

**Conservation
Outside Protected
Areas: A Case
Study of Sarus
Crane Conservation
Involving
Communities in
Kota, Rajasthan**



Abstract

The Sarus Crane, a bird species of wetlands, is categorised as Vulnerable on the IUCN Red List (IUCN 2007) and is listed in schedule IV of the Wildlife Protection Act 1972 of India. In India, Sarus cranes occur mostly outside protected areas, in a mosaic of agricultural and natural wetlands that is important for its breeding ecology. The species is consequently threatened due to poaching and destruction of eggs and juveniles. A community education and awareness campaign was carried out to protect the crane's habitat and nests. The campaign was conducted initially in one district, Kota, and later expanded to two more districts, Bandi and Baran, of south-east Rajasthan. Audio-visual shows, presentations, pamphlets, posters, postcards and signage were used in villages and schools in the vicinity of Sarus crane nesting sites. The campaign was instrumental in protecting 161 nests in 242 wetlands around 88 villages, and 155 chicks fledged successfully. A total of 103 Sarus cranes were documented in four districts of Rajasthan where the species had not been recorded previously. Eighty-six Rural Village Sarus Protection Groups (RVSPG) were formed during the study period. The results emphasize the importance of involving communities in conservation of wildlife species outside protected areas.

Keywords : Awareness, Breeding, Community Conservation, *Grus antigone antigone*, Kota, Nesting, Rajasthan, Sarus crane, Wetland Birds.

Introduction

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 outside such areas. In India, there are 140 Community Conserved Areas (CCAs) in 23 states for protection of habitats and species outside protected areas (Pathak & Kothari 2006). India has a rich history of community-based conservation, with thousands of small and large areas in which traditional forms of conservation are practiced or new conservation models have evolved.

Local communities are involved in conservation of lakes such as Lake Tsomoriri, in the Changthang Cold Desert Sanctuary, of Ladakh, which provide vital breeding grounds and key staging posts on migration routes for over 40 species of waterbird, including the highly threatened Black-necked crane (*Grus nigricollis*) and Bar-headed goose (*Anser indicus*). The management plan of the lake was prepared in consultation with local communities, who regularly participate in management decisions at the site (Chandan et al. 2006). *Overview on Community Conserved Areas*, a directory brought out by the NGO Kalpvriksh, mentions Uttar Pradesh as a locus of traditional wetland conservation. The directory mentions the example of a wetland in Amakhara village, of Aligarh District, which is used traditionally for irrigation and fishing and hosts a large number of migratory birds, which are not disturbed by the villagers. Patna Lake, in Etah District, is home to up to 1,00,000 waterbirds in a favourable season. The lake was declared a wildlife sanctuary in 1991 and has been protected for centuries as a sacred pond. Sareli village, in Kheri District, supports a nesting population of over 1000 Openbill storks, which are considered harbingers of a good monsoon. As they feed on snails, villagers consider them useful in controlling disease-spreading helminths. In Kakkare Belhure village, of Karnataka, the villagers offer protection to pelicans against hunting and untoward treatment, sometimes even foregoing their tamarind yield so that nesting birds are not disturbed. The birds are considered a sign of good fortune and provide farmers with guano (bird excreta) for their agricultural fields. In Tamil Nadu, a classic example is the 700 hectare Chitrangudi tank, built in 1800. It attracts storks, ibises, herons, egrets, cormorants and other migratory birds. Villagers do not allow any hunting or stealing of bird eggs. They go to the extent of not bursting crackers during Diwali, and avoiding commercial fishing. Similarly, the villagers of Udupur, in Kota, Rajasthan, protect a nesting colony of more than 150 Painted Storks (Nair

2006). Local communities are therefore traditionally protecting similar wetlands throughout the coastal and wetland regions of India.

Conservation of these lakes, ponds and waterbirds is important for sustaining the livelihoods of local communities and for protecting wildlife and their critical habitats.

Study Species : Sarus crane (*Grus antigone antigone*)

The Indian Sarus crane (*Grus antigone antigone*) is the largest and most abundant of the three subspecies of crane found in India. It prefers open, cultivated land in well-watered country, marshes, jheels, lakes and large rivers. The distribution range of the subspecies in India and the population are suspected to be on the decline (Sundar *et al.* 2000a).

