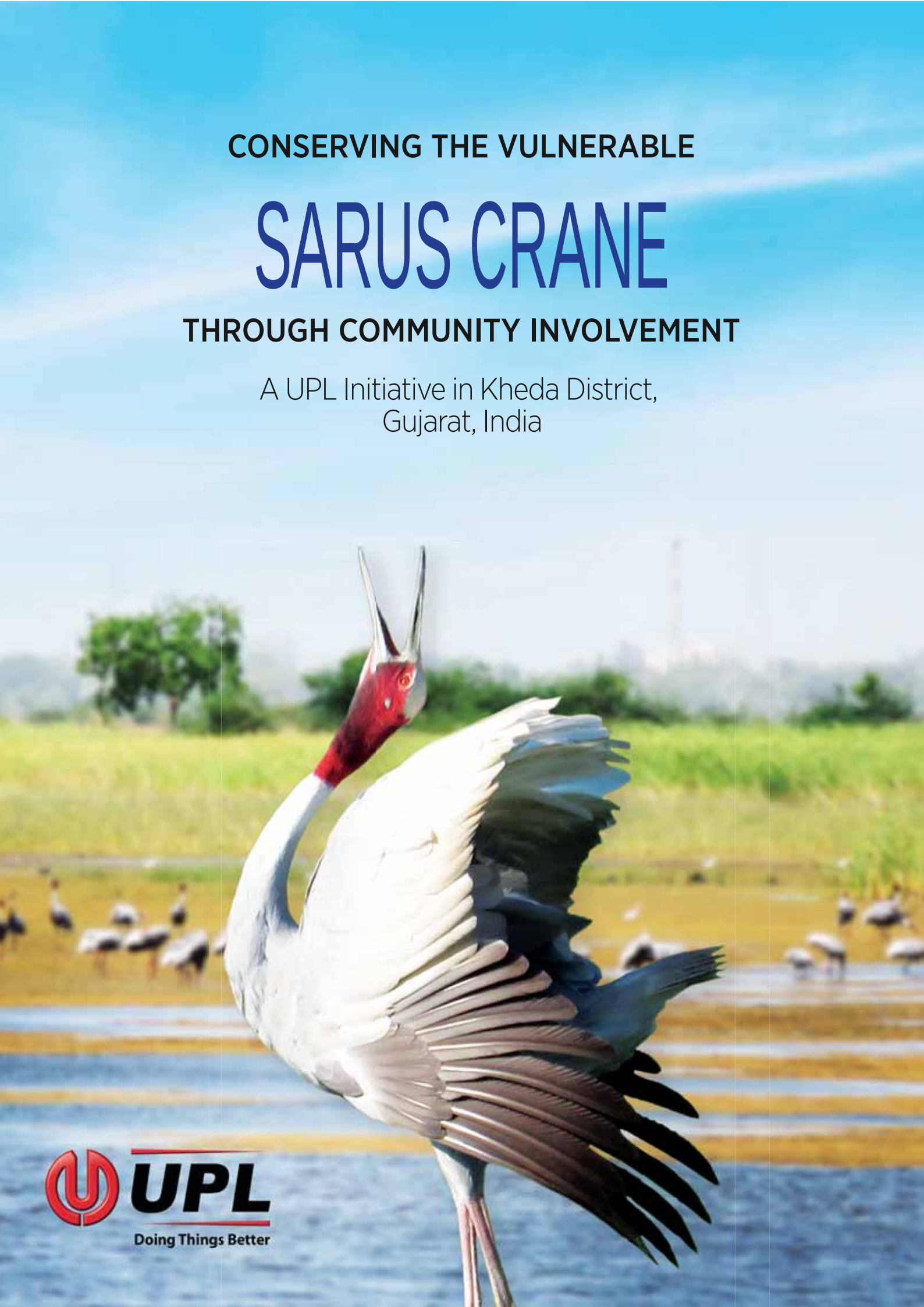
CONSERVING THE VULNERABLE

SARUS CRANE

THROUGH COMMUNITY INVOLVEMENT

A UPL Initiative in Kheda District,
Gujarat, India



UPL
Doing Things Better

Kaur J. , Patel J. and Pathania R. (2017)

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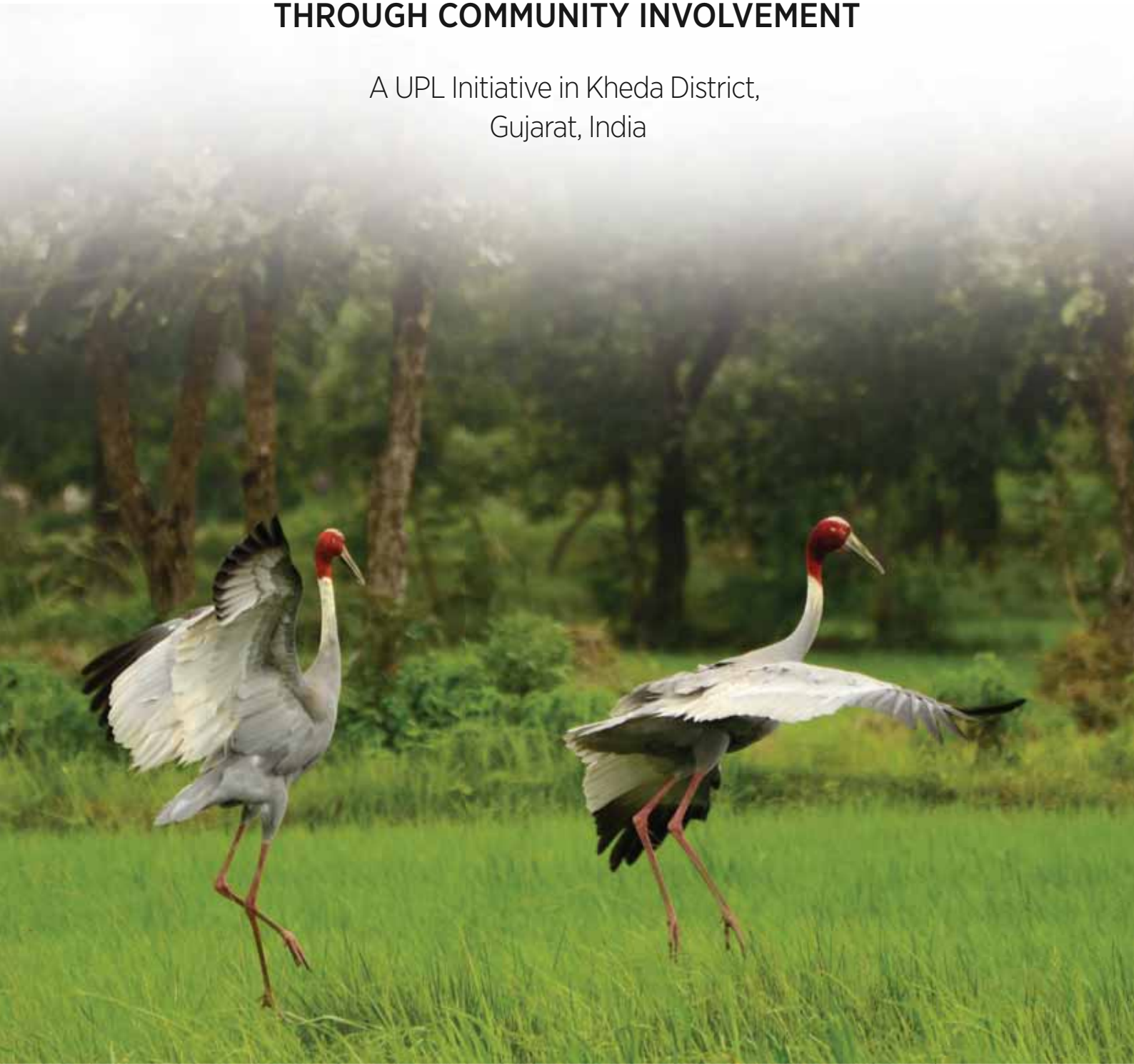

TABLE OF CONTENTS

LIST OF TABLES:

LIST OF FIGURES:

LIST OF PLATES:

LIST OF ANNEXURE

ACKNOWLEDGEMENTS

Execution of this project was made possible due to UPL Limited and SRSAT. We express sincere gratitude for all the help and support extended to us by UPL and SRSAT throughout the duration of this project.

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We would like to thank all of our Rural Village Sarus crane protection groups / individuals who took out time from their busy schedule for saving nesting sites of Sarus cranes and their active support and participation in the project.

We thank Principals and teachers of all the schools for giving us permission to conduct the awareness programmes and all the school children for their support and interest during the different awareness activities.

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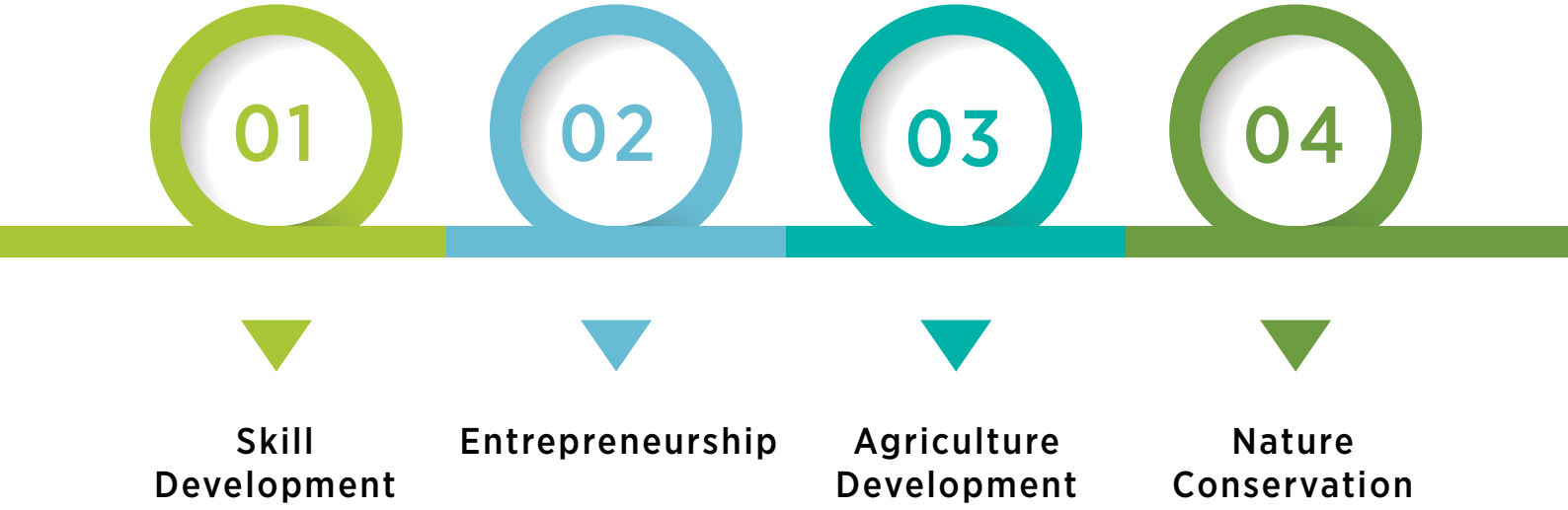
Last, but not the least, we would like to thank the Head CSR of UPL Limited Mr. Rishi Pathania and all our CSR / SRSAT team members for supporting us in conducting the project.

ABOUT SRSAT

S. R. Shroff Aajivika Trust (SRSAT) is a CSR initiative of UPL Limited aiming to create sustainable livelihood in community. At SRSAT we are well aware of present and future population challenges and its impact on sustainable livelihood. The Strategy envisaged for create sustainable livelihood has four pillars.



ABOUT UPL VASUDHA PROGRAMME

VASUDHA IN SANSKRIT MEANS “MOTHER EARTH”, the giver of all wealth. UPL’s Vasudha programme is an integrated nature conservation effort that involves all the stakeholders. UPL has always believed in protecting and promoting a green environment. Most of our programmes under Vasudha aim to create public awareness about environment conservation and the need to adopt sustainable actions.

INITIATIVES UNDERTAKEN UNDER VASUDHA PROGRAMME

01

Eco Clubs

This is an initiative to make the young generation aware about the importance of protecting nature and maintaining ecological balance. These clubs are formed in schools and students participate in environment related activities.

02

Sarus Conservation

There are 15 species of cranes found in the world today. Out of the 6 that are found in India, only Sarus crane (Grus antigone) is a resident species. The Sarus crane is nearly six feet tall with a wingspan of eight feet and it is the world's tallest flying bird. These are known to use wetlands and agriculture fields and live in association with human beings.

03

Green Ganesha

The importance of having a viable, environment-friendly alternative to the current Ganesha idols produced from Plaster of Paris has now become imperative. UPL in collaboration with Parisar Asha helped bolster this eco-initiative by organizing Green Ganesha Workshops in Mumbai schools. This sustainable substitute is colloquially known as Shadu Mitti or river clay and was traditionally used to create Ganesha idols. The workshops helps to reinstate the lost art of making Ganesha statues with Shadu Mitti back into society and create awareness for environment.

04

Social Forestry

Under Social Forestry we are planting trees in village common land, government wasteland and Panchayat land. Through this initiative, we work towards afforestation and rehabilitation of degraded forests and common lands with community involvement.

05

Mangrove Plantation

Mangroves not only help in preventing soil erosion but also act as a catalyst in reclaiming land from seas. Under the initiative, we have planted 1, 20,000 Mangrove plants spread across 60 acres of land in Vagra block.

ABOUT UPL LIMITED

UPL Limited is a global generic crop protection, chemicals and seeds company, headquartered in India (Mumbai). Founded in year 1969 by Mr. R. D. Shroff (Chairman), the company is listed on the National Stock Exchange and Bombay Stock Exchange in India. UPL Limited is largest producer of agrochemicals in India. It is amongst the top five post–patent agrochemical manufacturers in the world. UPL Limited operates in every continent and has a customer base in 124 countries with own subsidiary offices in various countries. The company's operations span across 24 manufacturing sites (10 in India, 4 in France, 2 in Spain, 3 in Argentina, 1 each in UK, Vietnam, Netherlands, Italy, China) and each of them boasts of strong support from the on-site technical services and the quality control teams.

For more information pls visit http://www.uplonline.com

ABOUT CSR AT UPL LIMITED

UPL Limited has always been proud of the fact that community outreach programs began even before company started manufacturing. CSR programs have always been driven by the need of the community first. UPL Limited believes in contributing to harmonious and sustainable development of society and that a company's performance must be measured not only by its bottom line but also with respect to the social contributions made by the company while achieving its financial goals! The CSR activities focus not just around our factory and offices, but also in other backward locations based on the needs of the communities. Before undertaking any program, a sound assessment of the scope, need, projected benefits are carried out. Based on need assessment the commitment to CSR have translated into 6 key focus areas:

01 **Agriculture Development**

02 **Employability & Entrepreneurship**

03 **Education & Empowerment**

04 **Environment & Nature Conservation**

05 **Health & Sanitation**

06 **National & Local Area needs**

All CSR projects undertaken in 6 key focus areas are according to company's CSR policy and are in line with Schedule VII of the Companies Act 2013.

