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Flora diversity in burned forest areas in Dehdez, Iran

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Abstract

Flora identified within a region plays an important role in maintaining national natural reserves. Iran is one of the most important centers of plant diversity in the Old World (22% endemic species of 8000 plant species). Dehdez burned forest area is located in the southeastern Khuzestan province. The field data were obtained from 115 sample plots in a systematic random grid (20 m × 20 m). The attributes such as tree and shrub species type, the number of species and canopy coverage were recorded. Within each sample plot small and large crown diameters were measured. In order to record herbaceous species, the Whitaker's snail plot method was applied (100 m² minimum plot area). In this study, 240 plant species were assessed and identified to 158 genera and 42 families. *Asteraceae* family with 33 species, *Papilionaceae* with 32 species, *Poaceae* with 29 species, *Apiaceae* with 27 species and *Lamiaceae* with 18 species prevailed and constituted 57.9% of all the plants observed. Investigation of species life forms showed that Hemicryptophyte plants were most important. Chorological study showed that species found in Irano-Turanian and Common areas of Irano-Turanian and Mediterranean eruption were the most important ecological groups in the region, while other chorotypes were positioned far from the next in importance.

Key words

flora, plant geography, Khuzestan province, diversity, life forms

Introduction

Iran with approximately 1.65 million km^2 area is a large country and except for Turkey it is the richest country in the Middle East in terms of plant diversity (White and Leonard 1991). The country is one of the centers of plant diversity considered in the Old World with nearly 22% endemic species of 8000 plant species of flora (Ghahreman 1994). The life form of any plant is fixed to developement based on morphological adaptation of plants to environmental conditions. There are different classification of the life forms, and among them Raunkier system is most commonly used. This system is based on the position of vegetative buds observed after a unfavorable for growth season. Plants are divided in the six main groups: Phanerophyte, Chamaephyte, Hemicryptophyte, Cryptophyte, Therophyte and Epiphyte (Asri 1999). The life form also depends on genetics and environmental factors, Certain environmental conditions can trigger shaping different, undeniable forms of plants. The spectrum of dominant life forms in a given climate, represents how adaptation of plants

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to climate is exceptional. The ecological range of each plant species has certain and unique amount of changes which will endure in environmental conditions. Field distribution of species may be limited or wide (Asri 1998). Vegetation of each region indicates specific important features and phenomena of nature and is the best guide in judgments concerning ecological factors in the region. Plants are resistant organisms that tolerate all environmental conditions and occurrences over the long term, including environmental stress (Meymandi Nezhad 1973). In any country, information on vegetation status – not just infrastructure development and scientific activities in the field – has commercial applications. It can also play an important role in restoration and use of natural resources (Shahsavari 1998). Identification of plant vegetation and geography of each region based on regional ecological research and reviews provides for effective appraisal of current and anticipated future nature status, and in this context proper management practices at a regional level play an important role (Shahsavari 1994). The position of regional studies on plants and plant geography has been more and more recognized in the global network of regional nature conservation (Iran Nezhad Parizi *et al.* 2001). Floristic research is one of the most effective methods in the management and protection of genetic resources (Akbarinia *et al*. 2004).

As a general rule, the identification of vegetation of an area and studies on biodiversity are particularly important as research basis in environmental sciences (Stace 1989). Quick and easy access to a particular plant species at its site and given time to determine the potential and capability of vegetative region (Stace 1989). This study is very useful for planning with reference to reclamation and management of valuable species. The study had been carried out for the first time in Southwest Iran with the aim to precisely identify plant species, especially those of local plants so as to review their chorotypes and life forms.

Material and methods

The burned forest study area is located in Southwest Iran in Khuzestan province; between (31°41'45") and (31°42'15") eastern longitude and (50°18'20") and (50°19'15") northern latitude (fig. 1).

