

# **POPULATION, BREEDING STATUS, AND HABITATS UTILIZATION OF SARUS CRANE *GRUS ANTIGONE* IN AYEYARWADY REGION**

Myo Sandar Winn<sup>1</sup>, Tran Triet<sup>2</sup>, Ah Mar Yi<sup>3</sup>, Thet Naing<sup>4</sup>, Aung Aung<sup>5</sup>  
Theingi Soe Myint<sup>6</sup>, Kaythi Khine<sup>7</sup>, May Kadipar Cho<sup>8</sup>

## **Abstract**

The present research deals with the estimate population, breeding status, and habitats of the globally threatened vulnerable species of Sarus Crane *Grus antigone* in Ayeyarwady Region. Data recorded by two methods of point transect and direct observation method in breeding season (June–October) and non-breeding season (November–May). Estimate population status survey was carried out toward end of the breeding season. This is the time when new chicks have fledged and recruitment rate can be estimated. At each Crane site, habitats were collected by rapid assessment by level 4 of Asian Wetland Inventory Handbook (Finlagson et al, 2002). According to the data, 299 individuals of Sarus Crane and 78 nests were recorded from June 2017 to May 2018.

**Keywords:** Population, habitats, breeding, Sarus Crane, wetland, Ayeyarwady

## **Introduction**

Ayeyarwady Delta is the Region where Sarus Crane have been seen most frequently and highest numbers. Surveys conducted by the International Crane Foundation and Myanmar Forest Department in Ayeyarwady Delta recorded 122 and 61 Sarus Cranes in 1996 and 1998, respectively (Barzen *et al.*, 1996). 88 Sarus Crane in April 2004 and 128 in May 2005 were recorded

---

<sup>1</sup>. Lecturer, Department of Zoology, University of Yangon

<sup>2</sup>. Director (South East Asia program), International Crane Foundation, USA

<sup>3</sup>. Lecturer, Department of Zoology, University of Yangon

<sup>4</sup>. Lecturer, Department of Zoology, University of Yangon

<sup>5</sup>. Lecturer, Department of Zoology, University of Yangon

<sup>6</sup>. Lecturer, Department of Zoology, Taunggok College

<sup>7</sup>. Assistant Lecturer, Department of Zoology, Dawei University

<sup>8</sup>. Assistant Lecturer, Department of Zoology, University of Yangon

at Tawtay Township, Ayeyarwady Delta (Thet Zaw Naing, 2005). Sarus Crane is currently listed as Vulnerable on the IUCN Red list and the only resident crane. There is a need to assess and monitor birds' populations since their numbers, distribution and activities reflect the ecosystem's quality and status (Ismail *et al.*, 2012). The current population size, seasonal movements and habitat use of Sarus Crane in Myanmar are still poorly known. No attempt has been made in Myanmar to conduct a country wide survey of Sarus Crane to estimate the total population and identify and describe habitats used. The research objectives are the estimate population, breeding status, and habitat utilization of the Sarus Crane *Grus antigone* in Ayeyarwady Region.

## **Materials and Methods**

### **Study area**

Ayeyarwady region (Ayeyarwady Delta) lies between north latitude 15° 40' and 18° 30' approximately and between east longitude 94° 15' and 96° 15'. Data were recorded in four districts (Maubin, Myaungmya, Pyapon, and Labyutta).

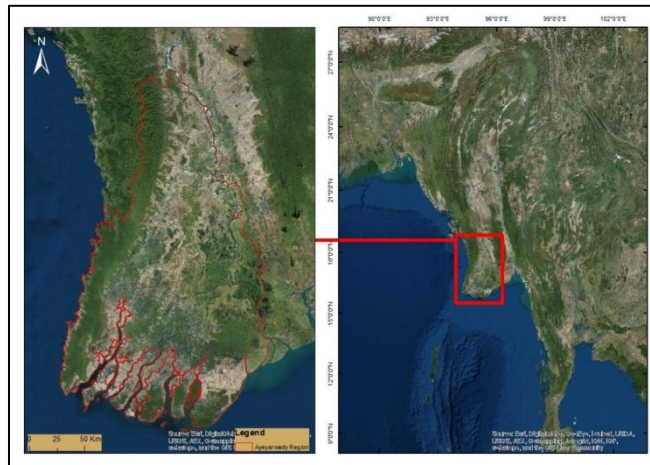
### **Study period**

The survey was conducted from June, 2017 to May, 2018.

### **Field data collection**

The present survey was conducted crane population count at all known and potential sites in Ayeyarwady Region by field survey and interviewed survey. Field surveys were carried out in the breeding season (June- October) and non-breeding season (November- May). Status of current breeding behavior and nesting sites were also recorded. Population surveys were conducted towards the end of the breeding season (June- October). This is time when new chicks have fledged and recruitment rate can be estimated. Interviewed surveys conducted with a wide variety of people such farmers, villagers, boatmen, fishermen and other local residents who well known about

the Crane. Data were collected using two methods, point transect and direct observation method. Birds were counted as bird seen and heard. Field data were carried out three days per trip and couple times every month during the survey period.



