



EVALUATE THE COMMUNITY PERCEPTION AND APPROACHES TOWARDS SARUS CRANE (*Grus antigone*) AND THEIR CONSERVATION IN FARIDPUR TEHSIL UNDER BAREILLY DISTRICT OF UTTAR PRADESH

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ABSTRACT

Community approaches is the most important for the success of wildlife conservation. Ecological education is very essential scheme to change the thoughts of community about the conservation of wildlife. The present survey was planned to community perception for Sarus crane (*Grus antigone*) and their conservation in Faridpur Tehsil under Bareilly district of Uttar Pradesh. The survey method consisted with the collection of data from primary and secondary resources. A semi-structured questionnaire survey to collect information on different aspects of Sarus crane conservation was used. All questions were in regional language, questions had multiple options and respondent chosen one of these. The majority of community noticed that maximum (59.33%) saw 1-2 Sarus cranes in their villages. The response for the preferred habitat of Sarus crane maximum (39.34%) saw the Sarus crane in the non cultivated marshlands, followed by crop field (32%), pond (24.66%) and minimum (4%) saw them near the river. Community person's maximum (48.67%) feels that standing crops were the most liked food by the Sarus cranes. The majority of respondents, most (76.67%) saw the presence of nest and eggs in their villages while 35 (23.33%) denied of any such sightings. The number of Sarus crane decline in study area therefore mostly (60.67%) feel a decline in the number of Sarus cranes however, others (39.33%) do not feel any such decline. They feel a decline in the number of Sarus cranes maximum (39.56%) believe it was because of wetland degradation, (27.47%) consider the decline because of adverse atmospheric conditions, (20.87%) think it is because of low food availability, (6.60%) because of hunting and (5.50%) considered other reasons for the decline. Furthermore, more research and projects should be planned for the conservation of Sarus crane in Uttar Pradesh.

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INTRODUCTION

Community-based conservation involves several basic principles, including: involving communities in decision-making; developing community institutions for management; incorporating traditional or local knowledge; devolving control over resource management; legitimizing community property rights; linking environment and development objectives; and providing incentives for conservation (Barrow & Murphree, 2001).

The ecological aspects animal diversity, food dispersion, predator diversity and density influence the group size and composition of birds' species. Community conservation is considered an important contemporary tool for nature conservation (Adams & Hulme, 2001) but has mostly been implemented in and around protected areas rather than for the conservation of species occurring outside such areas.

The survey was conduct to understand the Community Perception and approach Towards Sarus Crane (*Grus antigone*) and Their Conservation in Faridpur Tehsil under Bareilly District of Uttar Pradesh. Sarus crane (*Grus antigone*), which is categorized as Vulnerable on the IUCN Red List (IUCN, 2007) and occurs mostly in unprotected, wetland habitats. Even though the Sarus crane is observed as a wetland species (Meine & Archibald, 1996; BirdLife International, 2001) it is increasingly being forced into agricultural fields because of the deterioration and destruction of its natural wetland habitat (Mukherjee, 1999; Sundar *et al.*, 2000; Sundar & Choudhury, 2003). In India there are some Community Conserved Areas for particular species but the Sarus crane, which is not restricted to a single village or area, has not benefited from such schemes (Pathak & Kothari, 2006).

The number of Sarus crane population has presence in Faridpur Tehsil because of the wetlands, agricultural fields and canals of the two River Ram Ganga and Behgul provide the appropriate habitat. In this area Sarus crane breed in the July to

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October. Meine & Archibald (1996) suggested that wetland conservation should be integrated into village-based education and development programmes for preserving the habitat of the Sarus crane in India. In the arid landscape of Rajasthan where water scarcity is a major concern, retention of minimum water levels in wetlands, and protection and management of these wetlands, is beneficial both for the Sarus crane and for the people living in close proximity (Kaur *et al.* 2008).

