وضعیت اکولوژیک جمعیت هوبره (Chlamydotis undulata) در ایران

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چکیده

هوبره که متعلق به تیره Otididae است، دارای سه زیرگونه می‌باشد. زیرگونـه (Chlamydotis undulata macqueenii) از پرندگان دیرآشنای دشتهای کویری ایران است. اگرچه مطالعات بسیاری در کشورهای دیگر بر روی این پرنـده صـورت گرفتـه ولـی برای اولین بار است که مطالعات تحقیقی و پایه‌ای جهت شناخت پراکندگی این پرنده در سطح ایران انجام شده اسـت. ابتـدا پـس از مشخص کردن سطح پراکنش این پرنده، ۱۰ استان مهم که بیشترین پراکنش هوبره در آنها دیده شده بود، تعیین گردیـد. در ایـن ده استان مناطق با اهمیت به تعداد جمعاً ۳۰ منطقه انتخاب گردید و کلیه مطالعات در این مناطق متمرکز شـد. وضعیـت منـاطق از نظـر فیزیکی و توپوگرافیکی و موقعیت اکولوژیک، اهمیت و پوشش گیاهی مورد بررسی قرار گرفت و بالاخره تعداد هوبره مشاهده شده در آنها شمارش گردید. برای شمارش از روش Observation point استفاده گردید و تراکم نسبی هوبره در هر زیستگاه تعیین شد. از آنجایی که هدف این تحقیق، شناخت اهمیت زیستگاه‌ها و نقش آنها در حفاظت از هوبره‌ها بود، سعی گردید ویژگیهای اکولوژیکـی و مرفولوژیکی زیستگاهها مشخص گردیده و آنها درجه‌بندی و یا رتبه‌بندی شوند. در هـر یـک از ۳۰ منطقـه مـورد بحـث، عـلاوه بـر معلوماتی که به صورت تجربی و از مطالعات قبلی به دست آمده بود، هر منطقه در دو یا سه نوبت در سال ۱۳۷۹ مـورد بررسـی قـرار گرفت، کلیه اطلاعات مربوطه جمع‌آوری و در برگه‌های مطالعاتی آورده شد. از روی این برگه‌ها جداولی تهیه گردیده که بـه صـورت ماتریس‌هایی (نشان‌دهنده وضعیت زیستگاه) در متن آورده شده‌اند. عوامل تهدید در هر منطقه و درجه ارزشی آنها تعیین گردیده است. با توجه به امتیاز هر عامل، نمایه مطلوبیت هر زیستگاه مشخص شده و در نهایت بهترین زیستگاه‌ها به ترتیـب مشـخص گردیده‌انـد. این درجه‌بندی امکان مقایسه زیستگاهها را با یکدیگر فراهم کرده است. نتیجه این تحقیق نشان داد کـه در شـرایط کنونـی، دشـت مبارکه و سیاه کوه با نمایه مطلوبیت ۰/۸۴ بهترین شرایط زیستگاهی با حداقل تهدید را برای حفاظت و مدیریـت هوبره‌هـا دارنـد، در حالیکه دشت مقام با نمایه مطلوبیت ۰/۵۷ با تهدیدهای جدی روبروست و علیرغم اینکه بعضی ویژگی‌ها را دارد محل مناسـبی بـرای هوبره‌ها نمی‌باشد.

کلمات کلیدی:

هوبره، زیستگاه، درجه‌بندی، پراکندگی، حفاظت.

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Research

Ecological Status of the Houbara (Chlamydotis undulata) Population in Iran

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Abstract:

The Houbara Bustard is the only species of the genus Chlamydotis, which is subdivided into three sub-species, and the nominate race of Chlamydotis undulata macqueenii is a familiar bird of the desert plains of Iran.

The purpose of this research was to find out the suitability and importance of various habitats for the Houbara, and the role of habitat in the conservation of the species. Relevant information from 30 areas was collected, analysed and ranked respectively according to suitability for Houbara protection.

The results showed that Dasht-e-Mobarakeh and Siah Kuh (35 15 N, 50 40 E) with HIS=0.84 was identified as having the best habitat conditions with the fewest threat factors, while the Mogham plain (27 20N, 56 50E) with HIS= 0.51 was the least suitable and was faced with severe threat elements. A map showing the distribution of the Houbara in Iran was carefully prepared.