Earlier, we had conducted a need assessment study and arrived at a list of needs prioritized by the community. With the third party Impact Assessment study in 2017 we have measured impact of CSR initiative in community. The results have been very encouraging.

For more information pls visit http://www.uplonline.com/CSR

EXECUTIVE SUMMARY

Sarus crane, an agriculture wetland dominant species has been living in harmonious relationhip with humans from memories. But growing human population and ever-increasing demands followed by the modern market-based consumption culture have eroded the cultural and social values associated with nature which taught us “Om Sarve Bhavantu Sukhinah, Sarve Santu Nir- Amayaah, Sarve Bhadraanni Pashyantu, Maa Kashcid- Dukha- Bhaag- Bhavet” Meaning; May All become Happy, May All be Free from Illness, May All See what is Auspicious, May no one Suffer.

The Sarus is going through a population decline from the last two decades, more due to habitat loss, poaching and modern linear infrastructure developments. The last Sarus crane population count in 2010 has documented 1599 Sarus cranes in the state while 1963 Sarus cranes were documented in 2007, decline of 18.54% in just three years. The project from 2015 till 2017 has documented 500 Sarus cranes from just Kheda district alone covering all the seasons. Which establishes the need for a more systematic and rigorous Sarus crane count in the state to ascertain more realistic population numbers, their distribution and local migrations to formulate conservation plans for the habitats used by the species for its survival and reproduction involving the local communities.

INTRODUCTION

THE INDIAN SARUS CRANE AMONGST THE CRANES OF THE WORLD

Cranes are among the world's tallest birds, ranging in length from 90cm to more than 150cm. The shortest among the Crane species is the Demoiselle Cranes *(Anthropoides virgo)*, while Sarus crane *(Grus antigone antigone)* is the tallest. The Red crowned Crane *(Grus japonensis)* is the heaviest Crane, weighing up to 12 kg when fat deposits peak in the autumn. Male and female Cranes of all species are identical in their external features, except that the male is slightly larger than the female (Johnsgard 1983, Meine & Archibald 1996).

1.1 SPECIES AND SUB-SPECIES ACCOUNT OF SARUS CRANE

Sarus crane is one of 15 species within the crane family, *Gruidae*. It shares its genus with 9 other species among which its closest relatives are the lookalike *Brolga G. rubicunda* from Australia and new Guinea, and the White-naped crane *G. vipio* from northeast Asia (Krajewski and Fetzner 1994). Sarus crane *(Grus antigone)* is the only resident species. Over their entire distribution range, Sarus cranes utilize wetlands, both natural and man-made, and are well-known for their ability to live in association with habitation (Gole 1989, Gole 1996 Archibald & Meine 1996, Birdlife International 2001 & Kaur 2008). In India, people have attributed religious and cultural values to them, and protect Sarus and other Cranes. The Cranes have been documented right from historical times to pair for life (Ali 1927) and this feature has made them a symbol of fertility in large parts of north India. There are three extant sub-species of Sarus cranes in the world. All three sub-species are discernible on field by morphological features and have different distributional ranges and habitat requirements as described below (Johnsgard 1983, Meine & Archibald 1996).

The Indian Sarus Crane (G. a. antigone): is the largest and most abundant of the three sub-species. They prefer open cultivation in well-watered country, marshes, jheels, lakes and large rivers. There has been a recorded reduction in the distribution range for the sub-species in India and the population numbers throughout are suspected to be on the decline (Sundar et. al. 2000a). On the basis of the qualitative evidence accumulated over the past 150 years, it seems entirely plausible to suggest that the global population of Sarus crane has diminished to be at best 10% and very probably 5% or even 2.5% of its numbers in 1850. The most up-to-date population estimates of *Grus antigone antigone* is estimated to be around 8,000-10,000 individuals and are declining. (Sundar et. al. 2000b, Birdlife International 2001)

1.2 DESCRIPTION OF SARUS CRANE

Sarus crane is easily identified as a large, mostly steel-grey Crane with pink to reddish legs standing up to 175 cm and a red head (Meine & Archibald 1996). The adults have a naked scarlet head and upper neck, with an ashy-grey crown. The bill is characteristically large and greenish-grey in colour. In flight, the black primary feathers are distinct against the grey contour feathers. Immatures (juveniles) have a rusty-buff colouring on the head and neck, and the upper parts are marked with brown. Older immatures (subadults) have a dull red head and upper neck and are brownish-grey all over. Sexes cannot be easily differentiated, though some workers have attempted to find characteristics exclusive to the sexes, such as in the male, the lower border of the dark red band round the neck is oblique, whereas in the female, the lower border of the red band is horizontal. The bald cap on the head is larger in the male as compared to the female (Gole 1989) & (Desai (1989). The Sarus weighs between 6.8 to 8 kgs (Ali & Ripley 1980, Johnsgard 1983).

1.3 HISTORICAL ACCOUNT

A bird as large as Sarus crane has elicited interest right from historical times in India. The chapter 2 of the first book of the famous Indian epic Ramayana begins with the author Valmiki's observations of a hunter killing one of a pair of "kraunca" (Sarus crane) and its mate giving a "heart-rendering distress call"(Leslie 1998). For a long time, the identity of the bird was in doubt and different opinions of the identity of the bird ranging from curlews to herons to Cranes have been given in literature. Recent investigations have proven without doubt that the"kraunca" was indeed Sarus crane (Leslie 1998). The Emperor Jehangir has recorded some extremely useful and interesting notes concerning the breeding habits of the Sarus, from pairing onwards, to the time the young were hatched. Ali (1927) quotes in detail the methodical documentation by the Emperor on observations of pair-bond maintenance, courting display, mating, nesting and nidification in a couple of Sarus pairs. While the reference in the Ramayana was more romantic and poetic in its being, Jehangir's writings were natural history and behavioural ecology. Subsequently, Buddhist scriptures talk about an incident of a Sarus crane hunting observed by Gautam Buddha in Lumbini.

1.4 DISTRIBUTION OF SARUS CRANE IN INDIA

Sarus crane has been recorded to be found all over the northern and central region of the Indian sub-continent historically, including the present day Bangladesh (Gole 1989, Archibald & Meine 1996, Birdlife International 2001). Historical records indicate that their distribution used to extend from the Eastern part of the Indus river in Pakistan to the Western limits of the state of Assam through West Bengal, and from the Kashmir valley in the North to the West of the Godavari delta in the Southern part of the sub-continent (Jerdon 1864, Murray 1890, Ward 1907, Ali & Ripley 1980, Johnsgard 1983, Robert 1991).

According to Gole (1996), the fringe areas (areas beyond which the Sarus does not occur) include "Bhandara and Chandrapur district of Maharashtra; Rewa, Chhatarpur and Gwalior in MP; regions East of Allahbhad in UP; Hissar and Panipat in Haryana; Jodhpur in Rajasthan and Surat and Valsad in Gujarat". Gole (1989) conducted the last countrywide survey to determine the distribution and to assess habitat requirements of Sarus cranes in parts of North and Central India. The studies, have indicated that the numbers of Sarus has declined sharply and the distribution range of the Sarus has shrunk considerably over the years (Fig 1). From the distribution range of Sarus crane as projected after the 1998-99 countrywide survey by Wildlife Institute of India, it can be seen that major populations are now restricted to a belt comprising of Eastern and Central Gujarat, South-Eastern Rajasthan and Central and South-Western Uttar Pradesh.

Fig 1. Shrinkage distribution map of Sarus crane in India

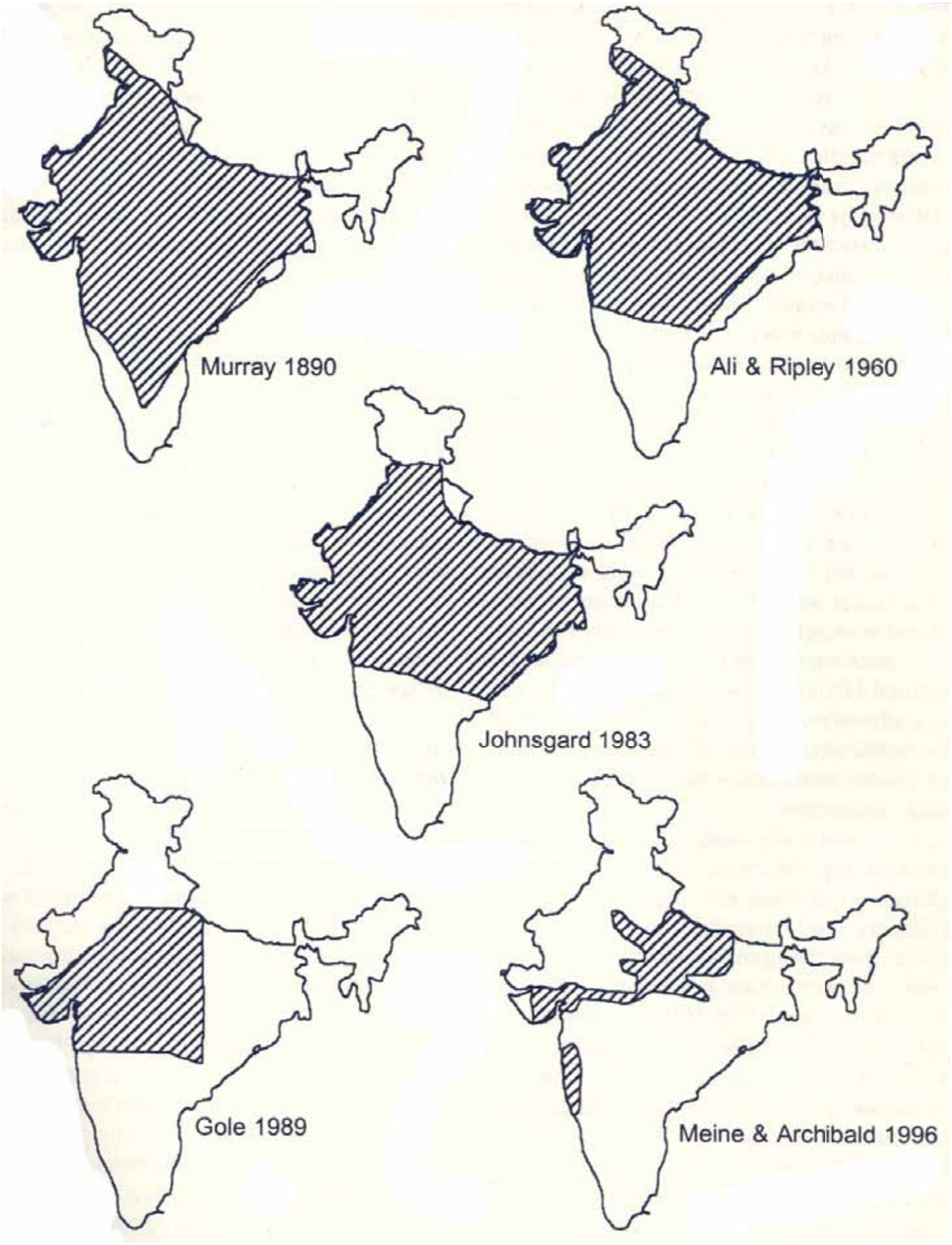
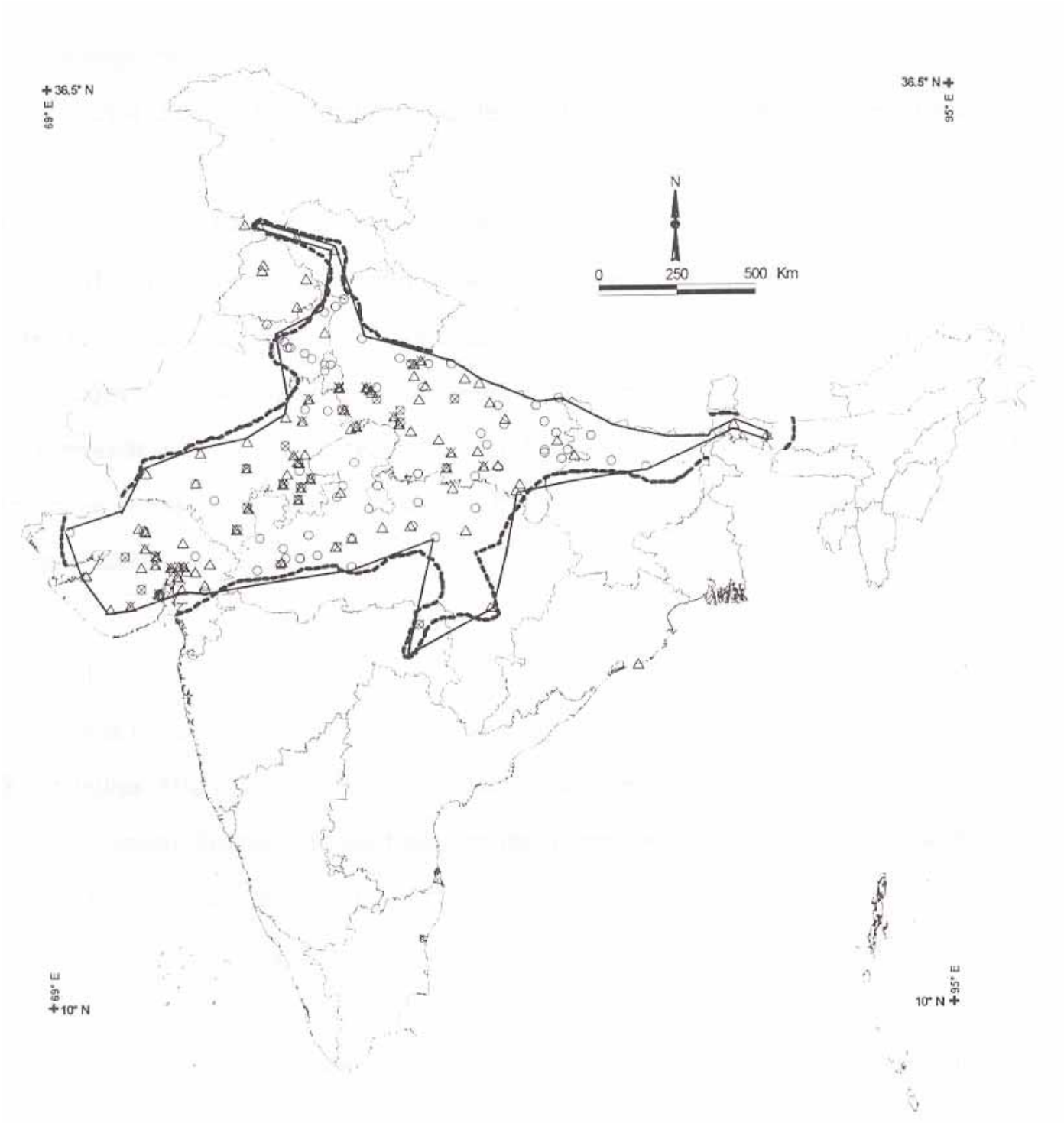


Fig 2. Map showing distribution range of Sarus crane *(Grus antigone)* in India

Source: Sundar et. al. 1999



- o Survery points (Summer 98)
- △ Survey points (Winter 98 - 99)
- × Nesting sites recorded during survey
- Distribution range of Sarus crane in India (Minimum convex polygon)
- Projected distribution range of Sarus crane in India

1.5 HABITAT DESCRIPTION

Sarus crane is known to use a wide variety of habitats depending on breeding status, season, food availability, land use and cropping patterns. They prefer a mosaic of natural wetlands comprising of marshes and ponds even when interspersed with agriculture fields (Gole 1989). They also occasionally use riverbanks and canals for feeding purposes. Breeding pairs typically use larger wetlands wherever available but have been seen to use nearly every type of wetland, natural and man-made (Parashyra et. al. 1989, Kulshrestha & Vyas 1989, Mukherjee et al. 2000, Board et al. 2002, Mukherjee et al. 2002). Developmental alterations in the landscape in India, however, seem to have led the Sarus to use more agricultural fields than natural wetlands. Gole (1989) first noticed this as being significant to Sarus crane ecology during his survey, from the data collected. They were observed to prefer paddy and wheat fields to other kinds of crop fields. The majority of Sarus crane sightings during the 1998-1999 all India surveys by the Wildlife Institute of India were made in agricultural fields, particularly rice and wheat, and Cranes tending to avoid soyabean and sugarcane, revealing the importance of man-made habitats (Sundar et. al. 2000b). Information on seasonal changes in habitat use is available from Kheda in Gujarat and shows that habitat use varied with season (Mukherjee 1999).