Conservation action for the species is urgently required, including education and community development programmes (BirdLife International, 2001). Such activities are important for the Sarus crane because it occurs mainly on private and community lands (Sundar *et al.*, 2000; Sundar & Choudhury, 2003). However, few activities have been implemented to raise awareness of the need to conserve the Sarus cranes (Trivedi, 2007). Hence, the aimed of the study to evaluate the Community Perception and Approaches Towards Sarus Crane (*Grus Antigone*) and Their Conservation In Faridpur Tehsil Under Bareilly District Of Uttar Pradesh.

MATERIAL AND METHODOLOGY

Study Area

The study was conducted in selected villages of Faridpur Tehsil under Bareilly district of Uttar Pradesh. The Bareilly district is located in the north western part of U.P. and lies between latitude 28°10'N, and longitude 78°23'E. The district consists of six Tehsils and fifteen blocks. These are Aonla, Baheri, City of Bareilly, Faridpur, Meerganj and Nawabganj. Bareilly district is a part of Bareilly Division. Faridpur Tehsil also known as Pitamberpur. Faridpur is a town and a nagar panchayat in Bareilly district. Presently Faridpur is famous for Jari work, Sarrafa (Gold and Silver Jewelry). Faridpur is located at 28.208611°N 79.538056°E. It has an average elevation of 215 meters (705 feet). Faridpur Tehsil located between 271 km in the north to Delhi and 228km in east to Lucknow. There are two rivers present in the Faridpur Tehsil namely Ramganga and Behgul. Ramganga flows in the south and Behgul in the north in Faridpur Tehsil. There are 385 villages are present in Faridpur Tehsil and it is divided in two blocks Faridpur and Bhuta the detail are given below:

Table 1 Name of two Blocks and total area of Faridpur Tehsil

Tehsil	Block	Area (Hectare)	Area (km ²)	Block Headquarters	Distance from Headquarter (Km.)
Faridpur	Faridpur	29838	298.38	Faridpur	22
	Bhuta	32384	323.84	Bhuta	34
Total area	-	62222	622.22	-	-

METHODS

The work was held in August 2011 to July 2012 in Faridpur Tehsil under Bareilly District of Uttar Pradesh. During the research, respondents were selected from the villages of Faridpur Tehsil where Sarus crane inhabits the whole year. The study method consisted with the collection of data from primary and secondary resources. Primary data were collected by direct observation, interviews, questionnaire survey and group discussion with forest staff and citizens through a semi structured questionnaire survey (Singh and Sharma, 2011). Multistage random sampling was used to selected survey villages. Faridpur Tehsil is composed of 385 villages. During the present study a total of 32 villages of Faridpur Tehsil were

extensively surveyed for the presence of Sarus cranes. Out of these 10 villages selected for the study which is 2.59 % of the whole.

One hundred fifty (150) community persons selected in ten (10) villages from farmers, students, service man, dairy farming, farming and shop keeping and fishery residing around the Sarus crane inhabits. The survey was done to assess the current status, habitat, breeding, threats and conflicts between Sarus crane and inhabitants in the area. Field observations were carried out with cover the agricultural fields, wetlands, river side and ponds. Several visits were done in the early morning and late evening near the Sarus crane inhabits in the selected villages.

Group discussion with the village community was also conducted to assess community perception and approaches towards Sarus Crane (*Grus Antigone*) and their conservation in the area.

