



ISSN: 0975-833X

RESEARCH ARTICLE

POPULATION STATUS AND CONSERVATION OF THE GREAT INDIAN BUSTARD
(*ARDEOTISNIGRICEPS*) IN THE DESERT NATIONAL PARK OF RAJASTHAN, INDIA

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ARTICLE INFO

Article History:

Received 04th February, 2015
Received in revised form
18th March, 2015
Accepted 25th April, 2015
Published online 31st May, 2015

Key words:

Great Indian Bustard,
Population,
Conservation,
Desert National Park.

ABSTRACT

Thar region is a unique arid ecosystem and it is also called as "The Great Indian Thar Desert" situated between 22°30' N to 32°05'N and 68°05' E to 75°45'E. It is one of the smallest deserts in the world, but exhibits unique habitats and biodiversity. This arid region of Rajasthan has two wildlife sanctuaries Desert National Park and Tal Chhapar Wildlife Sanctuary. It is home to the endangered wild species Great Indian Bustard (*Ardeotis nigriceps*), Desert Cat (*Felis silvestris*) and Chinkara (*Gazella bennetti*) but the populations of these wild fauna have been declining over the last few decades due to destruction of habitats, indiscriminate hunting, and increase in feral dogs. Similarly the transformation of desert grassland into agriculture fields under irrigation schemes of Gandhi Canal, drilling for gas and petroleum, mining, stone quarrying, industrial growth, power projects, expansion of roads, putting up electric poles, wind turbines and remaining grasslands are subjected to high grazing pressure from domestic livestock along with over-harvesting by local communities had intensified population declination. Consequently, the Rajasthan's state bird Great Indian Bustard (GIB) has become enormously rare now. The field survey was conducted from January 2009 to December 2011 through road and line transects.

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Citation: Jaipal, B. R. and Gehlot, H. S. 2015. "Population status and conservation of the great Indian bustard (*Ardeotisnigriceps*) in the desert national park of Rajasthan, India", *International Journal of Current Research*, 7, (5), 15986-15989.

INTRODUCTION

The bustards (*Otididae*) are a poorly-known family of ancient phylogeny with several curious biological attributes, and includes some of the largest and heaviest flying bird species (Collar, N. J 1983). Out of the 25 species of Bustards, India is home to four species and they are in great trouble. According to Bird Life International and IUCN criteria, two are Critically Endangered (the Bengal Florican and Great Indian Bustard), one is Endangered (the Lesser Florican) and one is Vulnerable (the Houbara Bustard). The Great Indian Bustard (GIB), once abundant in the grasslands across the Indian subcontinent, is reportedly extinct from 90% of its former range and now, the GIB is confined to some parts of Rajasthan, Gujarat, Maharashtra, Karnataka, Madhya Pradesh and Andhra Pradesh in India, and Sind in Pakistan, in scattered and isolated populations (Bird Life International 2008). About 30 year ago, about 1260 Great Indian Bustard were roaming in the arid region of Rajasthan (Dharmakumarsinhji 1957, 1971).

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Population of GIB has sharply declined from 745 to 600 individuals during 2001 (Dharmakumarsinhji 1978, Birdlife International 2001). The population of GIB was dwindling in continuity and during 2008, remained only 300 individuals (A R Rahmani (2006) Guideline for the GIB recovery programme MoEF, Govt. of India 2011).

Due to continuous decline of their population, The GIB was declared as 'Critically Endangered' species by IUCN (2011). The Rajasthan state has highest (100-125) surviving population of GIB at Jaiselmer, Barmer and Bikaner district (Dutta *et al.* 2010). The GIB population was wiped out from their former range owing to the anthropogenic factors like industrialization and land use conversion in their habitat (Rahmani 2006; Rahmani and Manakadan 1990).

MATERIAL AND METHODS

Study area: The Great Indian Thar Desert or Thar, as it is commonly called, is spread over 2,25,680 sq. km area between 22°30' N to 32°05'N and 68°05' E to 75°45'E. It is the most densely populated desert of the world – the human population density is 165 persons per sq km as compared to the national Figure of 324.

