

## STATUS OF SARUS CRANE *GRUS ANTIGONE ANTIGONE* IN RAJASTHAN AND ITS ECOLOGICAL REQUIREMENTS

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### Abstract

Sarus Crane *Grus antigone antigone* once had its distribution range from the Himalayan foothills to the Godavari plains in the south. Today their distribution is fragmented. The paper presents a review of the study conducted on the status and habitat of Sarus cranes in Rajasthan. Rajasthan and adjoining districts of Madhya Pradesh were surveyed, and complemented by handouts and questionnaire surveys on status, breeding sites and number of adults. The results showed that a total of 332 birds were present in the study area of which 139 pairs were with a sub-adult, juvenile or chick and 54 birds were young ones. The adult/juvenile ratio was 19.4% which is good compared to other states which have Sarus cranes. It was noticed that the cranes preferred wetlands close to croplands. The cropfields were normally within a radius of 1000m from the wetland that harboured Sarus Cranes. During the survey 73% of the birds were seen in inundated fields, marshes or near water body and 27% were in fallow, harvested fields. Wheat, maize and soya bean were preferred by the cranes. Marshes and reedbeds close to the canals are nesting sites of these birds. Awareness programmes are recommended for villagers who inadvertently destroy Sarus Crane habitats.

### Keywords

*Sarus Crane, Grus antigone antigone, Rajasthan, status, distribution, habitat, population*

### Introduction

Sarus Crane *Grus antigone antigone* is a mascot of our wetlands and croplands. Once its majestic presence graced the ponds, rivers, submerged fields and its call reverberated through the length and breadth of the country. The records of the last century show that Sarus Crane was plentiful in Mumbai region and its breeding has been reported from places like Panvel, Salsette and Santa Cruz. A Sarus Crane was shot near Bandra railway station in 1908 (Symons, 1908). Its breeding records are available from as far as Hardoi, in present day Uttar Pradesh (Pershouse, 1910) and Mahikantha in Kathiawar (O'Brien, 1909; Nosse, 1910). As late as in the sixth decade of this century, Ali and Ripley who were writing volume two of the *Handbook of the Birds of India and Pakistan*, stated that Sarus Crane is a common resident throughout the northern parts of the subcontinent south of the Himalaya, from Sindh and Punjab eastward through Uttar Pradesh, Bihar, northern Madhya Pradesh, diffusing decreasingly south to a diagonal line roughly from Surat on the west to the Godavari delta on the east. According to the last detailed status survey of Sarus Crane undertaken by Prakash

Gole and sponsored by MoEF, Government of India; it has lost its hold over most of its earlier distribution range. Gole (1989) stated in his report on "The status and ecological requirement of Sarus Crane" that its area of distribution may be redrawn between Porbandar to Hissar in the west, passing through Pilibhit in north to Gorakhpur in the east. It is patchily distributed between Valsad and Bhawanipatna through Chandrapur in the south and a straight line may draw its eastern boundary between Gorakhpur and Bhawanipatna. The Sarus Crane is a large bird requiring huge area for foraging and brooding. The march of civilization has pushed this bird to the margin of existence. Studies presented on ecology and breeding biology of Sarus Crane at Asian Crane Congress at Rajkot in 1989 (Vyas & Kulshreshtha) confirmed the importance of South East Rajasthan for survival of this bird. Gole (1989) expressed same sentiments in his report about Rajasthan. It has become amply clear that Rajasthan is one of the last strongholds of Sarus Cranes in India. To affirm the status of Sarus Cranes in the state, it was decided to undertake a survey of major Sarus Crane areas in the state of Rajasthan and adjoining districts of Madhya Pradesh.

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Sarus Crane is often depicted as a symbol of marital fidelity and considered auspicious, thereby receiving immunity against poaching, wherever the sentiments prevail. Although in recent times economic considerations overshadow such emotions and a number of birds have been poisoned by the farmers in Gujarat (Parasharya, 1996).

The main objectives of the study are as follows:

- To ascertain the present status of Sarus Crane in south, southeast and eastern districts of the State.
- To collect first hand information on the habitat and habitat utilization by Sarus Crane.
- To collect information on breeding areas and breeding success in the State.

### Study area and Methods

Route plans were finalised for the survey of Rajasthan and adjoining districts of Madhya Pradesh keeping the objectives of the study in mind.