Table 2 GPS locations and area of villages with the presence of Sarus cranes

S.No.	Village	Area in hectare	Area in km ²	Latitude	Longitude
1	Pachomi	442.93	4.4293	N 28°10.290'	E 079°33.943'
2	Khanjanpur	345.679	3.45679	N 28°08.830'	E 079°34.730'
3	Hasanganj	217.557	2.17557	N 28°09.627'	E 079°36.899'
4	Khanpura	193.883	1.93883	N 28°11.465'	E 079°37.985'
5	Billaua	162.430	1.6243	N 28°11.833'	E 079°37.962'
6	Piperthara	206.252	2.06252	N 28°13.024'	E 079°37.571'
7	Badra	358.629	3.58629	N 28°13.794'	E 079°37.759'
8	Mewa	371.577	3.71577	N 28°13.501'	E 079°38.414'
9	Kaherua	44.18	0.4418	N 28°13.685'	E 079°35.895'
10	Nabada van	488.85	4.8885	N 28°10.495'	E 079°32.753'
Total area		2831.967	28.31967		

Questionnaire Survey

A semi-structured questionnaire survey to collect information on different aspects of Sarus crane conservation was used. All questions were in regional language, questions had multiple options and respondent chosen one of these. The pre-testing of questionnaire was done on the theme areas of present study. As per the detail and information obtained in the pre testing, a closed ended questionnaire was designed. However, some open ended questions were also included to have the better knowledge and understanding on the habitat, ecology and different human aspects involved in Sarus crane conservation.

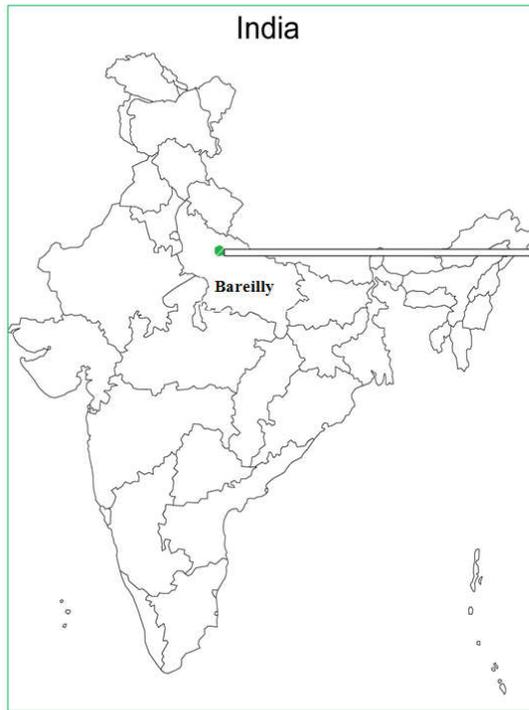
The secondary data information was collect from the published literature such as management plan, government document, official statistics, previous studies on the Sarus crane, technical report, scholarly journals, review articles, books, computerized database, the world wide database magazines and newspaper were recorded (Shell, 1997; Cnossen, 1997).

STATISTICAL ANALYSIS

Both quantitative and qualitative data was recorded and considered for statistical analysis. The data collection, tabulation, analysis and their interpretation was performed. The standard statistical analysis procedure was used (Snedecor and Cochran, 1994).

RESULTS AND DISCUSSION

Throughout the survey work, village community confirms the presence of Sarus crane and provided the evidences and support.



1 a Map of India showing Bareilly district



1 b Map showing different tehsils in Bareilly district

Plate 1 Location map of Faridpur tehsil under Bareilly district of Uttar Pradesh, India

