

CRANE CAPITAL



Conservation Strategy for Sarus Crane (*Grus antigone*) Habitats in Etawah and Mainpuri Districts, Uttar Pradesh

Rajeev Chauhan, Joydeep Bose, Nidhi Agarwal,
Bahar Dutt, Aniruddha Mookerjee



The Wildlife Trust of India (WTI) is a non-profit conservation organization committed to initiate and catalyse actions that prevent destruction of India's wildlife and its habitat. In the long run, it aims to achieve, through proactive reforms in policy and management, an atmosphere conducive to conservation. WTI works through building partnerships and alliances and its strengths lie in its willingness to work with innovative conservation techniques like acquiring land for wildlife and rescue and rehabilitation.

Suggested Citation: Rajeev Chauhan, Joydeep Bose, Nidhi Agarwal, Bahar Dutt, Aniruddha Mookerjee. (2004). 'Crane Capital' : Conservation Strategy for Sarus Crane (*Grus antigone*) Habitats in Etawah and Mainpuri Districts, Uttar Pradesh. Wildlife Trust of India, New Delhi. Pp

Keywords: Conservation; Wild Aid, Wild lands, Communities for Conservation, Wild Policy; Uttar Pradesh, Etawah and Mainpuri, Sarus Crane, Community and Conservation Reserve.

The designations of geographical entities in this publication and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the authors or WTI concerning the legal status of any country, territory or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged and appropriate credit given. Reproduction of material in this information product for or other commercial purposes is prohibited without written permission of the copyright holders. Applications for such permission should be addressed to the Executive Director, Wildlife Trust of India or by e-mail to info@wti.org.in

Copyright © WTI 2004

Photo credits
All pictures: Aniruddha Mookerjee

CRANE CAPITAL

Conservation Strategy for Sarus Crane
(*Grus antigone*) Habitats in
Etawah and Mainpuri Districts, Uttar Pradesh



Rajeev Chauhan, Joydeep Bose, Nidhi Agarwal,
Bahar Dutt, Aniruddha Mookerjee

December 2004

An Occasional Report of a Rapid Action Project conducted by the Wildlife Trust of India
Supported by the David Shepherd Wildlife Foundation



CONTENTS

List of Figures	iii
List of Tables	iii
Preface	iv
Acknowledgements	v
Executive Summary	vi
1. Introduction	1
2. History, Rationale and Objectives	4
3. Wetlands Surveyed	6
4. Methods	8
5. Results	9
5.1 Land ownership pattern	9
5.2 Wetland dependence patterns	10
5.2.1 Sarsai Nawar	10
5.2.2 Sauj	11
5.2.3 Gaad	13
5.3 Securing the wetlands through acquisition or purchase	14
6 Discussion	16
7 Recommendations	17
References	19
Appendix I	21
Appendix II	22
Appendix III	24

LIST OF FIGURES

Figure 1: The reduction in the distribution of Sarus Crane in India	3
Figure 2: Map of Etawah and Mainpuri districts showing the wetlands surveyed	7
Figure 3: Land ownership patterns in the three wetlands surveyed	9
Figure 4: Land ownership pattern of farmers who own land in Sarsai Nawar wetland	10
Figure 5: Income source of families who own land in Sarsai Nawar wetland	11
Figure 6: Land ownership pattern of farmers who own land in Sauj wetland	12
Figure 7: Income source of families who own land in Sauj wetland	12
Figure 8: Land ownership pattern of farmers who own land in Gaad wetland	13
Figure 9: Income source of Families who own land in Gaad wetland	14

LIST OF TABLES

Table 1: Wetland area estimates in Etawah and Mainpuri districts, U.P	8
Table 2: Number of villages around the wetlands surveyed	9
Table 3: Estimate of the cost of three important habitats of Sarus Crane	15

PREFACE

The Sarus Crane is so much a part of our culture and is so charismatic and widely recognized that there was once a strong possibility of its being chosen to be the National Bird of India. It did, however, become the State Bird of Uttar Pradesh, where it survives in the largest number. The Etawah and Mainpuri districts have a large wetland complex that is the most important breeding ground of the Sarus. Ironically, while people have been the cause of the decimation of much of India's wildlife, in the case of Sarus, traditional wetland farming practices, such as that of Singhara, have only benefited the bird. However, developmental activities and agricultural practices initiated by Uttar Pradesh *Usar Sudhar Nigam* (UPUSN), posed a severe threat to the rich habitats of Sarsai Nawar, Gaad, and Sauj; the crane capital of India. When a researcher from Wildlife Institute of India (WII), Gopi Sundar approached the Wildlife Trust of India in 2002, we readily agreed to take up the cause and went to court in a P.I.L. The High Court of Allahabad, in a landmark decision stayed the project and later directed the state government to protect the wetlands. In the two years that have passed, fresh threats to the wetlands have emerged but no concrete measures can be seen on ground that protects the habitat. In order to galvanize public opinion and government policy, the Wildlife Trust of India, then, further conducted a socio-economic study of the region. The results are presented in this report. WTI would hope that this succeeds in providing information so that a practical management solution is found that protects this Sarus habitat while keeping the dependency of human beings on these wetlands in mind.

December 22, 2004
New Delhi

Vivek Menon
Executive Director
Wildlife Trust of India

ACKNOWLEDGEMENTS

Wildlife Trust of India acknowledges the following people for helping in various stages of this project:

Mr. B.C. Brahma, Divisional Forest Officer, Etawah
Tehsildars of Bhartana, Karhal and Bhogaon
Ajay Kumar, Society for Conservation of Nature
and the villagers around the wetlands surveyed.

Pratibha Pande advised, paid a visit to the site and led the policy advocacy efforts from the very beginning. We are thankful to her for this.

EXECUTIVE SUMMARY

Mainpuri, Etawah, Etah and Aligarh districts of Uttar Pradesh (U.P.) are home to the largest population of Indian Sarus Crane (*Grus antigone antigone*). Such a healthy population of Sarus Crane is probably maintained in the state because of the mosaic of wetlands and agricultural fields that has remained unaltered over the years.