Key words:
Houbara, Habitat, Ranking, Suitability, Conservation

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Introduction

The Houbara bustard belongs to the Otididae family, and is a desert bird with an interesting courtship display and an important bird for Arab falconers.

In recent years the species has seen a severe decline throughout its habitat. However, very little information is available in relation to this bird in Iran. Furthermore, illegal hunting and habitat destruction have caused unfavorable conditions for this bird, so that it has been classified *LR/nt in the IUCN Red Data Book 2001.

In spite of its global importance, there is no scientific information about the population and distribution of thid bird in Iran. The main difficulties for researchers are the large unmber of habitats, long distances and its wide distribution throughout Iran.

Due to the distribution pattern of the Houbara in Iran, the bird is found in over three quarters of Iran. The ten provinces with the highest distribution of houbara in Iran were identified, and 30 habitats in these provinces were selected for further studies.

The studies showd that the relative density of the Houbara in Iran is around 4.95 in every 10000ha. The highest density was in Kafe-Gazanjan (19 birds in 10000ha.) and the lowest density was 0.27 in 10000ha. in Kafe Chah Khoshk, both in Kerman province.

The purpose of this research was to study the relationship between the Houbara and its habitats and to define the habitat suitability and to identify the best one for the conservation of the Houbara in Iran.

There are two populations of Houbara in Iran. According to this research, the breeding population of the Houbara is found in areas of central, southern, eastern and north eastern Iran, including the areas of central deserts of Kavir in Tehran province, Heart and Marvast and Kalmand plains in Yazd province, Dasht-e-Ferdous in Khorasan province and a small population in Gazanjan in Kerman province. The migrant population of the Houbara winters in areas of Khorasan province in the north and the provinces of Semnan, Yazd, Tehran, Khuzestan, and Ilam in the south-west of Iran. The wintering population arrives in autumn and leaves in early spring. These birds probably breed in suitable habitats in Kazakhstan, Tajikistan or Uzbekistan. In years with good rainfall, a few birds remain in the south-east and breed very sparsely in the plains of Sistan and Baluchistan.

This research is a begining for scientific studies and an attempt at giving some suggestions for the maintenance of the habitats and better conservation measures for the Houbara in Iran.

* lower/near threatended

Methodology

According to literature reviews, 25 years field experience of authors, and discussion with local people, hunters and even poachers, 10 important provinces with the highest distribution of Houbara in Iran were identified. From these 10 provinces a total of 30 plains were selected and all studies were carried out in these 30 sites.

Selected sites for further studies were:

1. Dashte Taybad	(35 00N, 59 00E)
2. Kalshur-e Gonabad	(34 45N, 58 40E)
3. Band-e Rig	(34 45N, 58 10E)
4. Dashte-Eftekhar	(34 15N, 58 10E)
5. Dashte-Ferdous	(34 00N, 57 45E)
6. Dashte Ab Khorak	(34 00N, 57 15E)
7. Dashte-Daroneh	(34 30N, 57 10E)
8. Dshte-Qareh Tappeh	(30 28N, 54 23E)
9. Dashte-Aghda	(32 28N, 53 50E)
10.Dashte-Hassan Qarei	(30 30N, 54 20E)
11.Ghale-Ganj	(27 40N, 58 15E)
12.Dashte-Biaz	(27 00N, 57 00E)
13.Dashtab	(29 10N, 57 10E)
14.Kafe-Chah Khoshk	(29 20N, 55 00E)
15.Kafe-Gazanjan	(27 30N, 58 10E)
16.Dashte-Monday	(27 30N, 50 50E)
17.Nayband	(17 10N, 52 30E)
18.Dashte Mogham	(26 50N, 52 50E)
19.Dashte-SiahPareh	(34 40N, 52 20E)
20.Dashte-Mobarakeh	(34 50N, 52 30E)
21.Dashte-babhemmat	(34 40N, 52 00E)
22.Dashte-Abbass	(32 15N, 47 45E)
23.Dashte-Akbar	(32 40N, 47 15E)
24.Dashte-Azadegan	(31 30N, 48 10E)
25.Dashte-Hendijan	(30 15N, 49 50E)
26.Dashte-Kassigin	(27 30N, 60 00E)
27.Dashte-Paskuh	(27 10N, 61 20E)
28. Dashte-Negur	(26 00N, 61 50E)
29. Dashte-Nosratabad	(29 50N, 59 45E)
30. Bahram-e-Gur	(29 30N, 55 00E)