Table 1. Transect details of the study sites

Intensive area	Transect ID	Length of transect	Habitat	
			Foresttype	Terrain type
Sudasari	ST-1	1.7	Scrub grassland forest	plain
	ST-2	1.9	Scrub grassland forest	plain
Khuri	KT-1	2.1	Scrub land	plain
	KT-2	1.9	Scrub land	plain

Table 2. Population of GIB in Desert National Park

Transect ID	No of transects	Numbers of GIB sighted		
		Winter (November -February)	Summer (March - June)	Monsoon (July -October)
ST-1	18	4	3	3
ST-2	18	4	2	2
KT-1	18	2	1	0
KT-2	18	2	2	1

Table 3. Census figures of Great Indian Bustard by Rajasthan Forest Department

Year	2004	2005	2006	2007	2008	2009	2010
No of Individual	110	96	No census	73	70	54	45

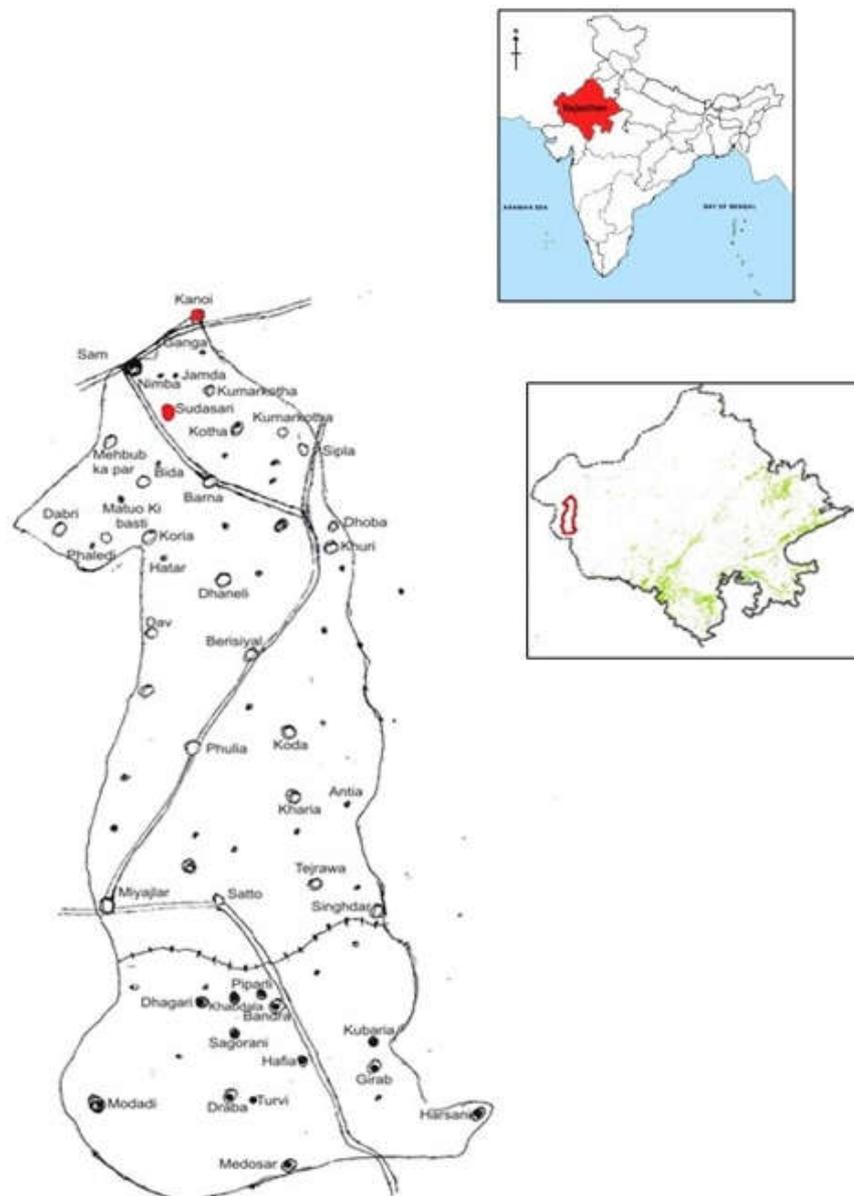


Figure 1. Map of desert National Park (DNP)

The livestock population is also very high in the Thar Desert and is still increasing. The Desert National Park in Jaisalmer and Barmer district (Fig.1) consist of 3,162 sq. km. In this huge area, there are 34 villages and numerous *dhanis* (cluster of huts). The Rajasthan State Forest Department has developed 16 enclosures where livestock grazing is prohibited so good grasslands have come up. Few fragmented grasslands are found in the Desert National Park, which are extremely important for the Great Indian Bustard. Out of 16 enclosures, Sudasari enclosure is heaven for GIB.