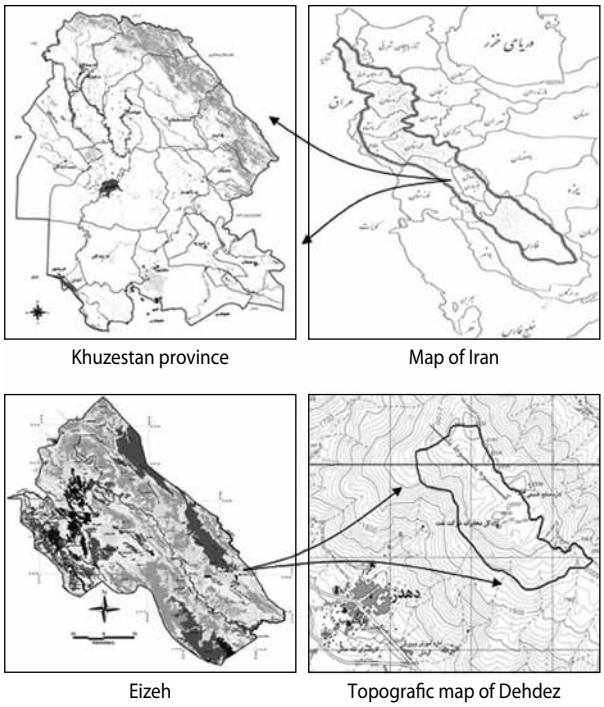

Fig. 1. Map of studied area

The study site covers an area of 238 ha. The altitude there is 1950–2204 m a.s.l. According to Eizeh weather station statistics, average precipitation and mean annual temperature are 596 mm and 19.1°C, respectively. In terms of climate the area based on coefficient method drought, De Marton (19.81) with semi-arid climate and is based on the method of Amberger coefficient (60.86) is placed in the range of sub-humid climate areas.

The field data were obtained using 115 sample plots (20 m × 20 m) in a systematic random grid. The attributes observed included tree and shrub species, the number of species and canopy coverage were recorded and small and large crown diameters were measured in each sample plot. In order to record herbaceous species, the Whitaker's nested sampling plot method was used, and the minimum area of 100 m² was determined. In the intercept, the area and the number of species for each plot were drawn to the X and Y axes, respectively. In the intersection point where the curve became horizontal, a vertical line was drawn toward the X- axis (Muller and Ellenberg 1974). In this study, the abovementioned minimum plot area was obtained as 81 m². The plot area was considered as 100 m² with the aim to increase precision.

Plant samples were identified at the Islamic Azad University herbarium in Ahwaz with the use of valid references such as Flora Iranica (Rechinger 1998), Flora of Iraq (Townsen *et al*. 1985), Flora of Turkey (Davis 1965–1985), Flora of Iran (Asadi *et al*. 1988), Flora of Khuzestan (Mozaffarian 1999), Flora of Ilam (Mozaffarian 2007), Flora of Iran (Ghahreman 1975–1999) and other applicable resources.

The life forms of plants were determined by Raunkier method (Raunkier 1934). Geographical distribution of species was determined based on vegetative areas classified by Zohary (Zohary 1963, 1973) and Takhtajan (Thakhtajan 1986).

Results

In 2012, 240 plant species from the study area were examined and classified into 158 genera and 42 families. The list of families, species, life forms and their distribution is presented in tab. 1.

Tab. 1. Plant families, species, life forms and chorotypes in Dehdez burned forest