According to the most up-to-date populations estimates, the population of *Grus antigone antigone* is around 8000-10,000 individuals (Sundar *et al.* 2000b, BirdLife International 2001). From the distribution range of the Sarus crane, as determined through a countrywide survey conducted by the Wildlife Institute of India in 1998-1999 (Sundar *et al.* 1999, Sundar *et al.* 2000b, Kaur *et al.* 2002), the major populations are now restricted to a belt running through eastern and central Gujarat, south-eastern Rajasthan and central and south-western Uttar Pradesh.

Study Site

The study sites selected for this work are located in south-eastern Rajasthan, in Kota, Bundi, Jhalawar and Baran districts. The region forms part of the Malwa Plateau, and the Mukandara Hills along an axis running from the south-east to the north-west through the region. Kota District has one of the largest reported breeding populations of Sarus cranes. It is located on the eastern bank of the Chambal River and is drained by its tributaries. The Sarus crane population in this well irrigated region is dependent mainly on the canal network of Kota Barrage and natural wetlands.

Bundi District is situated in the south-eastern part of Rajasthan, and it is bounded to the north by Tonk District, to the west by Bhilwara District and to the south-west by Chittorgarh District. The River Chambal forms the southern and eastern boundaries separating Bundi and Kota Districts. Bundi is also known for its *baories*, or step-wells. Unique to Rajasthan and Gujarat, the step-wells served as water reservoirs for the months of summer, when there is a scarcity of drinking water. Baran District is bounded in the north and north-west by Kota, Jhalawar and Bundi districts and in the west by Chittorgarh. District. Jhalawar is situated in the southern part of the region and is connected to the Malwa Plateau. The district shares its boundary in the north with Kota. Kali Sindh is the perennial river of the district, and it is a major tributary of the River Chambal.

The population of Sarus crane in the region is dependent mainly on wetlands that are supported by canal systems and on natural wetlands. Kota, Bundi and Baran districts are relatively well irrigated by the canal network of Kota Barrage. This canal network has resulted in the formation of reedy marshes and marginal wetlands that support a fairly good breeding population of Sarus cranes (Kulshreshta & Vyas 1989, Vyas 1999a, 1999b, Chaudhury *et al.* 1999, Sundar *et al.* 2000b) in the region. This is possibly the only region where Sarus cranes attempt a second breeding, during February-May, because of the availability of water and the favourable conditions that prevail (Kaur *et al.* 2008, Kaur 2008).

During an initial study carried out on the breeding biology of the Sarus crane in Kota District, disturbances caused by people were determined to be the major cause of egg mortality, with nests being destroyed by children or removed by the labour force during cropping seasons. To address this and to prevent predation of chicks by stray dogs in and around agricultural fields, an awareness programme for farmers was initiated.

Methodology

Fieldwork was carried out during the 2004-2005, 2007-2008 and 2009-2010 Sarus crane breeding seasons in July-November (wet season) and February-May (dry season). The presence of Sarus cranes and nests was determined either by actual observation or through secondary sources of information provided by farmers and villagers. Field visits to important Sarus crane breeding sites were made every week during the breeding seasons. During these field visits, local villagers, farmers, labourers and school children were approached and told about the importance of the Sarus crane. They were told about the birds being farmer friendly and the wetland marshes serving as important sources of water storage that help to keep the water table high for irrigation and other human and domestic livestock needs.

In the initial stage, education and awareness programmes were conducted through slide shows, and printed postcards were circulated to schools and villagers, asking for information on Sarus crane nests and congregation sites. The informers were approached directly to protect the eggs and chicks from predation and stealing. Farmers were given letters asking them to protect the Sarus cranes nests and chicks close to or in their agriculture fields (Kaur *et al.* 2005). In the second phase, when the programme was expanded to two more districts, slide shows and lectures were conducted in schools and villages close to the breeding sites with the involvement of local NGOs and volunteers. Colour postcards,

pamphlets and posters were handed out after the slide and movie shows to gather information on new wetlands and breeding and congregation sites of Sarus cranes. Paintings and flex signage were installed at important Sarus breeding sites in villages and houses close to canals, appealing to those who could not be contacted directly.

The village school children near the breeding sites were taken to the nesting sites and told about the nesting habitat, season of breeding, threats to nests and means of protecting Sarus cranes.

During the field visits and awareness programmes the villagers voluntarily came forward to form the Rural Village Sarus Protection Group (RVSPG). The responsibility of this group was to protect eggs and juveniles from poaching and predation and to prevent disturbances to the marshlands, ponds and wetlands used by the Sarus cranes during the nesting season. They were also trained to maintain a detailed diary on the locations and success of Sarus crane nests till the fledgling stage (Kaur *et al.* 2008).