A project that had been formulated by the Uttar Pradesh *Usar Sudhar Nigam* in 1998 could have endangered the Sarus Crane habitats in Etawah and Mainpuri. A Public Interest Litigation filed by the Wildlife Trust of India in Allahabad High Court, U.P. in 2002, put a stop to this activity. However, it was felt that the reprieve was temporary and that a broader conservation plan was the need of the hour. An appraisal of the field conditions in three wetlands viz. Sarsai Nawar, Sauj and Gaad was conducted between 1 January 2004 and 30 September 2004, using a questionnaire survey and verification of revenue land records.

The major findings of the study are :

- 1. In Gaad wetland, 76% of the total land was privately owned whereas in Sauj and Sarsai Nawar, the private ownership were 42% and 34% respectively**
- 2. In Sarsai Nawar and Gaad, the farmers who owned land in the wetland were more dependent on the wetland compared to Sauj.**
- 3. Out of the total 68 families interviewed in three wetlands, 41 were drawing more than 50% of their earnings from activities in the wetland.**

- 4. The cost of land under private possession in these three wetlands comes to about five crore Indian rupees.**

Based on experience from this WTI project as well as other research works on Sarus Crane and its habitat, the following recommendations are made for the management of these three wetlands:

- 1. Any developmental activity that involves drainage of the wetlands in the districts of Etawah and Mainpuri should be discouraged and the state should invest in models of development that are ecologically sound.**
- 2. The area be declared as an Ecologically Sensitive Area as per Section 3 of The Environment Protection Act, 1968.**
- 3. A process be initiated whereby the community is involved in conservation of the Sarus Crane and its habitat.**
- 4. Given the sizeable population of Sarus cranes that are present in the wetland, the area be declared as a site of international importance under the Ramsar Convention of 1971, to which India is a signatory.**

1. INTRODUCTION

The Sarus Crane (*Grus antigone*) is the only crane species breeding south of the Himalayas and the only resident crane of India (Ali & Ripley, 1980; Sundar *et al.*, 2000). Three extant subspecies of Sarus Crane are recognized, and all three are known to be distinct in their habitat requirements with different distribution ranges (Archibald and Meine, 1996). The Indian Sarus Crane (*Grus antigone antigone*), the largest of Indian cranes is a tall long-legged grey bird with a naked scarlet-red head and upper neck. There is no clear sexual dimorphism. The standing height of an adult male bird is c. 156 cm.

Cranes have been documented as a species that pairs for life (Ali, 1927) and this feature is considered as a symbol of loyalty and fidelity in parts of northern India (Sundar *et al.*, 1999). This could be the reason why people have attributed religious and cultural values to them and have traditionally protected cranes (Sundar *et al.*, 1999). Cranes are termed as 'k-rated' species in conservation terminology implying a long period of apprenticeship for the newborn; the mother brings up her young for up to two years till the young are able to fend themselves. Cranes are also a very important indicator species, indicating at a given point of time the health of the wetlands on which their very existence depends.

Sarus inhabit open, cultivated, well-watered plains, marshlands and jheels (Ali and Ripley, 1980) and are well known for their ability to live in association with human habitation (Gole, 1989; Archibald & Meine, 1996). They have been reported to nest in flooded paddy fields and marshes (Ali, 1996) and are distributed in Nepal terai, and the Indian states of Bihar, West Bengal, Assam, Rajasthan, Gujarat and Madhya Pradesh. Although previously widespread in south Asia, recent developmental

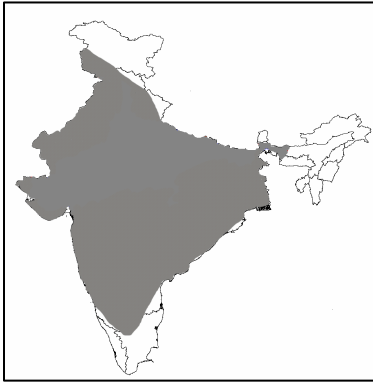
activities within its range of distribution have reduced the range and population of the species (Gole, 1989; Meine and Archibald, 1996).

Sarus is a threatened species and the World Conservation Union (IUCN) and Birdlife International have placed this species under the category 'Vulnerable' (IUCN, 2004). In India, this species is included in Schedule IV of the Wildlife (Protection) Act, 1972.

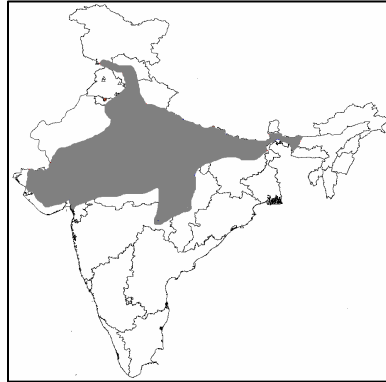
The Sarus population has declined sharply and the distribution range of the species has shrunk considerably over the years (Fig. 1) (Sundar *et al.*, 2000). U.P., which has adopted the Sarus as its State Bird, has the largest population of this bird compared to any other state. Of the estimated 8,000 to 10,000 birds in the country, 2,500 to 3,000 are found in U.P. alone and of all the Sarus counted in U. P., 73.04 percent were encountered in the four districts of Mainpuri, Etawah, Etah and Aligarh. The mosaic of wetlands and agricultural fields that has remained unaltered over the years has perhaps contributed to the healthy population of Sarus in the districts of Mainpuri and Etawah (Sundar *et al.*,2000).

The Sarus has been more partial to paddy fields than to natural marshlands, especially in U. P. This has been interpreted to be a consequence of landscape change rather than a conscious choice on the part of the crane (Gole, 1989). In U. P., the number of wetlands has declined to give way to paddy fields (Choudhury and Rao, 1996) and the Sarus has probably remained faithful to the general area. Within the area they are reported to prefer paddy and wheat fields compared to sugarcane and soybean fields. This preference could be attributed to the thick and impenetrable barrier that the sugarcane forms to the movement of the cranes

and that soyabean fields are flooded with pesticides that kills most of the fauna, sparing very little for the cranes to forage on.