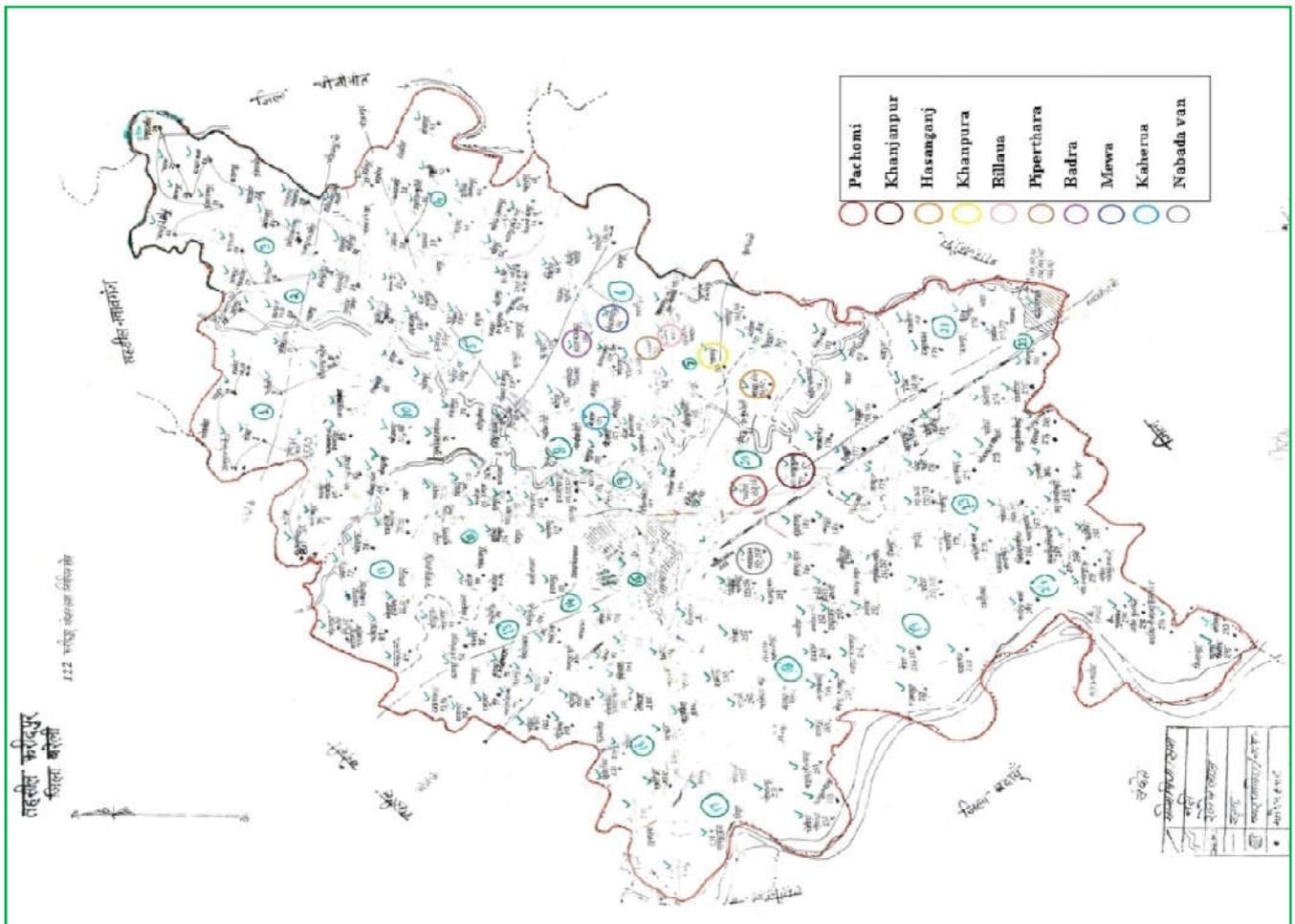


Plate 2 Map of Faridpur Tehsil showing different villages

The study indicates that the age of the respondents varies, those belonging to 45 and above age group were maximum 44.66% followed by 25-35 years age group 23.34% (Table 3). All the respondents participated in the survey were males. The majority of respondents lived in the area for a long period of the time or born there had better experience have adequate information about the species. The overall level of the education in the study area was 38% of the respondents were illiterate followed by intermediate 21.34%, high school 20.66%, primary school 10.66% and middle school 9.33% respectively (Table 4). The majority of the community depends on the agriculture activities. The occupation structure of the respondents was varied which includes farming 74.67%, dairy farming 11.34%, students 10.66%, service 6%, farming and shop keeping 4.67% and fishery 2.67% (Table 5). During the discussion with the people, maximum participants confirmed the sighting of Sarus crane in morning 68.67% whereas 22.66% feels in the evening and 8.67% feels that they are seen in the afternoon (Table 6).