It was decided to cover maximum number of Sarus Crane habitats like village tanks, seepage marshes, check dams and adjacent crop-fields found on the State highways, arterial roads and canal roads. The survey work was completed during the winter of 1997-98. This period was chosen with the view that during these months (i.e. October to February), breeding birds are normally confined to a smaller area. The shrinking wetlands also confine these birds to permanent water sources and crop-fields. Following districts were fully covered depending upon the reports and accessibility of the areas

Rajasthan: Bharatpur, Dhaulpur, Sawaimadhopur, Kota, Bundi, Baran, Jhalawar, Tonk, Ajmer, Jaipur, Nagaur, Bhilwara, Chittor, Udaipur, Dungarpur and Banswara.

Madhya Pradesh: Tikamgarh, Chhatarpur, Shivpuri, Sheopur, Mandsaur and Ratlam.

The survey work was undertaken by a team of volunteers of the society by jeep. The volunteers carried with them photographs of Sarus Crane and also handouts. They were asked to fill up a questionnaire to collect information on the status, breeding sites and number of adults (pairs and individuals), chicks, juveniles and subadults. They were also asked to note the crops in the area where Sarus Cranes were seen and the distance of occurrence of these birds from closest wetland, crop-field and human habitat. In all, 2696km road distance in Rajasthan and 575km in Madhya Pradesh were covered.

### Results and Discussion

During the present survey, 16 districts of Rajasthan were covered by jeep or two wheelers between November, 1997 and February, 1998. Six districts of Madhya Pradesh were also included in the survey. After careful consideration and discussions with the experts, it was decided to report the actual sightings and hearsay reports separately. Three distinct areas of abundance of Sarus Cranes have emerged in Rajasthan. In eastern Rajasthan, Bharatpur and Dhaulpur districts have fairly healthy and breeding populations and so is the case with Kota, Bundi, Baran and Jhalawar in southeastern Rajasthan. In southern Rajasthan, Pratapgarh area of Chittor District and Banswara, Dungarpur districts support a fairly good population of Sarus Cranes. In all 278 adult birds were sighted from 10 districts, out of which 133 pairs were seen (266 birds) and 12 adult birds were seen singly. Out of 133 pairs, 39 (29.32%) were with their young ones. The young ones have been further sub-divided into subadult, juvenile and chick depending on their plumage, approximate age and height (Table 1).

**Table 1. Number of Sarus Cranes seen during the survey.**

Sarus cranes	Numbers
Pairs	133 (266 birds)
Single	12
Subadults (approx. adult size, body, crown not red)	25
Juvenile (approx. 100cm., overall buff coloured)	19
Chick (downy, up to 70cm)	10
Total	332

In Bharatpur District 58 Sarus Cranes were seen, which included 45 adults, six subadults, four juveniles and three chicks. The population was mainly concentrated around Keoladeo National Park and Ajan Dam. Deeg area does not seem to have any permanent resident population of Sarus Cranes. Dhaulpur District has some of the finest wetlands but the Sarus Crane is confined to certain places like Dhaulpur City, Talab Shabi at Bari and Ramsagar on the way to a place named Nagar from Bari. Eighteen adults, three subadults and one juvenile were seen in the district. In all, 320km were traveled by road in these district; Kota and Baran districts have a network of canals, aqueducts and resulting seepage marshes, which provide an ideal habitat for Sarus to breed. There is an abundance of village tanks also. Eighty-two birds (68 adults, 2 subadults, 8 juveniles, 4 chicks) were recorded from Kota District and 29 (25 adults, 2 subadults and 2 juveniles) from Baran District, only 14 Sarus Cranes were seen in Bundi District but it is a very low figure since the district

is known to have larger populations, particularly between Keshoraipatan, Arnetha and Kapren. Out of a total of 14 birds, six were seen at Hindoli alone. Twenty-one Sarus Cranes have been recorded from Jhalawar District including 16 adults, one subadult, one juvenile and three chicks. A total distance of 1059km was covered in four districts (Table 2).