The following information was collected from each site:

Situation of the plains, topography, water resources, slope, aspect, coordination, surface area, distance from village, soil condition, percentage of vegetation diversity, mean elevation from sea-level, percentage of plant species, threatening elements and population density.

All the information was shown in 30 data information sheets of which the following is a sample:

Name: Qareh Tappeh
Province: Yazd
Date: December 2000
Area(ha.): 90000
Mean elevation from sea level: 1900m

Slope %:
0-2
3-5
5-10
10-50
>50

Aspect:

N
S
E
W
NW
SW
NE
SE

Water Resources:

Permanent and Seasonal
Wetland and rivers
Spring
Well

Soil Conditions:

Sandy
Gravelly
Sandy Loam
Loamy silty caly
Clay

No. of Houbara observed:

Male 23
Female 22
Juvenile
M/F 75

Important plants:

Artemia sp.,
Zygophylum atriplicoides,
Seidlitzia rosmarinus,
Haloxylon ammodendron,
Salsola Sp.,
Alhagi camelorum, and some

plants of families:

Leguminoseae,
Boraginaceae,
Euphorbiaceae,
Gramineae, and
Crucifeae.

% of Plant species:

Trees 5
Tall Bushes 30
Small bushes and
Grass 30
Mixture 35

Topography:

There are some mountains close to the area.

Threatened elements:

Land changes
Crowded hunting
New Water well

Remarks:

General Status of the plain: The plain is relatively large with much land eroded and seasonal rivers. Formerly the villages of Chahgueieh and Sia-Hueieh were more populated, but due to the drought in recent years and the introduction of pistachio farming, most of the local people have left the area for Yazd. Land transformation to pistachio farming still continues.

There is a narrow ditch in the area with some water in some parts of it. The Houbaras were observed mostly around the harvested alfalfa. The distance from villages is between 500m and 2Km. Some predators such as: fox, 3 buzzards, and a spotted eagle were seen during the survey.

The information was collected in a random line-transect.

The method used for population estimation of the Houbara was counting the birds from an observation point

All the selected sites have been surveyed and the required information collected accordingly.

Habitats, determination, and evaluation

This study was undertaken to determine the habitatas, to evaluate them and to define the suitability of sites for the Houbaras, in comparison with each other, and to define the best habitatas with regards to the threat elements in each habitat.

The following table has been compiled from the data information sheets (Table 1).

In order to rank the sites, each item was given the following degree and scores, as shown in table 2.

Special consideration was given to allocating a rank to each item according to a homogenous rating (scale of 0 to 5, 0 is the lowest and 5 is highest) as shown in the tables (2 throughout).

The scores given to each item were based on the information collected, and field experiences of authors.

Table 3. shows the matrix which resulted from the rating of table 2.

The best habitat condition received the highest score. For example, the animal food preference (5) was given to a habitat with the maximum number of animal items which contained the prefered food of the Houbara.

As all the areas were larger than 10,000ha., population density was, therefore, estimated according to the scale of one bird per 10,000 ha. (Table 2-).

The results of threat elements are shown in table 4.

All the results of matrices have been compiled in table 5 and every site has been assessed by summing up all the degrees given to each item (Table 5).

Finally the 30 areas were ranked and shown in table 6.

Results and Discussion

The results of this research showed that in spite of the supposed abundance of the Houbara in Iran, the population is decreasing and the relative density of the Houbara is very low. The species' dependence on habitat and the lack of complete security are the most important problems for the protection of the Houbara. The maximum number of birds seen during this survey was 585 and it was estimated that the Houbara population in Iran is somewhere between 1100 and 1300 birds in total. However, these figures require regular careful revision in all the species' habitats in order to obtain an accurate estimate of the Houbara population throughout Iran.

