



Rapid Assessment Vegetation Survey of HimaBani Hashem

ZarqaGovernat



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Botany Team

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Rapid Assessment Vegetation Survey of HimaBani Hashem



1. Site Description

1.1 Location

HimaBani Hashem is located in northern Jordan, about 30 kilometers north of Amman and 10 kilometers East of Jerash. It lies within the Governorate of Zarqa. (North-West coordinates E0219507 ,03559252South-East coordinates E0217461, 03557955’ It covers an area of 5km².

1.2. Topography and Geology

HimaBaniHashem extends over a mountainous area, dissected by numerous wadis, which varies in elevation from 600 meters to 700 meters above sea level. See photo 1.

1.3 Climate

The local climate is characterized by humid, cool winters with temperatures reaching a minimum of 5 degrees Celsius and hot dry summers with maximum temperatures of 30 degrees Celsius. The average rainfall in the area is around 400 millimeters per year.



Photo.1 HimaBani Hashem Location

1.4 .Survey objective

The main objectives of Rapid assessment vegetation survey were as follows:

- a. To establish the presence / absence of species.
- b. To assess Rangeland land status conditions of study areas

1.5 Survey Team Members

Team were participated in the field work according to their areas of expertise, In this study, the participation and involvement of the community initiation from selection of the site and methods of study , also Knowledge of the local people for identifying plant species at study area, based on PRAGA methodology:

1.5.1 Team Members

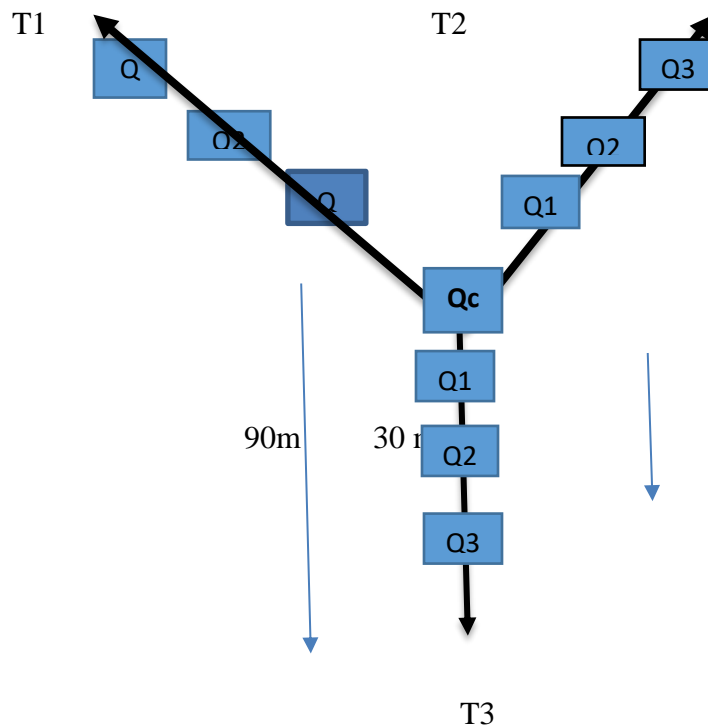
- Yaseen Ananbeh, M.Sc Degree in Agriculture Science (2014). Jordan University of Science and Technology. Botanist .Royal Botanic Garden.
- Khaled Al Khaledy, B.Sc Degree in Agriculture Science - University of Jordan Program Coordinator Community Based Rangeland Royal Botanic Garden
- Katmah Al – Omoush. Quara Hima Bani Hashem Society
- Ahmmad Olimat. Quara Hima Bani Hashem Society
- Bassam AL- Galab. Quara Hima Bani Hashem Society

2. Method

Flora rapid assessment survey started at the 15th of May 2019 and lasted for Five days, sampling was used according to the different vegetation types at HimaBaniHasehm Three methods were used: Ray line transect Quadrat and Random routes, Opportunistic records see photo 2- 8.