**Table 2. Number of Sarus Cranes sighted in each district in Rajasthan.**

District	Adults	Subadults	Juveniles	Chicks
Kota	68	2	8	4
Bundi	14	-	-	-
Baran	25	2	2	-
Jhalawar	16	1	1	3
Bhilwara	-	-	-	-
Chittor	19	1	1	-
Dungarpur	12	3	-	-
Banswara	59	5	2	-
Ajmer	2	2	-	-
Dhaulpur	18	3	1	-
Bharatpur	45	6	4	3
Total	278	25	19	10

In the year 1988-89, Prakash Gole had counted 386 Sarus Cranes from 15 districts of Rajasthan. He estimated that a population of 1373 Sarus Cranes might be found in Rajasthan. He also concluded that wetlands were the most preferred habitat of these birds (85%) against only 15% preference shown to crop-fields. After consulting experts, we had decided not to extrapolate our sightings statistically, thus only the actual sightings are being discussed for each district. Our figures tend to confirm the views of earlier researchers (Gole, 1989; Kulshretha & Vyas, 1994) that wetlands were most commonly frequented by Sarus Cranes in Rajasthan. During the recent survey 73% birds were seen in the inundated fields, marshes or very close to water bodies whereas 27% were found in fallow, harvested or crop-fields. Another very important aspect from Sarus conservation point of view has emerged that a complex of wetlands and crop-fields are most essential for Sarus cranes. They are never away from these habitats as shown in Table 3. If a Sarus Crane is near a wetland then crop-fields are normally within a radius of 1000m and this is the reason that the average distance of a bird from water is 72.28m and 87.66m from a crop-field. The range is 600m and 800m respectively for wetland and crop-field. Since such

**Table 3. Sarus Cranes in different habitat in Rajasthan.**

Type of habitat	Sarus found in range (m)	Average distance (m)	Total numbers
Wetland	0 - 600	72.28	242
Crop-field	0-800	87.66	90
Human Habitation	50-100	457.87	-

\* Wetland - village tank, dam, check dam, inundated fields (paddy or grass), marsh, reedbed, canal seepage, riverbed.

\* Crop-field - fallow, ploughed, harvested with crop.

wetland-crop-field complexes are close to human habitations, we found that in most of the cases, a village or a cluster of huts was within sight from places where Sarus were seen.

Our findings further confirm the findings of Gole (1989) that among the different types of wetland habitats, Sarus Cranes mostly preferred marshes, inundated fields and reed beds, followed by village tanks, paddy fields and finally canal and river beds especially during the summer months. Among the crops, most preferred by Sarus are paddy, wheat, maize and soyabean. Sarus cranes may be seen in harvested fields of these crops feeding on fallen grains and seeds and insects. Wheat and soyabean are common to all the areas in which Sarus is found but maize is most common in southern Rajasthan; whereas pulses are more common in eastern Rajasthan (Table 4).

During our survey 39 pairs out of a total of 133 were found with subadult, juvenile or a chick thereby giving a figure of 27% breeding pairs out of the total population of cranes. Of the total 332 Sarus Cranes seen, 54 (19.4%) were young ones which,

**Table 4. Common crops of the study area and those preferred by Sarus Crane.**

Districts	Common crops
Kota, Bundi, Baran and Jhalawar	Soyabean*, paddy*, sorghum, mustard*, wheat*, coriander*
Bharatpur and Dhaulpur	Masoor pulse*, Wheat*, mustard*, paddy*
Banswara and Dungarpur	Maize*, arhar pulse*
Tonk, Ajmer, Nagaur and Jaipur	Wheat*, mustard, alsi, arhar pulse cotton, saunf

\* crops preferred by Sarus Crane

compares well with the all India figure of 13.71% given by Gole (1989). With successful species of cranes like Common Crane and Sandhill Crane, this figure is as high as 43% to 60% and 20% to 50% respectively, but still we may say that an adult/juvenile ratio of 19.4% is better than other states of India in which Sarus Cranes are found (Gole, 1989).

Third most important area for Sarus Crane in Rajasthan is its southern districts namely Banswara, Dungarpur and Pratapgarh part of Chittor District. In this part, inclusive of Udaipur and Bhilwara, a total distance of 663km was covered. The survey team found very good concentration of Sarus Cranes on the village tanks and backwaters of Mahi Dam. Ninety-eight Sarus Cranes were seen, which included 90 adults and eight subadults and juveniles, maximum concentration was in Banswara area because of the change in its ecology brought about by the waters of Mahi Dam.

