



Research Paper

Tools of conservation of Sarus Crane *Grus antigone* in Unnao region of Uttar Pradesh

Varsha Rani* and Amita Kanaujia

Biodiversity and Wildlife Conservation Lab, Department of Zoology, University of Lucknow, Lucknow, Uttar Pradesh, India.

*Corresponding author Email: varshharaj@gmail.com

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Abstract: The Indian Sarus Crane (*Grus antigone*) is tallest flying bird in the world. Once widely distributed in India from Punjab, Nepal, it has now been restricted only to the northern Terai region in Uttar Pradesh. During the surveys carried out in the study period from February 2019 to December 2021, the estimated population of Indian Sarus Crane was almost 1200-1400 cranes in Unnao, a major sarus prone area of U.P. Population estimates were done by Line transect method using pair of binoculars along the roadside from their breeding sites, congregation places, while foraging, roosting, or at rest during day hours. As the breeding success is directly associated with availability of food, to increase the number of Indian Sarus Crane, their foraging grounds need to be maintained well. But due to rapid industrialisation and anthropogenic activities, their foraging sites are under threats, so if not conserved now, may result in decline in number of Sarus, the State bird of U.P.. Few measures have been put forward in the

study for Sarus conservation in Unnao region.

Keywords: conservation, Unnao, Indian Sarus Crane, *Grus antigone*

Introduction:

The Indian Sarus Crane (*Grus antigone*), the world's tallest flying bird and a globally 'Vulnerable' species as per IUCN Red List of Threatened Species is the only resident breeding crane in India. It is the State bird of Uttar Pradesh. The name Sarus came from Sanskrit term "sarasa" which means "bird of the lake". Sarasa is borrowed from the Austro-Asiatic language of the ancient people, who were the very first settlers to the Indian subcontinent region. A crane can appraise about 2-meter in height (over 6 ft), with wingspan up to 2.5-meter wide (about 8 ft) having weight of 7 to 10 kg (15-22 lbs). Sarus cranes are distributed in the lowlands, but most live outside protected areas, especially in agricultural areas and wetlands. The continuous expansion of agricultural land and the reduction of wetland habitats pose the greatest threats to the conservation of the species Sarus

Crane forages in both wetlands and uplands they readily shift their feeding strategies on a daily or seasonal basis to take advantage of available food items. They benefit from the food provided by agricultural fields during the breeding and/or non-breeding phase of their annual cycle. At one time or another, most cranes forage in crop lands and pastures that border the wetlands where they nest or roost. The Sarus is friendly to human beings and live close to them. These birds is also known as the eternal symbol of unconditional love and devotion and good fortune .

Materials and Methods

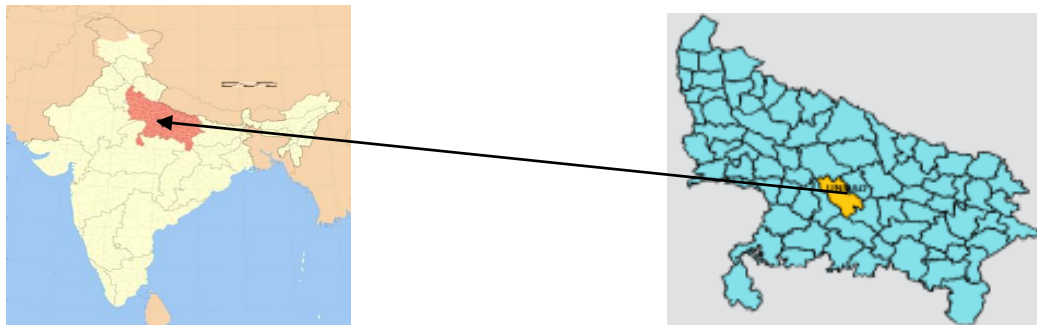


Figure 1: Map of India showing Unnao district of Uttar Pradesh

Results and Discussion:

The aim of the present study was to provide proposed conservation measures of Sarus cranes conservation in Unnao district of Uttar Pradesh, as the habitat is being degraded rapidly due to increasing human population, industrialization, loss of habitat (rapid declining of wetlands) and other developmental activities.