**Figure 1.** Map of the Study site

## **Results and Discussion**

### **Population and nest recorded in the study sites**

The present research conducted at 97 villages in nine townships of four Districts. According to the survey result, 299 individuals of Sarus Cranes and 78 nests were recorded from June 2017 to May 2018 (Table 1). Nests were recorded in 28 villages under the study sites. The highest numbers of nest were recorded in the month of August. Among the total individuals, 90 individuals of Sarus Crane found in Maubin District, 188 individuals of cranes in Myaungmya District, 13 individuals of cranes in Pyapon District and eight individuals of cranes in Labytta District (Table 2). Some area of nesting sites were not easy to survey because there were no boat way and footpath due to thick, tall grass and marshy.

## **Maubin District**

### **Population number and nest recorded in Maubin Township**

A total of 28 villages were surveyed at Maubin Township. There were 61 individuals of Sarus Crane recorded in non-breeding season and 12 nests were recorded in breeding season in seven villages (Table1).

### **Population number and nest recorded in Nyaungdon Township**

In non-breeding season, nine individuals of Sarus Crane were occurred in three villages. Nest was not observed in this township. The local people were interviewed by survey team and they said that flocks of Sarus Crane could be found in non-breeding period of December to February every year. Seasonal wetland and flooded paddy field were used as a foraging and roosting habitat.

### **Population number and nest recorded in Pantanaw Township**

Researches were conducted in ten villages in Pantanaw Township. During the survey period, 18 individuals of Sarus Crane were recorded in non-breeding season. The only one nest was recorded in Kattiyar village. This nesting site was observed in flooded paddy field and the nest site was chosen at the same place more than three years.

### **Population number and nest recorded in Danuphyu Township**

Researches were conducted in four villages. Two individuals of Crane were carried out in Set Tu Chaunggalay village in flying position. Local people said that Sarus Cranes could be seen in flooded paddy field habitat in every year. Nest data was not recorded during the survey period.

## **Myaung Mya District**

### **Population number and nest recorded in Myaung Mya Township**

Three villages were conducted during the research period. Four individuals of Sarus were recorded in near Tha Min Chan village in non-breeding season.

### **Population number and nest recorded in Einme Township**

Field and interviewed survey were carried out at 13 villages. Out of total village, 29 individuals of Sarus Crane were conducted in five villages during the research period (Table 1). In breeding season, four nests were observed in three villages. Local people of other village said that many Cranes (over 100 individuals) of Sarus Crane had been seen in July to August along the side of the road of Einme to Myaungmya Township.

### **Population number and nest recorded in Wakhema Township**

Researches were conducted in 31 villages. A total of 155 individuals of Sarus Crane were recorded in non-breeding season. In the breeding season, 56 nests were recorded in 11 villages. A total of 56 nests, the highest numbers of nests (24 nests) were recorded in Shwe Laung village. According to the survey result, Wakhema Township in Myaungmya District is the crucial important habitats for Crane species. Many Sarus Cranes were utilized as foraging, roosting and nesting in natural wetlands and flooded paddy field habitats in this area.

## **Pyapon District**

### **Population number and nest recorded in Kyaiklat Township**

Survey conducted in three villages. During the survey period, 13 individuals of Sarus Crane and two nests were observed in each Hlaing Tar village and Kyweku Khayar Yoe village in both season of breeding and non-breeding.

## **Labutta District**

### **Population number and nest recorded in Mawlamyingyun Township**

Eight individuals of Sarus Crane were recorded two villages in non-breeding season. Two nests and four individuals were observed in Kyaw Zan village during the study period.

### **Courtship and Breeding behavior of Sarus Crane**

Courtship and breeding in Sarus Crane is an annual spectacular event, initiated by loud trumpeting calls. Breeding pairs may resort to spectacular displays of calling in unison and different posturing, which include 'dancing' movements that are performed both during and outside the breeding season, and involved a short series of jumping and bowing movements made as one of the pair circles around the other. The parental birds are also known to display during the incubation period and when young birds are being reared to threatened intruders or to display territorial behavior. Sometimes, display is done to reassure each other after a predator is chased away.

### **Nesting behavior of Sarus Crane**

The Sarus Cranes breed mainly during the monsoon (June to October). They build large nest platforms made of reeds and vegetation in wet marshes or paddy fields. The nest can be upon to a meter in diameter and more than a meter height. The nest constructed in shallow water by piling up rushes, straw, grasses with their roots and mud so that the platform rises above the level of the water to form a small island. The elevated nest is conspicuous and is visible from a long distance. The clutch size is one or two eggs (rarely three), which are incubated by both the parents for about four to five weeks. The chalky white eggs are about four inches long and two and half inch wide. After hatching, the eggs shells are sometime swallowed by the parents or removed from the nesting site.

### **Behavior of Sarus Crane' chick**

The chicks depend on the parents to be fed for the first few days after which they are able to feed independently, mostly following the parents. It is, therefore, common to see Sarus chicks being continuously guarded by both the parent. Young bird still with their parents for more than three months.