1.6 PROTECTION STATUS AND THREATS

Sarus crane has suffered a rapid population decline, which is projected to continue, as a result of widespread reductions in the extent and quality of its wetland habitat, exploitation and the effects of pollutants. It therefore qualifies to be a 'Vulnerable' on the IUCN Red List (Birdlife International 2001).

The Birdlife International Red Data Book has proposed Sarus crane to be placed in the 'Vulnerable' category, (when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future). Sarus crane is placed under criteria A1c,d,e; A2c,d,e. by Birdlife International (2001).

2. PROJECT OBJECTIVES

- To estimate Sarus crane population in the natural wetlands as well as agricultural fields in the selected districts of Gujarat
- To assess habitat preference vis-à-vis availability, to identify areas important for breeding of Sarus cranes and areas that have potential to be restored with public support and government agencies
- To assess ecological, anthropogenic threats and opportunities before the population of Sarus cranes, with special focus on agriculture based activities
- To increase awareness of local communities and to ensure more effective community participation in the conservation of the Sarus
- To involve partners and build the capacity of all stakeholders for Sarus conservation

3. PRESENT DISTRIBUTION AND DEMOGRAPHY

3.1 DISTRIBUTION

The two year pilot study was carried out in Kheda district, Gujarat state during April 2015 - April 2017. The present study was undertaken to study the actual population size of Sarus cranes in Kheda district and to identify the factors affecting their distribution and survival. Earlier studies conducted by various authors revealed that the present distribution and population size of Sarus cranes has declined over the years in a district which holds the largest crane population in the agricultural landscape of Gujarat state, (Mukherjee 1999). Habitat preference plays a vital role in the life of birds as it determines fitness of the species and ultimately its survival. Sarus Crane in Kheda district of Gujarat occurs mainly in the agricultural landscape and has adopted to man modified habitat. The decline in population size of the bird has been mainly attributed to habitat loss (Mukherjee 1999).

During the study period the population of Sarus crane was observed to be constant and seasonal variations exhibited changes in social structure of Sarus crane. Study on distribution of Sarus crane in Kheda district was done during the seasons of:

The above period also coincides with the agrarian calendar of the area.

The data on Sarus crane abundance and distribution was collected during May 2015 - till March 2017. The May 2015-March 2017, data shows (Fig 3 & Fig 4.) that congregation of the species occurs twice in a year, starting from November-March and May-July and the maximum congregation occurs during the month of February, May and June. While surveying the study area in three districts, nine Summer and seven Winter congregation sites were identified. (Fig 5&6). The highest number of Sarus cranes during Summer was observed at Gobrapura wetland of 170 Sarus cranes. In Winter highest congregation of Sarus was recorded in Shekhupur agricultural land total of 140 Sarus cranes.

Plate 1: A Pair of Sarus Crane

Fig 3. Seasonal changes in social structure of Sarus cranes in study area during May 2015-March 2016

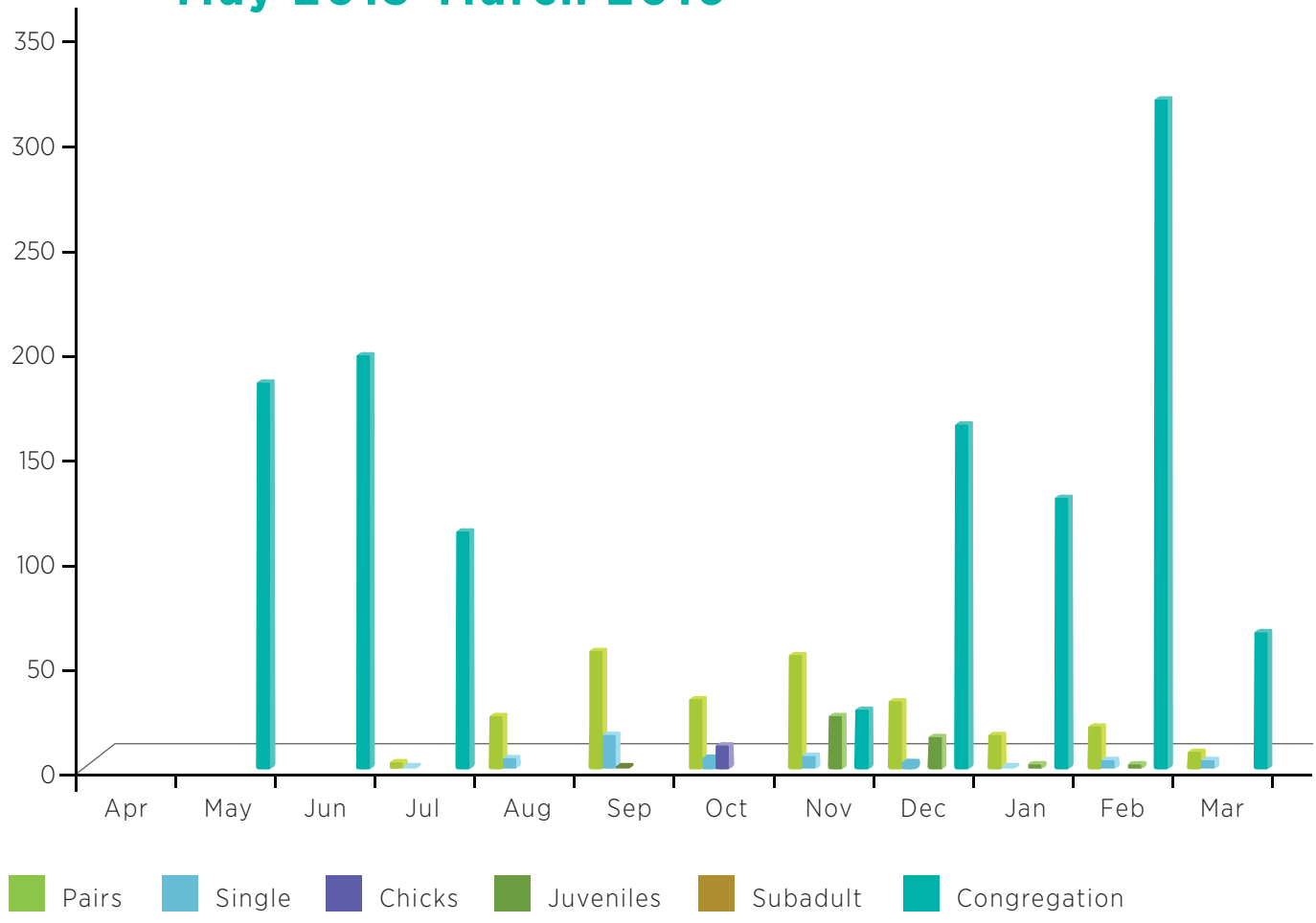


Plate 2 (A): Summer Congregation in Wetland

Fig 4. Seasonal changes in social structure of Sarus cranes in study area during April 2016-March 2017