Family	Species	Life forms	Chorotypes
1	2	3	4
Aceracae	*Acer monspessulanum* L.	Ph	IT
Amaryllidaceae	*Ixiolirion tataricum* (Pall.) Herb.	Ge	IT
Anacardiaceae	*Pistacia atlantica* Desf.	Ph	IT
	Pistacia khinjuk Stocks	Ph	IT
Apiaceae	*Azilia eryngioides* (Pau) Hedge & Lamond	He	IT
	Bifora testiculata (L.) Spreng	Th	IT, ES
	Bunium persicum (Boiss.) B. Fedtsch	He	IT
	Chaerophyllum macropodum Boiss.	He	IT
	Dorema aucheri Boiss.	He	IT, M, ES
	Ducrosia anethifolia (Dc.) Boiss.	He	IT, ES
	Ducrosia flabellifolia Boiss.	He	IT, ES
	Eryngium billardieri F. Delaroche	He	IT
	Eryngium caucasicum Trautv.	He	IT
	Eryngium bungi Boiss.	He	IT
	Ferula haussknechtii Wolff ex Rech. f.	He	IT
	Ferula stenocarpa Boiss. &Hausskn.	He	S
	Ferula ovina (Boiss.) Boiss.	He	IT
	Haussknechtii elymitica Boiss.	He	IT
	Legoecia speculum-veneris (L.) chaix	Th	IT, M
	Malabalia secacul (Miller) Boiss subsp. aucheri (Boiss.) c.c. Townsend	He	IT
	Ferulago macrocarpa (Fenzt) Boiss.	He	IT
	Ferulago angolata (Schlecht.) Boiss. Subsp. angolata	He	IT
	Pimpinella eriocarpa Banks & soland.	Th	IT
	Pimpinella tragium Vill.	Th	IT
	Prangos uloptera Dc.	He	IT
	Pycnocycla caespitosa Boiss. & Hausskn.	He	IT
	Scandix pectin-veneris L.	Th	IT, M, ES
	Smyrniopsis aucheri Boiss.	He	IT
	Smyrnium cordifolium Boiss.	He	IT, M
	Torilis leptophylla (L.) Reichenb.	Th	IT, M, ES
	Trugenia latifolia (L.) Hoffm.	Th	IT, ES
Asteraceae	*Achillea wilhelmsii* C. Koch	He	IT, S
	Achillea filipendula Lam.	He	IT, S
	Anthemis persica Boiss.	He	IT
	Anthemis wettsteiniana Hand. –Mzt.	Th	IT
	Artemisia aucheri Boiss.	Ch	IT
	Artemisia haussknechtii Boiss.	Ch	IT
	Atractylis cancellata L.	Th	M
	Carduus getulus Pumel.	He	S
	Centaurea pabotii Wagenitz	He	IT, S
	Centaurea bruguierana (Dc.)	Th	IT, S
	Centaurea inttricata Boiss.	He	IT
	Centaurea virgata Lam.	He	IT

1	2	3	4
Asteraceae	*Carthamus oxyacantha* M. B.	Th	IT
	Crepis sancta (L.) Babcock	Th	IT, M, S
	Cichorium intybus L.	He	Cosm
	Cichorium pumilum Jacq.	Th	IT, M
	Cirsium congestum Fisch. & C. A. May. ex Dc.	He	IT
	Cirsium spectabile Dc.	Ge	IT
	Cousinia haussknechtii C. Winkl.	He	IT
	Echinops erioceras Bornm.	He	IT
	Gundelia tournefortii	He	IT
	Hedypnois rhagadioloides (L.) F. W. Schmidt subsp. cretica (L.) Hayek	Th	IT, M
Asteraceae	*Koelpinia linearis* Pall.	Th	IT
	Lactuca serriola L.	Th	IT
	Notobasis syriaca (L.) Cass.	Th	IT, M
	Onopordon leptolepis Dc.	He	IT, S
	Outreya carduiformis Jaub. & Spach	He	IT
	Picris strigosa M. B. subsp. kurdica Lack	He	IT
	Picnomon acarna (L.) Cass.	He	IT
	Scariola orientalis (Boiss.) Sojak	He	IT
	Sonchus oleraceus L.	Th	Cosm
	Tanacetum polycephalum Schultz-Bip. Subsp. Polycephalum	He	IT
Boraginaceae	*Anchusa strigosa* Labill.	He	IT, M
	Arnebia decumbens (Vent.) Coss. & Kral	He	IT
	Gastrocotyle hispida (Forssk.) Juss.	Th	IT, S
	Onosma bulbotrichum Dc.	He	IT
	Onosma dasytrichum Boiss.	He	IT
	Onosma rostellatum Lehm.	He	IT
	Rindera lanata Pall.	He	IT
Campanulaceae	*Campanula cecilii* Rech. F. & Schiman-Czeika	Th	IT
	Campanula perpusilla Dc.	He	IT
Capparidaceae	*Cleome iberica* Dc.	Th	IT, ES
Caprifoliaceae	*Lonicera nummulariifolia* Jaub. & Spach	Ph	IT

