. H., Asri, Y., Moradi, H. R., 2004. Introduced flora, life form and geographical distribution of plants in Bagh Shad. *Jour. Pajoohesh and Sazandegi*, 63: 95-103. (In Persian).
- Kent, M., Coker. P., 1992. Vegetation description and analysis: a practical approach. CRC Press.
- Leutner B. F., Steinbauer, M. J., Müller, C. M., Früh, A. J., Irl, S., Jentsch, A., Beierkuhnlein, C., 2012. Mosses like it rough-growth form specific responses of mosses, herbaceous and woody plants to micro-relief heterogeneity. *Diversity*, 4: 59-73.
- Muller-Dombois, D., Ellenberg H., 1974. Aims and methods of vegetation ecology, John wiley & Sons. New York.
- Okland, R. H., 1990. Sommerfeltia supplement 1. (Vegetation ecology: theory, methods and applications with reference to fennoscandia). Botanical garden and museum, University of Oslo, Norway. 233pp.
- Rahimi, A., Atri, M., 2013. Study of flora of Miandasht Wildlife Refuge in Northern Khorassan Province, Iran. *Jour. Ecology and the Natural Environment*, 5(9): 241-253. (In Persian).
- Raunkiaer, C., 1934. The life forms of plant and statistical plant geography. Clarendon Press. Oxford. 328pp.
- Rechinger, K. H., 1998. Flora Iranica. Vols. 1-173. Akademisch Druck- U Verlagsanstalt, Graz.

- Takhtajan, A., 1986. Floristic regions of the world (translated by Mildered, E. M.). Univ. of California Press. 522 pp.
- Townsend, C. C., Guest, E., 1985. Flora Iraq. Vols. 1-9, Ministry of agriculture and agrarian reform, Baghdad.
- Turan, Y., Filiz, Y., 2011. The effects of restoration on soil properties in degraded land in the semiarid region of turkey. *Catena*, 84(1-2): 47-53.
- Vakili Shahre Babaki, S. M. A., Atri, M., Assadi, M., 2001. Introduced flora, life form and geographical distribution of plants in the region Meymand Babak (Kerman Province). *Jour. Pajoohesh and Sazandegi*, 14(3): 75-81. (In Persian).
- Vaseghi P., Ejtehadi, E., Zokaee, M., 2008. Investigation of flora, life form and chorology of vegetation in the mountains of the Kalat - John Gonabad, Khorasan Razavi. *Jour. Scie. Teacher Education*, 8(1): 75-88. (In Persian).
- Zohary, M., 1963. The geobotanical structure of Iran. Bulletin of the Research Council of Israel, Section D., Botany. Supplement. 113 p.
- Zohary, M., 1973. Geobotanical foundation of the Middle East. vols. 1-2, Stuttgart. 739p.