Murray, 1890 (Sundar *et al.*, 2000)



Sundar *et al.*, 2000

Figure 1: The reduction in the distribution of Sarus Crane in India

Such land-use changes and addition of synthetic chemicals to the already dynamic agricultural fields can be detrimental to the survival of the resident fauna (Thomson *et al.*, 1997). Changes in land use and loss of natural wetlands are regarded as the most serious threats to this species whereas other threats include mortality due to collision with high-tension electric cables, indiscriminate use of pesticides, hunting, egg stealing, capture of adult birds for the pet trade and disturbance by the farmers in the fields during the nesting period (Gole, 1989; Parasharya *et al.*, 1989; Muralidharan, 1992; Meine & Archibald, 1996; Sundar *et al.*, 1999).

Since almost all Sarus Crane territories are found alongside human associated disturbances, the activities of the agricultural community here can have a strong effect on the breeding and nesting patterns for the bird.

About 50 percent of the farmers in Etawah and Mainpuri districts of UP opined that Sarus Crane is a pest during the harvest season of both paddy and wheat (Sundar *et al.*, 2000). Though killing of these birds by shooting or by other means is not recorded here, the farmers resort to stealing eggs of the pairs nesting in agricultural fields.

2. HISTORY, RATIONALE AND OBJECTIVES

In the state of U. P., which is an agriculture dependent state, there is a huge demand for land for agriculture. Marshes and other waterlogged areas are often considered as wasteland and are targeted for conversion into agricultural fields. A new developmental project was formulated by the Uttar Pradesh *Usar Sudhar Nigam* (UPUSN)- the Wasteland Development Board- aimed at converting the waterlogged areas or natural wetlands into crop fields by building canals to drain the water. The project was also involved in spraying gypsum in the saline fields, flooding them with water and then draining them through canals. It was launched in 1998, with financial aid from the World Bank, aimed at converting 15,000 hectares of saline marshland into agricultural land to benefit about 5,500 farmers.

This project could have critically endangered the Sarus habitats of Etawah and Mainpuri. The Wildlife Institute of India was conducting research in the area and the researcher who was actively campaigning to save this species, also approached WTI to assist. WTI's response was swift and decisive. Using the ambit of its Rapid Action Project, it immediately sought legal opinion and went to court on the 21st of January 2002 in a Public Interest Litigation seeking the following:

1. An order from the court to stop any further conversion/destruction of any wetland in Etawah and Mainpuri.
2. An order from the court to the state government to protect the state bird of Uttar Pradesh or the Sarus in both the districts and specifically in the five wetlands of Sarsai Nawar, Gaad, Sauj, Ambarpur and Khuddaiya.
3. An order from the court to the state government to include this under its protected area network.
4. An order from the court to the state government to protect the Saman bird sanctuary.

The Hon. High Court of Allahabad on 25 January 2002 stayed all developmental activities and gave two weeks time to the Chief Secretary of Uttar Pradesh (14.2.2002) to submit a report. As this could not be met, the state asked for an extension and was given this by the Hon. Court which gave a fresh date as 19.3.2002. On this date, the state government filed a reply saying that it was doing all that it could to protect the bird. In its final order dated 19.3.2002, the Hon. Court directed the Chief Wildlife Warden U.P. and the District Magistrates of the concerned districts to take the necessary steps to implement the order (read, to strictly protect the Sarus Crane and its habitats) of the State Government (Appendix-III). This was both one of the most important and quickest legal victories for WTI having achieved its objectives in the short span of two and a half months. After this, the Trust offered all services to the State government to help them with their scheme.

When two years had passed and seeing that ground conditions were *status quo* but were not getting any better and in fact that newer projects

could be threatening the area, WTI once again stepped in on 17 of December 2003 with a Rapid Action Project to try and determine a broader conservation plan that was required to ensure the survival of the wetlands with the avifauna including the Sarus. The possibilities were:

- Declaration of the area as a bird sanctuary by the state government and government acquisition of lands.
- Private purchase of the lands for handing over to the forest department for declaring as a sanctuary.
- Conservation of the wetlands by involving the communities.

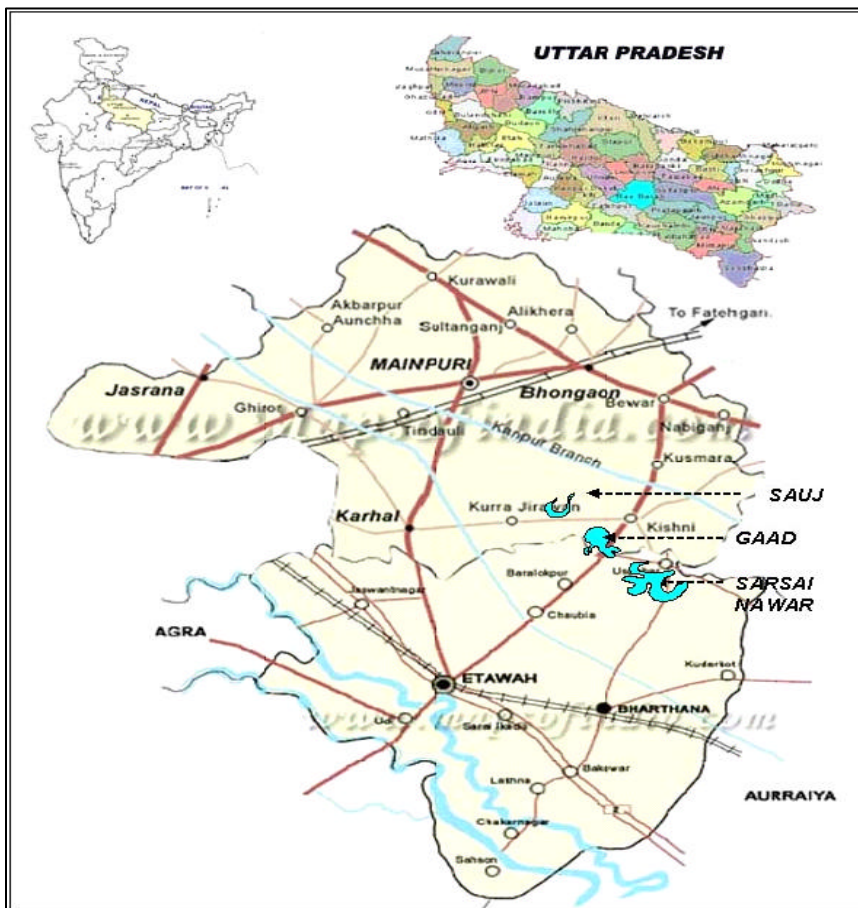
An appraisal of the field conditions in selected wetlands of Etawah and Mainpuri districts was conducted between 1 January 2004 and 30 September 2004 (nine months) with the following objectives:

- Verifying of land records of three wetlands, viz. Sarsai Nawar, Sauj and Gaad and mapping of the wetlands.
- Examining the possibilities of declaration of Sanctuary, private purchase of land and of establishing community protected areas.
- Studying the dependency of people in the villages adjoining the wetlands.

3. WETLANDS SURVEYED

The present project covered the wetlands of Sarsai Nawar (161.27 ha), Sauj (62.92 ha) and Gaad (112.39 ha) (also known as Hasil taal) in Mainpuri district and the adjoining villages in Uttar Pradesh (Figure 2). The district of Etawah lies in the southwestern portion of Uttar Pradesh at 26° 47' N latitude and 72° 20' E longitude and forms a part of the Kanpur forest division. It is bounded on the north by the districts of Farrukhabad and Mainpuri, while a small extent of the western border adjoins tahsil Bah of Agra district. The eastern frontier adjoins the dis-

tract of Auriya, and along the south lie Jalaun and the district of Gwalior, the division line being , except for a shorth distance, the Chambal and Yamuna rivers.



Source - <http://www.mapsofindia.com/maps/uttarpradesh/districts> (Map not to scale)

Figure 2: Map of Etawah and Mainpuri districts showing the wetlands surveyed

Mainpuri is a district of Agra division bounded on the north by Etah district, on the east by districts Farrukhabad and Kannauj; on the south by Etawah district and on the west by the Firozabad and Etah districts. It lies between 26° 53' to 27° 31' N latitude and 78° 27' to 79° 26' E longitude.

While in Mainpuri, there is no appreciable difference in wetland area before and after monsoon, in Etawah, nearly 500ha. of wetland is added on after the monsoon (Table 1).

District	Geographical area (ha)	No. of wetlands	Wetland area before monsoon		Wetland area after monsoon	
			Area (ha)	Percent of total	Area (ha)	Percent of total
Etawah	436650	51	4256	0.97	4703	1.08
Mainpuri	274058	62	6883	2.51	6883	2.51

Source: <http://upgov.up.nic.in/irrigation/wetland>

Table 1: Wetland area estimates in Etawah and Mainpuri districts, U.P

4. METHODS

Verification of land records was done by collecting the *khasra* and *khatauni* (revenue land records) from the revenue department. Toposheets were also procured from the revenue department. A questionnaire method was employed to collect information on the possibilities of establishing community protected areas and studying people's dependency in the villages adjoining the wetlands.

A survey of the three wetlands of Sarsai Nawar, Sauj and Gaad in this region was conducted to assess the dependency of the local village community on the wetlands which are also critical habitats for the Sarus. Along with village level discussions, individual household level questionnaires were given to 68 families that had private entitlement of land in the

three wetlands of Sarsai Nawar, Sauj and Gaad. The questionnaire was used primarily to collect data regarding dependency of local village communities on the wetlands. Additional information in terms of family size, supplementary occupations and agricultural output from the wetlands, local attitudes towards the Sarus was also collected.

5. RESULTS

5.1 Land Ownership Pattern

Fifteen villages around the wetlands were surveyed (Table 2 and Appendix I). The legal status of the wetlands in terms of ownership (private or *gram panchayat*) showed a similar pattern in Sauj and Sarsai Nawar but differed in Gaad (Figure 3).

Wetland	Area	Number of villages
Sauj	62.92 ha.	4
Sarsai Nawar	161.27 ha.	6
Gaad	112.39 ha.	5

Table 2: Number of villages around the wetlands surveyed

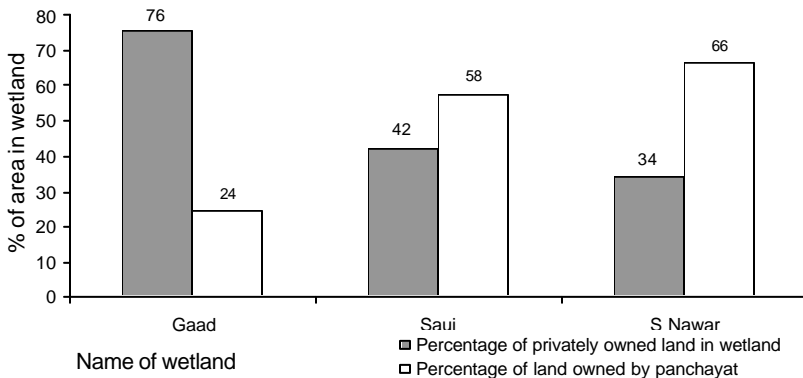


Figure 3: Land ownership patterns in the three wetlands surveyed

5.2 Wetland Dependence Patterns

The extents of dependence of the families on the wetland, specifically in terms of household earnings are as under:

5.2.1 Sarsai Nawar

Twenty-three out of the 28 families that own land around the wetland were interviewed in Sarsai Nawar. Revenue department records show that out of 161.27 ha. of wetland, 64.48 ha. is in the possession of farmers and the rest is with the *gram panchayat*. The details of land owned by the 23 families are given in Figure 4. Analyses of the data thus obtained indicate that nearly 64 percent of the area owned by the farmers is in the wetlands while 36 percent is outside the wetland.

