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RESEARCH ARTICLE

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

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ABSTRACT

Tarragon is a unique arid ecosystem and It also called the "The Great Indian Thar Desert" which is 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 it exhibits a wide variety of habitats and biodiversity. This arid region of Rajasthan has two wildlife sanctuary Desert National Park and Tal Chhapar Wildlife Sanctuary. It is a home to the endangered wild species Great Indian Bustard (*Ardeotisnigriceps*), Desert Cat (*Felissilvestris*) and Chinkara (*Gazellabennetti*) in Rajasthan. But the populations of these wild fauna have been declining within the Thar Desert of Rajasthan over the last few decades due to destruction of habitats, indiscriminate hunting, and increase feral dog, human and livestock population in their habitats and similarly the transformation of desert grassland into agriculture fields under irrigation schemes of Rajeev Gandhi Canal, drilling for gas and petroleum, mining, stone quarrying, growth of industries, and power projects along with the expansion of roads, putting up electric poles, wind turbines and many remaining grasslands are subjected to high grazing pressure from domestic livestock and intensive harvesting by local communities consequently the Rajasthan's state bird Great Indian Bustard (GIB) has become enormously rare now. The field survey was conducted January 2009 and December 2011 through road and line transects.

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INTRODUCTION

The bustards (*Otididae*) are a poorly-known family of ancient phylogeny with several curious biological attributes, and include 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). More than three decades ago, 1260 individuals of GIB were known to be thriving in the western parts of India (Dharmakumarsinhji 1957, 1971). That population came down to 745 individuals in

1978 (Dharmakumarsinhji 1978). In 2001, the numbers further dwindled to 600 birds (Birdlife International 2001). The situation continued to worsen and the numbers of GIBs decreased to less than 300 individuals in 2008 (A R Rahmani (2006) Guideline for the GIB recovery programme MoEF, Govt. of India 2011). In 2011, International Union for Conservation of Nature (IUCN) declared GIB as 'Critically Endangered' species of the world from its previous category of 'Endangered'. Rajasthan holds the largest population and prime hope for saving the species and at present the highest number of GIB (100-125) are found in districts of Jaisalmer, Bikaner and Barmer in the state of Rajasthan (Dutta *et al.* 2010). Their habitat is under anthropogenic pressure from industrialization and conversion to agricultural fields. In most of their former ranges, GIBs have been wiped out due to the loss of 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.

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**Table 1. Transect details of the study sites**

