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A CHECKLIST OF THE FLORA OF SHANJAN PROTECTED AREA, EAST AZERBAIJAN PROVINCE, NW IRAN

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Abstract

The flora of protected Shanjan rangeland in Shabestar district, Azerbaijan Province, NW Iran was studied using a 1 m x 1 m quadrate in spring and summer 2011. The climate of this area is cold and dry. In this area 94 plant species belonging to 25 families were identified as constituting the major part of the vegetation. The families in the area are *Amaryllidaceae, Boraginaceae, Campanulaceae, Caryophllaceae, Cistaceae, Compositea, Cruciferae, Cyperaceae, Dipesaceae, Euphorbiaceae, Geraniaceae, Hypericaceae, Linaceae, Melvaceae, Orobachaceae, Papaveraceae, Paronychiaceae, Plantaginaceae, Polygolaceae, Ranunculaceae, Resedaceae, Rubiaceae, Scrophulariaceae, Solanaceae* and *Valerianacea*. Floristic composition is Irano-Turanian elements. Detailed analysis showed that Biennial plants were 3.19%, Annual 41.49% and Perennial 55.32%.

Keywords: Checklist, flora, edaphic grasslands, Shanjan Protected area, East Azerbaijan Province

Introduction

Iran, a country with 1,640,000 square kilometers area in the south-west of Asia within the northern hemisphere, has its specific combination of different elements of life and a special ecosystem and biodiversity due to various factors including different climatic conditions, high mountains all around and a large desert in the centre. Different phytogeographic regions in Iran's plateau cause massive genetic flow in this area which results in a variety of plant species in comparison with what obtains in neighbouring countries, although some others have very interesting points of advantage. Some plant species have been walled beyond the natural fences (as endemic), and some are scattered in other lands. Due to the diversity of climate, topography and edaphic conditions, limited areas of vegetation in Iran are very different and heterogeneous. Vegetation in Iran, in particular, consists of discrete and dispersed limited areas. Its coverage in the northern and north-western areas and humid regions is very high. But in arid areas with low precipitation and high evaporation, it is very low. However, there is very high plant diversity in Iran which is remarkable and comparable with other countries. Iran consists of 167 families of vascular plants, 1215 genera (Flora of Iran, 2012). Total Taxa in Iran are about 8,000 which include about 6417 species, 611 subspecies, 465 varieties, and 83 hybrids. Of these, about 1,810 are endemic to Iran. Present statistics are adopted from the surveys conducted in 2000 in Central Herbarium of University of Tehran. (Ghahreman and Attar, 2000).

The Flora of Iran was published by A. Ghahreman 12 volumes (Ghahreman, 1993). Check list of flora in different areas have been researched by different researchers such as Ozhatay and Kultur (2006), Çakal et al (2012), Mirahmadi et al (2012), Kara and Kızıloğlu (2012), Dumlu et al (2011), and Emerhi (2012).

East Azerbaijan, NW Iran has a great potential of plant diversity in rangelands. The aim of this research is to broadcast the current situation of plants in Shanjan rangeland in Shabestar district, NW Iran. This study intends to introduce 94 plant species belonging to 25 families of this area.

Materials and Methods

Research area is located in Shanjan rangeland Shabestar District with elevation of 1700-2050 m. Shabestar District is situated in East Azerbaijan Province, NW Iran between the latitude 38° 10' 60.00"N and longitude 45° 42' 0.00"E (Figure 1). Geographical significance of research area is based on the fact that its boundaries touch Maran District in North east, Khoy District in North West, Salmas District in West, Tabriz District in East and South East, and Uremia Super salt lake in South. The soil of the Shanjan rangeland (Figure 2) is dissected in silty loam and silty clay loam texture. The coldest months of the area are December to March, while the maximum temperature is recorded in the months of July and August. Maximum and minimum precipitations fall in the months of February and August, respectively (Obadoni et al., 2009). We have selected 10 random 1×1 quadrate samples (Figure 3) in 8 stations with about 50 m different elevation for 24 weeks (from March 20, 2011 to August 31, 2011). Plant samples have been identified in Shabestar Unit, Islamic Azad University with Flora of Iran (Ghahreman, 1993).

