

Warning to the Status of Critically Endangered Great Bustard *Otis tarda* in Iran¹Rahim Abdulkarimi and ²Naser Ahmadi Sani

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Abstract: Great Bustard is a critically endangered species that is classified in IUCN red list and in the current decade it is faced with several threats as losing its natural refuge and habitat destruction by human interference in Iran. Up-to-date data about population status and induced threat on the Great Bustard is necessary to design a reaction plan and conservation measure. Therefore, this study was conducted to investigate the status of Great Bustard population in Mokryan region, NW Iran in January to December 2011. Based on the final reports, the Great Bustard habitats were destroyed in some parts of country except for Mokryan, in south of West Azerbaijan province. The sites around Boukan are the main refuge in Mokryan that Great Bustard breeds in its dry land and survive the wintering time there. The results of this study indicated that optimal habitats in NW (Mokryan) approached to desolation and their Great Bustard population linearly has decreased in comparison to past years; however, the largest number was only 33 individual birds which were observed in winter. The induced change by human as destruction of grasslands and conversion to land cultivation, transformation of dry land to water land, establishment of industrialism, increase in human density and those side effects are the main reasons to this tragedy. Regarding these results, only 35-45 individual birds have been estimated in throughout of country. Thereafter, an urgent plan to reserve this species must be performed by DoE or other responsible organs.

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Key words: Great Bustard *Otis tarda*, population status, Mokryan region, Northwestern Iran.

1. Introduction

The Great Bustard *Otis tarda* is a globally threatened species (Collar et al, 1994), considered as a vulnerable category under the current IUCN conservation criteria (Collar et al, 1994, Bird Life International, 2008). This species is distributed in grassland habitats from the Iberian peninsula in Spain to the eastern Asia (Alonso et al, 2000, 2003). During the last century most population of the Great bustard *Otis tarda* has decreased because of the changes in its habitat structure made by human being. In Iran this species existed in west and northwest of country and is distributed between West and East Azerbaijan, Kurdistan, Kermanshah and Hamedan provinces (Amini, 2000). Although Great bustard is declared as a protected species by the Department of the Environment (DoE) in 1967 (Department of Environment, 1997), its new status in overall areas is critically endangered and its population sharply tends to decline (Barati and Amerifar, 2008; Abdulkarimi et al., 2010a, Abdulkarimi, 2010), as a result, 35-45 individual birds were estimated in the whole areas of country (Abdulkarimi and Barati, 2011., submitted data). In the recent years, reports on the Great Bustard are registered only in North west of Iran which is named Mokryan region in south of west Azerbaijan province (Abdulkarimi et al, 2010a). Boukan areas are the main habitats in Mokryan region that Great bustard

breeds in its dry lands with steppe grounds that are mostly covered by grassland as wheat, barley and legumes (Abdulkarimi et al, 2010ab). Up-to-date data about population status and induced threats on the Great Bustard is necessary to design a reaction plan and conservation measure in future. Therefore this study was conducted to investigate the status of Great Bustard in Mokryan grounds, NW Iran in January to December 2011.

2. Study area

Our census was conducted in five province in west and northwest of country, where this species has existed from old times, as follow; West and East Azerbaijan, Kurdistan, Hamadan and Kermanshah. Several sites that have an important role in holding Bustards are concentrator in Mokryan, which is located in south of west Azerbaijan and Northern of Kurdistan province (Figure 1). Mokryan region (44° 52' 47" 20' E, 36° 00' 37" 15' N) which extends over 17946 km². The climate of this region is mountainous with moderate rainfall in spring and autumn. Also the winter is hard and high temperature is seen in summer. The traditional agricultural system is based on extensive cultivation of cereals in a rotation scheme, resulting in a mosaic of cereal fields, ploughed land, stubbles (recently harvested cereal fields) and fallow land. The land is almost entirely cultivated with wheat and

barley. More than 80% of the surface was used for wheat (*Triticum aestivum*) or barley (*Hordeum vulgare*) production, c. 8% was in alfalfa (*Medicago sativa*) cultivation, and less than 2% was occupied by small vineyards. Surveys were carried out in six important habitats (Figure 1). Four areas located around Boukan as Sootave wildlife refuge (36° 33' _ 36° 37' N and 46° 08' _ 46° 12' E), Yengija and Albolaq (36° 26' _ 36° 28' N and 46° 13' _ 46° 17' E), Hunting prohibited area of Se kanian (36° 39' _ 36° 45' N and 46° 1' _ 46° 17' E), and Qazlian ((36° 28' - 36° 30' N and 46° 08' - 46° 10' E), one near Mahabad including Azad and Bajvand (36° 49' N and 45° 11' E) and Ghareh gheslhaq hunting prohibited area, near Urmia lake in East Azerbaijan province, north of Mokryan.

