



ORIGINAL ARTICLE

Distribution Pattern of Sarus Crane *Grus antigone antigone* in Lakhimpur District, Uttar Pradesh**Sulakshana Darapuri¹ and Dr. Bipin Kumar Aggarwal²**¹Research Scholar, ²Research Supervisor

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Email: sulakshanadarapuri167@gmail.comReceived: 11th Feb. 2018, Revised: 9th March 2018, Accepted: 16th March 2018**ABSTRACT**

During the study year 2015 the distribution pattern of Indian Sarus Crane *Grus antigone antigone* was studied in Lakhimpur Kheri district. Lakhimpur Kheri is the largest district in Uttar Pradesh, India, on the border with Nepal. Lakhimpur Kheri district is a part of Lucknow division, with a total area of 7,680 square kilometres (2,970 sq mi). Dudhwa National Park, is in Lakhimpur Kheri and is the only national park in Uttar Pradesh. It is home to a large number of rare and endangered species including tigers, leopards, swamp deer, hispid hares and Bengal floricans. A district survey was carried out to determine the distribution pattern and encounter rate of the Indian Sarus Crane *Grus antigone antigone*. Sarus Crane lives in pairs but also can be seen in large flocks. The number of individuals in a flock may be 136. It is observed that about 400 Sarus Crane still live in Lakhimpur district.