Results and discussion

In the research area 94 plant species belonging to 25 families were identified as constituting the major part of the vegetation (Table 1). The families in the area are *Ixilirion* (1 species), *Anchusa* (1 species), *Heterocaryum* (2 species), *Lappula* (1 species), *Lithospermum* (1 species), *Nonnea* (1 species), *Onosma* (2 species), *Rochelia* (1 species), *Campanula* (3 species), *Gypsophila* (1 species), *Agrostemma* (1 species), *Arenaria* (2 species), *Cerastium* (1 species), *Dianthus* (2 species), *Melandrium* (1 species), *Saponaria* (1 species), *Silene* (4 species), *Helianthemum* (1 species), *Achillea* (3 species), *Anthemis* (1 species), *Centaurea* (2 species), *Cerepis* (1 species), *Chardinia* (1 species), *Cosinia* (1 species), *Crepis* (1 species), *Erigeron* (1 species), *Gundelia* (1 species), *Helichrysum* (3 species), *Lasiopogon* (1 species), *Scorzonera* (1 species), *Senecio* (1 species), *Siebera* (1 species), *Aethione* (1 species), *Alyssum* (4 species), *Cardaria* (1 species), *Conringia* (1 species), *Erysimum* (1 species), *Malcolmia* (1 species), *Nasturium* (1 species), *Thlaspi* (1 species), *Carax* (2 species), *Scabiosa* (3 species), *Ephorbia* (4 species), *Erodium* (1

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species), *Geranium* (1 species), *Boissiera* (1 species), *Hypericum* (1 species), *Linum* (1 species), *Malva* (1 species), *Orobanche* (1 species), *Papaver* (1 species), *Romeria* (1 species), *Paronchia* (1 species), *Acantholimon* (1 species), *Acantholimon* (1 species), *Polygonum* (1 species), *Adonis* (1 species), *Ceratocephalus* (1 species), *Ranunculus* (1 species), *Reseda* (1 species), *Asperula* (1 species), *Callipeltis* (1 species), *Cruciata* (1 species), *Galium* (1 species), *Bungea* (1 species), *Linaria* (1 species), *Linaria* (1 species), *Scrophularia* (1 species), *Veronica* (1 species), *Hyoscyamus* (1 species) *and Valerianella* (1 species) (Figure 4).

A detailed analysis showed that Biennial plants were 3.19%, Annual 41.49% and Perennial 55.32% (Figure 5).

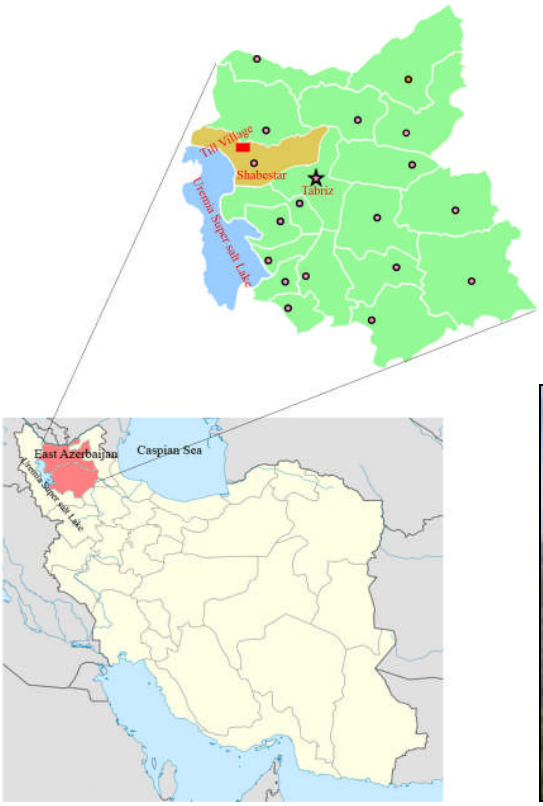

Figure 1: Map of Shabestar District

Figure 2: Shanjan rangeland, Shabestar District, East Azerbaijan Province, NW Iran.