Table 3 Age of the respondents

S. No.	Age group	Number of respondents	Percentage
1	15-25	17	11.34 %
2	25-35	35	23.34%
3	35-40	31	20.66 %
4	45 and above	67	44.66 %
Total		150	100%

Table 4 Education of the respondents

S. No.	Education	Number of respondents	Percentage
1	Primary School	16	10.66 %
2	Middle School	14	9.34 %
3	High School	31	20.66 %
4	Intermediate	32	21.34 %
5	Illiterate	57	38 %
Total		150	100%

Table 5 Occupation of the respondents

S. No.	Education	Number of respondents	Percentage
1	Primary School	16	10.66 %
2	Middle School	14	9.34 %
3	High School	31	20.66 %
4	Intermediate	32	21.34 %
5	Illiterate	57	38 %
Total		150	100%

Table 6 Community perceptions for timings of Sarus crane sighting

S. No.	Time	Number of respondents	Percentage
1	Morning	103	68.67 %
2	Afternoon	13	8.67%
3	Evening	34	22.66 %
Total		150	100%

During the group discussions at village level, the participants observation About the Sarus crane maximum 59.33% respondents saw 1-2 Sarus crane in their village followed by 24.67% with 3-6 Sarus, 9.33% with 7-14 Sarus and only 6.67% with 15 and above number of Sarus crane respectively (Table 7). A great number of respondents 59.33% confirmed the presence of Sarus crane in the non-cultivated marshlands, whereas 32% with crop field, 24.66% pond and minimum 4% saw them near the river (Table 8). Table showed that the maximum 48.67% feels that standing crops were the most

liked food include with response to the germinated seeds 16%, small insect 14.66%, fish 12.67%, snails 6.67% and 2 1.33% like other food by the Sarus cranes (Table 9). A community of respondents 76.67% confirms about to observe the presence of Sarus crane nests and eggs in their villages while 35 (23.33%) denied of any such sightings (Table 10). These community members most of the 40.87% saw the nest in non cultivated marshland followed by 39.13% in the paddy field, 18.26% in the pond and only 1.74% reported the presence of nest near the river (Table 11). Although 60.67% respondents were feel a decline in the number of Sarus cranes however, others 59 (39.33%) do not feel any such decline (Table 12). Out of the 91 respondents who feel a decline in the number of Sarus cranes 36 (39.56%) believe it was because of wetland degradation, 25 (27.47%) consider the decline because of adverse atmospheric conditions, 19 (20.87%) think it is because of low food availability, 6 (6.60%) because of hunting and 5 (5.50%) considered other reasons for the decline (Table 13). The result indicates that the majority of participants felt that most major threat to Sarus crane eggs and chicks is human being with 41.33% followed by other birds 22.67%, dogs 10.67%, electric cables 6% and flood 8% (Table 14). However, 11.33% respondents think there is no threat to Sarus crane eggs or chicks (Table 15). Concerning the practices of the community, 92 % of the respondents replied that the Sarus crane doesn't cause any problem to village community whereas 12 (8%) feels that they cause little problems such as like damages crops, attack on peoples and eat up fishes (Table 16). 44.67% community experienced to see incidences for the Sarus crane killing, egg damages and stolen (Table 17).