2.1 Ray line transect Quadrat Methods

The ray line transects Quadrat Method was used to describe the dominant plant species at study area. Six quadrates were randomly selected in the study area based on topography and landscape in the HimaBani Hashem. A total of 60 quadrates (0.1 m² each) were selected along the study area. Three ray line transect taken from the center of quadrat area spreading continuously toward outside in three directions starting with south and west and finally north aspect of the study Quadrat. On each plot, 1m² quadrat was built of center and three quadrat taken for each line. The vegetation was sampled using 60 quadrates (0.1 m² each) paced systematically at 30 steps and all the species encountered in the quadrates were identified. The most dominant plant species were employed to roughly describe the vegetation types in the study area. Following are figures representing sampling procedures follows:



2.2 Random Route Method

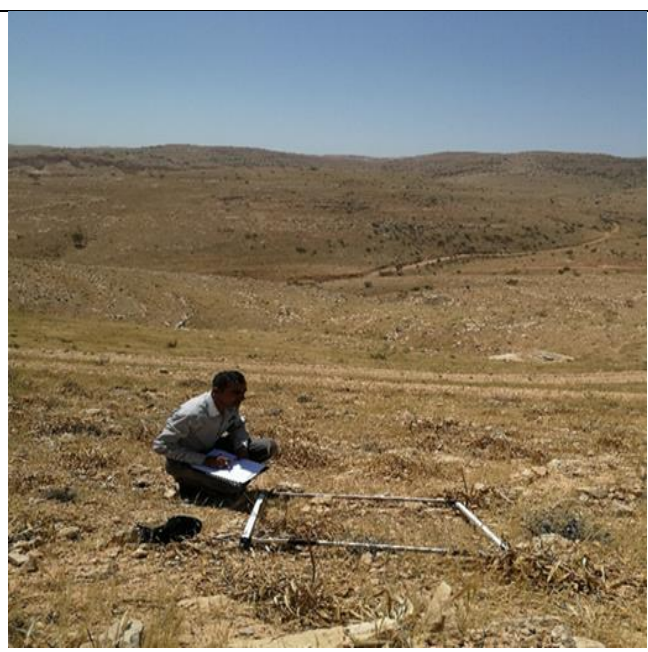
Random routes were used to cover the different vegetation types, habitats and ecosystems according to topography at Study area .Change in vegetation cover was determined by plant species association records and vegetation types in the routes, Routes were accomplished by two researchers walking side by side to cover 10 meter wide route for each. GPS coordinates were taken at the start and the end of each route using a hand-held GPSseeTable 4 .The length and the distance between transects were variable according to change in habitat within transects and accessibility to the area. All plants were recorded and identified on site according to Botanist experience and identification guides. Unidentified specimens were collected but not pressed to be identified later using taxonomy guides.

2.3 Opportunistic records

Apart from routes method; all opportunistic findings for plant species were taken, records were obtained along the main roads of the study area and during moving from one place to another.

Photo below method used at HimaBaniHasehmstudy area





3. Results and Discussion

3.1. Vegetation Types

There are four bio-geographical zones in Jordan: Mediterranean, Irano-Turanian, Saharo-Arabian, and Sudanian penetration. HimaBaniHashem is located within Mediterranean bio-geographical zone.

HimaBani Hashem located within Mediterranean bio-geographical zone. This zone is characterized by having the highest annual rainfall in Jordan which varied between 400-600 mm/year. As well, it contains the most fertile soil type (Terra rossa and Rendzina) which supports the growth of forests and the altitude is considered the highest and is in the range of 900-1700 meter above sea level. (Al Eisawi, 1996).

The vegetation types of Jordan are grouped into thirteen different types. The survey revealed that the vegetation types in the study area can be divided into Mediterranean non-forest Vegetation and Steppe Vegetation.

3.1.1 Mediterranean non-forest Vegetation Type

This vegetation is confined to the Mediterranean region which is covered by shrubs and bushes. The leading plant species is *Retamaraetam*, *Sarcopoterium spinosum* and *Capparis spinosa*, *Salvia dominca*, *Ballotaundulata* , *Tecuriumpolium* .

3.1.2 Steppe Vegetation Type

This vegetation is related in its composition to the climatic condition. As this vegetation occurred close to the Mediterranean region, it is dominated by, *Artimeisiasiberi*, *Noeamucronata*, *Anabasis syriaca*, and this vegetation type dominant at the North-western parts of study area.