3. Data collection

The surveys were carried out from January to September 2011 in Mokryan, with a frequency that varied from one per week to one every 3-4 months. All observations were made with 10×40 Bushnell binoculars or a 20–60× telescope. All tracks were accessible by car and in some way on foot were covered in each survey, and observations were also made from the adjacent hills. Types of crops, changes in agricultural activities and threat factors were recorded wherever possible. The maximum number of Great Bustards observed was noted for each area. Except the six areas which investigated by us (Mokryan region), we inquired data collected in 2011 by DoE in other areas of country. Also we used the information about Bustard population in previous works (Abdulkarimi et al., 2010a; Amini 2000; Abdulkarimi, submitted data)

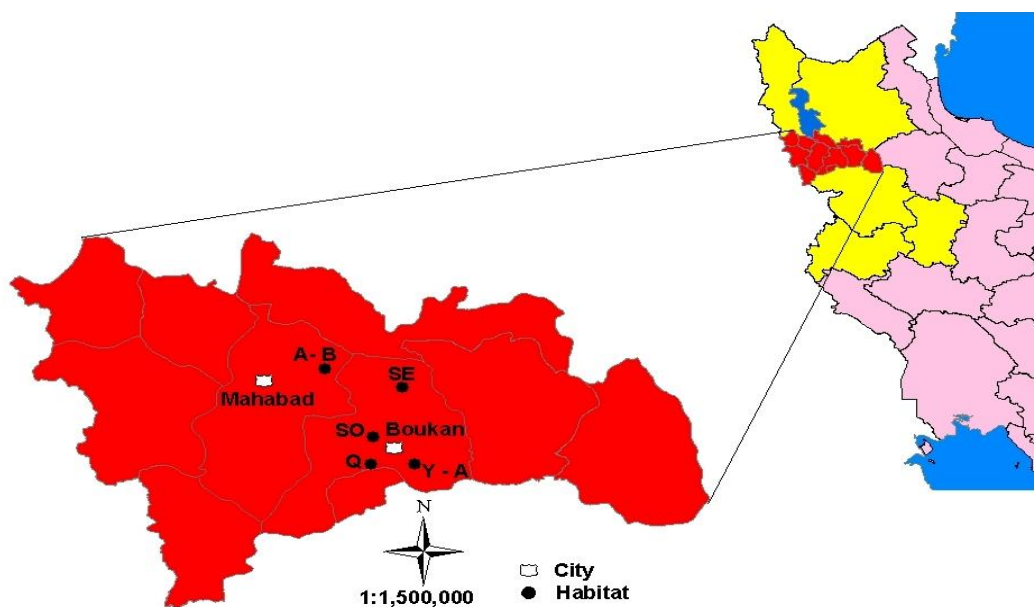


Figure 1. The main habitats of Great Bustard *Otis tarda* in Mokryan region, NW Iran; SO= Sootave, Q= Qazlian, Y-A= Yengija-Albolaq, SE= Se kanian, A-B= Azad and Bajvand; Red area= current distribution, Yellow area= past distribution.

Table 1. The maximum number of Great Bustard *Otis tarda* (from January to Desember 2011) in main sites of Mokryan region, NW Iran

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Agu	Sep	Oct	Nev	Des
Sootave	22	16	22	19	12				5	2	13	25
Yengija_Albolaq		18							7			
Qazlian	33		12									
Se kanian		2	2			2						
Azad-Bajvand					2							

In other habitats in Kurdistan, Hamadan , East Azerbaijan and Kermanshah provinces not record confirmed by DoE and local people (in 2011)

4. Results & Discussion

Nowadays, higher than 80% of Great Bustard sited in Boukan area, Mokryan region, south of west Azerbaijan province. The results indicated that Great Bustard is faced with extinction in original parts of Iran including overall habitats in Kurdistan, Hamadan, Kermanshah and East Azerbaijan (Ghareh gheslhaq).