The Sarus crane is listed as a Vulnerable category of IUCN Red list, 2010. Several workers provided the evidences related to habitat use by Sarus crane in previous studies (Gole, 1989; Chauhan and Kumar, 2000; Sundar et al., 2000a; Vyas, 2002; Archibald et al., 2009). A total of 1973 individuals of sarus crane recorded in the Unnao District, U.P. (Kumar and Kanaujia (2017).

Surveys were carried out in in the Hassanganj Nawabganj, Poorva, Bangarmau tehsils of Unnao district of Uttar Pradesh Fig no 1. from February 2019-December 2021. During the surveys the observation on status of the wetlands, breeding sites, number of breeding birds, and threats and disturbances were recorded. Additionally, the villagers were also interviewed at the existing wetlands to know the attitude of the locals in supporting the sarus and their foraging sites. Based on our examination on all potential sarus sites, I have formulated a number of conservation measures recommended that are vital threats specific to the sarus.

Sarus cranes prefer shallow area and avoid deep reservoirs and other wetlands for habitation (Borad *et. al.*, 2001), it prefers nesting in marshland and paddy rice (Sundar, 2009) of water depth varying between 25 and 65 cm (Mukherjee *et. al.*, 2000), population fluctuations across habitats by Sarus is extremely season dependent (Mukherjee., 1999)

There is a significant population of sarus crane, in some areas in Unnao, but yet conservation intrusions in these situations must be implied as soon as possible.

Discussed below are the threats faced by Sarus, significant measures that need to be taken up for their conservation. The threats pertaining to former and existing sarus sites in Unnao district (Fig 2) based on our surveys conducted time to time in study period. Table 1: Summary of threats

to former and existing major sarus sites in Unnao district.

Table 1: Major Sarus sites and Threats observed in Unnao district of U.P.

Sarus sites	LW	EA	P	LE	FF	E	LPS	CAW	LCAY	UF
Kudina	N	Y	N	N	Y	Y	N	N	N	Y
Kunda	N	Y	N	N	Y	Y	N	N	N	Y
Aamiya	N	Y	N	N	Y	Y	Y	N	N	Y
Matlabpur										
Poorva	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Jagdishpur	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Govindpur	Y	Y	N	Y	Y	Y	Y	N	Y	Y
Makur	N	Y	N	N	Y	N	N	N	N	Y
Nawae	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Chandra shekhar Azad Bird Sanctuary	Y	N	Y	Y	N	N	Y	Y	Y	N

LW – Loss of Wetlands, EA – Expansion of Agriculture ,P – Pollution/Industrialisation , LE – Land Encroachment , FF – Fencing of fields ,E –Electrocution of Power lines,LPS –Loss of People Support ,CAW –Clogging of Aquatic Weeds , LCAY –Lack of Care of Young ones,UF-Use of fertilizer/Pesticide,Y-Yes ,N –No , (?)=uncertain , (-) =not applicable.