3.2. Plant diversity

Plant diversity was expressed as the total recorded number of plant species for the study area which is the simplest measure of. Total number recorded identified species 54 species in six quadrates varied from 15 to 26. The plant diversity was higher in the Quadrat Four compared to all survey sites where the lowest diversity was at Quadrant one. From data analysis the most dominant family species were Gramineae and Cruciferae represented mainly by *Poa bulbosa* and *Erucaria hispanica*. The checklist of all identified species at the six Quadrat survey sites is shown in Table 2

Table 2: plant species record of Quadrat at Hima Bani Hashem

	Family	Species	Method : Quadrat					
			Q1	Q2	Q3	Q4	Q5	Q6
1.	<i>Apiaceae</i>	<i>Chaetosciadium trihospermum</i>	x	x	x	x	x	
2.		<i>Eryngium creticum</i>				x		x
3.	<i>Boraginaceae</i>	<i>Echium judaeum</i>					x	
4.		<i>Arenaria sp</i>	x	x	x			
5.	<i>Caryophyllaceae</i>	<i>Herniaria hirsuta</i>	x	x		x	x	x
6.		<i>Paronychia argentea</i>				x		
7.		<i>Spergularia diandra</i>	x	x				
8.	<i>Chenopodiaceae</i>	<i>Anabasis syriaca</i>	x	x				
9.	<i>Chenopodiaceae</i>	<i>Noaea mucronata</i>	x	x	x	x		x
10.	<i>Cistaceae</i>	<i>Helianthemum sp</i>						x
11.	<i>Compositae</i>	<i>Anthemis sp</i>				x		
12.		<i>Achillea aaleppica</i>		x				
13.	<i>Compositae</i>	<i>Artemisia siberi</i>	x	x		x		x
14.		<i>Carthmus tenuis</i>				x		x
15.		<i>Carlina hispanica</i>						x
16.	<i>Compositae</i>	<i>Centaurea ibérica</i>				x		
17.		<i>Centaurea sp</i>		x			x	
18.		<i>Cichorium pumilum</i>	x	x			x	
19.	<i>Compositae</i>	<i>Filago desertorum</i>	x	x	x			
20.		<i>Echinops polyceras</i>		x	x			
21.		<i>Gundelia tournefortii</i>					x	
22.	<i>Compositae</i>	<i>Iflogas sp</i>		x	x	x		x
23.		<i>Silybum marianum</i>					x	
24.	<i>Compositae</i>	<i>Onopordon ambigum</i>					x	
25.		<i>Lactuca orientalis</i>	x					
26.		<i>Phagnalon rupestris</i>						x
27.		<i>Picnomanacarna</i>				x		
28.	<i>Cruciferae</i>	<i>Erucaria hispanica</i>	x	x	x	x	x	x
29.		<i>Sinapis arvensis</i>				x		
30.	<i>Cyperaceae</i>	<i>Carex pachystylis</i>			x			
31.	<i>Euphorbiaceae</i>	<i>Euphorbia hierosolymitana</i>				x		
32.	<i>Geraniaceae</i>	<i>Erodium lacinatedum</i>			x	x		

33.		<i>Bromussp</i>		x	x	x		
34.		<i>Avenasterllis</i>				x	x	x
35.		<i>Catapodiumrigidum</i>						
36.	<i>Gramineae</i>	<i>Hordummarainum</i>			x	x	x	
37.		<i>Poabulbosa</i>	x	x	x	x	x	x
38.		<i>Rotrariaobtusiflora</i>	x		x		x	
39.		<i>Stipacapensis</i>			x		x	x
40.	<i>Leguminosae</i>	<i>Astragalussp</i>		x				
41.		<i>Retamaraetam</i>			x			
42.		<i>Ballotaundulata</i>			x	x	x	
43.		<i>Salvia dominca</i>			x			
44.	<i>Labiatae</i>	<i>Teucriumpolium</i>		x		x		x
45.		<i>Phlomisbrachyodon</i>					x	
46.	<i>Liliaceae</i>	<i>Allium sp</i>	x	x				x
47.		<i>Asphodelusramosus</i>		x	x		x	
48.	<i>Malvaceae</i>	<i>Malvaparviflora</i>			x	x		
49.	<i>Papaveraceae</i>	<i>Glauciumarabicum</i>				x		
50.		<i>Pappavesp</i>					x	
51.		<i>Roemeriahyprida</i>					x	
52.	<i>Rosaceae</i>	<i>Sacropoterium spinosum</i>				x		
53.	<i>Ranunculaceae</i>	<i>Adonis dentata</i>				x	x	
54.	<i>Zygophyllaceae</i>	<i>Peganumharmala</i>					x	

Table 3: Total number of plant species and Rangeland status condition of study area