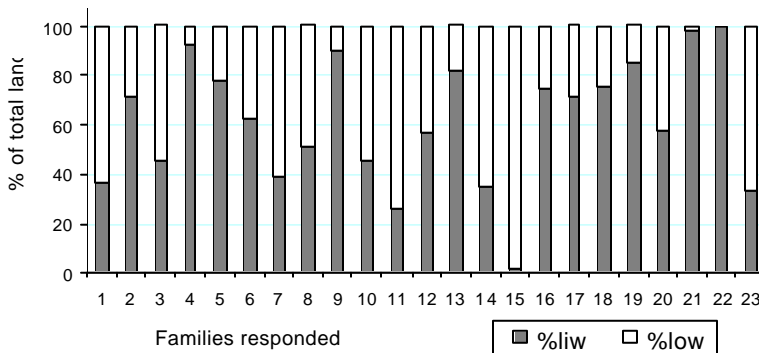


Figure 4: Land ownership pattern of farmers who own land in Sarsai Nawar wetland, liw-land in wetland, low-land outside wetland, (n=23)

More than half the earnings of the families come from the land they cultivate within the wetland and another one third from cultivation outside the wetland. The detail of income of each family is given in Figure 5. Out of the total 23 families, 14 were drawing more than 50 percent of their

income from the wetland. It was further observed that the fisheries department has given out permits for fishing in the wetlands but as fish availability was poor in the region, people have resorted to growing crops. The main crop grown in this area is water chestnut or '*singhara*' (*Trapa bispinnosa*) for which no drainage of water from the wetland is required.

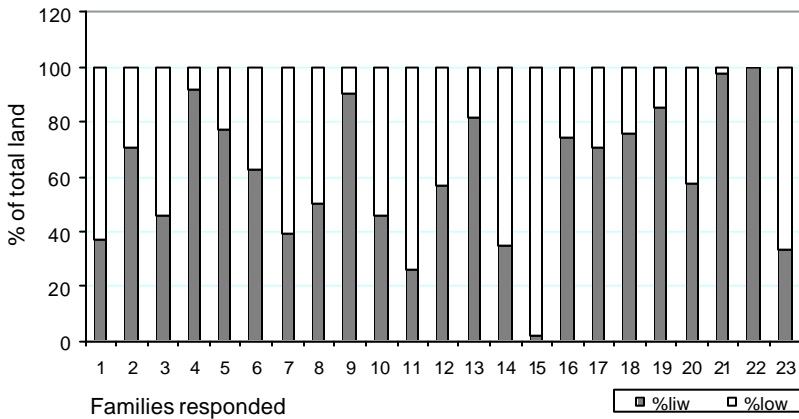


Figure 5: Income source of families who own land in S.Nawar wetland eawl -wetland, ealo -other lands, eads -other sources (n=23)

5.2.2 Sauj

Twenty-eight families out of 35 were interviewed in and around Sauj wetland. The total area under this wetland is 62.92 ha., out of which only 39.392 ha. is *gram panchayat* land and the rest belongs to farmers. The break up of land owned by 28 families is given in Figure 6. Analyses of this data showed that 60% of the total land in the possession of families lies outside the wetland but a significant portion (40%) lie within it.

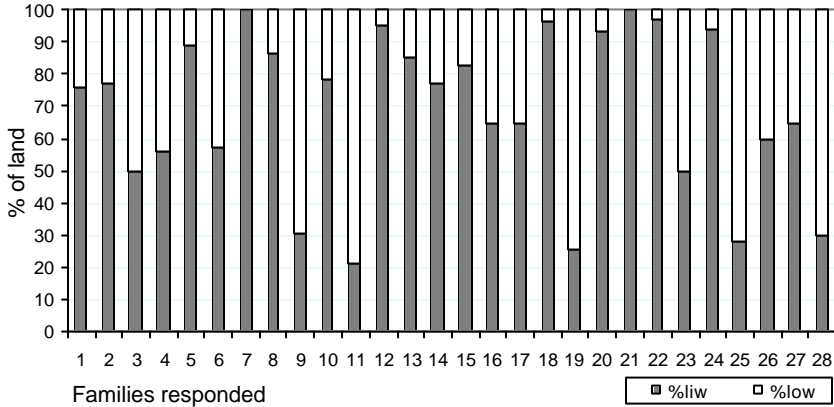


Figure 6: Land ownership pattern of farmers who own land in Sauj wetland, liw- land in wetland, low - land outside wetland, (n=28)

A break up of income of individual families is shown in Figure 7. Twenty two families out of the 28 were drawing half or more than half of their income from the wetland. Out the total income of all the families around Sauj, 39 percent is from the land outside wetland. The income from other sources and wetland is 30 percent and 31 percent respectively.

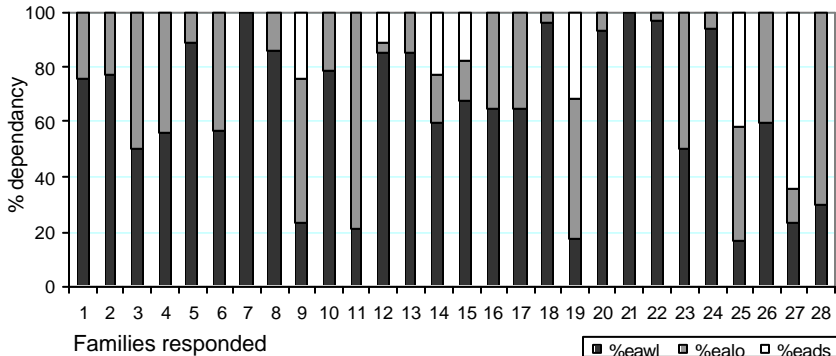


Figure 7: Income source of families who own land in Sauj wetland eawl - wetland, ealo -other lands, eads -other sources, (n=28)

5.2.3 Gaad (Nagla Sarang Ka Tal or Hasil Lake)

Seventeen families were interviewed out of the 20 that live around Hasil lake. The total area of this wetland is 112.39 ha., of which only 3.50 ha. is *gram panchayat* land and the rest is in the possession of farmers. The details of land owned by 17 families are given in Figure 8. Out of the total land under their possession, nearly 69 percent lies within the wetland itself while 31 percent is outside the wetland.