1	2	3	4
Caryophyllaceae	*Arenaria persica* Boiss.	Th	IT, M, ES
	Dianthus crossopetalus (Fenzl ex Boiss.) Grossh.	Ch	IT
	Dianthus orientalis Adams. Subsp. Orientalis	Ch	IT
	Minuartia hybrida (Vill.) Schischk. Subsp. hybrida	Th	IT, M, ES
	Paronaychia arabica (L.) Dc.	He	S
	Silene conoidea L.	Th	IT, M
	Velezia rigida L.	Th	IT, M, ES
	Acanthophyllum microcephalum Boiss.	Th	IT, M
Convolvulaceae	*Convolvulus arvensis* L.	He	Cosm
	Convolvulus buschiricus Bornm.	He	S
	Convolvulus stachydifolius Choisy	He	IT
Crassulaceae Cruciferae	*Sedum hispanicum* L.	Th	M, ES
	Capsella bursa-pastoris (L.)	Th	Cosm
	Diplotaxis harra (Forssk.) Boiss.	He	IT, ES
	Euclidium syriacum (L.) R. Br.	Th	IT
	Isatis raphanifolia Boiss.	Th	IT
	Neslia apiculta Fisch. et Mey.	Th	IT
	Raphanus raphanistrum L.	Th	IT, ES
	Sisymbrium officinale (L.) Scop.	He	IT
Dipsacaceae	*Cephalaria dichaetophora* Boiss.	Th	IT, M
	Pterocephalus brevis coult.	Th	IT, M
	Scabiosa calocephala Boiss.	Th	IT
Euphorbiaceae	*Euphorbia microsciadia* Boiss.	He	IT
	Euphorbia peplus L.	He	IT
Fagaceae	*Quercus brantii* Lindl.	Ph	IT
Gentiaceae	*Centaurium pulchellum* (Swartz) Druce	Th	IT
	Gentiana olivieri Griseb.	Ge	IT
Geraniaceae	*Biebersteinia multifida* Dc.	He	IT
	Erodium pulverulentum (Cav.) Willd.	Th	IT, M, S
	Geranium dissectum L.	Th	IT, M, ES
	Geranium rotundifolium L.	Th	IT, M, ES

1	2	3	4
Hyperi-caeae	*Hypericum helianthemoides* (Spach) Boiss.	He	IT
	Hypericum perforatum L.	He	IT
Hyperi-caeae	*Hypericum scarbrum* L.	He	IT
Lamiac-eae	*Lamium amplexicule* L.	Th	IT, M, ES
	Marrubium austracanicum Jacq.	He	IT, M
	Marrubium persicum C. A. Mey.	He	IT
	Mentha longifolia (L.) *Hudson var.petiolata* Boiss.	Ge	Cosm
	Nepeta persica Boiss.	He	IT
	Phlomis bruguieri Desf.	He	IT
	Phlomis olivieri Benth.	He	IT
	Phlomis persica Boiss.	He	IT
	Salvia macrosiphon Boiss.	He	IT
	Salvia compressa vent.	He	IT
	Salvia reuterana Boiss.	He	IT
	Salvia syriaca L.	Ge	IT
	Stachys lavandulifolia Vahl.	He	IT, M, ES
	Teurium polium L.	Ch	IT, M
	Teucrium oliverianum Gingins.	He	IT
	Thymus kotschyanus Boiss. & Hohen.	Ch	IT
	Ziziphora capitata L. subsp. orientalis Samuelsson ex Rech. F.	Th	IT, M
	Ziziphora tenuir L.	Th	IT
Liliaceae	*Allium atroviolaceum* Boiss.	Ge	IT
	Allium eriophyllum Boiss. var. eriophyllum	Ge	IT
	Allium colchicifolium Boiss.	Ge	IT
	Allium hirtifolium Boiss.	Ge	IT, S
	Muscari tenuiflorum Tausch	Ge	IT
	Tulipa clusiana Dc.	Ge	IT
Lythra-ceae	*Lythrum salicaria* L.	He	IT, ES, S
Malva-ceae	*Alcea angulata* (Freyn & Sint.) Freyn ex lljin	He	IT
	Alcea aucheri (Boiss.) Alef.	He	IT
	Helianthemum salicifolium (L.)	Th	IT, M, S
	Malva parviflora L.	Th	IT, M