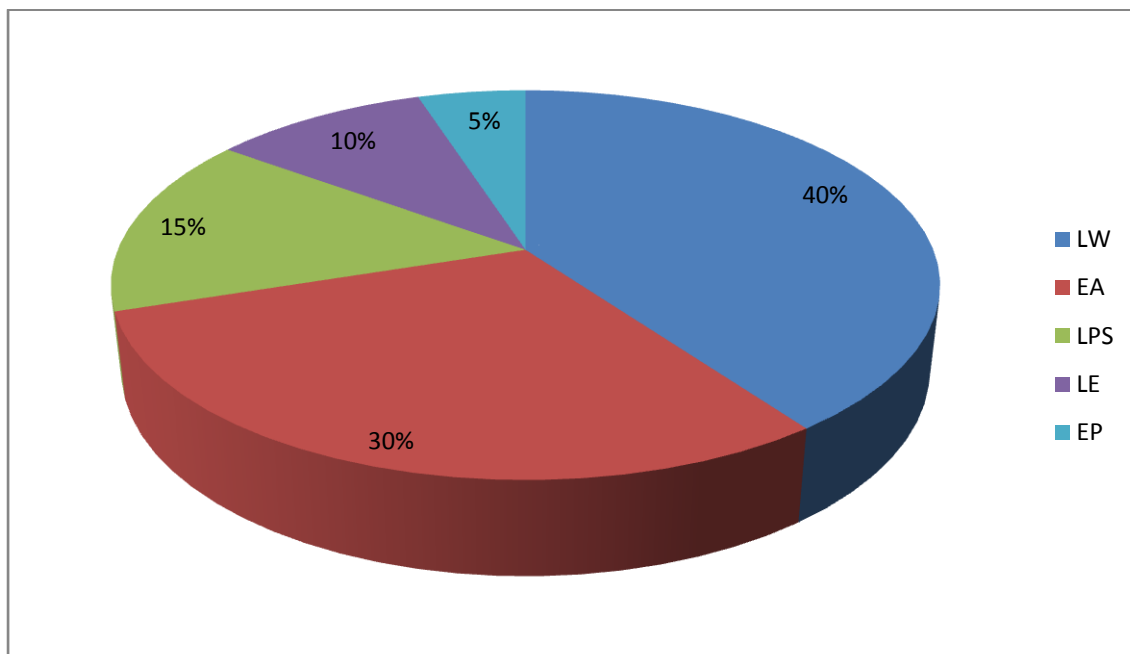


Fig No: 2 Percentage of major threats at Sarus sites.

Conservation Issues and Conservation Measures

Loss of Wetlands: As, Sarus cranes prefer nesting in shallow area and marshy area or wetlands, so degradation of wetlands by humans either in conversion of agriculture or result of drainage of sewage or industrial waste should be avoided. Water is drained from wetlands by cutting ditching into the ground which drain water out of the wetlands. Generally many mounds are built and trees are planted without considering the actual necessity and fitness. The best example is of Chandra Shekhar Azad Bird Sanctuary, Nawabganj, Unnao where a mound is seen just next to tourist walking trail which was a disturbing factor for the birds residing there. Removal of silt helped in deepening of shallow ends of the jheel. All these contribute to damaging of wetland.

Proposed conservation measures:

In order to provide healthy habitat for Sarus Crane, restoration and management of the existing wetlands need to be implied.

There should be construction of wetlands to provide sarus crane sites for breeding, foraging activities

Expansion of agriculture:

To maintain a health increase in production of food grains to support demand of human population, lead to expansion of agriculture of wheat, paddy, mustard, potatoes cultivation. For this reason the lowland marshy areas, pond were converted in agricultural fields where vegetation of Jal khumbhi, Water chestnut, Jussiaea, Water meal, Sacred lotus, Water lily, Coon tail, Hydrilla, Cyprus, Pond weed, Patera cuttail, Big duck weed, Gerga grass, Water spinach, Tape grass, Wild rice, Pola, Van laung and Smart weed grow well in wetlands, (Kumar and Kanauia (2015)). Most of the wetlands, are

included in Gram-samaj list, are deployed for fish cultivation to people by fisheries department of Uttar Pradesh. Due to lack of proper monitoring, farmers prefer water chestnut cultivation with fish culture there. Most of the wetlands are seasonal and farmers use their water for irrigation.

Proposed conservation measures :

Illegal farming of water chestnut and other aquatic weeds should be banned.

Irrigation methods either by ground water through tube wells or cutting off water lanes from nearby canals should be done than drawing water from wetlands.

Use of pesticide in agricultural fields:

In fields, use of pesticide and chemical fertilizer is high, to increase yield of food grains, ignoring their effect on their intake by these sarus cranes foraging in same agricultural fields

Proposed conservation measures:

A native composting techniques for organic farming and use of biological controllers need to be implied in order to reduce it.