Out of the 17 families possessing land in Gaad wetland, five were drawing more than half of their total income from activities in the wetland alone. Majority of the families had earnings from cultivation outside the wetlands and from other business (Figure 9).

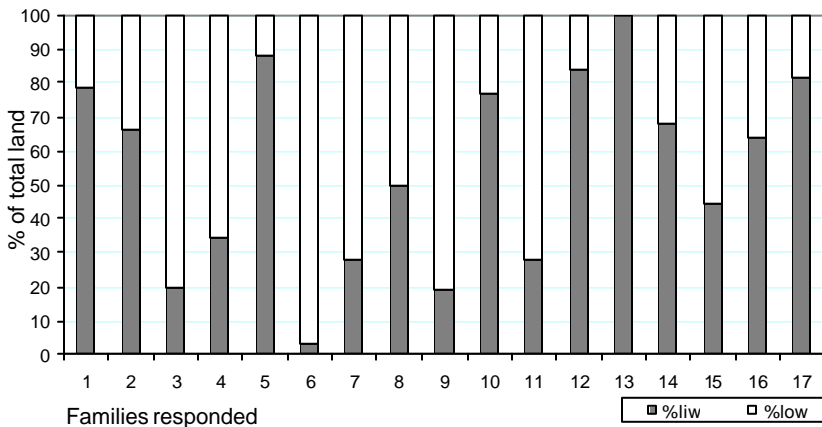


Figure 8: Land ownership pattern of farmers who own land in Gaad wetland, liw-land in wetland, low - land outside wetland, (n=17)

The wetlands here are used for growing paddy instead of the *singhara* crop. Generally people from higher castes own land in this wetland. Villagers opined that "cultivation of *singhara*" is considered to be a 'dirty job' since it involves getting into murky waters during the time of harvest.

Therefore, the people from the upper caste did not usually cultivate *singhara*. This crop is cultivated by people who do not own any land or are from a lower caste.

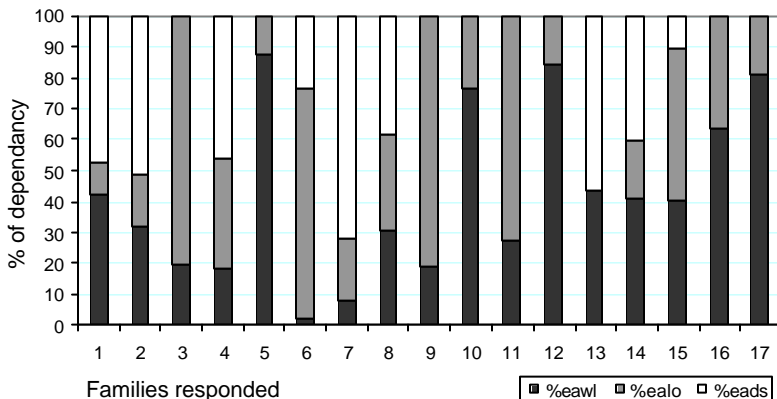


Figure 9: Income source of families who own land in Gaad wetland
eawl - wetland, ealo - other lands, eads - other sources, (n=17)

5.3 Securing the Wetlands through acquisition or purchase

There could be two possibilities to secure these wetlands that lie mostly outside the Protected Area system (only one sanctuary, Saman, lies within this system). The state government could acquire private lands or a private trust such as the Wildlife Trust of India could purchase the same for conservation purposes or protect the wetlands with the participation of local communities.

The cost of lands around the three wetlands surveyed varies from 1 lakh to 1.5 lakh per acre. A conservative estimate of the cost of land with farmers in three wetlands is given in Table 3. Purchasing the land under the ownership of farmers alone amounts to a prohibitive five crore Indian rupees. Another hurdle to be tackled in case of acquiring the wetlands is the substantial degree of dependency of villagers. Sarus survives well

in areas with agriculture as long as land use patterns allow for wetlands and do not drain the whole area. Therefore conservation of the area by government acquisition or purchase by WTI was not considered essential as creation of a sanctuary covering the entire area is both impractical and unnecessary.

Wetland	Area (ha)	Farmer's Land (ha)	Panchayat Land (ha)	Approx. cost of farmer's land @Rs2.5 lakh/ha
Sarsai Nawar	161.27	64.38	96.79	1.6 crores
Sauj	62.92	23.53	39.69	60 lakhs
Gaad	112.39	108.89	3.50	2.7 crores

Table 3: Estimate of the cost of three important habitats of Sarus Crane

Our survey showed that 100% of the surveyed population (n= 68) expressed an initial willingness to sell the land. But the option of involving the community in protection of the bird was not explained to the community in detail and this requires more detailed interactions. We propose additional meetings to be held with the community on the possibility of initiatives such as eco-tourism and community protection of the bird.

The farmers who own land in the wetland were further asked whether the Sarus Crane be protected. All the respondents (n=68) reported that such efforts should be made, which is indicative of a favorable attitude of the people towards this bird. As the Sarus Crane thrives in a habitat of agricultural activities, involving the communities in its protection would be more sustainable.