Tables, show the situations and the importance of each habitat for attracting and protecting Houbaras. The value of each site in relation to its suitability for Houbara is shown according to priority, and the problems of threat elements were also considered.

The map shows that the sites surveyed included more than 90% of the most important distribution areas of the Houbara throughout Iran. Table 6 shows the final evaluation of each site. It is important to note that the grade of all these habitats is more than 50, meaning they are all well-suited to the Houbara and it would be easy to upgrade them by eliminating undesirable factors.

It is possible to put all the factors evaluated into three categories:

1- factors which appear unchangeable, impossible or very difficult to remove, such as geographical area, soil conditions or topography.

2- Those where the removal or change of unsuitable factors might be difficult, but with proper planning could be modified, such as vegetation.

3- Those where it is easy to change unfavorable factors. Therefore, in principle and with proper planning, even after a short period, it would be quite possible to remove them and create suitable conditions for the gathering and protection of the Houbara. Such factors include crowded areas, grazing, disturbances, land degradation and hunting.

Upon consideration of these three groups, it is evident that, two factors, are common to all habitats; grazing and loss of habitats. Dashte-Mobarakeh and Siah Kuh (34 59°N, 52 30°E) received maximum scores of (79) and HSI=0.84. These are the most suitable sites with the fewest unfavorable factors in comparison with the other sites in Iran. The sites is situated in the Kavir National Park, and should be considered the best habitat for the Houbara.

Baba Hemmat plain received a score of 69 and HSI= 0.76. This site is situated close to the Mobarakeh and Siah Kuh plain, with more disturbances.

These two sites are very important for breeding and wintering Houbaras.

- Plains 3, 4, and 5, although very important for breeders and wintering birds, are faced with heavy land transformation and grazing.
- Plains 6 to 11, are faced with the same unfavorable factors, whilst additional negative factors include some crowding, poachers, and illegal hunting.
- Plains 12 to 24 are very important for wintering Houbaras, although they suffer from Houbara's preferred food sources.
- Plains 25 to 30 have all the other problems and are also neglected without any activity such as patrolling or conservation measures.
- In relation to the joint project in cooperation with Saudi Arabia, it is worth mentioning that, their French expert selected Dashte-Qareh-Tappeh (30 28N, 54 23E) as the best habitat for the breeding of Houbara. However in this research the two plains (Dashte-Mobarakieh and Siah Kuh, Baba Hemmat) were evaluated higher (HSI=0.84, 0.76)than Qareh Tappeh (HSI=0.73).
- There are two populations of Houbara in Iran, the migrant and the resident. Map 1

Shows the accurate distribution of the Houbara in Iran.