1	2	3	4
Papav-eraceae	*Papaver dubium* L.	Th	IT, M, ES
	Papaver macrostomum Boiss. & Huet ex Boiss.	Th	IT
Papili-onaceae	*Astragalus adscendens* Boiss. & Hausskn	He	IT, S
	Astragalus argyrostachys Boiss.	He	IT
	Astragalus callistachys Boiss. et Buhse	Ch	IT
	Astragalus caprinus Dc.	He	IT, S
	Astragalus cemerinus Beck.	Ch	IT
	Astragalus cephalanthus Dc.	Ch	IT
	Astragalus fasciculifolius Boiss.	Ph	IT, S
	Astragalus gypsicolus Maassoumi. & Mozaffarian	He	IT
	Astragalus gossypinus Fisch.	Ch	IT
	Astragalus obtusifolius Dc.	He	S
	Astragalus sieberi Dc.	He	IT, S
	Ebenus stellata Boiss.	Ch	IT
	Glycyrrhiza glabra L. Var. glabra	He	IT, M, ES
	Hymenucarpus circinnatus (L.) Savi	Th	M
	Lathyrus inconspicuus L.	Th	IT, ES
	Mediacago coronata (L.) Bartilini	Th	IT, M
	Medicago minima (L.) Bartilini	Th	Cosm
	Medicago orbicularis (L.) Bartilini	Th	Cosm
	Medicago polymorpha L.	Th	IT, M, ES
	Medicago radiate L.	Th	IT
	Medicago rigidula (L.) All.	Th	IT, M
	Medicago sativa L.	He	Cosm
Papili-onaceae	*Onobrychis crista-galli* (L.) Lam.	Th	M
	Onobrychis cornuta (L.) Desv. Subsp. cornuta	Ch	IT
	Ononis reclinata L.	Ch	IT
	Trifolium campestre Schreb.	Th	IT, M, ES
	Trifolium clusii Godron & Gren. Var. Kahiricum zoh.	Th	IT, M
	Trifolium stellatum L.	Th	M
	Trifolium tomentosum L.	Th	IT, M, ES