6. DISCUSSION

In Sarsai Nawar and Gaad, dependencies on the wetlands by the people for their earnings were higher. In the Sauj wetland, the dependence is medium level with 40 percent of the families owning land in the wetland deriving only 39 percent of their household earnings from this land. It was observed that a strong correlation exists between the caste profile and the cropping patterns. Thus, people from the higher caste preferred to grow paddy while those from the lower caste are more dependent on *singhara* cultivation (for which no drainage of water is required as it is a water plant). Further while *singhara* cultivation may not be harmful to the wetland, the cultivation of paddy is a potential threat to Sarus habitat, if it results in complete drainage of water from the wetland. Should the wetlands disappear, the damage which the cranes can do to crop fields is immense, thus bringing them into direct conflict with the local farmers. This has been the case in Gujarat and Rajasthan where wetlands are rare and the birds frequently destroy crops. The ideal habitat for the Sarus is a mosaic of natural wetlands interspersed with fields of paddy during monsoons and wheat during winters (Sundar, 2002). Any conservation intervention would therefore have to take this into consideration. Therefore declaration of the area as a bird sanctuary would not be practical given the high presence of human habitation in these wetlands. Purchasing the land also would be a difficult exercise given the high dependence of the land by the farming community as well as the prohibitive land costs.

7. RECOMMENDATIONS

Based on the above analysis the following is recommended:

1. **Any developmental activity that involves drainage of the wetlands in the districts of Etawah-Mainpuri should be immediately stopped and the state should invest in models of development that are ecologically sound.**
2. **The area be declared as an Ecologically Sensitive Area as per Section 3 of The Environment Protection Act, 1968.**

Sub section 2(v) EPA elaborates the measures that can be taken. It states that,

"restriction of areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards"

3. **A process be initiated whereby the community is involved in the conservation of the Sarus Crane and its habitat.**

Declaration of the area as a sanctuary which excludes human activity is not necessary. But working closely with the farmers who cultivate crops in the wetland and providing them with incentives for protection of the bird and for maintaining small patches of wetland within their agricultural fields will help in maintenance of crucial nesting and feeding sites for the Sarus Crane. We also recommend taking up of eco-tourism initiatives which will be

managed by the local community. Such initiatives will help in the protection of the bird as well as provide additional income to the local people in the district.

4. Given the sizeable population of Sarus cranes that are present in the wetland, the area be declared as a site of international importance under the Ramsar Convention of 1971.

The Ramsar Convention on Wetlands, to which India is a signatory, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources and recognizes over 1401 sites around the world.

To conclude, the wetlands of Etawah and Mainpuri provide a habitat for the cranes and serve as a buffer that controls the damage the cranes could potentially cause to standing crops. In recent times, much has been written about combining the goals of conservation and development. The preservation of the habitat of the Sarus Crane in partnership with the local communities provides an opportunity to achieve conservation goals through community participation.

REFERENCES

- Anonymous. Retrieved October 25, 2004 from
<http://www.undp.org.in/programme/environment/wetlands/wetland.htm>
- Ali, S. (1996). *The Book of Indian Birds*. Bombay Natural History Society. Oxford University Press.
- Ali, S. (1927). The Moghul Emperors of India as naturalists and Sportsmen. Part II. *J. Bombay Nat. Hist. Soc.* 55:166-168.
- Ali, S. & Ripley S. D. (1980). *Handbook of the Birds of India and Pakistan*. Vol. 2: Megapodes to Crab Plovers. Oxford University Press, Delhi.
- Archibald, G. W. & Meine, C. D. (1996). Family Gruidae (Cranes). In: *Handbook of the Birds of the World*. Vol 3: Hoatzin to Auks. J. del Hoyo, A. Elliott & J. Sargatal (eds). Lynx Edicions, Barcelona.
- Choudhury, B. C. & Rao, K. (1996). Conservation status of migratory and resident Cranes and their wintering range in India. Draft report by Wildlife Institute of India, Dehradun, India. 140 pp.
- Gole, P. (1986). *The Status and Ecological Requirements of Sarus Crane*. Phase I. Ecological Society of India, Pune, India, 45 pp.
- Gole, P. (1989). *The Status and Ecological Requirements of Sarus Crane*. Phase I. Ecological Society, Pune, India.
- Meine, C. D. & Archibald, G. W. (1996). The Cranes: status survey and conservation action plan. IUCN, Gland, Switzerland and Cambridge, U.K., 249 pp.
- Muralidharan, S. (1992). Poisoning the Sarus. *Hornbill* 1: 3-7.
- Murray, J. A. (1890). *The Avifauna of British India and its Dependencies*. Reprinted by International Book Distributors, Dehradun in 1985. 830pp.
- Parasharya, B. M., Mathew, K. L. & Yadav, D. N. (1989). Status and habitat preference of Indian Sarus Crane in Gujarat, India. Paper presented in the Asian Crane Congress at Rajkot, Gujarat.
- Sundar, K. S. G., Kaur, J. & Chaudhury, B. C. (1999). Distribution, general

ecology and conservation status of the Indian Sarus Crane (*Grus antigone antigone*) in India. Report of an all India survey 1998-99. Wildlife Institute of India, Dehradun. Pp 122.

Sundar, K. S. G., Kaur, J. & Chowdhury, B.C. (2000) Distribution, Demography and Conservaton Status of the Indian Sarus Crane (*Grus antigone antigone*) in India. *J, Bombay. Nat. Hist. Soc.* 97 (3): 319-339.

Sundar, K. S. G. & Kaur, J. (2000). Sarus Crane Count-2000. Wildlife Institute of India, Dehradun, India, 24 pp.

Sundar, K. S. G. (2001). *Where the Sarus Duet*. Sanctuary Asia, (October).

Thomson, D. L., Baille, S. R. & Peach, W. J. (1997). The demography of age-specific annual survival of song thrushes during periods of population stability and decline. *J. Anim. Ecol.* 66:414-424.