Table 7 Community perceptions for usual number of Sarus cranes observed by respondents

S. No.	No. of Sarus crane	Number of respondents	Percentage
1	1-2	89	59.33 %
2	3-6	37	24.67 %
3	7-14	14	9.33 %
4	15 and above	10	6.67 %
Total		150	100%

Table 8 Community perceptions for habitat of the Sarus crane

S. No.	Place	Number of respondents	Percentage
1	Pond	37	24.66 %
2	Near the river	6	4 %
3	In the crop field	48	32 %
4	Non cultivated Marshland	59	39.34 %
Total		150	100%

Table 9 Respondent's observations about the food preferences of Sarus crane

S. No.	Food preferences	Number of respondents	Percentage
1	Standing crops (paddy, wheat, pea, lentil, potato, groundnut etc.)	73	48.67 %
2	Germinated seeds	24	16 %
3	Fish	19	12.67 %
4	Small insect	22	14.66 %
5	Snails	10	6.67 %
6	Any other	2	1.33 %
Total		150	100%

Table 10 Community perceptions for sighting of Sarus crane nest and eggs

S. No.	Nest/egg sighting	Number of respondents	Percentage
1	Yes	115	76.67 %
2	No	35	23.33 %
Total		150	100%

Table 11 Community perceptions for Sarus cranes nesting site preferences

S. No.	Nesting site	Number of respondents	Percentage
1	Pond	21	18.26%
2	Near the river	2	1.74%
3	Non cultivated marshland	47	40.87%
4	In the paddy field	45	39.13%
Total		115	100%

Table 12 Perception about decline in the number of Sarus crane

S. No.	Perception about decline	Number of respondents	Percentage
1	Yes	91	60.67 %
2	No	59	39.33%
Total		150	100%

Table 13 People perception about the reason behind such decline

S. No.	Reason for decline	Number of respondents	Percentage
1	Wetlands degradation	36	39.56%
2	Low food availability	19	20.87%
3	Adverse atmospheric condition	25	27.47%
4	Hunting	6	6.60%
5	Others	5	5.50%
Total		91	100%

Figure 1: People perception about the reason behind Sarus crane decline

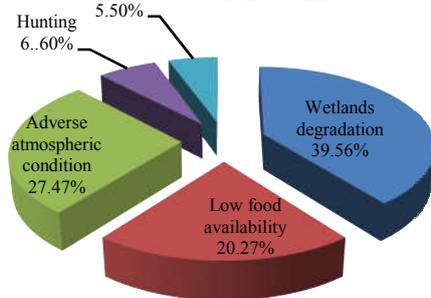


Table 14 People perception on the major threats to eggs and chicks of Sarus cranes

S. No.	Answers	Number of respondents	Percentage
1	Human beings	62	41.33%
2	Dogs	16	10.67%
3	Other birds	34	22.67%
4	Flood	12	8%
5	Electric cables	9	6%
6	None	17	11.33%
Total		150	100%

Figure 2: People perception on the major threats to eggs and chicks of Sarus cranes

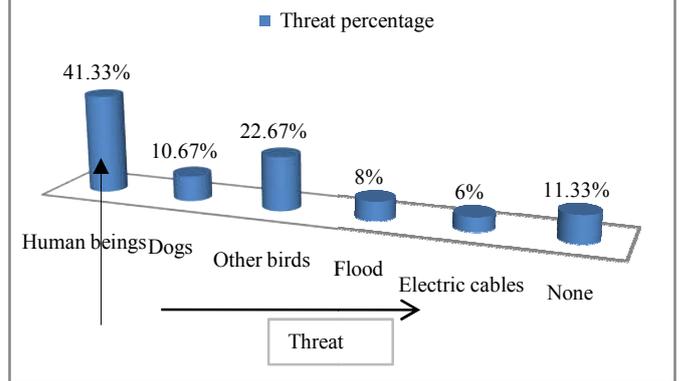


Table 15 People remarks on the problem caused due to Sarus cranes

S. No.	Problematic/ Non problematic	Number of respondents	Percentage
1	Problematic	12	8%
2	Non problematic	138	92%
Total		150	100%

Table 16 People observation on the common problem associated with Sarus crane

S. No.	Common Problem	Number of respondents	Percentage
1.	Damage crops	8	66.67%
2.	Eat up fishes	1	8.33%
3.	Attack on people	3	25%
Total		12	100%

Table 17 Incidences heard and seen by the respondents for the Sarus cranes killing, egg damages