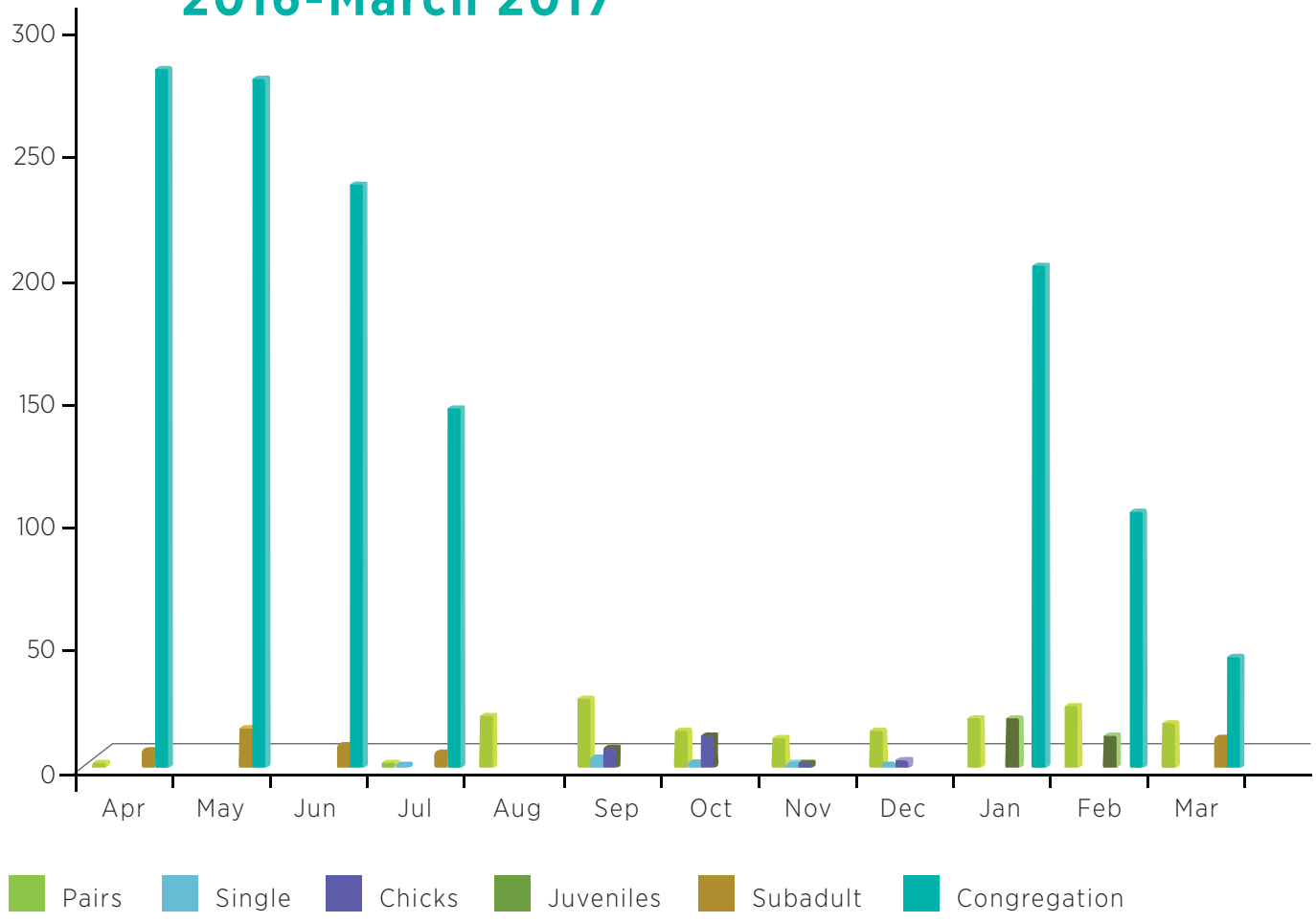


Plate 2 (B): Winter Congregation in Agricultural Field

Fig 5. Summer congregation sites in Kheda district during 2015-2017

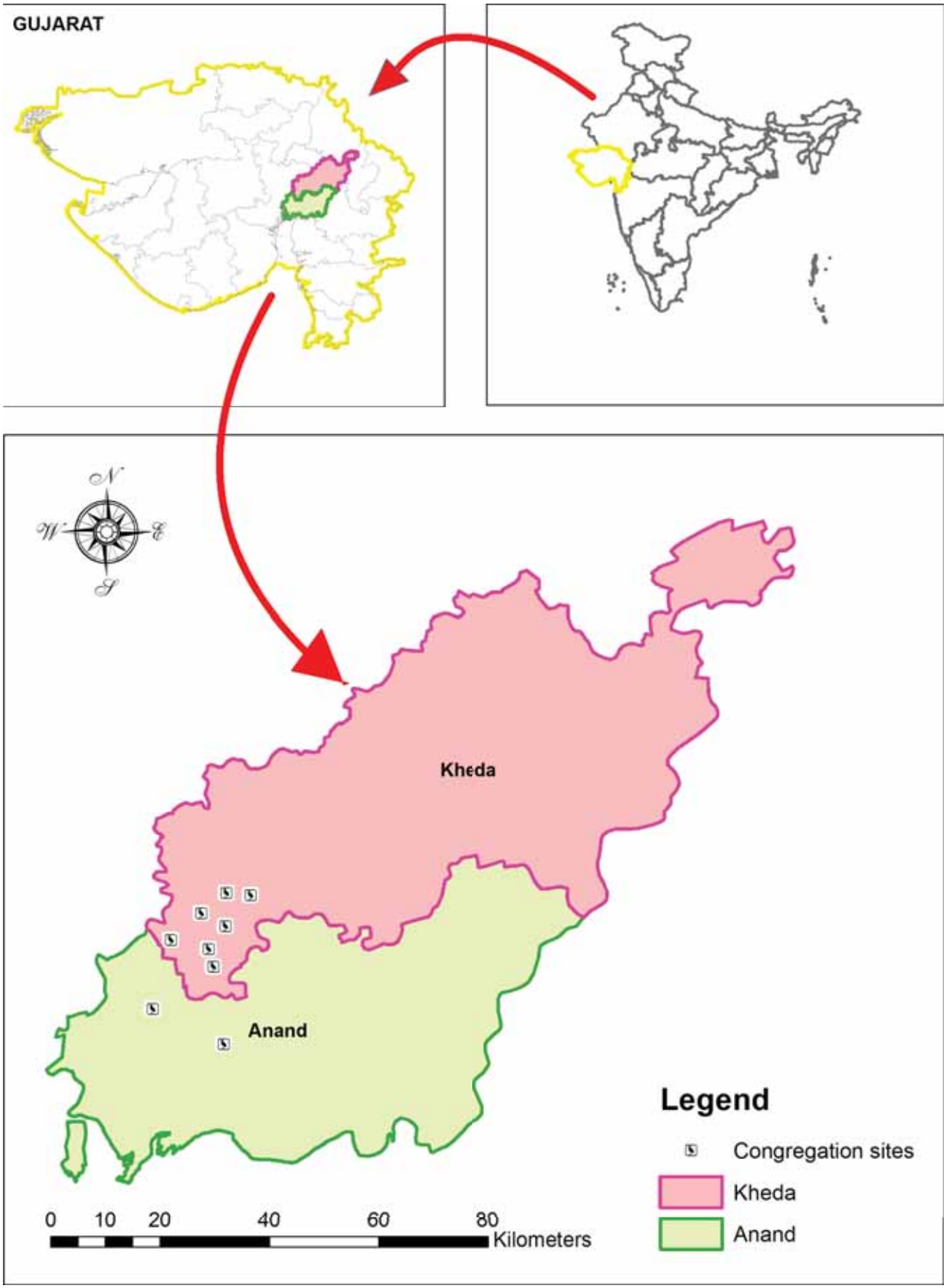
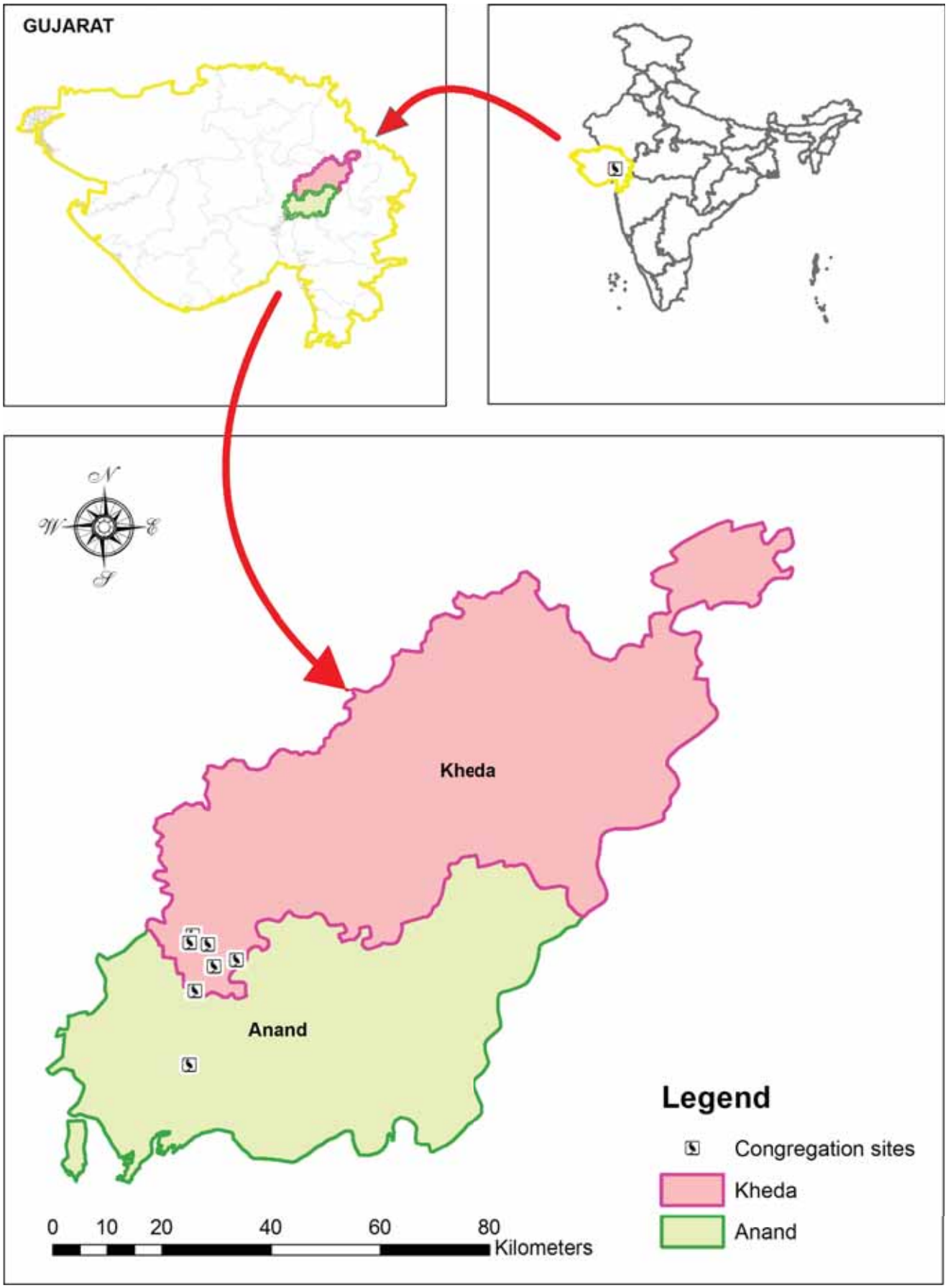


Fig 6. Winter Congregation of Sarus cranes in Kheda district during 2015-2017



3.2 HABITAT USE

During Summers Sarus crane spend more time in man-induced & natural wetlands, compared to agricultural fields for congregations, feeding, pair bonding and cool off from the heat, concurrently use of natural wetlands post monsoon was observed. During Winters, the Sarus spent more time in agriculture fields compared to natural wetland (Fig 7.) as they have chicks and juveniles with them to feed during the period. Among the agricultural crops paddy and wheat fields were used most often in Summer and Winter respectively. During Summers the Cranes feed on left residues of post crop harvest around wetlands.

From July onward Sarus cranes spend more time in agriculture fields inundated by water as they use paddy saplings for nesting during the period. Analysis on habitat use by Sarus crane families show that during rainy season July-March, families spend more time in agriculture fields followed by man-made and natural wetlands.

Fig 7. Habitat use by Sarus crane in study area during May 2015 - March 2017

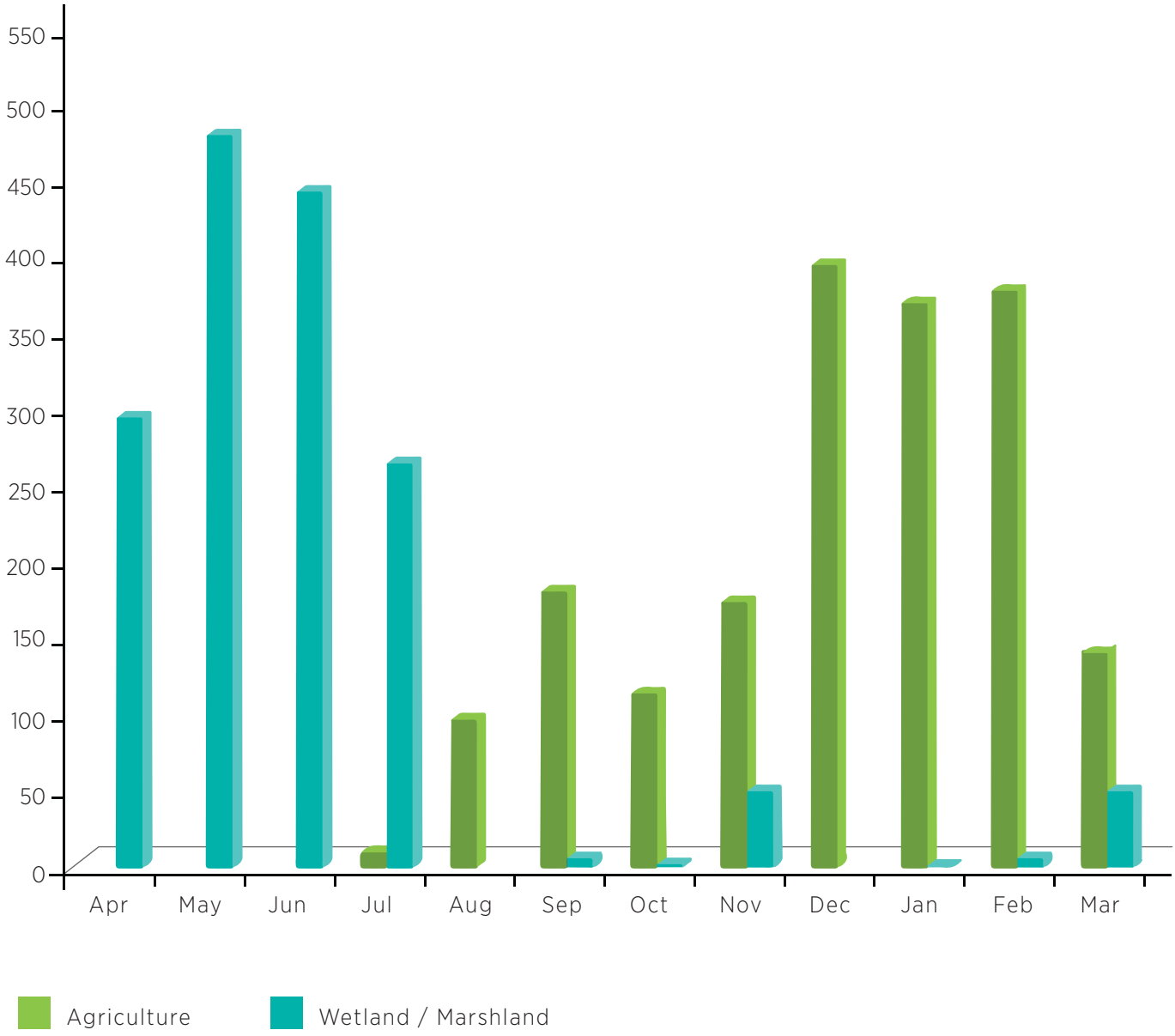


Plate 3 (A): Pair of Sarus Crane in Agriculture Field

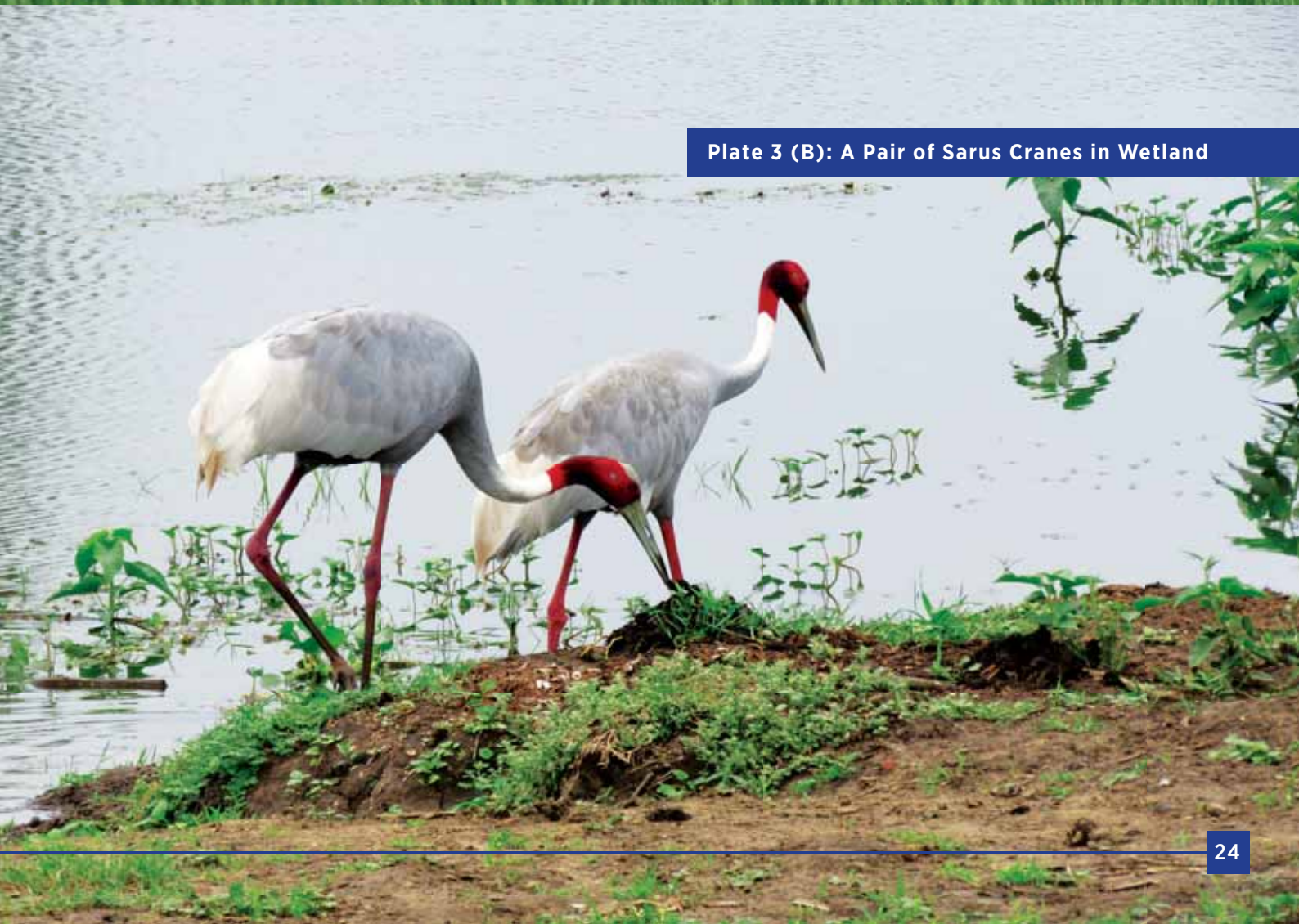


Plate 3 (B): A Pair of Sarus Cranes in Wetland

4. NESTING AND BREEDING SUCCESS

Sarus crane is a monogamous species, and is known to have a similar pattern in their reproduction biology, behavior and use of nesting habitat across their distribution range. The material used for nesting is that which is available immediately around the nesting area and created by piling of vegetation into a roughly round heap surrounded by a narrow moat.

4.1 NEST DISTRIBUTION AND CHRONOLOGY OF NESTING

Based on existing and literature-based information, courting and breeding pair locating surveys were initiated during June/July. Efforts were made to cover exhaustively such areas to locate families of Sarus cranes and nest in each field site. Presence of nest was also determined by observing behaviors of courting pairs and secondary information sources (farmers etc.). The study areas were surveyed for locating courting and breeding pairs by making use of the extensive metalled, non-metalled roads, and on foot. When the areas were invisible from any road, they were traversed regularly during breeding season. The nests were also located following the birds while they prepared the nest, by locating the incubating adult and also through information gathered from the villagers. Fifty-four nests were located during two years of study period from April 2015-April 2017 (Fig 8). The nests were initiated during the second week of August and continued till November. The maximum clutches of two eggs were laid during the first and second week of September (Fig 9, Table1). Earlier studies showed last week of August and September as the months when maximum nests were observed (Mukherjee 1999). The observed breeding activities in study area are given in Table 2.