Q#	Total number of recorded plant species for Quadrat areas			Landscape descriptions		Rangeland Status Condition		
	No.of families:	No.of genera:	No.of species	Highland	Wadi	High	Medium	Low
Q1	7	14	14		x		x	
Q2	8	20	20	x		x		
Q3	10	19	19	x			x	
Q4	13	26	26	x		x		
Q5	11	21	21		x	x		
Q6	10	17	17	x			x	

Table 4. Quadrat coordinate at Study area

Quadrat #	Coordinates /Elevation		
	East	North	Elevation
Q1	0218465	3558028	648
Q2	0218208	3558586	677
Q3	0218873	3558570	670
Q4	0218690	3559351	640
Q5	0218624	3558625	594
Q6	0218974	3559280	634

3.3. Checklist of identified plant species

The survey results showed the presence of plant species were recorded 85 at HimaBaniHasehm that belong to 32 families based on survey methodologies as well as the literature review see Table 5. Almost all plant species have found least concern but two species vulnerable & one species near threatened. These species were categorized according to their human use and it was found that a total of nine plant species are used for medicinal purposes, seven species have an ornamental value one are woody plants, 10 species are edible, 16 palatable species and one poisonous plant .

Table5: Checklist of identified plant species at HimaBani Hashem study area

الإسم العلمي	الإسم العربي	حالة الحماية	الإستخدام
Anacardiaceae			
Pistacia atlantica	بطم اطلسي	N تحت التهديد	غذاء للإنسان
Boraginaceae			
<i>Anchusa strigosa</i>	حمحم	LC غير مثير للقلق	طبي
<i>Echium judaeum</i>	مصيص الدبور	LC غير مثير للقلق	مستساغ للرعي
<i>Heliotropium spp.</i>		LC غير مثير للقلق	لا يوجد له استخدام
Capparaceae			
<i>Capparis spinosa</i>	قبار	LC غير مثير للقلق	طبي، غذاء للإنسان
Caryophyllaceae			
<i>Arenaria spp*</i>			
<i>Heranaria hirsutea*</i>			
<i>Paronychia argentea*</i>	رجل الحمامة	LC غير مثير للقلق	طبي
<i>Spergularia diandra*</i>			
Chenopodiaceae			
<i>Atriplex halimus</i>	قطف	LC غير مثير للقلق	مستساغ للرعي
<i>Anabasis yriaca*</i>	عجرم		
<i>Salsola vermiculata</i>	حمض	LC غير مثير للقلق	مستساغ للرعي
<i>Noaea emucronata*</i>	صر	LC غير مثير للقلق	
Cistaceae			
<i>Fumana spp.</i>		LC غير مثير للقلق	مستساغ للرعي
<i>Helianthemum spp</i>		LC غير مثير للقلق	مستساغ للرعي
Compositae			
<i>Achillea aleppica</i>		LC غير مثير للقلق	لا يوجد له استخدام
<i>Artemisia siberi*</i>	شبيح	LC غير مثير للقلق	طبي
<i>Anthemis spp*</i>	اقحوان	LC غير مثير للقلق	لا يوجد له استخدام
<i>Carlinahispanica*</i>	زند العبد	LC غير مثير للقلق	لا يوجد له استخدام
<i>Carthamus tenuis</i>	زوينه	LC غير مثير للقلق	لا يوجد له استخدام
<i>Centaurea adamacena</i>	مرار دمشقي	LC غير مثير للقلق	لا يوجد له استخدام
<i>Centaurea iberica</i>	مرار	LC غير مثير للقلق	لا يوجد له استخدام
<i>Cichorium pumilum*</i>	هندباء	LC غير مثير للقلق	غذاء للإنسان
<i>Crepis sancta</i>	صفيرة	LC غير مثير للقلق	لا يوجد له استخدام
<i>Dittrichia viscosa</i>	طيون	LC غير مثير للقلق	طبي
<i>Echinops polyceras.</i>	شوك	LC غير مثير للقلق	لا يوجد له استخدام
<i>Gundelia tournefortii*</i>	عكوب	LC غير مثير للقلق	غذاء للإنسان
<i>Filago pyramidata</i>	قطينه	LC غير مثير للقلق	لا يوجد له استخدام