In a similar way, Kani seve and Misalem plains (west of Boukan city), Hassan Abad (North east of Mahabad city) and Nazloo in Urmia was destroyed by human activities in current decade (Abdulkarimi, submitted data). In 2011, reports on Great Bustard observation were restricted to the areas around Boukan as Sootave, Yengija-Albolaq, Qazlian and Se kaniyan (Table 1). Although a report received by local people in May at Azad-Bajvand, this area has less importance in comparison to sites around Boukan. Azad-Bajvand plain had high potential to hold Bustards in subpopulation which existed and reproduced in past years (DoE reports) but growth of agricultural mechanization like irrigation system and vehicle machines, transferring of dry field to water land, human density and dig a ditch were main causes to undesirable area for Great Bustard.

Regarding the obtained results, Sootave held numerous Bustards in spring, which breeds in dry land of this area (Abdulkarimi et al., 2010b). Steppe lands with dry cultivation and traditional farming are more common in Sootave and also low human density or remote area caused this plain to be favorable as breeding ground for Great Bustards and nests-site selection compared to other habitats (Figure 2).



Figure 2. The Male Great Bustard *Otis tarda* in Sootave, NW Iran. © M. Ahmadi

However, breeding population of the Great Bustard in Sootave plain (22 individual bird in March) declined while compared to the previous records, 25 and 23 in April 2009, 2010 respectively (Abdulkarimi, submitted data). Although the efforts performed by DOE guard, the breeding population of the Great Bustard in areas of Boukan especially in Sootave plain declined in recent decades (Amini 2000, Abdulkarimi et al. 2010). Some factors are important during the breeding season of this species which may reduce habitat quality. Some effective factors are illustrated as follow; increasing of human disturbance, Farming activities, grazing sheep, arriving of vehicle machines, wandering of wild animals such as wolves, fox, jackals and also stray dog (Abdulkarimi, submitted data).

Se kaniyan is one of the other areas which Great Bustard sited and breeds in it. However this area has some favorable characteristics, for example; dry lands with vast expansion, traditional agricultural and low human density. But Se kaniyan is less selected by Bustards as a breeding site, because in our survey we observed only 2 adult Bustard in June which is lower than 4 adult female in April 2010 (Abdulkarimi, submitted data), and 15 individual birds in spring, 1993 (Amini, 2000). Hunting by vocation people, grazing sheep and low protection measure by DoE could be the main cause of disturbing of Bustards and habitat destruction (Abdulkarimi, 2010). By 2007, Gareh gheslhaq was counted on as a favorable region, which had the Bustards that generated in spring (Amini, 2000). Reports have confirmed the wintering population of Bustards existed at this region in cold period (DoE reports, Autumn 2007). Regarding the final survey that was conducted by us in 2011, we didn't find swath of Bustards in different seasons of year. Building of high way Bonab-Naghadeh, growing in irrigation system and make a lot of canals in dry lands caused that the Great Bustard's habitat to be destructed. Other main areas which have a high value for Bustard are Yengija-Albolaq and Qazlian, near Boukan. These areas are known as the autumn and wintering habitats, where this species doesn't breed in now, and have held the flocks of Bustard in cold season (Table.1, Abdulkarimi et al., 2010 a). Traditional farming and alfalfa fields have preserved Yengija-Albolaq plain as a Great Bustard's habitat in autumn and winter (Figure 3). The dynamic action between areas around Boukan (Sootave, Yengija-Albolaq and Qazlian) may be probable, because this areas are close together and visibly moving of birds has been observed (Authors obser).