Fig.8 Distribution of nesting sites in study area during 2015-2017

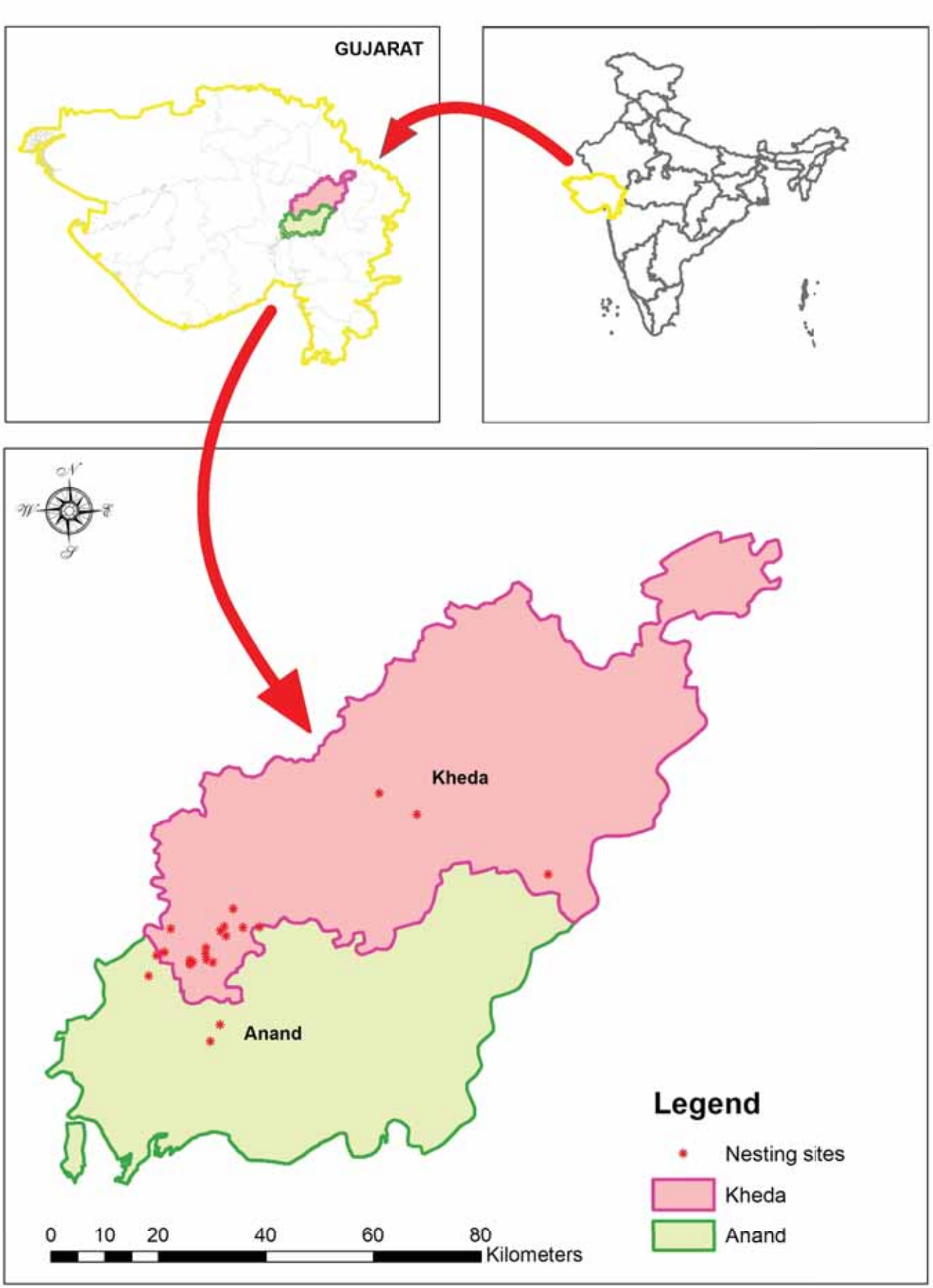


Table 1. Nesting Initiation in study area

Season	July	August	September	October	November	December	Total no. of nest
Monsoon 2015	0	2	12	11	3		28
Monsoon 2016	0	6	14	5	1		26

Fig.9 Nesting Chronology of Sarus crane in study area

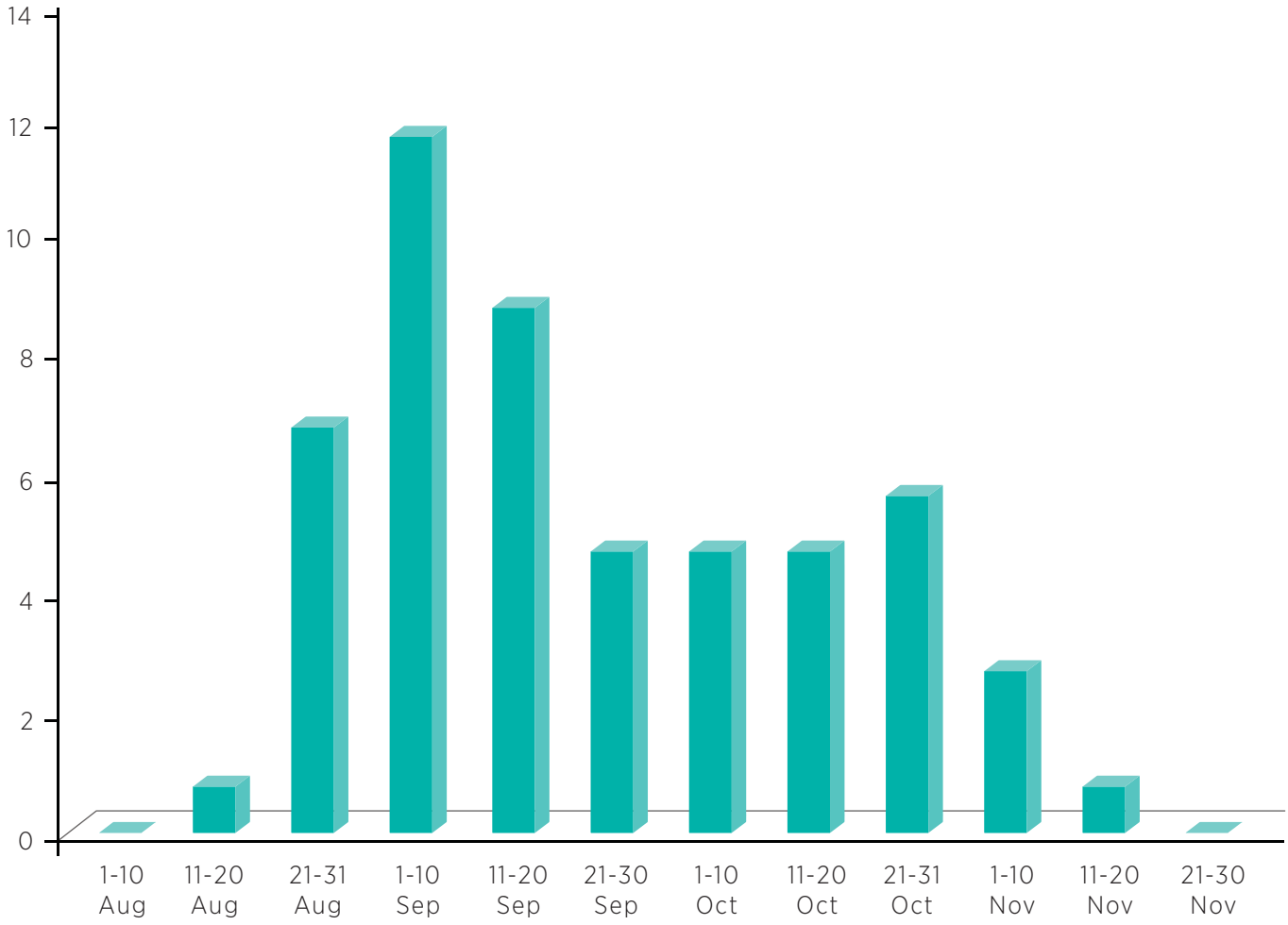


Table 2. Stages of Breeding Activities

Stages of breeding activities	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Dispersal of Pairs from Congregation	+	+										
Pair Formation and Courtship Display		+	+									
Nest building and Displays			+	+	+	+						
Incubation			+	+	+							
Hatching				+	+	+						
Parental Chick Rearing				+	+	+	+	+	+	+		
Weaning and Dispersal	+										+	+

4.2 BREEDING SUCCESS

For successful nests, the date of nest initiation was calculated by subtracting the 30 day mean incubation period from the hatch date. Since Cranes, have precocial young, nesting efforts were defined as successful if at least one egg was hatched. Evidence for breeding success included direct observation of one or two chicks, peeping, or a combination of length of nesting activity at the site together with the presence of egg shell fragments. Different levels of threats were assessed on Sarus crane eggs and chicks at the nest site. The breeding success was calculated for hatching, fledging and weaning. Success was calculated separately for eggs and nests when calculating nesting success statistic.

4.2.1 CLUTCH SIZE IN NESTING SEASON

During breeding season 2015, 28 nests were observed and most of the nests had two eggs (n=20, 71.42%) and 28.57% (n=8) of the nests had one egg each (Table 3.) Eggs stealing in two nests were observed. A total of 26 nests of 2016 nesting season were observed, and 50% (n=13) nests had two eggs and thirteen nests had one eggs each. Predation was seen in one nest with two eggs and in another nest, only one chick hatched out of two eggs (Table 4).

Table 3. Clutch Size in Nests during 2015-2016

Total No. of Nests	Nests with one egg	Nests with two eggs	Chicks hatched out from nests with one egg	Chicks hatched out from nests with two egg
28	8	20	8	36

Table 4. Clutch Size in Nests during 2016-2017

Total No. of Nests	Nests with one egg	Nests with two eggs	Chicks hatched out from nests with one egg	Chicks hatched out from nests with two egg
26	13	13	13	23

4.2.2 NEST SITE SELECTION

Depending upon the availability of water, Sarus crane uses different habitats for constructing the nest. During 2015-17, the most preferred nest site was paddy field (n=28, 51.85%) followed by man-induced wetlands that support nesting during wet season with typha or aquatic vegetation (n=15, 27.77%) and eleven nests (20.37%) were on agriculture field bund (Table 5).

Table 5. Nest Site Selection by Sarus Crane during 2015-2017

Year	Season	No. of Nests	Nest site
2015	Aug - Nov	13	Paddy field
	Aug - Nov	6	Agriculture bund
	Aug - Nov	9	Marsh
2016	Aug - Nov	15	Paddy field
	Aug - Nov	5	Agriculture bund
	Aug - Nov	6	Marsh

Plate 4 (A): Nest of Sarus Crane on Agriculture Bund

Plate 4 (B): Nest of Sarus Crane in Paddy Field

Plate 4 (C): Nest of Sarus Crane in Marshland

4.2.3 NESTING PERFORMANCE

54 nests were recorded during 2015-2017. Of the 87 eggs observed, 80 (91.95%) hatched out. Egg stealing was recorded in two nests by locals. Predation was observed in one nest and in another, out of the two eggs, one hatched. 100% fledging success was recorded (Table 6).

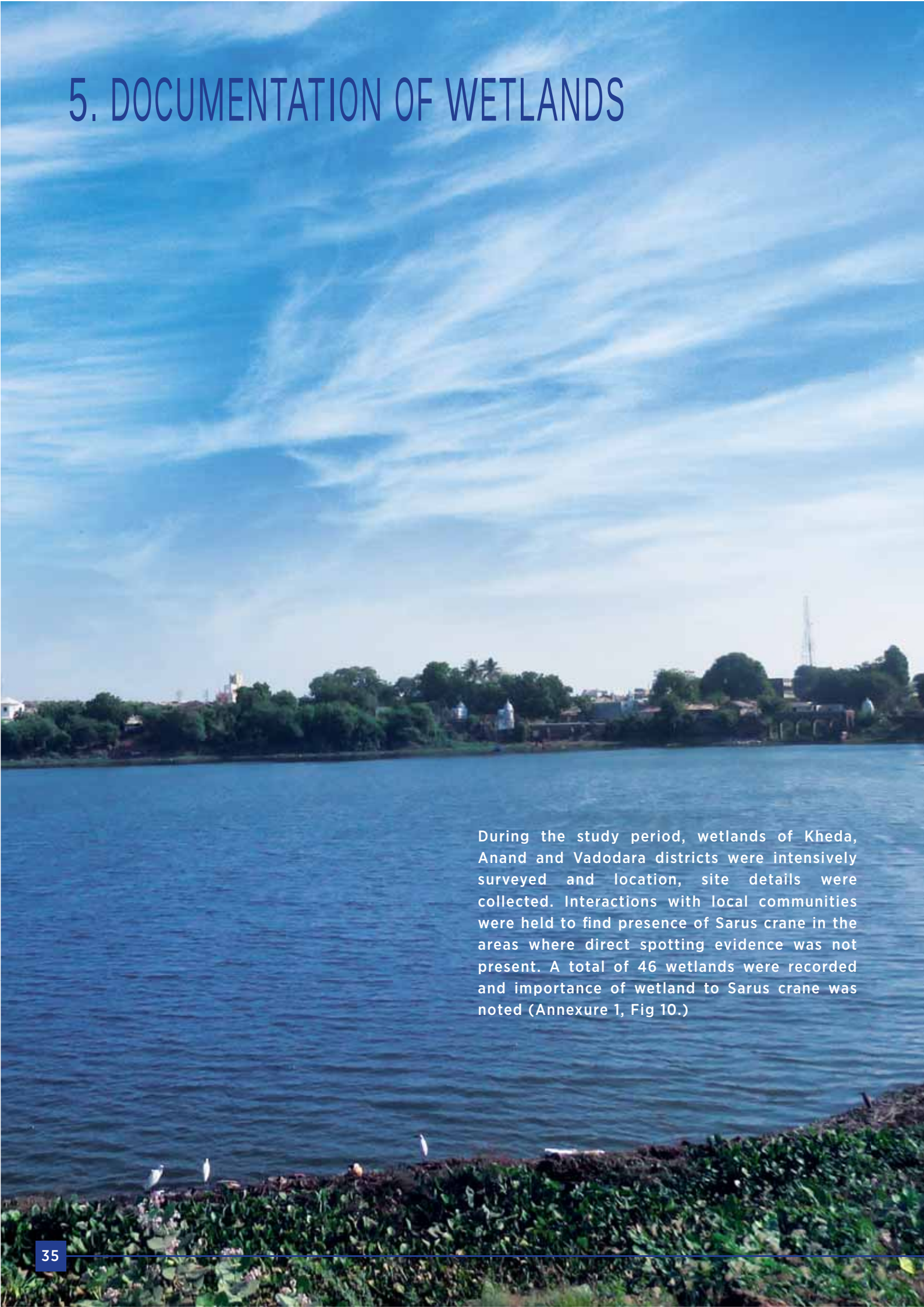
Table 6. Breeding Success of Sarus Crane Egg and Nests in study area during 2015-2017

	Nest (n=54)	Egg (n=87)
Hatching Success	(51) 94.44%	(80) 91.95%
Fledging Success	(51) 100%	(80) 100%

Plate 4 (D): Chick Hatched out from Egg

Plate 4 (E): Pair of Sarus crane with Juveniles

5. DOCUMENTATION OF WETLANDS



During the study period, wetlands of Kheda, Anand and Vadodara districts were intensively surveyed and location, site details were collected. Interactions with local communities were held to find presence of Sarus crane in the areas where direct spotting evidence was not present. A total of 46 wetlands were recorded and importance of wetland to Sarus crane was noted (Annexure 1, Fig 10.)