1	2	3	4
Papili-onaceae	*Trifolium resupinatum* L.	Th	IT, M, ES
	Vicia monantha Retz.	Th	IT
	Vicia villosa Roth	Th	IT
Plantag-inaceae	*Plantago lanceolata* L.	He	Cosm
	Plantago lagopus L.	Th	IT, M
	Plantago coronopus L.	Th	IT, M, S
Poaceae	*Avena ludoviciana* Durieu.	Th	IT, M
	Aegilops triuncialis L.	Th	IT, M
	Agropyrom trichophorum (Link) Richter	He	IT
	Agropyrom intermedium (Host) P- Beauv.	He	IT
	Agropyrom tauri Boiss. & Bal.	He	IT
	Boissiera squarrosa Hochst. ex Steud	Th	IT, M
	Bromus danthoniae Trin.	Th	Cosm
	Bromus tomenteluss Boiss.	He	IT
	Bromus scoparius L.	Th	IT, M, ES
	Bromus tectorum L.	Th	Cosm
	Bromus sterrilis L.	Th	IT
	Cynodon dactylon (L.) Pers.	Ge	Cosm
	Dactylis glomerata L.	He	IT, M, ES
	Eremopoa persica (Trin.) Roshev.	Th	IT, M, ES
	Festuca ovina L.	He	IT, M
	Heteranthelium piliferum (Banks & Soland.) Hochst.	Th	IT
	Hordeum glaucum Steud.	Th	IT, M
	Hordeum sponataneum C. Koch	Th	IT
	Hordeum bulbosa L.	Th	IT
	Hordeum violaceum Boiss. et Huet	He	M, ES
	Hyparrhenia hirta (L.) Stapf	He	IT, M, S
	Melica persica Kunth	He	IT, M
	Phalaris minor Retz.	Th	IT, M
	Poa bulbosa L.	Ge	IT, M, ES
	Stipa capensis Thunb.	Th	IT, M, S
	Stipa hohenackeriana Trin. & Rupr	He	IT
	Taeniatherum crinitum (Schreb.)	Th	IT, M
Poaceae	*Trachynia distachya* (L.) Link.	Th	IT, M, S
	Vulpia myuros (L.) j. f. Gmel.	Th	IT, M, ES
Polygo-naceae	*Rumex crispus* L.	He	Cosm
	Rumix vesicarius L.	Th	S, M
Primula-ceae	*Anagallis arvensis* L.	Th	IT, M, ES
Ranun-culaceae	*Ceratocephalus falcatua* (L.) Pers.	Th	IT, ES
	Delphinium cyphoplectrum Boiss.	Ge	IT
	Ranunculus arvensis L.	Th	IT
	Ranunculus asiaticus L.	Ge	IT, M
Reseda-ceae	*Reseda aucheri* Boiss. subsp. bracteata (Boiss.) Rech. F.	Th	IT
Rhamna-ceae	*Rhamnus persica* Boiss. & Hohen.	Ph	IT
Rosa-ceae	*Amygdalus orientalis* Duh.	Ph	IT
	Amygdalus scoparia Spach	Ph	IT
	Amygdalus lycioides Spach Var. Lycioides	Ph	IT
Rosa-ceae	*Crataegus azarolus* L.	Ph	IT
	Rosa elymatica Boiss. & Hausskn.	Ph	IT
	Cerasus microcarpa (C. A. Mey.) Boiss. Subsp. microcarpa	Ph	IT
	Sanguisorba minor Scop. Subsp. Lasiocarpa (Boiss. & Hausskn)	He	IT, M, ES
Rubia-ceae	*Callipeltis cucularis* (L.) Stev.	Th	IT, S
	Galium setaceum L.	Th	IT
	Galium tricorne Stokes	He	IT, ES
Rutaceae	*Haplophyllum tuberculatum* (Forssk.) juss.	He	IT
Scrophu-lariaceae	*Kickxia sieberi* (Reichb.) Allan.	He	M
	Scrophularia striata Boiss.	He	IT
	Verbascum sinuatum L. Var. sinuatum	He	IT, ES, S
	Verbascum assurense Bornm. & Hand. –Mzt.	He	IT
	Verbascum kochiforme Boiss. & Hausskn.	He	IT
	Veronica anagalis-aquatica L.	Th	Cosm

1	2	3	4
Solanaceae	*Hyoscyamus orthocarpus* Schonbeck – Temesy	He	IT
	Hyoscyamus tenuicaulis Schonbeck – Temesy	He	IT
Thymelaceae	*Daphne mucronata* Royle	Ph	IT, ES
	Daphne stapfii Bornm. & Keissler	Ph	IT
	Thymelaea mesopotamica (C. jeffrey) B. Peterson	Th	IT, ES
Urticaceae	*Parietaria judaica* L.	He	IT
	Zosimia absinthifolia Hoffm.	He	IT
Valerianceae	*Valerianella vesicaria* (L.) Moench.	Th	IT, M
Verbenaceae	*Vitex pseudo-negundo* (Hausskn.) Hand-Mzt.	Ph	IT
Zygophyllaceae	*Peganum harmala* L.	He	Cosm
	Tribulus terrestris L.	He	IT

Ph – Phanerophyte, He – Hemicryptophyte, Th – Therophyte, Ge – Geophyte, Ch – Chamaephyte, IT – Irano-Turanian, M – Mediterranean, S – Sahara-Sindian, ES – Euro-Siberian, Cosm – Cosmopolite.