In the districts of Tonk and Ajmer, some places showed potential of having Sarus Cranes but due to deficient rainfall in the region in the year 1997, most of the wetlands had dried up by the end of October. Sarwad area of Ajmer is known to have fairly good population of these birds, so is the case with Malpura, Nagar and Uniara area of Tonk District. The team covered 494km of distance by road in this part but only two birds were found in Ajmer District.

In northwestern and western Madhya Pradesh, a total distance of 575km was covered by Jeep and Sarus Cranes were seen in Mandsaur, Ratlam Dewas, Indore, Shivpuri and Sheopur (Part of Gwalior District) districts. Our observation suggests that Dewas and Indore districts have good population of this bird whereas it is patchily distributed in northwestern Madhya Pradesh. In Karera Great Indian Bustard Sanctuary, we found two pairs of Sarus Cranes out of which one pair was nesting in the marsh near Dihaila Lake.

The average distance of the Sarus Cranes from a wetland, crop-field and a human habitation was 72.28m, 87.66m and 457.87m respectively, signifying the fact that wetlands and crop-field are extremely important in the ecology of these birds. Most of the Sarus Cranes seen were in the close vicinity of a wetland or a crop-field. The crop-field close to a pond, canal or a marsh has greater chances of harboring Sarus Cranes. If we consider the number of birds seen in each habitat (242 near water or reedbed and 90 in crop-field) it becomes clear that 73% were close to a wetland and 27% were close to a crop-field. When we further dwell in to the subject, it becomes clearer that village tanks and Pokhars are most preferred by Sarus whereas canal seepage and inundated fields are second best habitat for them. During the scarcity of water, canal and river beds are used for foraging and resting. Among the crops, wheat and paddy are most preferred and soyabean, masoor pulse and mustard are second best. In

Banswara and Dungarpur area maize is the most preferred crop.

Although the population of Sarus Crane is showing a decline in the state of Rajasthan, its status may be termed static in relation to earlier findings. This bird has lost some of its habitat in central Rajasthan but has gained ground in southern Rajasthan. Three very distinct areas have emerged and these areas hold the key to successful survival of Sarus in the State. Bharatpur-Dhaulpur in eastern Rajasthan, Kota, Bundi, Baran and Jhalawar in southeastern Rajasthan are important Sarus Crane areas. Any change or disturbance to the wetland ecology of these districts and change in the crops or cropping pattern may have an adverse effect on survival of Sarus in the State. In Kota area we have seen an alarming drop in the nesting of Sarus because of the draining of marshes and usurpation of reedbeds for cultivation. In this area, a number of Sarus roosting sites have been lost to industrial growth in the region. We must realise that the ecological requirements of Sarus Crane are important for the survival of human beings. Because, if we have enough good wetlands and flourishing crop-fields, it is going to be in mutual interest. In fact the government of Rajasthan holds the rights to the marshes and reedbeds close to the canals and it can and must protect these areas for its own good. These are the most commonly used nesting sites of Sarus Crane. The human population in general is favourably inclined towards Sarus in Rajasthan and village folk normally protect these birds but they inadvertently cause harm to their habitat. An awareness campaign shall help a great deal in making people aware that this majestic bird is a symbol of the healthy wetland-crop-field complex on which the survival of mankind depends.

Following common vernacular names of Sarus Cranes are in vogue in different parts of Rajasthan and this knowledge may be helpful to future researchers.

Bharatpur, Dhaulpur, Tonk districts - *Beela*

Chhoti Tori area of Banswara - *Kareta*

Banswara and Pratapgarh area - *Hareda, Kabra* and *Ade*

Dungarpur - *Hirodi*

Salumbar - *Sureda*.

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## Errata

*Zoos' Print Journal* 16(12): 669.

**"Food habits of Hanuman Langur (*Semnopithecus entellus*) during dry season at Mount Abu Wildlife Sanctuary"**

Second paragraph, third line

**Read:** "Though it rains generally in the month of April during a year with good rains, this year it rained in March 2001".

**As:** "Though the month of April is generally dry during a year with good rains, in 2001 it remained dry in the month of March".

*Zoos' Print Journal* 17(1): 677.

**"Mammalian and avian diversity of the Nallamala Hills, Andhra Pradesh"**

Second paragraph, eighth line

**Read:** "*Rhinopoma beddomei*"

**As:** "*Rhinolophus beddomei*".