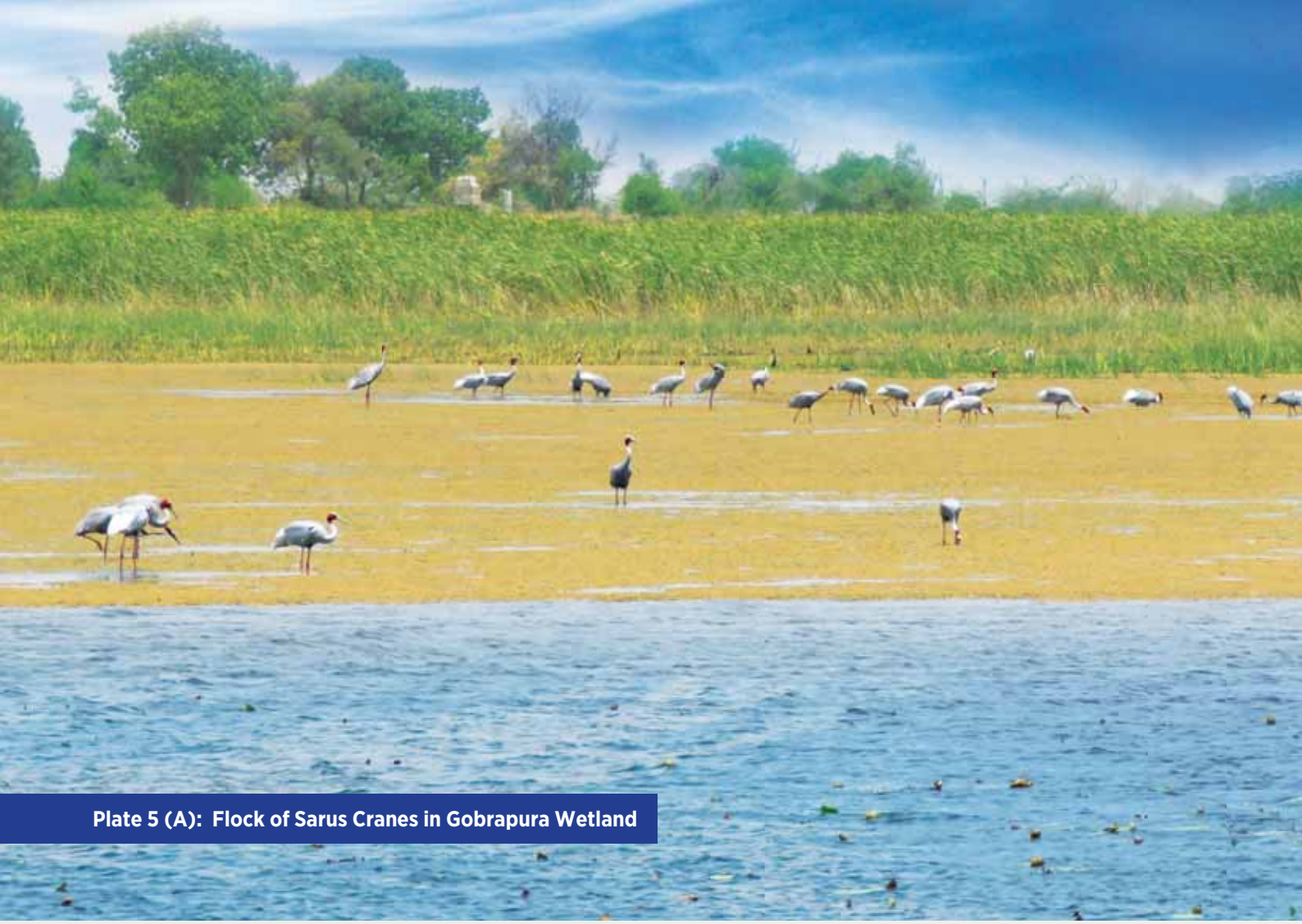


Plate 5 (A): Flock of Sarus Cranes in Gobrapura Wetland

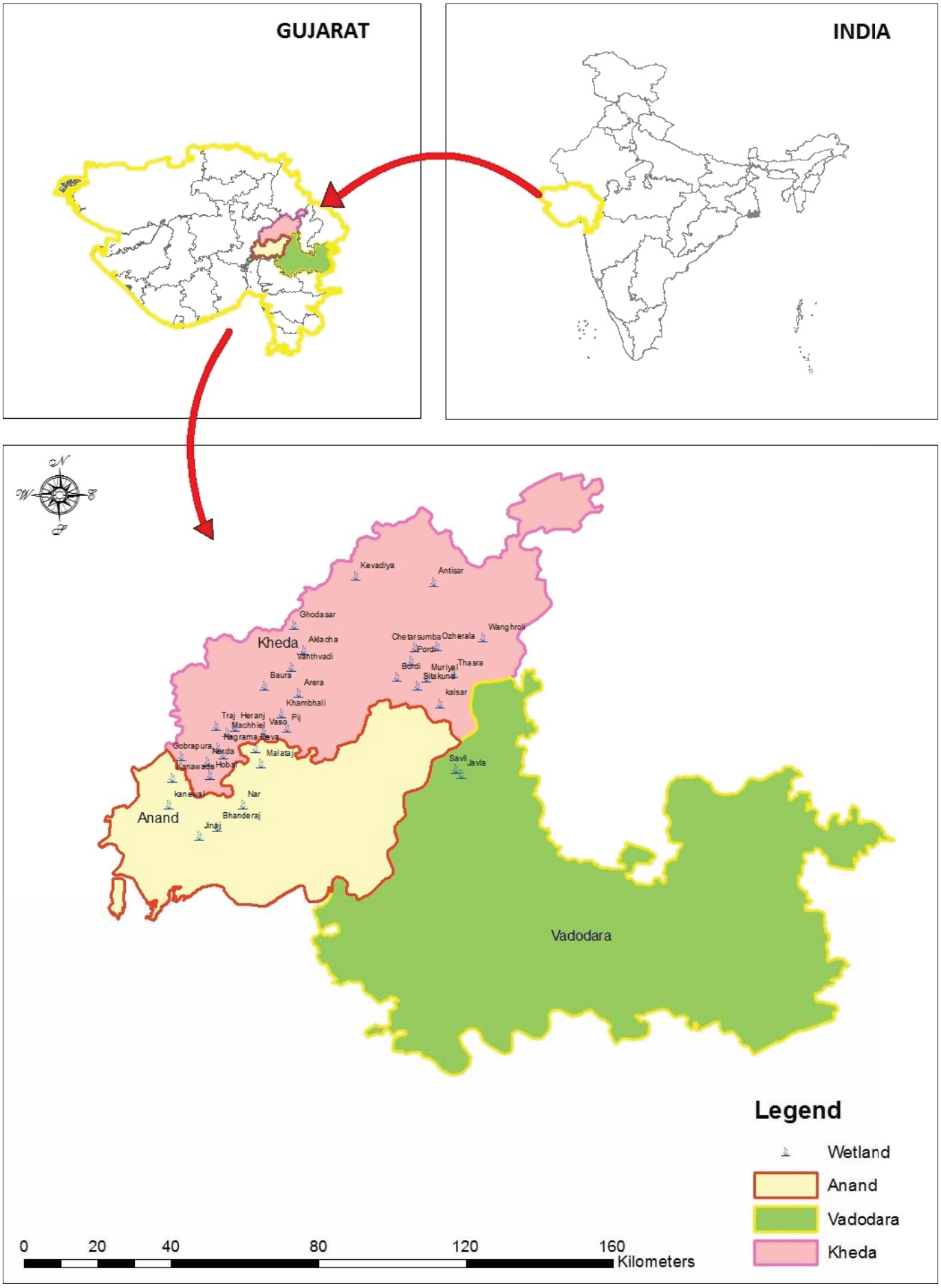
Plate 5 (B): Pariej Wetland

Plate 5 (C): Wadhvana Wetland

Plate 5 (D): Kandhli Pond

Plate 5 (E): Daloli Lake with Dense Vegetation Cover

Fig 10. Map showing wetlands in study area



6. AWARENESS PROGRAMME

The project envisaged an awareness campaign for Sarus crane, with the involvement of local communities and NGOs, and assessed the impact of the campaigns. Field visits to important Sarus crane breeding sites were made every week during the breeding season. Two thousand colour pamphlets and 1000 posters in local languages were printed for distribution in schools and villages. The pamphlets and postcards helped us in obtaining information from people about Sarus crane nesting sites and juveniles. The information reached people via their children in school or friends and neighbors. People provided information by phone and during personal visits.

Audiovisual shows and lectures on the Sarus crane, including a short documentary film explaining the breeding period, habitat, and development of the chicks, were undertaken during the Programme (Annexure 2). The shows helped to dispel misconceptions regarding the Crane's supposed destruction of crops, use of eggshells for various health problems. Activities like drawing, rangoli competitions, slide shows, lectures/talks, elocution, on-the-spot quiz, field visits and celebration of different environmental awareness days like World Wetlands Day, Wildlife Week, World Environment Day etc, were held with the schools and villagers near the Sarus crane breeding or congregation areas.

School children living near breeding sites were taken to nesting sites and briefed on how they can protect the nests and chicks. An assessment on awareness level of students and local villagers was done in villages; where awareness programmes were held and in control villages where no programmes were held. Interpretation or Sign boards were erected in important Crane breeding sites describing information on nesting of the Sarus cranes, the bird being farmer-friendly, use of eggshell being harmful, and requesting to share information on the Sarus crane, with contact details of the project team, to connect more people in the project area who were not touched directly by the project. These boards were installed at ten key breeding locations of the Sarus crane (Annexure 2).

Community meetings and workshops were held with villagers, school children, college students, farmer groups, individuals and the forest department. During the meetings and workshops, discussions were held on identifying major threats to the species that need immediate attention and its working mechanisms. The local community can play a major role to protect the Sarus crane and its habitat. So we identified farmers groups and interested individuals for awareness and training programmes on conservation of Sarus cranes and other related issues. With co-ordination of these stake holders, we targeted different community groups to raise public awareness on Sarus crane conservation (Annexure 3).

Awareness programmes were held with 843 farmers in 16 villages to protect nests in paddy fields, fall out of which has been reporting of 21 nests from agriculture fields leading to successful fledging of 34 juveniles. Similarly awareness programmes was held in 48 schools which saw participation of 3461 students and 157 teachers.

Plate 6 (A): Rangoli Competition during Celebration of Wildlife Week

Plate 6 (B): Drawing Competition in School

Plate 6 (C): Interpretation Board at Village Gram Panchayat

Plate 6 (D): School Awareness Program in Nature Education Camps at Pariej Wetland