Figure 3: a 1× 1 quadrate sample

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Table 1: Plant list in Shanjan Rangeland in Shabestar District, East Azerbaijan Province, NW Iran.

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Family	Botanical name	Habit	Flowering period
Amaryllidaceae	*Ixilirion tataricum* (Pall.) et Schult.	Annual	May to June
Boraginaceae	*Anchusa italica* Retz. Var. italica	Perennial	May to June
	Heterocaryum macrocarpum Zak.	annual	May
	Heterocaryum szoritsianum (Fisch. et C. A. Mey.) A. DC.	annual	May
	Lappula barbata (M.B.) Gurke	annual	May to June
	Lithospermum tenuiflorum L.Fil.	annual	March to May
	Nonnea caspica (willd) G. Don.	annual	May
	Onosma araraticum H.Riedi	Perennial	June to July
	Onosma trachytricum Boiss	Perennial	May to June
	Rochelia disperma (L.F.) C.Koch.	annual	March to May
Campanulaceae	*Campanula phyctidocalyx* Boiss. et Noe	Perennial	May to June
	Campanula propinqua Fisch.et Mey.	annual	May to June
	Campanula stricta L.	Perennial	May to June
Caryophllaceae	*Gypsophila bellidifolia*Boiss	Perennial	July
	Agrostemma githago L.	annual	March to May
	Arenaria gypsophiloides L. *var gypsophiloides*	Perennial	May to June
	Arenaria polycnemifolia Boiss	Perennial	May
	Cerastium dichotomum L.	annual	March to May
	Dianthus crinitus SM.	Perennial	July to August
	Dianthus macranthoides Hausskn. ex Bornm.	Perennial	June to July
	Melandrium persicum (Boiss) et Buhse) bornm.	Perennial	May
	Saponaria orientalis L.	annual	May to June
	Silene aucheriana Boiss.	annual	March to May
	Silene marschalii C.A.Mey	Perennial	May to June
	Silene morganae Freyn	Perennial	June to July
	Silene pungens Boiss	Perennial	May to June
Cistaceae	*Helianthemum ledifolium* (L.) mill. *Var. ledifolium*	annual	March to May
Compositea	*Achillea micrantha* Willd.	annual	June
	Achillea millefolium	Perennial	July
	Achillea nobilis L. *subsp. neilreichii* (kerner) Formancek.	Perennial	June
	Anthemis tinctoria L.	Perennial	May to August
	Centaurea aucheri (DC.) *Wagenitz Subsp. Szowitssii(Boiss)Wagenitz*	Perennial	June to July
	Centaurea cheiranthifolia Willd.Var. Purpurascens (DC) Wagenitz.	Perennial	June to July
	Cerepis asadbarensis Bornm.eX Rech.f.	Perennial	May to June
	Chardinia orientalis (L.) O Kuntze	annual	May
	Cosinia microcephala	Perennial	June to July
	Crepis sancta (L.) Babcock subsp. sancta.	annual	May to June
	Erigeron acria L. Confertum Boiss	biennial	March to May
	Gundelia tournefortii (L.)	Perennial	May to June