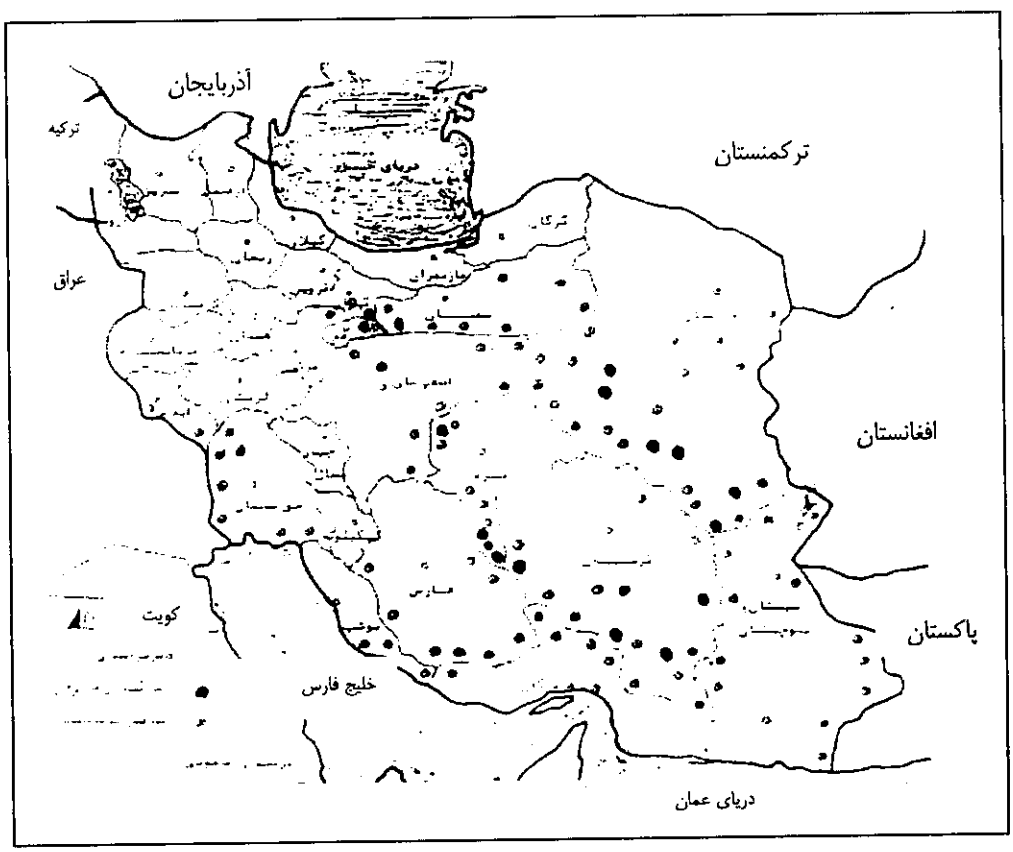
- These two population appear to intermingle during the migration period. It is extremely important, therefore, to investigate the distribution and breeding status of both populations in Iran.
- Habitat management, especially in key habitats where Houbara breed, is absolutely vital. It is therefore important to prepare a careful management plan and implement it in the first 11 sites, al least, as soon as possible.
- The present research showed that the main reason for Houbara decline is human threat. It is therefore necessary to consider this important factor in the preparation of a management plan.
- It is recommended that for population estimation in Iran, it is necessary to use a suitable method for each area depending upon the characteristics of each site. Each method should be practiced by trial and error, in order to find the best method suitable for the particular area.
- The joint project between Iran and Saudi Arabia will be implemented in Qareh-Tappeh in Yazd province. Although Qareh-Tappeh is one of the more valuable plains for the Houbara in Iran, according to the table in this research, it is ranked in third place with a value of 66 and HSI=0.73.
- Although the evidence shows that there are genetic similarities between the migrant and native birds, no research has been done to clarify this similarity. It is important to collect blood samples from all the distribution areas of the Houbara in Iran, in order to analyze the birds' DNA and examine them for any differences.
- The migration routes of the Houbara are not yet known. It is suggested that by using a transmitter it would be very simple to identify the movements of the species throughout Iran.
- It is recommended, breeding biology and breeding success of the Houbara in Iran be surveyed. There is enough experience in adjacent countries of the south Persian Gulf, and it should be possible to benefit from the sharing of this experiences.
- The role of local people in habitat conservation and Houbara protection is very important. Education and public awareness of the local people living inside or around the areas and consideration of the economic conditions of these people are vital for Houbara conservation.
- Fundamentally, the conservation and management of habitats produce better results in increasing the population, while propagation needs specialized personnel and extra expense.
- Every kind of Houbara hunting or trapping

throughout Iran, for any reason, should be prevented completely.

It is hoped that the implementation of these suggestions could effectively help in the management and conservation of the Houbara Bustard throughout Iran.

Fig. 1. Houbaras which were taken from the poachers in the Persian Gulf, while they were Sending them to southern countries

Houbara has two populations in Iran, the migrant and the resident. Map 1. shows the accurate distribution of the Houbara in Iran.