Plate 6 (E): Drawing Competitions during Celebration of World Environment Day

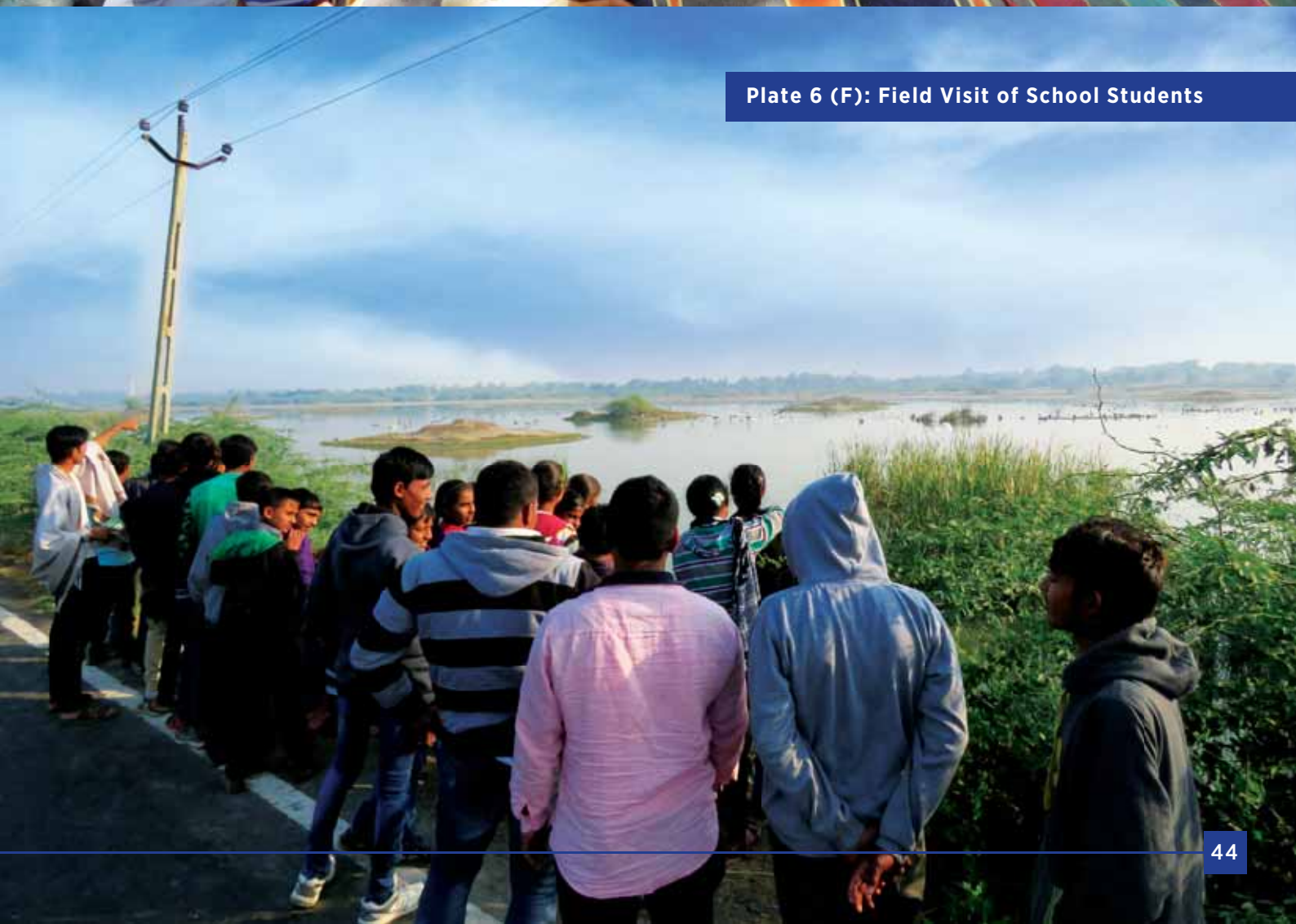


Plate 6 (F): Field Visit of School Students

Plate 6 (G): Plantation in School

Plate 6 (H): Talk and Movie Screening in School Awareness Programmes

Plate 6 (I): Community Meeting with Sakhi Mandal

Plate 6 (J): Community Meeting with Local Villagers

Plate 6 (K): Programme of World Wetland Day

Plate 6 (L): Discussion with Farmers Group on World Wetland Day

Plate 6 (M): Training Workshop for Volunteers & Farmers

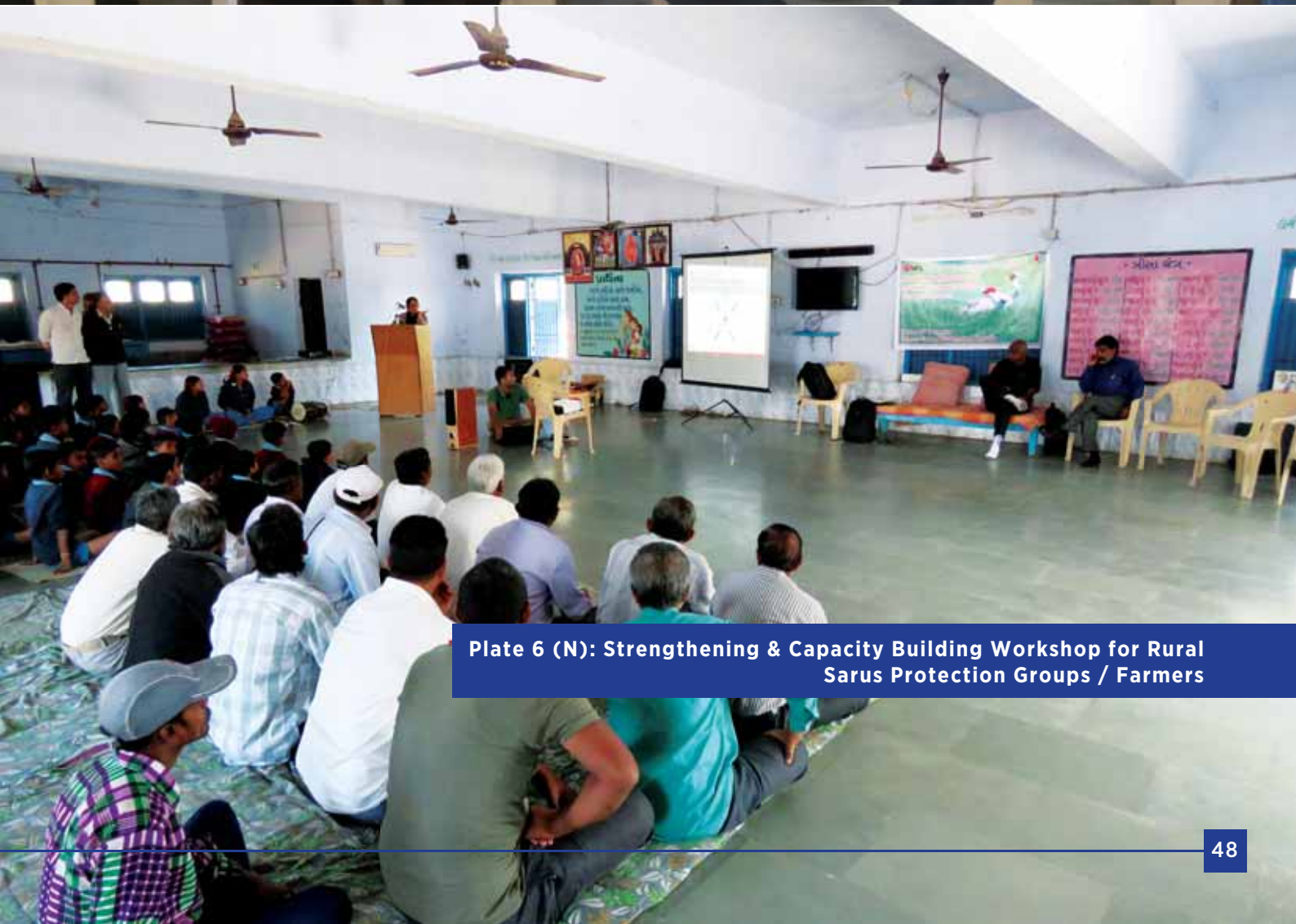


Plate 6 (N): Strengthening & Capacity Building Workshop for Rural Sarus Protection Groups / Farmers

7. REWARDS & RECOGNITION

Community involvement can play an important and major role for species conservation. During the field visits and awareness programmes, villagers voluntarily came forward in the formation of 12 **"Rural Sarus Protection Groups"** comprising of 35 volunteers. The responsibilities the groups took on during the nesting seasons were, protection of eggs and juveniles from poaching and predation. They also provided information about nesting location, breeding pairs, congregation sites and injured birds etc. in

In recognition of the unpaid and motivated efforts put forth by these volunteers for conservation of the species, the project proposed to recognize these **"Rural Sarus Protection Groups"** through a token reward for their conservation contribution. Fifty-six grass-root level villagers from 23 villages including volunteers, farmers and teachers from Kheda district were the recipients of the **"Sarus Crane Conservation Recognition Certificate"** and T-shirts. (Annexure 4).

Plate 7 (A) : Certificate Given to Rural Sarus Protection Groups

Plate 7 (B): Rural Sarus Protection Groups of Different Villages

Plate 7 (C): Certificate Given to Rural Sarus Protection Groups

SRSAT

UPL SARUS CONSERVATION PROJECT

UPL

સન્માન-પત્ર

આ સન્માનપત્ર શ્રી રમેશભાઈ રહે.ઘનાતલાવ

જીલ્લો ખેડા (ગુજરાત) ને વર્ષ ૨૦૧૫-૧૭ માં ભારતીય સારસના પ્રજનનસમયમાં એમના

માળા અને બચ્ચાઓનું જતન તથા જળાશયોના સંરક્ષણ હેતુ માટે જાગૃકતા તેમજ સહભાગીદારીના અભિયાનમાં

વિશિષ્ટ સેવા બદલ આજ તા. ૨૭-૩-૨૦૧૭ ના દિવસે આપવામાં આવે છે.

સ્થળ : પરિયેજ

તા. ૨૭-૩-૨૦૧૭

Rishi Pathania
Head, CSR, UPL LTD.

Ashwin Parmar
DCF, NADIAD.

Dr. Jatinder Kaur
Project Supervisor

8. CONCLUSION

This study with a short span has been successful in documenting 500 Sarus cranes from Kheda district alone in Gujarat, the highest Crane numbers from the state (737 Sarus cranes were reported in 1998, while 437 in 2010 combining Anand and Kheda by GEER foundation, 14.41% increase from last count from Kheda district alone).

But with a team of only 12 Rural Sarus Protection Groups comprising 35 volunteers the task of saving and protecting the species from damage of nests, egg stealing and electrocutions is a mammoth one, until we are able to increase this voluntary participation and people take pride in it. Being an agriculture landscape dependent bird it's equally challenging in deriving a mechanism to mitigate whatever damage happens to the farmers through its nesting in the crop.

The present work has been exemplary in documenting the nesting sites and the species in study area and bringing into limelight the need of conservation interventions for the long term survival of the species which thrives in the agro wetland biodiversity of the region.

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10. ANNEXURE

Annexure 1: Documentation of Wetlands in study area and Importance to Sarus crane.

Sr. No	Districts	Name of Wetland	Latitude/ Longitude	Wetland Description	Wetland Importance To Sarus
1	Kheda	Pariej	23°15'23.30'' N 72°38'46.32'' E	The wetland has an area of 445 ha perennial reservoir that supports large concentration of migratory waterfowl in Gujarat during Winter and nesting of resident species. The wetland has open water and dense vegetation habitat that varies in depths and land covers. The vegetation types include submerged, emergent, and cropland. It covers with highly dense vegetation. Commercial fishing is practiced in this reservoir.	Roosting, congregation & foraging
2		Hobal	22°33'10.0'' N 72°37'33.2'' E	This wetland is shallow with many small land mounds which provides suitable roosting and resting place for water birds. It provides best habitat for migratory birds.	Roosting & congregation
3		Narda	22°35'6.9'' N 72°37'7.4'' E	The shallow reservoir of 57 ha has aquatic vegetation, particularly Nelumbo nucifera and Typha angustata. Major threat facing the reservoir is illegal fishing by nearby villagers.	Roosting, congregation & foraging
4		Traj	22°40'20.3'' N 72°38'26.7'' E	This is a small village bearing two water bodies adjacent to each other. One of the wetlands has deeper water levels. It is used by villagers for water and other daily household chores. The second wetland has almost dried with small water pockets. These wetlands are habitat for avifauna and crocodiles.	Roosting, congregation & foraging
5		Heranj	22°40'17.3'' N 72°41'13.4'' E	It is an old and man-made reservoir with an area of about 69.56 ha. It receives rain water from surrounding catchment area and fresh water from Mahi channel. The water is used for drinking, fisheries; agriculture and domestic purposes. This wetland provides habitat for crocodile and waterfowls.	Roosting, congregation, foraging & nesting

Sr. No	Districts	Name of Wetland	Latitude/ Longitude	Wetland Description	Wetland Importance To Sarus
6		Gobrapura	22°35'52.1" N 72°33'21.2" E	Gobrapura wetland is spread over 56 hectare area. Major aquatic vegetation of the reservoir consisted of mainly Nelumbo nucifera and Typha angustata spread over vast area of the reservoir. Gobrapura reservoir hosts the largest number of Sarus crane congregation among all the sites visited during this month. Collection of Nelumbo nucifera was also observed at the location.	Roosting, congregation & nesting
7		Malawada	22°36'13.274" N 72°39'28.790" E	It is a village pond. It has a vegetation of Nelumbo nucifera and Typha angustata. Pond is used for agriculture purpose and also suitable habitat of water birds including Sarus crane.	Foraging & roosting
8		Nagrama	22°37'10.148" N 72°38'42.613" E	It is a reservoir mainly used for agriculture, legal fishing and household activities. It provides habitat for water birds and crocodiles. It is almost dried up in Summer. It has a dense vegetation of Nelumbo nucifera and Typha angustata.	Congregation, roosting
9		Machhiel	22°39'25.133" N 72°40'00.751"' E	It is a village pond for agriculture and household activities. It has a small patch of vegetation and no bird diversity observed.	Occasional use
10		Khandhli	22°38'51.353" N 72°41'22.420" E	It is a man-made village pond normally used for household activities and cattle. It is free of vegetation and water birds are observed in it.	Occasional use
11		Dethli	22°36'17.85" N 72°41' 12.67" E	This village pond adjoins two water bodies. It has a small patch of vegetation of Typha angustata. It provides habitat for common water birds. This wetland is mostly dried up in Summer.	Foraging
12		Malawada	22°35' 43.54" N 72°39'26.74" E	This wetland is submerged by two water bodies. It has a good population of water birds. Agriculture practices observed around the wetland.	Foraging & roosting
13		Kharenti	22°37'48.99" N 72°35' 59.12" E	This village pond has no vegetation cover. Village pond is used for household activities and cattle. There is no avifauna in wetland.	Occasional use

Sr. No	Districts	Name of Wetland	Latitude/ Longitude	Wetland Description	Wetland Importance To Sarus
14		Tranja	22°38'19.299'' N 72°39'29.589" E	It is a village pond used by villagers for household activities, agriculture purpose. It has a vegetation of Nelumbo nucifera and Typha angustata. It provides a habitat for common water birds.	Foraging
15		Shekhupur	22°34'21.946'' N 72°37'26.250" E	It is a small village pond. It has no vegetation cover. There is no avifauna observed in this pond. It is used for household activities, agriculture and cattle.	Occasional use
16		Muriyal	22°47'25.4'' N 73°09'12.4'' E	It is a small village pond. Pond had shallow water levels with Nelumbo nucifera spread over almost entire pond. Avifauna of the pond consisted of waterfowls. Household waste was also found dumped on the edges of the pond, probably polluting the pond and rendering it inhabitable for Sarus crane.	Foraging & occasional use
17		Pordi	22°49'59.8'' N 73°07'1.3'' E	This village pond is a rained village pond. It dries up during Summer months.	Occasional use
18		Thasra	22°48'05.274'' N 73°13'06.827'' E	It is a village pond. It has a dense vegetation of Nelumbo nucifera. It is polluted by household garbage dump and sewage water. It is also a habitat for water birds.	Foraging & roosting
19		Chetar-sumba	22°51'52.2'' N 73°07'29.4'' E	Chetarsumba is also a rained village pond, dried during Summer months and had no water birds diversity.	Occasional use
20		Bordi	22°47'32.1'' N 73°04'49.6'' E	Bordi has two ponds, both fed by rainwater and canals. One of the ponds is located inside the village, while the second bigger one is located couple of kms away from the village. The pond inside the village had shallow water levels with Typha sp. and Nelumbo nucifera its dominant vegetation. The bigger lake also had similar conditions and fishing activity was observed in it.	Foraging
21		Sitakund	22°46'16.3'' N 73°7'55.2'' E	Situated on Radhakund road, Sitakund is a small roadside pond. The dominant vegetation included Typha sp. Avifauna of the pond consists water birds including Sarus crane.	Foraging & roosting

Sr. No	Districts	Name of Wetland	Latitude/ Longitude	Wetland Description	Wetland Importance To Sarus
22		Kalsar	22°43'40.0'' N 73°11'8.3'' E	It is a small pond with no aquatic vegetation in it. No water birds were sighted inside the wetland.	Not used
23		Wanghroli	22°53'20.13'' N 73°17'28.92'' E	It is a large reservoir. It has a catchment area which received rain water in Monsoon. It has no vegetation cover. It is used for agriculture purpose and cattle. It is provides habitat for resident water birds.	Roosting, nesting & foraging
24		Ozherala	22°51'59.62'' N 73°10'40.35'' E	This wetland has shallow water and provides habitat for common resident water birds. The dominant vegetation included Typha & small patch of Nelumbo nucifera. It is used for agriculture activities and cattle.	Occasional use
25		Vaso	22°39'27.3'' N 72°45'24.2'' E	The pond was observed to be used for fishing, and household wastes were also dumped at few places. No aquatic vegetation was noted except a small patch of Eichhornia. Egrets and Pond herons were sighted inside the pond.	Foraging& occasional use
26		Pij	22°40'4.8'' N 72°48'42.9'' E	The pond had no major aquatic vegetation. Avifauna of the pond included Teals, Spoonbills, Egrets and Painted storks.	Occasional use
27		Deva	22°37' 09.81'' N 72°44' 08.53'' E	This village pond is well known for good population of crocodiles. There is no vegetation in this pond. Villagers used for household activities and cattle.	Occasional use
28		Arera	22°45'11.3'' N 72°50'25.4'' E	The village pond was devoid of any aquatic vegetation or water birds.	Not used
29		Khambhali	22°42'11.3'' N 72°47'57.7'' E	Khambhali was a rain-fed seasonal pond. The pond was mostly dried with a small water pocket.	
30		Baura	22°46'13.8'' N 72°45'27.1'' E	The pond had high water level as compared to other small village ponds and no aquatic vegetation and water birds were seen.	