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Family	Botanical name	Habit	Flowering period
	Helichrysum araxinum Takht.ex Kirp.	Perennial	June
	Helichrysum oligocephalum DC.	Perennial	June
	Helichrysum rubicundum (C.Koch) Bornm.	Perennial	June
	Lasiopogon muscoides (Desf.)D.	annual	March to May
	Scorzonera phaeopapa (Boiss) Boiss.	Perennial	June to July
	Senecio mollis Willd	Perennial	June to July
	Siebera nana (DC.)Boram	annual	March to June
Cruciferae	***Aethione arabicum (L.) Andrz. et DC.***	annual	*March to May*
	Alyssum bracteatum(Boiss. et Buhse)	Perennial	*May to June*
	Alyssum linifolium Step. et Willd. Var linifolium)	Perennial	July
	Alyssum longistylumGrossh&Schischk.	Perennial	June
	Alyssum marginatum(Steud. ex boiss.)	Perennial	July
	Cardaria draba L.	Perennial	March to May
	Conringia perfoliata (C. A. Mey) Busch.	annual	July
	Erysimum crassipes Fisch.et C.A.Mey.	Perennial	June
	Malcolmia strigosa Boiss	annual	March to May
	Nasturium officinale R.Br.	Perennial	May to June
	Thlaspi stenocarpum (Boiss) Hodge.	Perennial	June
Cyperaceae	***Carax caucasica Stev.***	Perennial	May to June
	Carex Pseudofoetida Kukenth	annual	March to May
Dipesaceae	***Scabiosa argentea L.***	biennial	May to June
	Scabiosa calocephala Boiss	annual	May to June
	Scabiosa rotata M.B.	annual	March to June
Euphorbiaceae	***Ephorbia turcomanica Boiss***	Perennial	July
	Euphorbia boissieriana (Woron.) Prokh.	Perennial	July
	Euphorbia cheiradenia Boiss. et Hohen	Perennial	June
	Euphorbia seguieriana Necker subsp. Niciciana (Borb.)Rech. F.	Perennial	May to June
Geraniaceae	***Erodium pulverulentum (Cav.) willd. subsp. bovei***	annual	March to May
	Geranium collinum Steph.ex willd.	Perennial	March to June
	Boissiera squarrosa (Banks et Soland.) Nevski	Plantaginaceae	June
Hypericaceae	***Hypericum scabrum L.***	Perennial	March to June
Linaceae	***Linum catharticum L.***	annual	March to June
Melvaceae	***Malva Sylvestris L. Var Sylvestris***	Perennial	July
Orobachaceae	***Orobanche anatolica Boiss et Reut.***	Perennial	March to June
Papaveraceae	***Papaver arenarium M.B.***	annual	July
	Romeria hybrid L.	annual	June
Paronychiaceae	***Paronchia arabica (L.)DC.Subsp.breviseta (Aschers.et Schwein F.)Chaudhri.***	annual	March to May
Plantaginaceae	***Acantholimon fominii Kusn.***	Perennial	June to July
	Acantholimon sorchenes Rech.F.	Perennial	June
Polygolaceae	***Polygonum afghanicum Meisn.***	Perennial	July
Ranunculaceae	***Adonis aestivalis (L.)***	annual	July

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Family	Botanical name	Habit	Flowering period
	Ceratocephalus falcatus (L.) Pers.	annual	June
	Ranunculus lomatocarpus F. et M.	annual	June
Resedaceae	***Reseda transitoria Rech.F.***	biennial	July
Rubiaceae	***Asperula arvensis L. Var albida bornm.***	annual	July
	Callipeltis cucullaria Stev.	annual	June
	Cruciata coronata (Sibth. Et Sm.) Ehendf subsp. persica (DC.) Ehrendf.	Perennial	June
	Galium humifusum Bieb	Perennial	July
Scrophulariaceae	***Bungea trifida (Vahi.) C.A. Mey. Var linifolia (Vahi.) C.A. Mey.***	Perennial	July
	Linaria chalepensis (L.) Mill.	annual	June
	Linaria simplex (Wild.) DC.	Plantaginaceae	June
	Scrophularia striata Boiss	Perennial	July
	Veronica beccabungal. Subsp.abscondita M.A.Fischer	Perennial	July
Solanaceae	***Hyoscyamus pusillus***	annual	June
Valerianacea	***Valerianella vesicaria (L.) Moench***	annual	March to May