Key words: Sarus Crane, Lakhimpur, Uttar Pradesh

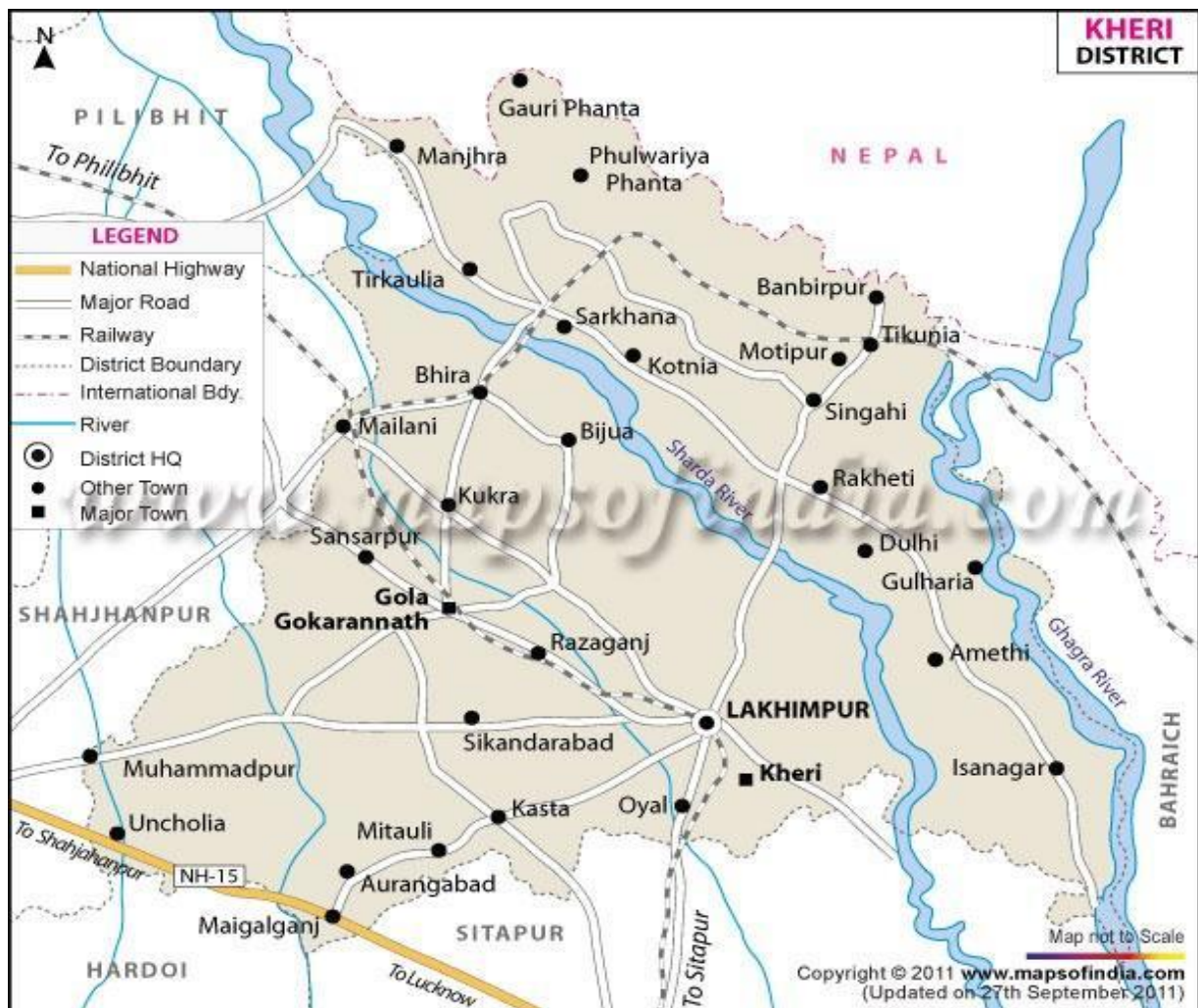
INTRODUCTION

Indian Sarus Crane (ISC) (*Grus antigone* L.), is a magnificent and beautiful bird which is an icon of the wilderness. The world's tallest flying bird is listed in schedule IV of the Wildlife (Protection) Act, 1972 (Tripathi, 2014) and globally a 'Vulnerable' species as per IUCN Red List of Threatened Species (Bird Life International, 2016). It is a large grey stroke like bird with long bare red legs and naked red head and neck (Ali, 1941), having an iris of orange-red colour, a grey ear patch and a greyish - green bill, while juveniles have a bill with yellowish base and the fully feathered brown-grey head (Prasad *et al*, 1993). Coloration in males and females does not differ at all but the females are smaller than males, although juveniles differ from adults by their yellowish brown head. During the breeding season the mating pair exhibits peculiar ludicrous dancing display and capering, spreading their wings and prancing and leaping in the air around each other (Ali, 1941). Three distinct populations of the Indian subcontinent, South-East Asia and Northern Australia were estimated with a total world population of 15,000-20,000 individuals (Archibald *et al*. 2003). One of world's 15 known species of cranes, the most sedentary and tallest of the three crane subspecies is residing in northern and central India, Nepal and Pakistan, with occasional vagrants in Bangladesh (Meine and Archibald, 1996, 1996b). Distribution range has contracted towards the north and west of the Indian subcontinent (Sundar *et al*. 2000) and its population is considered under declining trend (Archibald *et al*. 2003). Once common and widespread in several northwestern states of India (Salim Ali, 1941, Ali and Ripley, 1983, 1980), the distribution and concentration of the Sarus Crane is now restricted to few states like Assam, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh (Anonymous, 2000; Gabhane, 2015; Gole, 1989, 1987, 1991; Singh And Tatu, 2000; Sundar *et al*. 2000). Gujarat is the third most important State as far as the global population of the Sarus crane is concerned – the first being Uttar Pradesh, second Rajasthan. Ahmedabad, Anand, Vadodra and Kheda are important districts for the Sarus Crane. During the All-India Sarus Crane Count in the year 2000, almost 30% of the cranes were counted from Gujarat (Mukherjee, 2002). The diet of this omnivores bird consists of grains, shoots and other vegetation as well as they consume insects, mollusks and small reptiles (Ali, 1941). Sarus crane indicates good rainfall and healthy wetland ecosystem (Kumar and Kanaujia, 2017a). Even though cranes are recognized as a mascot of wetland, Sarus crane also

utilizes the irrigated agricultural fields to build the nests for raising chicks as they become temporary wetlands (Mukherjee, 2006). Present paper illustrates primary information about the distribution pattern of Sarus Crane in Lakhimpur Kheri district.

STUDY AREA

The present study area is Lakhimpur Kheri, district of Uttar Pradesh. Lakhimpur Kheri district is situated on Indo-Nepal border close to foot hills of Himalayas in Terai area. It is a district of Uttar Pradesh in the Lucknow division. The headquarters of the District are situated in the city of Lakhimpur. It borders with Bahraich, Sitapur, Hardoi, Pilibhit and Shahjahanpur districts. Areawise it is the largest district in Uttar Pradesh. About 20% of this area is covered with deciduous thick forest. It is famous for Dudhwa Tiger Reserve. The total forest area is dominated by Sal forest dotted with open areas covered with grasses which are commonly known as "Phanta". It is home to a large number of rare and endangered species including tiger, leopard, swamp deer, hispid hare, Bengal florican, etc. Being a Terai district it is rich in natural resources with lush green scenery and many Rivers. Lakhimpur Kheri district is the largest district in terms of area in the state (Total Area = 7680 sq. km). It is located at 27.60 to 28.60 N Latitude and 80.340 to 81.300 E Latitude.