Map 1. Distribution of Houbara in Iran

○ Center of Province
● Wintering Distribution
● Breading Distribution

Table 1. Summary of Data information Sheets

No.	Name of Area	No. of Houbara	Area (ha.)	Elevation (m)	Slope %	Aspect	Vegetation Density%	Plant Species%				Soil Tex.	Water Resource	Threats	Dist. From
								Trees	Bushes	Grass	Mixture				
1	Dasht-Taybad	7	50000	1000	0-2	S	5	5	30	50	15	SICL	SR+Ww.	Lc+Cr +Li+H	1
2	Kalshure-Gonabad	9	50000	800	0-2	NE	5	15	20	20	25	L	SR+ Ww	Lc+Cr	2
3	Dashte Bandrig	5	60000	1100	0-2	NW	10	5	50	30	15	L	SR+ Ww	Cr+Li	2
4	Dashte Eftekhar	11	20000	1050	0-2	S	5-10	10	25	20	25	L-CL	SR+Ww	Lc+Cr	2
5	Dashte Ferdous	3	50000	1250	2-5	SE	5-10	20	20	20	20	L-SICL	SR+Ww	Lc+Cr	1
6	Dashte Abkhorak	27	80000	950	2-5	SE	5-10	5	50	30	15	L	SR+Ww	Lc+Cr +Li	2
7	Dashte Daruneh	12	15000	1000	0-2	SW	0-5	2	60	20	18	L	SR+Ww	Lc+Cr +Li	2
8	Dashte Qareh Tappeh	120	90000	1900	0-2	SE	5-10	5	30	30	35	SICL-SL	SR+Ww	Lc	0.5-1
9	Dashte Aqda	35	20000	1400	2-5	SE	5-10	5	20	50	25	S-L	SR+Ww	Lc+Cr	2
10	Dashte Hassan Qarei	7	20000	1950	2-5	SE	5-10	5	15	70	10	SCL	Sr+Ww+Sp	Lc+Cr	0.5-1
11	Dashte QaleGanj	20	10000	450	2	SE	5-10	5	30	50	15	SL-CL	Sr+Ww+Sp	H	2-5
12	Dashte Biaz	14	25000	1800	10-50	E	50-70	20	60	10	10	L-CL	Sr+Ww+Sp	Cr+Li	1-2
13	Dashtab	3	35000	2050	10-50	NW	10-50	10	30	30		CL-SL	Sr+Ww	Lc+Cr	1-5
14	Kafe Gazanjan	57	10000	1800	2-5	S	5-10	20	50	20	10	SCL	Sr+Ww+Sp	Lc+Cr	0.5-1
15	Kafe Chanhkhoshk	2	50000	1300	0-2	SE	5-10	5	40	20	35	CL-SL	Sr+Ww	Cr+H	2-5
16	Mond Area	18	44000	5	0-2	SW	50-70	15	40	30	15	CL-SL	Pr+Ww	Cr+h	2-5
17	Naybad Area	2	22500	5	2-5	NE	5-10	30	30	20	10	CL	Sr+Ww	Lc+Cr	1
18	Dashte Mogham	3	50000	5-10	1-2	S	10-50	20	50	30	10	L	SR+Ww	Cr+Lc	0.5-1
19	Dashte Siah Pareh	2	20000	900	2-5	N	5	5	70	20	5	CL-L	Sr+Ww	Cr+Lc	2-3
20	Dashte Mobarakeh	37	10000	1050	2-3	SW	10-50	5	70	20	5	L	Sr+Ww	Cr+Lc	5-6

Table 1. Summary of Data information Sheets

No.	Name of Area	No. of Houbara	Area (ha.)	Elevation (m)	Slope %	Aspect	Vegetation Density%	Plant Species%				Soil Tex.	Water Resource	Threats	Dist. From
								Trees	Bushes	Grass	Mixture				
21	Dashte Baba Hemmat	19	>50000	1100	2-3	NE	50-70	45	50	5		L-CL	Sr	Cr	10
22	Dashte Abbass	2	20000	200	2-5	SW	5	20	50	25	5	L-CL	Sr+Ww	Cr+Cl	1-2
23	Dashte Akbar	14	20000	205	2-5	SE	5	10	30	40	20	L-CL	Pr+Ww	Cr+Li+H	1-2
24	Dashte Azdegan	12	25000	15	2-5	W	5	5	25	50	20	L-CL	Pr+Ww	Lc+Cr+H	1-2
25	Dashte Hendijan	6	30000	15	2-5	S	5	10	40	50		L-CL	Sr+Ww	Lc+Cr+Li	2-3
26	Dashte Kasigin	53	30000	1250	2-5	SW	5	5	50	20	25	SL-CL	Sr+Ww	Lc+Cr+Li	3-5
27	Dashte Paskuh	28	25000	1200	2-5	SE	5-10	20	30	40	10	L-CL	Sr+Ww	Sr+Cr+Li	3-5
28	Dashte-Negur	10	50000	10	0-2	SE	5	20	40	20		L-SCL	Sr+Ww	Sr+Cr+Li	2-5
29	Dashet Nosratabad	25	>100000	1500	2-5	N	5	30	30	30	10	L-CL	Sr+Ww	Cr+Li+H	2-3
30	BahrameGur	33	>100000	1950	2-5	SW	5-10	5	50	40	5	L-CL	Sr+Ww	Cr+Li+H	3-5