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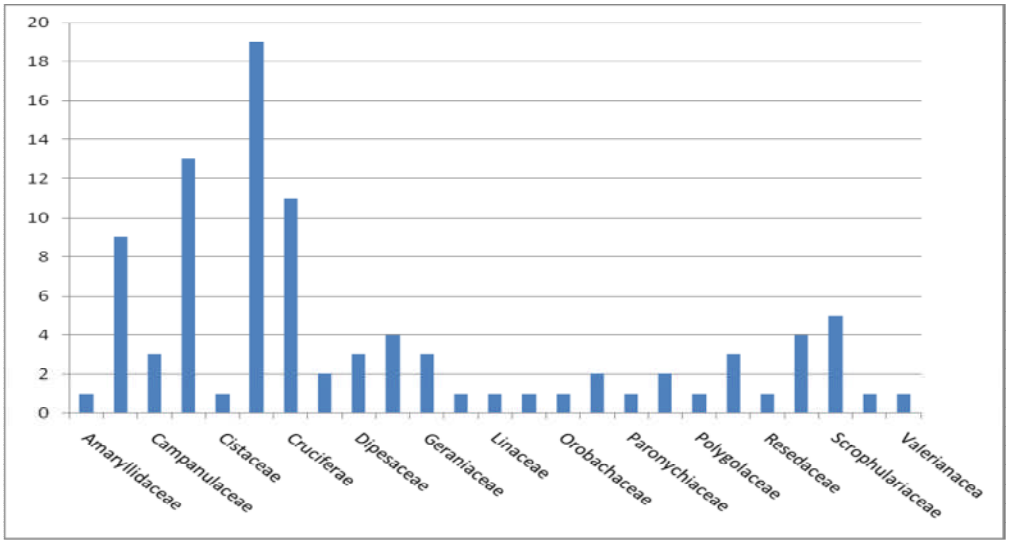

Figure 4: Plant family members in Shanjan Rangeland in Shabestar District, East Azerbaijan Province, NW Iran

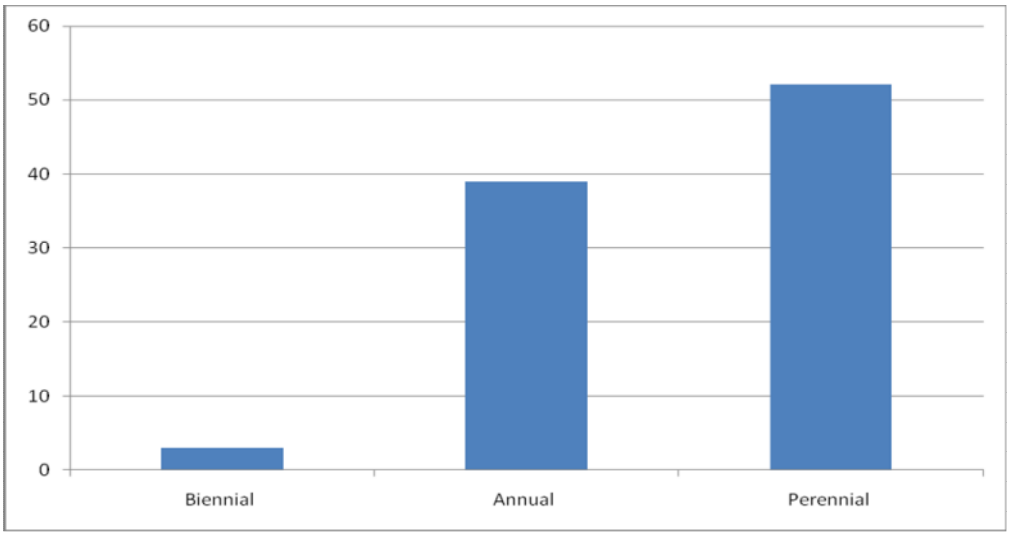

Figure 5: Plants Habit in Shanjan Rangeland in Shabestar District, East Azerbaijan Province, NW Iran

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