Map 1: Site Map (Source: Google)

METHOD

Present study was carried out in four blocks of Lakhimpur Kheri district viz., Behjam, Mohammadi, Lakhimpur and Bijuwa. The intensive study made in the marshland, water bodies and agriculture fields of these blocks. The survey was conducted during month of last June 2015, 2016 and 2017 to

know number and population pattern of Sarus Crane in all four blocks of district. The methods of survey were applied by the road and wetlands transect. All the possible areas of Sarus habitat were surveyed. The direct observations were made through naked eyes and 10X25 Binocular to know accurate number of Sarus Crane. Local peoples also were also a part of study to know about the distribution pattern of Sarus Crane in different parts of district. The global locations of large wetlands were recorded through G.P.S. device. All four blocks were divided into three transect. (Map. 1)

Transect I- Lakhimpur - Korhaiya -Behjam –Kasta

Transect II- Lakhimpur - Gola- Landanpur- Mohammadi

Transect III- Gola- Gulariya- Bijuwa - Bhira

Encounter rate of Sarus population was calculated by the relationship:

$$\text{Encounter rate} = \frac{\text{Number of Sarus Crane counted in the transect}}{\text{Length of transect}}$$

Methods adopted were those of Sunder *et al.* (1999).

RESULT

In this paper total three roads and five large transect areas were used to find out population and distribution pattern of Sarus Crane in Lakhimpur district. Total 133 Sarus were counted in 2015, 225 in 2016 and 137 in 2017 (Table 1). The encounter rate was found 1.05 in 2015, 1.76 in 2016 and 1.11 in 2017 (Table 1). In this survey the juvenile and adult were not separately counted. The flock size of Sarus was also observed (Table. 2). The highest counts were seen in Faridpur Grant and Belawa in 2016.

Table 1: Population status and encounter rate of Sarus Crane (2015-2017)

Year	Total no. of sarus				Encounter rate
	Transect 1	Transect 2	Transect 3	Total number	
2015	21	33	79	133	1.05
2016	39	65	121	225	1.76
2017	31	37	69	137	1.11

Table 2: Flock size of Sarus Crane in large wetland of Lakhimpur district (2015-17)

Area observed	Flock size			GPS location
	2015	2016	2017	
Achhaniya	14	27	15	27°51'23.7"N 80°37'11.7"E
Bhareta	23	37	21	27°52'41.4"N 80°39'07.2"E
Faridpur Grant	43	66	45	28°02'14.6"N 80°18'25.2"E
Belawa	30	50	31	27°58'15.5"N 80°57'06.1"E
Bhira	23	45	25	28°19'21.3"N 80°28'50.5"E

DISCUSSION

Agricultural ecosystem is highly productive with respect to grains, green fodder or invertebrate prey which ensures food to birds of diverse food habits (O'Connor and Shrubbs 1986; Dhindsa and Saini 1994; Borad *et al.* 2000). In western India, at least 260 bird species have been recorded in intensively cultivated areas (Parasharya *et al.* 1996b). Hence, a large number of bird species utilizing agroecosystem are directly influenced by agriculture. Agriculture is implicated in the decline of several bird species currently listed as threatened or endangered or that are candidates for listing (O'Connor and Shrubbs 1986; Rodenhouse *et al.* 1993). Population decline of several bird species in India have been attributed to agricultural activities (Parasharya *et al.* 1996a; Rahmani 1996; Sankaran 1997; Javed *et al.* 1999).

The survey was done in summer season because the most wetlands dry up and the Sarus move toward few stable wetlands. The fluctuation of encounter rate occurs due to rain fall. The flock size was also studied by different workers like Prasad *et al.* (1993), Mukherjee *et al.* (1999), Sunder (2003) in different areas in different months. Sarus crane presence was significant at Faridpur Grant area of Mohammadi block and Belawa area of Lakhimpur block (Table 2). Nirmal kumar *et al.* (2007) found that Sarus crane population was highly dynamic, in summer the mean density observed was highest (98), and lowest (19) in monsoon, which suggest the availability of food to other locations leads to local migration during monsoon season.

CONCLUSION

Present study was carried out in four blocks of Lakhimpur district *viz.*, Behjam, Mohammadi, Lakhimpur and Bijuwa. The intensive study made in the marshland, water bodies and agriculture fields of these blocks. Total three roads and five large transect areas were used to find out population and distribution pattern of Sarus Crane in Lakhimpur Kheri district. Total 133 Sarus were counted in 2015, 225 in 2016 and 137 in 2017. The survey was done in summer season because the most wetlands dry up and the Sarus move toward few stable wetlands. The fluctuation of encounter rate occurs due to rain fall.

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