Sr. No	Districts	Name of Wetland	Latitude/ Longitude	Wetland Description	Wetland Importance To Sarus
31		Vanthvadi	22°49'00.8" N 72°49'23.3" E	Vanthvadi village pond had shallow water and no aquatic vegetation. Water birds sighted included lapwings and egrets. Asian Open billed Storks were observed to be roosting on a tree beside the pond.	
32		Aklacha	22°51'27.5" N 72°51'11.5" E	Pond had no aquatic vegetation. Avifauna included herons, egrets, lapwings, teals, etc. Water was drawn from the pond with the help of motor. Motors are used for withdrawing water from wetland for agricultural purposes. It is used for washing clothes by village women.	
33		Ghodasar	22°55'8.2" N 72°49'48.1" E	No aquatic vegetation was present, neither were there any water birds. Local information suggested two pair of Sarus cranes residing in the nearby field although no sightings were made. The wetland is used by village women for washing clothes.	
34		Sadiyavad	22°01'28.2" N 73°10'17.8" E	Sadiyavad village has a seasonal pond which gets dried up during Summer months. No Sarus crane or any other water bird or vegetation was found.	
35		Antisar	23°01'28.2" N 73°10'17.8" E	It is a small village pond. No Sarus crane was sighted in the pond.	
36		Kevadiya	23°02'20.4" N 72°58'47.5" E	Kevadiya lake is a big seasonal lake, which gets inundated by Monsoon rains. During the time of survey, the lake was dried up and farming and grazing activities were carried out on the lake.	Occasional use
37	Anand	Kanewal	22°28'49.22" N 72°31'31.65" E	This reservoir is covered with dense aquatic vegetation included Eichhornia sp. and Nelumbo nucifera. Its irrigation channels supplies water to Saurashtra. It provides habitat for large water birds population. This wetland is mainly used for agriculture and commercial fishing. Collection of Nelumbo nucifera was also observed at the location.	Congregation, roosting & foraging

Sr. No	Districts	Name of Wetland	Latitude/ Longitude	Wetland Description	Wetland Importance To Sarus
38		Bhanderaj	22°25'35.7" N 72°38'34.2" E	The wetland was dried up in most of the area with water in one pocket. Major aquatic vegetation included Eichhornia sp. and Nelumbo nucifera. Avifauna mostly included ibises, herons,etc.	Congregation, roosting & foraging
39		Nar	22°28'48.56" N 72°42'19.17" E	This small village pond has no vegetation cover. This pond is mainly used for household activities and cattle.	Not used
40		Kanawada	22°32'49.625" N 72°31'59.483" E	It is a small village pond mainly used for agriculture and household activities. It is covered with small patch of vegetation. It provides habitat of common water birds. It has seasonal change in water level.	Roosting
41		Jinaj	22°24'14.266" N 72°35'54.324" E	This is a man-made pond with no vegetation. It is used for household activities and cattle. No observation of bird diversity.	Occasional use
42		Malataj	22°34'49.68" N 72°44'58.92" E	This wetland known for crocodile population. It has no vegetation. Common water birds observed in wetland. Generally used for agriculture and household activities.	Occasional use
43	Vadodara	Malataj	22°34'49.68" N 72°44'58.92" E	Savli is highly polluted (domestic sewage and waste dumping), According to the farmers fisherman scares birds away for fishing.	Foraging & roosting
44		Muval	22°35'03.432" N 73°15'14.961" E	Muval forms very good habitat for wetland birds. This lake faces huge pressure from fishing activities.	Nesting, foraging
45		Javla	22°33'21.379" N 73°14'19.070" E	Javla is a very good habitat for wetland birds. It used for commercial fishing, agriculture & cattle.	Roosting
46		Timbi	22°36'06.86" N 73°27'97.66" E	It is a man-made lake, dug to supplement irrigation needs. It retains water throughout year and form suitable habitat for wetland birds including Sarus crane.	Foraging & roosting

Annexure 2: Awareness Program conducted in Different Schools during 2015 – 2017

Sr. No	School Name	Tehsil	No. of Students	No. of Teachers	Activities
1	Govt. girls primary school, Pariej	Matar	74	2	Lecture, movie screening
2	Govt. primary school, Daloli	Matar	124	5	Lecture on Sarus lifecycle & conservation
3	Govt. primary school, Valotri	Matar	110	4	Lecture on Sarus lifecycle & conservation
4	Govt. primary school, Indravarna (WW)*	Matar	49	4	Lecture, spot quiz
5	Govt. primary school, Valotri (WW)	Matar	72	5	Talk, drawing competition
6	Govt. primary school, Daloli (WW)	Matar	80	4	Talk, drawing competition
7	Govt. primary school, Kanawada (WW)	Tarapur	85	3	Lecture, movie screening, spot quiz
8	Govt. girls primary school, Pariej (WW)	Matar	95	4	Talk, drawing competition
9	A L Patel high school, Traj	Matar	155	7	Lecture on Sarus conservation & importance of wetlands
10	Govt. primary school, Kharenti	Matar	135	5	Lecture on Sarus lifecycle & conservation
11	Jivanjyot high school, Bhalada	Matar	42	3	Lecture, movie screening, field visit
12	Mithaiwala high school, Pariej	Matar	45	1	Lecture, movie screening, field visit
13	S D Patel high school, Singiwada	Matar	41	2	Lecture, movie screening, field visit
14	Uttarbuniyadividhyalay, Bamangam	Matar	80	2	Lecture, movie screening, field visit

Sr. No	School Name	Tehsil	No. of Students	No. of Teachers	Activities
15	Govt. high school, Undhela	Matar	75	5	Lecture, movie screening, field visit
15	Govt. high school, Undhela	Matar	75	5	Lecture, movie screening, field visit
16	Uttarbuniyadividhylay, Vastana	Matar	33	3	Lecture, movie screening, field visit
17	Navchetanvidhyalay, Limbasi	Matar	45	1	Lecture, movie screening
18	Vinaymandir high school, Malawada	Matar	30	2	Lecture, movie screening, field visit
19	Uttarbuniyadividhyalay, Dethli	Matar	52	2	Lecture, movie screening, field visit
20	A L Patel high school, Traj	Matar	33	1	Lecture, movie screening
21	Govt. primary school, Sayla	Matar	63	3	Lecture, movie screening, field visit
22	Govt. boys primary school, Bhalada	Matar	100	3	Lecture, movie screening, Drawing competition
23	B M Patel science college, Vidhyanagar	Anand	50	1	Lecture on wetlands, movie screening, bird watching, field visit
24	S M Patel science college, Vidhyanagar	Anand	45	1	Lecture on Sarus conservation & importance of wetland, bird watching
25	Govt. primary school, Viroja	Matar	90	2	Lecture on sarus conservation, wetland & its importance, Spot quiz competition
26	Govt. primary school, Chanor	Matar	106	3	Lecture on Sarus conservation, movie screening
27	Govt. primary school, Chanor	Matar	50	1	Talk, drawing competition
28	Govt. primary school, Sayla	Matar	105	6	Lecture on Sarus conservation, plantation

Sr. No	School Name	Tehsil	No. of Students	No. of Teachers	Activities
29	Govt. primary school, Shekhupur	Matar	108	4	Lecture on Sarus conservation, plantation
30	Govt. primary school, Haripura	Matar	70	5	Talk, spot quiz
31	Gram seva Kendra, Bhlada	Matar	190	5	Lecture, drawing competition
32	Govt. primary school, Bamangam	Matar	40	5	Talk, rangoli competition
33	Govt. primary school, Valotri	Matar	40	3	Talk, rangoli competition
34	Uttarbuniyadi high school, Vastana	Matar	60	4	Talk, rangoli competition
35	Govt. primary school, Chanor	Matar	15	1	Flora & fauna register
36	Govt. primary school, Indravarna	Matar	15	1	Flora & fauna register
37	Vinobabhave Ashram	Vadodara	11	4	Bird watching, wetland visit
38	ShardaVidhyamandir, Nadiad	Nadiad	75	5	Lecture on Sarus lifecycle & migratory birds, field visit
39	Govt. primary school, Chanor	Matar	24	2	Interaction on how to improve knowledge of local flora and fauna
40	Mrs. S R Mehta Arts college, Ahmedabad (NSS camp)	Matar	22	1	Sarus lifecycle, conservation issue
41	Mr. C Cseth commerce college, Ahmedabad & Gram seva Kendra, Bhalada (NSS camp)	Matar	22 & 65	4	Sarus lifecycle, conservation issue
42	Mrs. S R Mehta Arts college & Mr. C Cseth commerce college, Ahmedabad	Matar	44	3	Bird watching, field visit
43	Govt. primary school, Malawada	Matar	145	4	Lecture, spot quiz, elocution

Sr. No	School Name	Tehsil	No. of Students	No. of Teachers	Activities
44	Ashramshala & Navjyot high school, Bhalada	Matar	56	4	lecture, field visit, elocution
45	Sadhnavidhyalay, Bamangam	Matar	70	3	lecture, movie screening, field visit, elocution, MCQ test
46	Mani Shankar vidhyamandir, Dethli	Matar	62	2	lecture, movie screening, elocution, MCQ test
47	Vinaymandir high school, Malawada	Matar	35	3	lecture, movie screening, field visit, elocution, MCQ test
48	Vinaymandir high school, Malawada	Matar	70	8	Lecture, Drawing competition

Annexure 3: Community Awareness Programs, 2015 – 2017

Sr. No	Village / Location	Tehsil	No. of Participants	Activities
1	Indravarna	Matar	21	Talk on Sarus lifecycle and conservation issue
2	Bhalada	Matar	34	Lecture on Sarus lifecycle and conservation
3	Pariej	Matar	30	Lecture on Sarus lifecycle and conservation
4	Chanor	Matar	35	Lecture on Sarus lifecycle and conservation
5	Shekhupur	Matar	30	Lecture on Sarus lifecycle and conservation
6	Pariej wetland	Matar	40	Lecture on Sarus lifecycle and conservation
7	Dhanatalav	Matar	26	Lecture on Sarus lifecycle and conservation
8	Chanor	Matar	24	Discussion on Sarus conservation and crop loss issue
9	Pariej wetland	Matar	84	Talk on Sarus lifecycle & teacher's role in species conservation
10	Indravarna	Matar	20	Discussion on Moringa plantation
11	Bhalada	Matar	28	Talk on Sarus conservation with community participation, SRI method of Rice paddy, Boribaghicha project
12	Shekhupur	Matar	27	Talk on Sarus lifecycle & conservation issues
13	Pariej wetland	Matar	313	Lecture on Sarus conservation in current time
14	Pariej wetland	Matar	24	Talk on Sarus lifcycle & conservation, exposure visit of nursery, Boribagicha project
15	Pariej wetland	Matar	52	Talk on Sarus lifecycle & conservation, exposure visit of interpretation centre, Boribagicha project
16	Pariej wetland	Matar	55	Recognition program for rural Sarus protection groups

Annexure 4: List of Rural Sarus Protection Groups from Different Villages

Sr. No	Name	Village	Occupation
1	Rahulbhai	Indravarna	Farmer
2	Bhathibhai	Indravarna	Farmer
3	Bhanubhai	Indravarna	Farmer
4	Nizambhai	Indravarna	Farmer
5	Vipulbhai	Indravarna	Teacher
6	Bhavinbhai	Nagrama	Com. Oprator
7	Prahladbhai	Nagrama	Farmer
8	Kanubhai	Bamangam	Farmer
9	Jalarambhai	Bamangam	Farmer
10	Mehulbhai	Bhalada	Trustee (Gram sevakendra)
11	Vipinbhai	Dethli	Trustee (Gram sevakendra)
12	Girishbhai	Motipura	Worker
13	Vijaybhai	Motipura	Worker
14	Hiteshbhai	Motipura	Farmer
15	Rameshbhai	Dhanatalav	Worker
16	Mahendrabhai	Dhanatalav	Farmer
17	Vikrambhai	Limbasi	Farmer
18	Rajeshbhai	Limbasi	Farmer
19	Bhaveshbhai	Limbasi	Farmer
20	Rajkumar	Limbasi	Student

Sr. No	Name	Village	Occupation
21	Dinshabhai	Limbasi	Farmer
22	Shehbazbhai	Chanor	Student
23	Akhtarbhai	Chanor	Technician
24	Safibhai	Chanor	Farmer
25	Nazimbhai	Chanor	Farmer
26	Sameerbhai	Chanor	Farmer
27	Milanbhai	Chanor	Teacher
28	Nareshbhai	Chanor	Teacher
29	Vishal	Vaso	VNC
30	Ajaykumar	Deva	Env. Educator
31	RahulBhai	Vvnagar	Trustee (NHF)
32	Dr. Divyeshbhai	Vvnagar	Veterinary doctor
33	Chhotabhai	Vastana	Farmer
34	Chandubhai	Vastana	Farmer
35	Piyushbhai	Vastana	Farmer
36	Ashokbhai	Laxmipura	Farmer
37	Dhanabhai	Laxmipura	Farmer
38	Sanjaybhai	Laxmipura	Farmer
39	Jitendrabhai	Shekhupur	Sarpanch
40	Laxmanbhai	Shekhupur	Dairy Chairman
41	Mayurbhai	Valotri	Teacher
42	Jitendrabhai	Bamangam	Teacher

Sr. No	Name	Village	Occupation
43	Bhimsinhbhai	Daloli	Teacher
44	Khodabhai	Kharenti	Teacher
45	Jagdishbhai	Punaj	Teacher
46	Sajanbhai	Kanewal	Farmer
47	Harishbhai	Dantali	Student
48	Kalubhai	Nagrama	Farmer
49	Girishbhai	Sayla	Teacher
50	Jitubhai	Viroja	Teacher
51	Bachubhai	Limbasi	Teacher
52	Pareshbhai	Limbasi	Veterinary doctor
53	Dharmeshbhai	Nagrama	Farmer
54	Sattabhai	Pariej	Farmer
55	Dhirubhai	Kanewal	Contractor
56	BharatBhai	Vastana	Teacher

Annexure 5: Nest protection by Rural Sarus Protection Groups

Sr. No	Volunteers name	Nest	Juveniles	Nesting site
1	Rajeshbhai	1	2	Vastana
2	Chhotabhai	3	5	Vastana
3	Ganpatbhai	1	2	Kanawada
4	Rahulbhai	1	2	Indravarna
5	Bhanubhai	1	2	Indravarna
6	Prahladbhai	3	5	Tranja, Nagrama, Malawada
7	Hitesh & Rahul (school students)	1	2	Shekhupur
8	Kanubhai	1	2	Nadhanpur
9	Bhopabhai	1	1	Limbasi
10	Govindbhai	1	2	Chanor road
11	Nizammiya	1	2	Indravarna
12	Bhavinbhai	1	NA	Nagrama
13	Sanjaybhai	1	1	Indravarna
14	Laxmanbhai	1	1	Shekhupur
15	Vishalbhai	2	4	Bhadkad, Nandoli
16	Harishbhai	1	1	Dantali

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