Results

During the 1999-2002 study on Sarus crane breeding ecology, conducted by the Wildlife Institute of India, disturbances caused by people were determined to be the major cause of egg mortality, with nests being destroyed by children or removed by the itinerant labour force (Sundar *et al.* 2000a, Kaur & Choudhury, 2002, 2003a, 2003b). In an attempt to increase the breeding success of the cranes, a preliminary awareness campaign was carried out in Kota during 2000-2002 (Kaur & Choudhury 2003a) through slide shows conducted in villages and schools. Printed postcards were sent to schools, seeking information on Sarus crane nesting and congregation sites. These provided information on the nesting and breeding sites of Sarus cranes in the district. The informers were approached to protect the eggs and chicks from predation and stealing. The villagers and farmers voluntarily came forward to protect Sarus crane eggs from poaching and were responsible for the successful fledging of 19 hatchlings from 22 nests during the wet seasons (July-October) of 2000 and 2001, but there was no successful fledging during the dry season (February-May 2001). The villagers who protected the nests were rewarded with recognition certificates, presented to them during Wildlife Week celebrations, and their names were published by the vernacular media. They were also compensated for their time with usable products such as raincoats, umbrellas, torch lights and shoes.

Building on the work carried out in 2000-2001, further work was carried out in the same areas in Kota District from July 2004 to May 2005. Our aims were to conduct a more thorough awareness campaign for the Sarus crane, with the involvement of local communities and NGOs, and to assess the impact of the campaign and to spread the campaign to other adjoining districts.

The audiovisual shows and lectures on the Sarus crane in schools and villages helped dispel misconceptions regarding the crane's supposed destruction of crops and the shells of its eggs being effective for various health problems. They increased the people's knowledge of the species' breeding biology and demonstrated the importance of the surrounding wetlands for the species. School children living near breeding sites were taken to nesting sites to make them learn practically about protecting the nests and chicks. These activities helped increase awareness among the villagers and school children regarding the importance of wetlands and the species. During an awareness programme being held at another village, we received information from the local community regarding a mass death of water birds in a river close to one of the Sarus crane breeding sites (Nair & Kaur 2010).

During the awareness campaign the need of sign boards was felt, and a local school teacher volunteered to paint walls and sign boards. Sarus murals were made on the outer wall of a house in Janakpur and another at the Government Upper Primary School, Amalsara (Plate 1). Both these sites are situated on the way to the Great Indian Bustard protected area at Sorsan, in Baran District and situated close to a canal. These paintings had information on the nesting of Sarus cranes and the bird being farmer-friendly because it eats insects. They conveyed the message that the use of the bird's eggshell as medicine is harmful and requested information regarding the Sarus crane, with the contact details of the researchers provided. An interpretation board (Plate 2) was also installed at Ummedganj, close to which there was a key breeding site, on the right main canal of the River Chambal. The awareness programmes and campaign led to the area being declared 'Pakshi Vihar' in 2012. The interpretation boards and wall paintings were helpful in soliciting more information from villagers on an additional seven, previously unknown, sites that had 23 adult and 5 juvenile Sarus cranes in 2004-2005. With the active support of 17 Rural Village Sarus Protection Groups, 18 chicks fledged successfully from 22 nests in 2004-2005, including some in the dry season (Table 1).



Plate 1 : Wall Painting of Sarus Crane



Plate 2 : Flex board at breeding site



Table 1 : District and year-wise documentation of Sarus Crane nests

	Kota		Bundi		Baran		Jhalawar					
	2002	2004	2007	2009	Total	2007	2009	Total	2007	2009	Total	2009
No. of wetlands	9	9	26	46	90	18	31	49	3	22	25	6
No. of new wetlands	7	7	16	9	39	13	13	26	19	20	39	6
Villages covered	6	6	9	17	38	12	15	27	17	12	29	4
RSVPGs	14	17	17	16	64	10	5	15	3	4	7	3
No. of nests	22	22	33	19	96	11	9	20	18	21	39	6
Fledgelings	19	19	25	25	88	8	15	23	16	20	36	8

The work was extended to two new districts, Bundi and Baran, in 2007-2008, and 30 protection groups (Table 1) were formed in three districts during the awareness programmes. The responsibilities the groups took on were the protection of eggs and juveniles from poaching and predation and ensuring that during the nesting seasons the ponds and wetlands used by the Sarus cranes were not disturbed (Plate 3). During this period, 95 wetlands were covered in the three districts, and of these, 48 wetlands were documented for the first time. Sarus cranes are using these wetlands for roosting or breeding. In Kota District, 42 wetlands were covered, and 16 were documented for the first time. In Bundi District, 31 wetlands were covered, out of which 13 were newly documented. In Baran, 22 wetlands were covered, and 19 were documented for the first time. A total of 62 nests (Table 1) were observed in three districts during the wet period and three nests during the dry period. Eighty chicks successfully fledged from the nests (Kaur & Nair 2008).