Abreviations: Ww= Water well, Cr= crowded Pr= Permanent river, Sp = Spring Sr = Seasonal river Li = livestock, Lc = Land change, H = hunting,

Table 2. Rating Systems of Ecological Survey

Table 2-1. Area

Area (ha)	Degree
up to 5000	1
5000-10000	2
10000-50000	3
50000-100000	4
>100000	5

Table 2-2. Elevation from Sea Level

Elevation (m.)	Degree
<500	5
500-1000	4
1000-1500	3
1500-2000	2
2000-3000	1

Table 2-3. Land Status and Topography of Area

Item	Degree
A. desert	1
B. undulated and little hilly	1
C. Steppic	1
D. few scattered desertic vegetation	1
E. Saline and sandy areas	1

Table 2-4. Soil conditions

Soil texture	Degree
Silty Clay	1
Silty Clay Loam	2
Clay Loam	3
Loam	4
Sandy Loam	5

Table 2-5. % of trees

Trees present	Degree
<5	5
10	4
20	3
20-25	2
>25	1

Table 2-6. No. of grasses present

Grasses Family	No	Degree
Euphorbiaceae	7	5
Compositeae	6	4
Crassulaceae	4	3
Caryophyllacea	2	2
Crufifereae	1	1
Legominoseae		
Chenopodiaceae		

Table 2-7. Plant food Preference (28species)

No. of Plant Species	Degree
28	5
20-27	4
10-19	3
5-9	2
<5	1

Table 2-8. Animal food preference (10 species)

10 Species	Degree
10	5
6-9	4
3-5	3
2	2
1	1

Table 2-9. Land use Change

% of changes	Degree
No change	5
10%	4
10-20	3
20-50	2
>50	1

Table 2-10. No. of animals in the area

No. of Animal	Degree
nil	5
1-10	4
10-50	3
50-200	2
>200	1

Table 2-11. No. of dog in the area

No. of Dogs	Degree
Nodog	5
1-2	4
3-5	3
5-10	2
>10	1

Table 2-12. No. of Hunters and poachers

No.	Degree
nil	5
1	4
2	3
3	2
>3	1

Table 2-13. Distance from village

Distance m.	Degree
up to 500	1
500-1000	2
1000-2000	3
2000-3000	4
>3000	5

Table 2-14. Houbara Density

Density in unit area (1:10000)	Degree
0.27-1	1
1.2-2	2
2.1-5	3
5.1-10	4
10.1-19	5

Table 2-15. No. of Natural predarors

No.	Degree
nil	5
1-2	4
3-5	3
6-10	2
>10	1

Table 4. Matrix of threatening Factors

No.	Name of Area	Human population	Land use change	No. of Livestock	No. of dog	Nat. Predators	Hunting pressure	Degree
1	Taybad	2	3	1	3	2	2	13
2	Kalshur Gonabad	3	3	3	3	3	4	16
3	Dashte Band Ridg	2	3	3	4	3	4	19
4	Dashte Eftekhar	2	3	1	3	4	4	17
5	Dashte Ferdous	3	3	3	3	3	3	16
6	Dashte Abkhorak	3	2	2	3	3	4	17
7	Dashte Daruneh	2	3	2	2	3	4	16
8	Dashte Qare Tappeh	4	2	3	4	3	4	20
9	Dashte Aqda	2	3	3	4	3	5	20
10	Dashte Hassan qaraie	2	2	3	3	3	4	17
11	Ghaleh Ganj	4	4	2	4	3	1	18
12	Dashte Biaz	2	3	3	3	3	3	17
13	Dashtab	2	3	2	3	3	3	16
14	Kafe Gazanjan	2	1	2	3	2	3	13
15	Kafe Chahkhoshk	2	3	2	3	3	2	15
16	Mond P. Area	4	5	2	4	3	3	20
17	Naybad P. Area	2	3	2	2	3	2	14
18	Dashte Mogham	3	2	2	3	2	2	14
19	Dashte Siah Pareh	2	2	1	3	3	3	14
20	Dashte Mobarakeh	4	4	4	5	3	5	25
21	Dashte Baba Hemmat	4	4	5	5	3	4	25
22	Dashte Abbass	2	3	2	2	3	3	15
23	Dashte Akbar	2	3	2	3	3	3	16
24	Dashte Azadegan	2	3	1	2	3	3	14
25	Dashte Hendijan	2	3	1	3	3	3	15
26	Dashte Kasigin	3	3	1	2	3	3	15
27	Dashte Paskuh	2	3	2	3	3	3	16
28	Dashte Negur	3	3	2	2	3	3	16
29	Dashte Nosratabad	3	3	2	3	3	3	17
30	Bahrame Gur P. Area	3	3	2	3	3	3	17