### **Habitat utilization of Sarus Crane**

During the breeding season, breeding pairs and non- breeding pairs used different wetland sites. Foraging, nesting, and roosting in three kinds of habitats such as seasonal wetlands, natural wetlands and flooded paddy fields were used. Nesting sites were most found in natural wetlands and flooded paddy field. The flooded paddy field is mingled with natural wetlands. Sarus Cranes forage in shallow water of wetlands and agricultural fields probing to depths that their long bills can reach. Natural wetlands appear to be the most preferred habitat of the Sarus followed by crop fields interspersed with water bodies. The natural wetlands are crucial to ensure maximum breeding success of Sarus Crane, even though a mosaic of surrounding paddy fields serves the territorial requirements of the breeding pairs. Reedy marshes and marginal wetland are supporting a fairly good breeding population of Sarus Crane in this area. It may be assumed that habitat quality often plays a major role until the fledging stage of the juvenile Sarus Crane.

### **Threats on Sarus Crane**

According to the survey result, agricultural expansion, fishponds, loss and degradation of wetlands, heavy use of pesticides, and human population growth have all contributed to the decline of Sarus Crane' population. The variety activities of human were also threats on biodiversity. The construction of fishponds was one of the significant threats to the habitats of Sarus Crane. Destruction of wetlands by agricultural expansion was a significant threat as

well. Human interference, pollution, environmental contamination and lack of knowledge and public support were lesser threat for Sarus Crane.

**Table 1.** Recorded number of Sarus Crane' nests in Ayeyarwady Region

No	District	Township	No	Village name	No of Nest
1	Maubin	Maubin	1	Gone Min	1
			2	Nyaung Khar Shae	1
			3	Thae Phyu	2
			4	Yelegalay	2
			5	Ah Chaw	3
			6	Ah Lan Gyi	1
			7	Lain Kone	2
		Pantanaw	8	Kattiya	1
2	Myaung Mya	Einme	9	Pwesar	2
			10	Mayan Chaung	1
			11	Mezali	1
			12	Nyaung Wine	1
		Wakhema	13	Shwelaung	25
			14	Kan Gwin	2
			15	Kyon Kha Yaing	1
			16	Kyon Padi Kyoung Pa Daw	4
			17	Minlan	2
			18	Katsake	5
			19	Tarpat Ashae	2
			20	Kyon Hta Yeik	4
			21	Ka Leik Kyon Toke	2
			22	Kyon Ka Pyin	4
			23	Wea Gyi	2
			24	Sittan	1
			25	Ayun	1
3	Pyapon	Kyaiklat	26	Hlaingtar	2
			27	Kyaweku Khayaryoe	2
4	Labyutta	Mawlamyinkyun	28	Kyaw Zan	1
Total					78



**Table 2.** Recorded number of Sarus Crane nest and individuals in four Districts

District	Township	Village	Nest	Number of individual
MaUbin	4	45	13	90
Myaung Mya	3	47	59	188
Pyarpon	1	3	4	13
Latbyutta	1	2	2	8
Total	9	97	78	299



A



B



C



D



E



F

**Plate I**

- A. A flock of Sarus Crane
- B. Sarus Cranes in the paddyfield
- C. Incubation of Sarus Crane
- D. Eggs of Sarus Crane
- E. Sarus Crane with chick
- F. Sarus Crane chicks on the nest

### **Acknowledgements**

We are deeply indebted to Dr Thida Lay Thwe, Professor (Head), Zoology Department, University of Yangon, who permitted to do this research. We would like to express our special thanks to Dr Tran Triet, Director of South East Asia Program, International Crane Foundation (ICF), USA for his invaluable guidance throughout this research. Thanks to Dr Gopi Sundar, Director of SarusScape, and International Crane Foundation (ICF) for technical supporting. Special thanks are due to U Tin Aung Tun, freelance conservationist for his invaluable technical supporting during the survey period.

### **References**

- Barzen, J., Briggs, E., Latt, T. N. and Thaug, U.T. L. (1996). *A preliminary report on the status of Eastern Sarus Crane Grus antigone sharpii and other large water birds species in selected wetlands in Myanmar.*
- Finlayson, C. M., Begg, G.W., Howes, J., Davies, J., Tagi, K and Lowry, K. (2002). *A manual for an inventory of Asian wetlands*, Version 1.0. Wetland International Global Series 10, Kuala Lumpur, Malaysia. 87pp.
- IUCN, (2015). *The IUCN Red List of Threatened Species*. Version (2015).2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 03 September 2015.
- Ismail, A. Rahman, F. Zulkifli, S.Z, (2012). *Status, Composition Diversity of Avifauna in the Artificial Putrajaya Wetlands and Comparison with its Two Neighboring Habitats*. Trop. Nat.Hist. 12(2): 137-145.
- Thet Zaw Naing, (2005). *Sarus Crane Survey in Payargyi Kwin and it's environs, Ayeyarwady Delta, Report. Myanmar*