طبي	LC غير مثير للقلق	بابونج	<i>Matricariaaurea</i>	21
غذاء للإنسان	LC غير مثير للقلق	خرفيش	<i>Notobasisyriaca</i>	22
لا يوجد له استخدام	LC غير مثير للقلق	شوك	<i>Onopordonambigum*</i>	23
مستساغ للرعي	LC غير مثير للقلق	خس بري	<i>Lactucaoreintalis</i>	
لا يوجد له استخدام	LC غير مثير للقلق	صفيرة	<i>Pallenisspinosa</i>	24
طبي	LC غير مثير للقلق	قدحه	<i>Phagnalonrupestre*</i>	25
لا يوجد له استخدام	LC غير مثير للقلق	شوك الفأر	<i>Picnomonacarna*</i>	26
لا يوجد له استخدام	LC غير مثير للقلق	رويس	<i>Rhagadiolusstellatus</i>	27
لا يوجد له استخدام	LC غير مثير للقلق	صفيرة	<i>Seneciovernalis</i>	28
لا يوجد له استخدام	LC غير مثير للقلق	خرفيش	<i>Sliybummarianum</i>	29
طبي	LC غير مثير للقلق	صفيرة	<i>Varthemiaiphinoides</i>	30
Convolvulaceae				
لا يوجد له استخدام	LC غير مثير للقلق	مديدة	<i>Convolvulus dorycnium</i>	31
Crassulaceae				
لا يوجد له استخدام	LC غير مثير للقلق		<i>Sedum spp.</i>	32
لا يوجد له استخدام	LC غير مثير للقلق		<i>Umbilicus intermedius</i>	33
Cruciferae				
لا يوجد له استخدام	LC غير مثير للقلق		<i>Alyssum spp.</i>	34
لا يوجد له استخدام	LC غير مثير للقلق		<i>Biscutelladidyma</i>	35
غذاء للإنسان	LC غير مثير للقلق	جرجير	<i>Eruca sativa</i>	36
	LC غير مثير للقلق		<i>Erucariahispanica*</i>	37
لا يوجد له استخدام	LC غير مثير للقلق	خردل	<i>Sinapisarvensia*</i>	38
Cyperaceae				
	LC غير مثير للقلق	سعيد	<i>Carex pashystylis*</i>	
Dipsaceae				
لا يوجد له استخدام	LC غير مثير للقلق		<i>Scabiosapalaestina</i>	39
Euphorbiaceae				
زينة ، طبي	LC غير مثير للقلق	ليان	<i>Euphorbia hierosolymitana*</i>	40
Fumariaceae				
	LC غير مثير للقلق		<i>Fumariadensiflora</i>	41
Geraniaceae				
لا يوجد له استخدام	LC غير مثير للقلق	ابرة العجوز	<i>Erodiumacaule</i>	42
لا يوجد له استخدام	LC غير مثير للقلق		<i>Geraiumrotundifolium</i>	43
Graminae				
مستساغ للرعي	LC غير مثير للقلق	سنيسله	<i>Avenasterilis*</i>	44
مستساغ للرعي	LC غير مثير للقلق		<i>Catapodiumrigidum*</i>	45
مستساغ للرعي	LC غير مثير للقلق		<i>Bromusspp*</i>	46
مستساغ للرعي	LC غير مثير للقلق	نجيل	<i>Cyndondactylon</i>	47
لا يوجد له استخدام	LC غير مثير للقلق		<i>Cynosurus spp.</i>	48
مستساغ للرعي	LC غير مثير للقلق	شعير	<i>Hordiummarinum *</i>	49
مستساغ للرعي	LC غير مثير للقلق	قبأ	<i>Poabulbosa *</i>	50
مستساغ للرعي	LC غير مثير للقلق		<i>Stipacapensis *</i>	51
Labiatae				
لا يوجد له استخدام	LC غير مثير للقلق		<i>Ballotaundulata*</i>	52
لا يوجد له استخدام	LC غير مثير للقلق	لسينه	<i>Salvia dominca*</i>	53
طبي	VU عرضة للتهديد	ز عتر بري	<i>Origanumsyraicum*</i>	54
زينة	LC غير مثير للقلق	مصيص اصفر	<i>Phlomisbrachyodon*</i>	55
طبي	LC غير مثير للقلق	جعدة	<i>Teucriumpolium *</i>	56