Table 5. Results of Matrices of Habitats

No.	Name of Area	Threatening Degree	Houbara rel. Density	Degree of value
1	Taybad	25	12	76
2	Kalshur Gonabad	15	2	60
3	Dashte Band Ridg	19	0.7	62
4	Dashte Eftekhar	16	0.4	59
5	Dashte Ferdous	20	4.7	65
6	Dashte Abkhorak	14	0.7	57
7	Dashte Daruneh	16	4.7	61
8	Dashte Qare Tappeh	17	4	62
9	Dashte Aqda	20	16	66
10	Dashte Hassan qaraie	20	6	65
11	Ghaleh Ganj	15	0.27	52
12	Dashte Biaz	15	0.7	57
13	Dashtab	14	4	58
14	Kafe Gazanjan	16	1.3	59
15	Kafe Chahkhoshk	17	1.5	59
16	Mond P. Area	25	6	69
17	Naybad P. Area	19	1.2	60
18	Dashte Mogham	18	7	61
19	Dashte Siah Pareh	15	18	59
20	Dashte Mobarakeh	17	8	59
21	Dashte Baba Hemmat	13	0.93	52
22	Dashte Abbass	17	3.6	58
23	Dashte Akbar	16	4.7	57
24	Dashte Azadegan	13	19	56
25	Dashte Hendijan	16	9	58
26	Dashte Kasigin	14	2.7	52
27	Dashte Paskuh	14	0.16	51
28	Dashte Negur	20	2.3	58
29	Dashte Nosratabad	16	1	52
30	Bahrame Gur P. Area	17	4.7	52

Table 6. Degree of values of Habitats and Habitat Suitability Index in priority

No.	Name of habitats	Degree of Value	Habitat Suitability Index
1	Taybad	76	0.84
2	Kalshur Gonabad	69	0.76
3	Dashte Band Ridg	66	0.73
4	Dashte Eftekhar	65	0.72
5	Dashte Ferdous	65	0.72
6	Dashte Abkhorak	62	0.69
7	Dashte Daruneh	62	0.69
8	Dashte Qare Tappeh	61	0.68
9	Dashte Aqda	61	0.68
10	Dashte Hassan qaraie	60	0.67
11	Ghaleh Ganj	60	0.67
12	Dashte Biaz	59	0.65
13	Dashtab	59	0.65
14	Kafe Gazanjan	59	0.65
15	Kafe Chahkhoshk	59	0.65
16	Mond P. Area	59	0.65
17	Naybad P. Area	58	0.64
18	Dashte Mogham	58	0.64
19	Dashte Siah Pareh	58	0.64
20	Dashte Mobarakeh	58	0.64
21	Dashte Baba Hemmat	57	0.63
22	Dashte Abbass	57	0.63
23	Dashte Akbar	57	0.63
24	Dashte Azadegan	56	0.62
25	Dashte Hendijan	52	0.58
26	Dashte Kasigin	52	0.58
27	Dashte Paskuh	52	0.58
28	Dashte Negur	52	0.58
29	Dashte Nosratabad	52	0.58
30	Bahrame Gur P. Area	51	0.57
Total	Sum of Values	90	1