Asteraceae (33 species), *Papilionaceae* (32 species), *Poaceae* (29 species), *Apiaceae* (27 species) and *Lamiaceae* (18 species) were the most important families. These families represented 57.9 % of all the species and families observed. Frequency of plant species from the families identified is shown in fig. 2.

The assessment of life forms based on the Raunkier system (Raunkier 1934) showed that the most important group was Hemicryptophyte. In the present study, Hemicryptophyte constituted 43%, Therophyte – 38%, Geophytes – 7%, Phanerophyte and Chamaephyte – 6% of the life forms observed. The life-form spectrum of the plants investigated is presented in fig. 3.

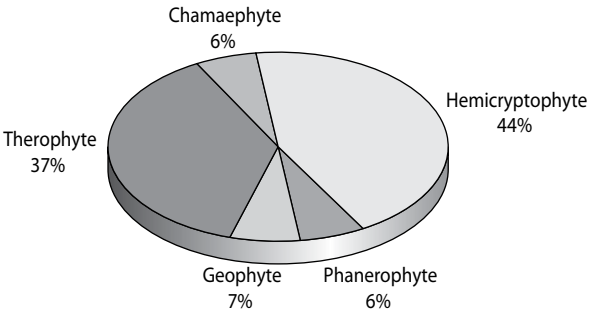

Fig. 3. Life-form spectrum of plants in Dehdez forest

Geographical distribution analysis showed that the most important chorotype was Irano-Turanian. The results obtained indicated that Irano-Turanian chorotype constituted 53.3%, Irano-Turanian, Mediterranean (IT, M) – 11.6%, Irano-Turanian, Mediterranean and European-Siberian (IT, M, ES) – 9.6% of plant geographical distribution. The abovementioned chorotypes constituted 74.5% of all the species observed. The spectrum of geographical distribution is shown in fig. 4.