Leguminaceae (Papilionaceae)				
				<i>Astragalus</i> sp 57
مستساغ للرعي	LC غير مثير للقلق	مستزرع		<i>Colutea Iстриa</i> * 58
لايوجد له استخدام	LC غير مثير للقلق	عرف الديك		<i>Onobrychis christa -galli</i> 59
مصدر للخشب	LC غير مثير للقلق	الرتم		<i>Retamaraetam</i> * 60
مستساغ للرعي	LC غير مثير للقلق	برسيم		<i>Trifolium campestre</i> 61
مستساغ للرعي	LC غير مثير للقلق	برسيم		<i>Trifolium spp.</i> 62
مستساغ للرعي	LC غير مثير للقلق	برسيم		<i>Trifolium stellatum</i> 63
Liliaceae				
لايوجد له استخدام	LC غير مثير للقلق	ثوم بري		<i>Allium sp</i> * 64
لايوجد له استخدام	LC غير مثير للقلق	عيسلان		<i>Asphodelusaestivus</i> * 65
زينه	LC غير مثير للقلق	زنبق لبناني		<i>Fritillaria libanotica</i> 66
زينه	LC غير مثير للقلق	نجمة بيت لحم		<i>Ornithogalum montanum</i> 67
Pinaceae				
غذاء للإنسان	VU عرضة للتهديد	صنوبر حلبي		<i>Pinus halepensis</i> 68
Linaceae				
	LC غير مثير للقلق	كتان اصفر		<i>Linum mucronatum</i> 69
Malvaceae				
زينه	LC غير مثير للقلق	ختميه زاحفه		<i>Alcea acualis</i> 70
غذاء للإنسان	LC غير مثير للقلق	خبيزة		<i>Malva parviflora</i> * 71
Papaveracea				
لايوجد له استخدام	LC غير مثير للقلق			<i>Hypecom pendulum</i> 72
لايوجد له استخدام	LC غير مثير للقلق			<i>Roemeria hybrid</i> * 73
Plantaginaceae				
لايوجد له استخدام	LC غير مثير للقلق	لسان الجدي		<i>Plantago spp</i> 74
Myrtaceae				
	نبات مدخل	كينيا		<i>Eucalyptus camaldulensis</i> 75
Polygonaceae				
غذاء للإنسان	LC غير مثير للقلق	حميض		<i>Rumex spp.</i> 76
Ranunculaceae				
زينه	LC غير مثير للقلق	دحنون		<i>Adonis dentata</i> * 77
زينه	LC غير مثير للقلق			<i>Anemone coranaria</i> 78
Resedaceae				
لايوجد له استخدام	LC غير مثير للقلق			<i>Reseda lutea</i> 79
Rosaceae				
مستساغ للرعي	LC غير مثير للقلق	بلان		<i>Sarcopoterium spinosum</i> * 80
Scrophulariaceae				
لايوجد له استخدام	LC غير مثير للقلق	عمايه		<i>Verbascum spp.</i> 81
Umbellifrae				
				<i>Chaetosciadium trihospermum</i> * 82
غذاء للإنسان	LC غير مثير للقلق	قرصعنه		<i>Eryngium creticum</i> * 83
Urticaceae				
الايوجد له استخدم	LC غير مثير للقلق	لزيفه		<i>Parietaria sp</i> 84
Zygophyllaceae				
سام	LC غير مثير للقلق	حرمل		<i>Peganum harmala</i> * 85

IUCN Status: Least concern (LC), Vulnerable (VU), Near Threatened (NT)

Plant species with * star Mark were recorded in Ray line transect Quadrat Methods

Photo below plant record at study area



Medicinal plant :*Teucrium polium* & *Artemisia siberi*



Edible plant: *Gundelia tournefortii* & *Cichorium pumilum*



Common plant: *Retamaraetam* & *Anemone coronaria*

4. Conclusions

- The vegetation of HimaBani Hashem was of the Mediterranean non forest and Steppe Vegetation
- Plant diversity was higher in the Quadrate four follow by Quadrate five and two compared to areas for all survey sites.
- The local community at study area has good knowledge for plant uses for medicinal and edible plant, also palatable plants used for grazing animals.

5. Recommendation

- Monitoring program should be conducted every year using similar methods at study area
- A comprehensive survey covering spring and summer seasons, one take place from February to March, and the other from May to June, Is recommended to help in recording all species in the study area. The species that are still not recorded might have important status
- It is important to follow the same season of this monitoring program for effective estimate of the conservation effectiveness for species.
- Local community should be part of the management of the site; "community based management" they should be involved through all social, ecological and economical programs. This will facilitate the ongoing research and will help into increasing the awareness toward protecting the native plant
- The grazing activities should be organized through registering all grazing animals and their distribution at study area