

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

Ghassem Habibi Bibalani^{1*} and Elnaz Taheri²

¹Shabestar Branch, Islamic Azad University, Shabestar City, East Azerbaijan, Iran. ²Young Researchers club, Miyaneh Branch, Islamic Azad University, Miyaneh, Iran.

*E-mail: habibibibalani@gmail.com

Abstract

The flora of protected Shanjan rangeland in Shabestar district, Azerbaijan Province, NW Iran was studied using a 1 m x 1 m quadrat 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*, *Caryophyllaceae*, *Cistaceae*, *Compositae*, *Cruciferae*, *Cyperaceae*, *Dipsacaceae*, *Euphorbiaceae*, *Geraniaceae*, *Hypericaceae*, *Linaceae*, *Melvaceae*, *Orobanchaceae*, *Papaveraceae*, *Paronychiaceae*, *Plantaginaceae*, *Polygalaceae*, *Ranunculaceae*, *Resedaceae*, *Rubiaceae*, *Scrophulariaceae*, *Solanaceae* and *Valerianaceae*. 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 quadrat 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), *Orobancha* (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).

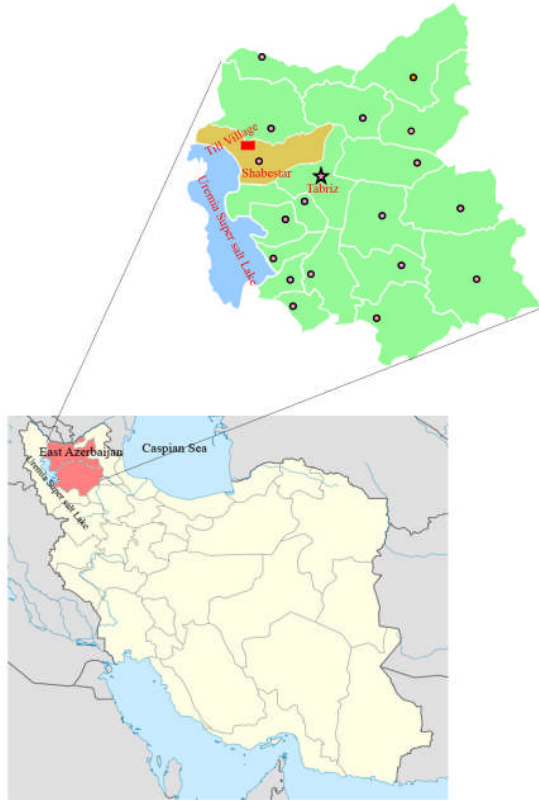


Figure 1: Map of Shabestar District

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



Figure 3: a 1×1 quadrat sample

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

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

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

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

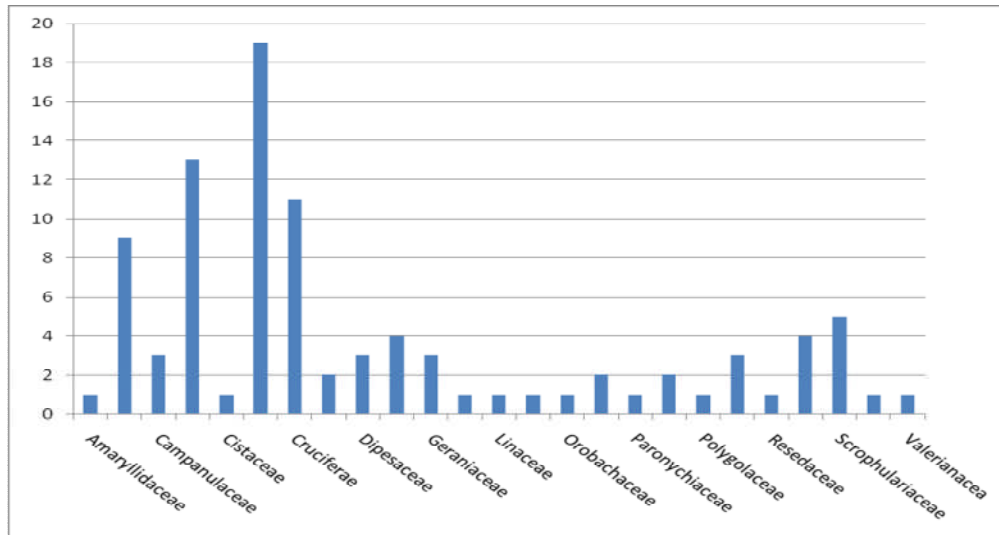


Figure 4: Plant family members in Shanjan Rangeland in Shabestar District, East Azerbaijan Province, NW Iran

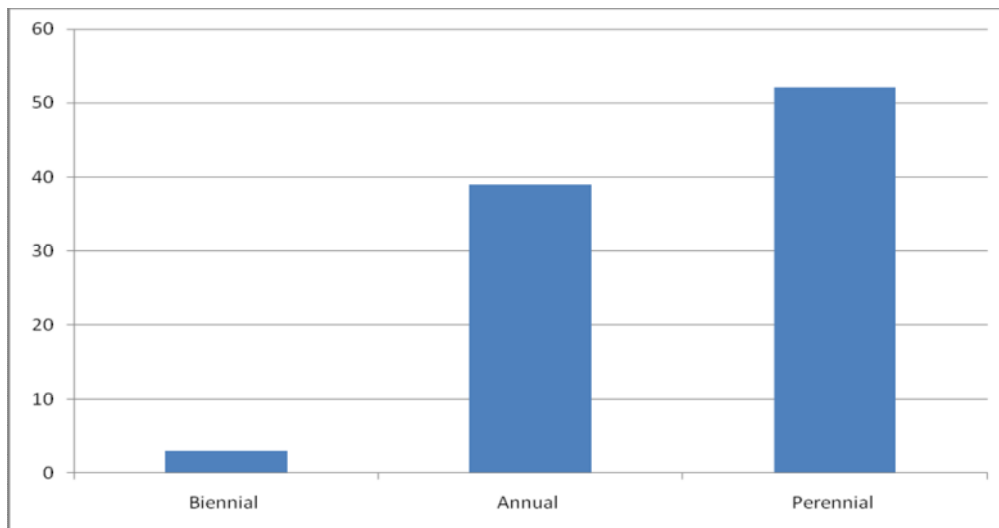


Figure 5: Plants Habit in Shanjan Rangeland in Shabestar District, East Azerbaijan Province, NW Iran

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