Appendix I

List of villages in the three wetlands surveyed

Wetland	Name of village
Sauj	Millik Maikheda Sauj Sehakala
Sarsai Nawar	Chhota Udaipur Balsingh Kishanpura Daulatpur Sarsai Nawar Kuberpura
Gaad	Sarang Kunwarpura Rakhera Gugriya Hindupur

Appendix II

Data sheet for household level survey in Etawah and Mainpuri

1. Name of village
2. Name of respondent
3. Family profile

Name	Age	Male/female	Occupation

4. Do you own any land?
 - a. Yes
 - b. No
5. What kind of ownership do you have over this land
 - a. Patta or on lease from the government
 - b. No entitlement but still cultivating
 - c. Private ownership (e.g. owned by family for generations)
 - d. Any others : Please specify
6. If yes how many acres
7. Do you harvest any crops in the wetlands
 - a. Yes
 - b. No
8. Please give an idea of the annual output from your land

Crop	Average output in kg	Amount sold in market (indicate price also)	Amount used for consumption
Rice			
Paddy			
Others			

9. Do you use the land for any other purpose
 - a. Fishing
 - b. Homestead
 - c. Any others (e.g. village commons used as playground,

- cultural reasons, drying crops) Please specify for what
10. If you own land but do not grow any crops on it please state why?
 - a. Yield is too low
 - b. I have land somewhere else
 11. Do you own any other land?
 12. If yes how many acres
 13. What is the average output from this land?

Crop	Average output in kg	Amount sold in market	Amount used for consumption
Rice			
Paddy			
Others			

14. Do you think the Sarus Crane should be protected?
 - a. Yes
 - b. No
15. If yes, then what suggestions do you have for its protection
 - a. Handing the area to the forest department after giving compensation to land owners
 - b. Involving villagers in its protection through village protection committees
 - c. Any others (please specify)
16. If you were asked to sell this land and harvest crops in another area would you agree
 - a. If yes why
 - b. If no why

Appendix III

Verdict of the Hon. High Court of Allahabad

IN THE HIGH COURT OF JUDICATURE AT ALLAHABAD

CIVIL SIDE

ORIGINAL JURISDICTION

DATED: ALLAHABAD THE 19.3.2002.

PRESENT

THE HON'BLE S.K. SEN CHIEF JUSTICE

THE HON'BLE V.M. SAHAI JUDGE

CIVIL MISC WRIT PETITION NO. 3807 of 2002.

Order on the petition of Wildlife Trust of India. &

INRE

Wildlife Trust of India. Through, Mr. Aniruddha Mookerjee
Director, G-644, New Friends Colony, New Delhi-110065.

.Applicant.

Versus

1. State of Uttar Pradesh Through, Its Chief Secretary
Secretariat Lucknow.
2. Principal Secretary, Department of Irrigation,
Government of Uttar Pradesh, Lucknow.
3. Principal Secretary, Department of Agriculture,
Government of Uttar Pradesh, Lucknow.
4. Secretary, Department of Forest, Environment and
Wildlife, Government of Uttar Pradesh Lucknow.
5. Union of India, Through its Secretary, Ministry of
~~the~~ Environment & Forest, Delhi.

. Respondents.

ORDER ON THE ORDER SHEET

(PHOTO COPY OF THE ORDER ON THE ORDER SHEET ATTACHED).

Lalji
Lalji.

ORDER SHEET		
Writ Petition No. <u>3807</u> of <u>2002</u> 189		
Vs.		
Date of Order	Order	Compliance Report by office
19.3.2002	<p><u>Hon. S.K. Sen, C.J.</u> <u>Hon. V. M. Sahal, J.</u></p> <p>We have heard Sri Sudhir Mishra, learned Advocate for the writ petitioner and Sri Ashok Mehta, learned Chief Standing Counsel for the State Respondents.</p> <p>Pursuant to our order dated 25.1.2002, the report of Chief Secretary, U.P. accompanied by affidavit affirmed on 18th March, 2002 has been filed today and the same is taken on record. Dr. Ram Lakhan Singh, Chief Wildlife Warden, U.P. and the District Magistrates of the concerned Districts are present in Court.</p> <p>From perusal of the report accompanied by affidavit and the submissions made by the learned counsel for the parties, it appears that the State Government has taken serious note of and expressed concern over the problems of the writ petitioner raised in the writ petition. Sri Ashok Mehta, learned Chief Standing Counsel has also assured us that existing Nala drainage will not be widened and no developmental activity adversely affecting the natural habitat of wildlife within these Protected Areas will be allowed. It also appears from the report that wild animals</p>	

P.S.U.P. - 86 H.C. - 17-11-2000 - 1,00,000 (H.C. Press)

re

including Sarus Crane are protected within the State and its habitat is strictly protected and outside of the Protected Areas hunting of wild animals is strictly prohibited. It also appears from the report that a considerable area has been designated as Saman Bird Sanctuary in Mainpuri district and the wetlands preferred by Sarus Crane in Etawah and Mainpuri districts have been restricted against allotment of pottas.

Considering the facts and circumstances of the case, as Dr Ram Laxhan Singh, Chief Wildlife Warden, U.P. and the District Magistrates of the concerned Districts are present in Court, they are directed to take necessary steps to implement the order of the State Government.

With the above directions the writ petition stands disposed of.

Sd/- S.A. Sen - C.J.
Sd/- V.M. Saha - J.

prosec by
Dum
30/4/2002



True Copy

Section Officer
High Court, Allahabad

Principal Investigator: Aniruddha Mookerjee

Advisor: Pratibha Pandey

Project Team

Rajeev Chauhan

Nidhi Agarwal

Bahar Dutt

Joydeep Bose

Editorial Team

Series Editor: Vivek Menon

Technical Editor: Anoop K R

Editor: Rupa Gandhi Chaudhary



The Sarus is one of India's most charismatic yet threatened birds. This WTI report chronicles the fight through litigation to save the largest breeding grounds of the species in the world and advocates a community - state participatory model that can help save the Etawah and Mainpuri wetlands of Uttar Pradesh.



A-220 New Friends Colony, New Delhi-110065
Tel.: 011 26326025, 26326026, Fax: 011 26326027
Website: <http://www.wildlifetrustofindia.org>