Plate 3 : Awareness Programme at School



In 2009-2010, 28 protection groups were formed in 50 villages to cover 99 wetlands. Of these, 48 wetlands were documented for the first time, in four districts (Table 1). A total of 55 nests were observed and 68 birds successfully fledged from these nests (Table 1).

Overall, during the entire study period, 86 Rural Village Sarus Protection Groups were formed, covering 98 villages, which documented 242 wetlands. Of these, 90 were documented for the first time. The groups were instrumental in protecting 161 nests, with 155 successful fledgelings (Table 1).

After the study period, in 2011, one of the volunteers of this programme, Brijmohan Malav (a school teacher) recorded for the first time 12 nests and 12 fledglings in the adjoining Jhalawar District (unpublished information), in Rajasthan.

Recognition Awards

The Rural Village Sarus Protection Groups formed during the awareness programmes were very helpful during the nesting period of the cranes, and following suggestions from national and local NGOs, these enthusiasts were honored for their active participation with certificates and utility materials, including bird identification books in the local language, raincoats, caps, torches, t-shirts, binoculars and bicycles (Plate 4.)

The local and national media highlighted the efforts of these volunteers (Anon. 2005, Phatarphekar 2006), and journalists were taken to the breeding areas to learn about the work and meet the villagers, whose efforts were helping the conservation of the cranes. The stories in the media motivated more people to come forward to provide information on Sarus Cranes at other sites.

Discussion

Meine and Archibald (1996) have 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

Plate 4 : Recognition award ceremony



management of these wetlands, is beneficial both for the Sarus crane and for the people living close to them. BirdLife International (2001) has listed urgent conservation action to be taken for the species, including education and community development programmes. Such activities are important for the Sarus crane because it occurs mainly on private and community lands (Sundar *et al.* 2000b; Sundar & Choudhury 2003). However, some activities have been carried out to raise awareness about the need to conserve Sarus cranes (Trivedi 2007). No project has previously been implemented to encourage local people to participate in Sarus Crane conservation.

The long-term conservation of the species outside protected areas requires more community protection groups and education and awareness programmes in the major breeding, foraging and roosting areas. Education is a vital part of any attempt to enforce legal protection for the Sarus crane (Davis 1998), and development of an active network of farmers, village communities and NGOs will facilitate improved conservation of the species as in the case of the farmers from Bhoj, in Bhopal (www.wti.org.in).

Such active networks will facilitate improved conservation of not just Sarus cranes but also other wetland species by re-establishing a bond between communities and nature. The awareness and education programmes have proved that the involvement of communities outside protected areas is very important in saving especially habitats of wetland species, most of which do not enjoy any protected area status. The involvement of different government agencies and NGOs for a prolonged period is necessary to restore religious beliefs and to understand the mechanism required to develop the available natural resources for the betterment of the community and the species dependent on them, which have so far coexisted with each other peacefully.

Acknowledgements

We are thankful to the Oriental Bird Club and the Rufford Small Grants Foundation for their generous support to the Sarus Crane conservation programmes carried out in 2004, 2007-2008 and 2009-2010, to the Bombay Natural History Society, Wildlife Trust of India, Indian Bird Conservation Network, members of Hadothi Naturalists Society and Hobby Nature Club-Kota, Bikram Grewal, K.S. Gopi Sundar, Manoj Kulshreshta and Sunita Choudhury for their support in honouring the grass root workers and to Dharendra Rahul, editor, *Rajasthan Patrika*, Kota for his valuable suggestions. We are thankful to the GEER Foundation for providing us a documentary on the Sarus Crane. Our sincere thanks to villagers Brijmohan Malav, Sitaram Gurjar and Lattur Lal for their efforts in collecting and monitoring information on Sarus crane nestlings and congregations. We would also like to thank Shakir Ali, Hariraj Singh, A.H. Zaidi and Rakesh Chourey for their support during field surveys and awareness programmes and their suggestions.

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