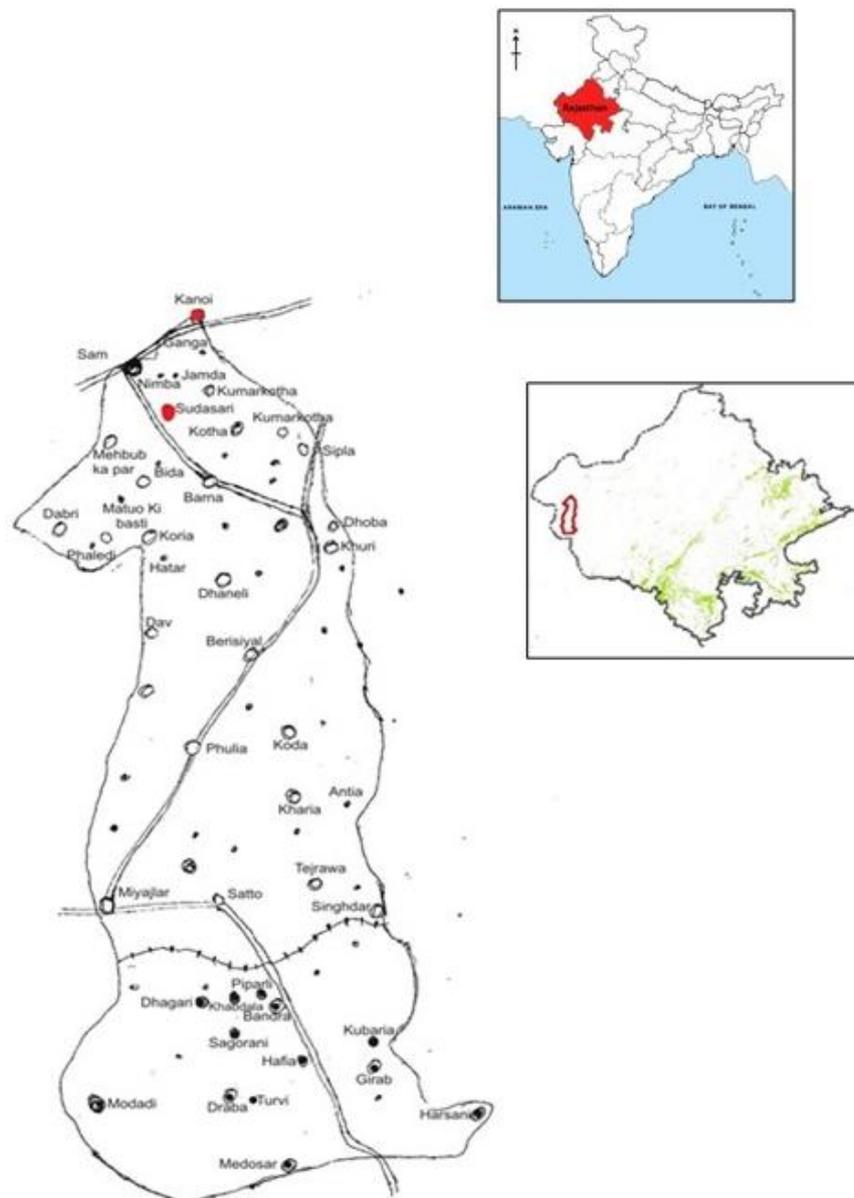
Intensive area	Transect ID	Length of transect	Habitat	
			Foresttype	Terrain type
Sudasari	ST-1	1.7	Scrub grassland forest	plain
	ST-2	1.9	Scrub grassland forest	plain
Khuri	KT-1	2.1	Scrub land	plain
	KT-2	1.9	Scrub land	plain

**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 26°43' N latitude and 70°35' E longitudes. The habitat is plain ground with *Lasiurussindicus* (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 area is supported by a grass, *Lasiurussindicus* and remaining area is occupied by other vegetation like *Caparis decidua*, *Prosopis cineraria*, *Salvadorapersica*, *Calotropisprocera*, *Ziziphusnummularia*, *Leptadeniapyrotechnica*, *Lyciumbarbarum*. 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 *Lasiurussindicus* which is surrounded by sandy dunes. Sand dunes are naked or rare vegetation found on them however, inter dune place have rich vegetation. This area lies between 26°36' N latitude and 70°43' E longitudes. Major natural vegetation are *Calotropisprocera*, *Caparisdeciduas*, *Salvadorapersica*, *Ziziphusnummularia*, *leptadeniapyrotechnica*, *Lyciumbarbarum*, *Aervajavanica*, *Brachiriaramosa*, *Haloxylonsalicornicum* 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).

## RESULT AND DISCUSSION

The population of GIB declined in Desert National Park (DNP), where earlier these were sighted in large number; present study comprised of about total 134 km transects survey (72 transect) in 02 intensive study sites namely Sudasari and Khuri in desert region of Rajasthan. Four transects (ST-1, ST-2, KT-1 and KT-2) of both Sudasari and Khuri study sites were walked twice in a season (Table 1) 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 the population of GIB were good numbers about 110 individual during 2004 whereas 2010 they reduced 50% (45 individuals) due to habitat loss and other anthropogenic pressure (Table 3). The area of Chelasar Nari, Kanod, 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 Ramgarhis 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 next ten years owing to the on-going loss of its grassland habitats, mainly through conversion to cultivation and pasture, as well as hunting pressure (Bhardwaj *et al.*, 2011). GIBs have been hunted as game birds (Hume and Marshall 1878; Ali 1927; Rahmani 1989) and continue to be hunted in neighbouring Pakistan (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 Barna village in Jaisalmer (Times of India, 2012). Due to vanishing of the desert grasslands of Rajasthan, this endemic bird has lost much of its original habitat and has disappeared from 95 percentage of its range today consequently the 2011 red list of birds, released by International Union for Conservation of Nature (IUCN), has enlisted the great Indian bustard in the 'critically endangered' category. The Great Indian Bustard is one of our rarest and grandest birds and is threaten 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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