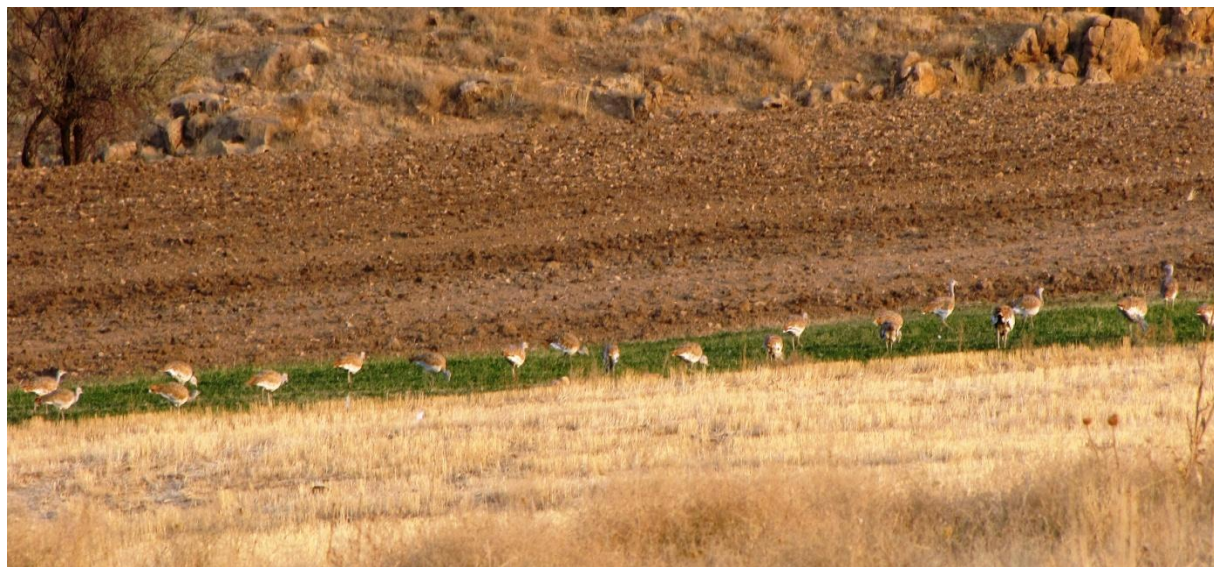


Figure 3. Feeding of the Great Bustard *Otis tarda* in alfalfa field, Yengija-Albolaq, NW Iran. © M. Ahmadi



Figure 4. The wintering population of Great Bustard *Otis tarda* in Qazlian, NW Iran, © M. Ahmadi.

Thus this phenomenon could be discussed that Great bustard selected nest on ground of Sootave in spring, thereafter moved to Yengija in early autumn and to Qazlian in early wintering. Although in current study, the birds appeared also in autumn and winter in Sootave, this result can be related to appropriate weather condition in this time. As opposed to Sootave, no adult birds or their nests were observed in spring and summer in Qazlian (Table.1), because of the mechanization of agriculture (irrigation system and agricultural tools). But in first winter and with beginning of cold weather, Great Bustard arrived in Qazlian (Figure 4). Dietary Great Bustard with alfalfa as a feed source can be one of the causes that the species come back in wintering period. In Qazlian

plain, dry cultivation has been common in the past, but in the recent decade modern irrigation is rising (Abdulkarimi et al, 2010a). Farmers presence for agricultural activities in spring and summer is probably another cause of the disappearance of the birds in breeding season. Although in recent years, the Great Bustard breeding and wintering sites localized in Mokryan region, but like other parts of Iran, some important areas such as Kani seve, Misalem, Hassan abad and Ghareh gheslaq have been destroyed, and in other fragment sites in Mokryan, the population of this species linearly has decreased while compared to the past decade (Figure 5). The induced change by human especially farmers on Bustard habitats, which including; destruction of grasslands or pasture (had been initial refuge for Great Bustard) and convert to cultivation of land, transformed dry to water land, establishment of industrialism, increasing in human density and those side effects are the main reasons to this tragedy. In Mokryan, the maximum number of Great Bustard in 2011 was 33 individual birds, which in optimal case can be 35-50 individual birds be in Iran. Unfortunately, there is not willpower by DoE and responsible organs to save and Great Bustard reproduction in way as habitat resurgence, reproduction of birds by use of advanced methods, advertisement between local people (villagers and farmers) to raise of environmental culture and conservation measure in notable area. If the critical status of Great Bustards continues in future years, we will face the dramatic situation and which is the extinction of this species.

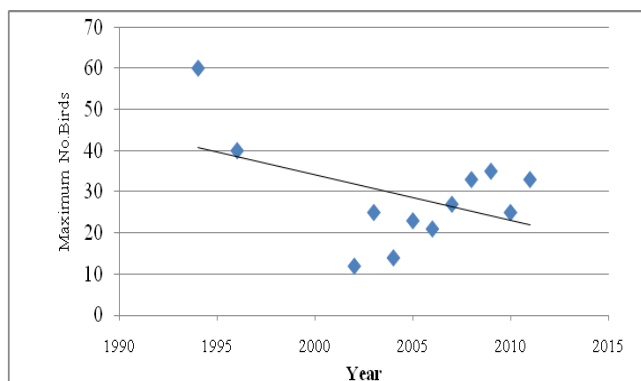


Figure 5. Variation in the Maximum number of Great Bustard *Otis tarda* in Mokryan region, NW Iran.

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