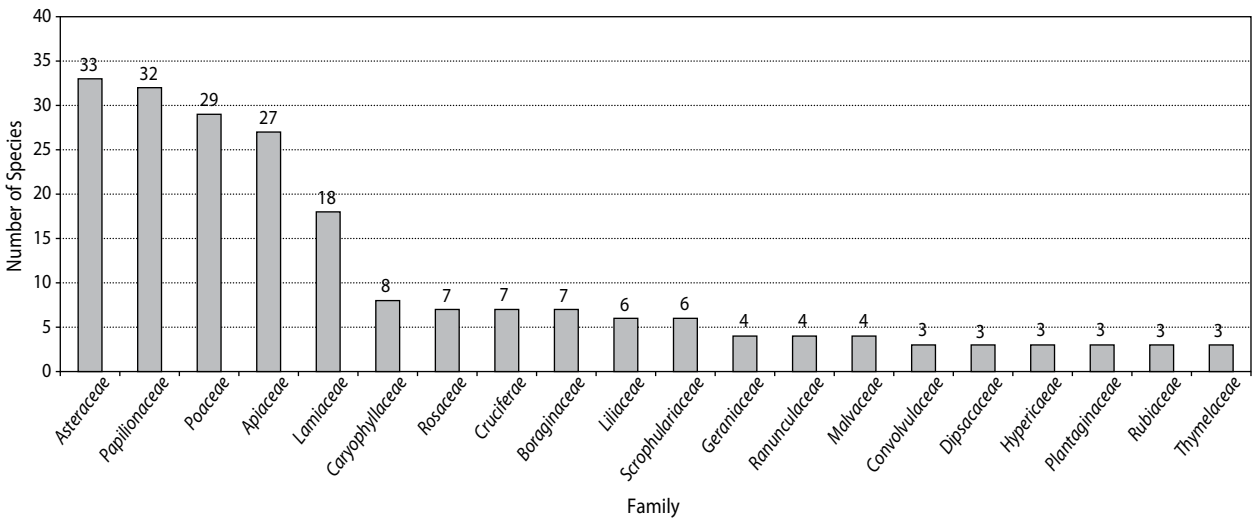

Fig. 2. Frequency plant families and species in Dehdez forest

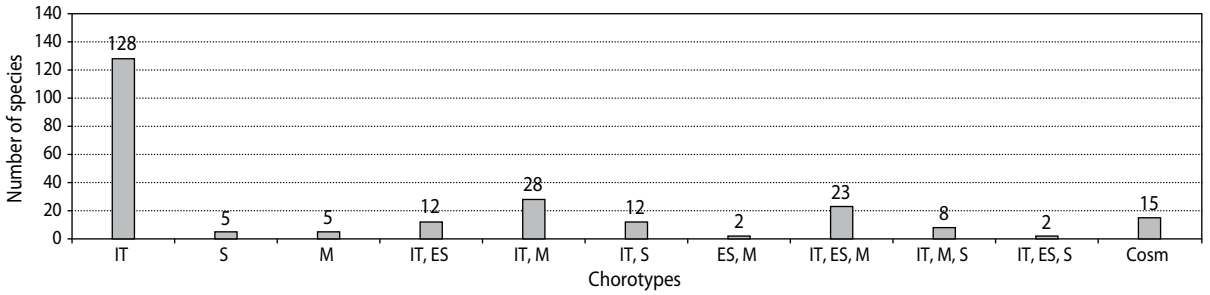

Fig. 4. Chorological types spectrum in flora in Dehdez forest

Discussion

The results obtained allow for the conclusion that the study area is very rich with reference to plant diversity. Among all plants, Hemicryptophyte (43%) are dominant and Therophyte (38%) are next in the order. Plant life forms indicate abilities of adaptation to environmental factors, and especially – climatic conditions.

According to Mobayen (1975, 1985, 1995) the frequency of Therophyte plants is a result of Mediterranean climate and the frequency of Hemicryptophyte is attributable to cold and temperate climate. On the whole, the frequencies of Hemicryptophyte and Therophyte among the plants of the area show the effects of the two types of climate: Mediterranean and cold temperate. Therophyte adapted to the rainfall shortage and dryness of the region, by enduring in the form of seed during the vegetation season (Asri 2003). Hemicryptophyte adapted to conditions of the area by using different ways such as: reserving water, using ground water, reducing water needs by losing leaves and diminishing own vegetative growth. The dominance of Hemicryptophyte and Therophyte clearly indicates adaptation of these plants to area aridity. The geographical distribution of plants reflects the climate conditions. Considering the fact that 53.3% plant species in the area are Irano-Turanian elements, there can be concluded that the area is Irano-Turanian (characterized by low rainfall and extended dry season). *Astragalus* diversity with its 11 species identified in the study area which is mountainous, shows that *Astragalus* family has adapted to mountainous conditions. The occurrence of *Asteraceae* and *Lamiaceae* families with large species diversity is the result of environmental degradation in the area investigated. It is believed that degradation of the region is accompanied by increasing occurrence of several plant families including *Asteraceae*, which is supported by the results of Archibold (1995) and Vakili Shahrebabaki *et al.* (2001). The presence of plant species such as *Stachys lavandulifolia*, *Teucrium polium*, *Teucrium orientale, Phlomis olivieri* and *Euphorbia sp.* indicates negative changes in not protected portions of this area.

Conclusion

The study area is very rich in terms of plant diversity. Documenting habitat floristic composition is valuable for ecological research continuation as well as management and conservation of plants and animals. Resources available for conservation of species and ecosystems are in short supply relative to the needs. Targeting conservation and management actions toward the species and ecosystems requires clearly established priorities such as studies of floristic composition. Thus, in this research, the identification of 245 plant species in Dehdez burned forest along with their chorology, family, species and life form are of central importance for further ecological investigation, conservation and management of wildlife refuge in Iran.

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