Sudasari: This study site is 40 km south-west to Jaisalmer and lies at 2643' N latitude and 7035' E longitudes. The habitat is plain ground with *Lasiurus scindicus* (Sevan grass) and bushes. It is a core area surrounded by wire fencing and divided into six blocks. Agricultural and grazing activities are prohibited in this area. It is an ideal habitat for the state bird of Rajasthan. It has 7 Gazellers to provide water to wild animals. Most of the study site is supported by a grass, *Lasiurus scindicus* and remaining area is occupied by other vegetation like *Caparis decidua*, *Prosopis cineraria*, *Salvadora persica*, *Calotropis procera*, *Ziziphus nummularia*, *Leptadenia pyrotechnica*, *Lycium barbarum*. GIB along with Desert Cat, Desert Fox, Indian Fox, Chinkara, Desert Hare, Mongoose, Nilgai and Hedgehog were noticed from this site.

Khuri: Khuri study site is situated at 40 km south to Jaisalmer city. It has few patches of *Lasiurus scindicus*, which is surrounded by sand dunes. Sand dunes are naked and rarely any vegetation is found on them. However, inter dunal valleys have rich vegetation. This area lies between 2636' N latitude and 7043' E longitudes. Major natural vegetation are *Calotropis procera*, *Capparis decidua*, *Salvadora persica*, *Ziziphus nummularia*, *leptadenia pyrotechnica*, *Lycium barbarum*, *Aerva javanica*, *Brachiria ramosa*, *Haloxyton salicornicum* and major faunal composition include Desert cat, Desert fox, Indian fox, Chinkara, hare, Mongoose, Hedgehog, GIB and hawk etc.

Methods: Preliminary information on the distribution of GIB in Desert National park was collected with the help of secondary literature and consultation with local people and line transect was used (Anderson *et al.*, 1979). The area under the intensive study (Sudasari and Khuri) was visited twice in a season as well as walked line transect during three seasons. Four transects (ST-1, ST-2, KT-1 and KT-2) of both study sites were walked in monthly field visit and field observations were made with the help of binoculars (Nikon-10X50).

RESULTS AND DISCUSSION

The population of GIB declined in Desert National Park (DNP), while earlier these were sighted in large number. At present study area comprised of about total 134 km transects survey (72 transect) in 02 intensive study sites namely Sudasari and Khuri. Four transects (ST-1, ST-2, KT-1 and KT-2) of both Sudasari and Khuri study sites were walked twice in a season and total of 18 field visits were made during this study period. It was found that 26 individuals (12 birds in winter, 08 birds in summer and 06 GIB during monsoon) were recorded (Table 2). Along with GIB about 54 other birds were noticed by Jaipal, (2012) in this area. According to the wildlife census done by Forest Department of Jaisalmer during 2004 about 110

individuals were recorded whereas in 2010 their number reduced by 50% (45 individuals) due to habitat loss and other anthropogenic pressure (Table 3). The area of Chelasar Nari, Kanoi, Ramdevra, Khetolai and Gajai Mata of the DNP is also good habitats for this bird where few sightings of GIB were done while the Saner-Mokla area between Jaisalmer and Ramgarh is also good habitat for GIB. The Great Indian Bustard (GIB) is critically endangered because it has an extremely small population that has undergone an extremely rapid decline (50-79%) over the past ten years owing to the on-going loss of its grassland habitats, mainly through conversion to cultivation, pasture, and hunting pressure (Bhardwaj *et al.*, 2011). Once hunted as a Game bird (Hume and Marshall 1878; Ali 1927; Rahmani 1989), the GIB hunting is still prevalent near Indo-Pakistan border in Cholistan desert region (Khan *et al.*, 2008). Low intensity poaching still persists within India as well (Dutta *et al.*, 2010). Unfortunately, a GIB was poached and killed during daytime on the link road to the Sam sand dunes near Burna village in Jaisalmer (Times of India, 2012). Due to degradation of desert grassland, the population of endemic birds has been declined from 95 percentage of its former ranges. Therefore, the GIB was declared as 'critically endangered' bird by IUCN. The Great Indian Bustard is one of our rarest and grandest birds and is threatened with extinction but with timely steps the position appears to have changed for the better (Dharmakumarsinhji, 1957). The GIB is highly endangered with only about 300 birds in the country and Rajasthan was once home to 50% of the bird population which has now come down to just only 45 Bustards (Census figure 2010). This is a critical stage for GIB. We have to take immediate steps to ensure the population of these majestic birds.

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