S. No	Incidences number	Number of respondents	Percentage
1.	Yes	67	44.67%
2.	No	46	30.67%
3.	Can't say	37	24.66%
Total		150	100%

DISCUSSION

However, as per these no one was ever involved in hunting of Sarus crane for meat/ egg/ recreation purpose. Hammer (2009) maintained that the species is venerated in India and legend has it that the poet Valmiki cursed a hunter for killing a Sarus crane and was then inspired to write the epic Ramayana. Sundar and Choudhury (2006) stated that the species was a close contender to the Indian peafowl as the national bird of India. Russell (1916) acknowledged that Among the Gondi people, the tribes classified as "five-god worshippers" consider the Sarus crane as sacred.

All the respondents in the area were using pesticides in their crops. They also had not reported any mortality in Sarus crane and other birds when they sprayed pesticides. Sarus cranes were preferred in the community. All the respondents feel that Sarus cranes and their habitat should be conserved.

Kaur *et al.* (2008) acknowledge that villagers and farmers were instrumental in protecting adult Sarus cranes from poaching and were responsible for the successful fledging of a total of 19 hatchlings from 22 nests during the wet seasons of 2000 and 2001 but none during the dry season. In the area mainly Sarus crane seen in the agricultural areas.



1 A flock of Sarus crane near the Behgul river



2 A pair of Sarus crane feeding in agricultural land



3 Two pair of Sarus crane using the agricultural land near the village community



4 A pair of Sarus crane standing in the Sugercane field



5 Farming community using the wetland water for the agricultural use



6 A pair of Sarus crane with their nest and eggs in paddy field



7 A pair of eggs of Sarus crane on the bund of paddy field

Plate 1 Photographs shows the presence of Sarus crane, their nests and eggs availability with the farming community

Results are similarly like that Borad *et al.*, 2001 reported that Sarus cranes prefer shallow area and avoid deep reservoirs and other wetlands for habitation.

Kumar and Kanaujia, (2017) perform a study in Unnao District of Uttar Pradesh and respondents confirms the sighting of the population of Sarus cranes in study area, the density of Sarus crane in agriculture habitat greater than wetlands. The abundance of Sarus crane in agriculture was less with compared to the wetlands habitat. It was also observed that, the density of Sarus crane was more in agriculture habitat in comparison to the wetlands.

Kumar and Kanaujia (2017) reported that in 2013-14, the majority of survey respondents believed the nest and eggs protection and conservation had positive impacts on the community and Sarus crane population. In terms of impacts on Sarus crane, respondents were generally ambiguous in enlightening their positive statuses during study period, mentioning to their efforts to attention for the Sarus crane. Conservation does not come without a cost even when it is being done by communities themselves. Many times communities consider these costs integral to their efforts while at other times the costs begin to impact the sustainability of the initiative and communities even look for help to counter them (kalpavriksh.org). Sarus crane has a long breeding season right from July to October. During the survey, it was noticed that the status of Sarus crane nests, eggs and breeding were not in good conditions or very poor. Breeding success was very little.

Davis 1998 suggested that education is a vital part of any attempt to enforce legal protection for the Sarus crane and for the long-term conservation of the species outside protected areas more community protection groups and education and awareness programmes will be required in other breeding areas. Development of an active network of farmers, village communities and NGOs will facilitate improved conservation of the species. Kumar and Kanaujia, (2017) also recommended that one of the conservation improvement strategies is that of promoting educational efforts on long-term basis by concentrating on the emotive affection of the local people, school children and farmers to the crane and by underlining the importance of Sarus in the ecosystem.

Understanding the community to importance the role of wildlife has a crucial role for the Sarus crane conservation planning and implementations in the area. Our experience with during the research work confirmed that it is possible to reestablish a bond between farmers and nature, and work on community involvement for the Sarus crane is continuing, with the involvement of more districts in Uttar Pradesh.

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