Loss of People support :

As sarus crane are seen mostly close to human habitation, so most of sarus sites are located in or nearby villages and were not disturbed and provided special protection by local villagers. (Table 2.) The supplementary support by forest staff at some villages provide additional boost to protection of sarus and their habitats. Combined efforts of both local people and forest department is vital for protection of their habitats.

The local support of villagers is declining mainly due to problem of economic loss faced by them, as a result they started using wetlands for water chestnut and fish cultivation. Increasing human population, changing life styles and their related demands on natural resources have led to threatening status of sarus.

Table 2. Showing villages of Unnao and PEOPLE support

S.No.	Village	Type of Habitat	Loss of Forest support	Loss of people support
1.	Kudina	Sharda Canal,	N	N
2.	Kunda	Pond, agricultural fields	N	N
3.	Aamiya	Canal, agricultural fields	N	Y
4.	Matlabpur	Sharda canal	Y	Y
5.	Poorva	wetland	Y	Y
6.	Jagdishpur	Paddy ,potatoes field	Y	Y
7.	Govindpur	Paddy fields	Y	Y
8.	Makur	Agricultural fields of paddy.	N	N
9.	Nawae	Marshy land, wetlands	N	Y
10.	Chandra Shekhar Azad Bird Sanctuary	wetland	N	Y

Proposed conservation measures

Villagers should be given funds and involved in activities of caring young abandoned young ones, creating, protecting and maintenance of wetlands, provided with annual compensation for revenue losses.

Site-specific eco-development schemes for villagers should be brought forward, in order to lessen the demands on natural resources.

Awareness and importance of wetlands in ecosystem should be given to local people. Sarus mitr volunteers for sarus conservations should be encouraged and awarded.

Electrocution of Power lines:

The Sarus Crane have a wide wingspans, which makes them prone to collide with electric power lines. Due to their wide wing span of 2.5 meters, if they fly close to these power lines, chances of wings touching them is very high. Which may lead to cranes being electrocuted.

Proposed conservation measures :

The route of power lines should be shifted from flight path of sarus both from breeding and foraging grounds. Insulation

of power lines around sarus habitat areas should be done.

Protection of eggs and young ones from dogs :

In order to increase the number of Sarus Crane, need to protect eggs and abandoned young ones is must. Most of times they are destroyed by stray dogs and raptors or sometimes even by farmers or villagers of that area.

Proposed conservation measures :

Monitoring of population of the cranes should be done regularly and protection of their nests, eggs and chicks should be done.

The local people and farmers should be encouraged to protect nests and provide some compensation to them if any damage caused to crop.

Both state and central government should impose strict laws to protect their habitats'

Land Encroachment:

With increase in population size there is more demand of lands for house establishment. Flood plain development often directly impacts wetlands by removing vegetation leading to soil erosion or draining wetlands for building sites. . Encroachment due to urban

development, siltation and change of land use pattern, the waste water sewers line join to the wetlands, beside this improper use of watersheds have all caused a substantial decline of wetlands .

Proposed conservation measures :

All major foraging sites of Sarus should be declared as protected areas and handed over to the forest department.

Strict laws of anti-pollutions should be applied for areas nearby foraging and breeding sites of sarus.

Figure 3 : PHOTOS showing threats faced by ISC their foraging sites.

	
<p>Encroachment of Wetlands due to expansion of agriculture.</p>	<p>Use of pesticides in agricultural lands.</p>
	
<p>Electrocution danger near foraging site</p>	<p>Expansion of Agriculture</p>

Conclusion:

The threats faced by the Indian Sarus Crane in Unnao district of U.P., are mainly due to the damage caused to the wetlands which are primarily habitat of the cranes. As, their breeding success is dependant on the food availability, their future will be assured only if their foraging grounds are in good condition.

Recommendations have been forwarded in this study for conservation of the sarus crane sites. If only few are implied by

concerned authorities will help in rapid increase in number of Sarus here.

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