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Sustainable Increase in the Number of Sarus crane in and around Alwara Lake of District Kaushambi (U.P.), India

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Abstract
The Sarus crane (*Grus antigone)* is the world's tallest flying bird. This is the only resident and non-migratory breeding crane of Indian subcontinent. The sarus is well known as an eternal symbol of unconditional love, devotion and good fortune with high degree of marital fidelity as they pair for lifelong. This bird is now globally threatened due to the shrinking of wetlands, reduction in safe mating sites and increased anthropogenic activities. Present study is designed to study the number of sarus crane in the year 2018 in and around the Alwara Lake of district Kaushambi (Uttar Pradesh) India and their comparison to its number recorded from 2012 to 2017 in the same study area. This systematic study reflects an increase in the number of sarus crane at sustainable level in the area studied due to better ecological and climatic conditions of the lake.

Keywords: alwara lake, sarus crane, wetland, threatened, conservation, awareness

Introduction

The sarus crane is large, long-legged and long-necked birds belonging to family: Gruidae, order: Gruiformes, class: Aves and phylum: Chordata. Its occurrence represents a healthy wetland ecosystem. There are three subspecies of sarus crane *namely* the Indian sarus crane *Grus antigone antigone*, Eastern sarus crane *Grus antigone sharpii* and the Australian sarus crane *Grus antigone gillae*. Sundar *et al.*, (2003) [12] gave the literature review of sarus crane in detail while Archibald *et al.*, (2003) [3] gave the first comparative review of these three subspecies.

The Indian Sarus Crane, *Grus antigone antigone* (Linnaeus, 1758) prefers to inhabit close to human habitation and open habitat like marsh areas, abundantly irrigated paddy fields, grass land and river banks as these areas suit them for foraging, roosting and nesting. This water bird is omnivorous, feeding on aquatic plants, seeds, roots, tubers, invertebrates including crustaceans, insects, molluscs, fishes, frogs, reptiles and eggs of birds.

Due to widespread reductions in the extent and quality of their wetland habitats, unsustainable agriculture, unplanned irrigation, anthropogenic activities and ignorance of wild life rules and regulations as well, the number of sarus cranes is gradually decreasing at global level. Due to its declining number, Indian sarus crane has been now listed as globally threatened i.e. vulnerable avian species (The IUCN Red List 2017 and Bird Life International, 2017) [5].

A review of literature suggests that there had been only a few attempts to study the demography, ecology and status of Indian sarus crane on large scale in Uttar Pradesh. As far as the study of sarus crane from population dynamics and conservation point of view, in and around the Alwara lake is concerned, it is done only by few Zoologists like Prakash *et al.*, (2014, 2016a) [8, 16] and Verma *et a.l*, (2015, 2016a, 2016b, 2017, 2018a and 2018b) [15, 16, 17, 20, 21]. Prakash *et al*, (2016b) [18] and Verma *et al.*, (2016c) [18] worked a little on the nesting materials, their medicinal values and suitable selection of nesting sites of this crane.

Present study is aimed to study the number of sarus crane in the year 2018 in and around the Alwara Lake of district Kaushambi (Uttar Pradesh), India and their comparison to its number recorded from 2012 to 2017 in the same study area.

Material and Method

The Alwara lake (Fig. 1, Google map) is a natural lake (Fig. 2) and a part of perennial wetland and is situated between the latitude $25^0$24'05.84"S – $25^0$25'10.63"N and longitude $81^0$11'39.49"E-$81^0$12'57.95"W with altitude MSL – 81.08 meter. It is surrounded by agricultural fields and connected to the river Yamuna and covers more than 1750 hectares. It is located in Sarsawan block of Manjhanpur tahsil of Kaushambi district of Uttar Pradesh. The lake is skirted by villages like; Ranipur, Dundi, Hatwa and Bhawansuri in east, Paur Kashi Rampur, Alwara and Gaura in the north, Shahpur, Umrawan in the south and Mawai, Tikra and Dalelaganj in the west.

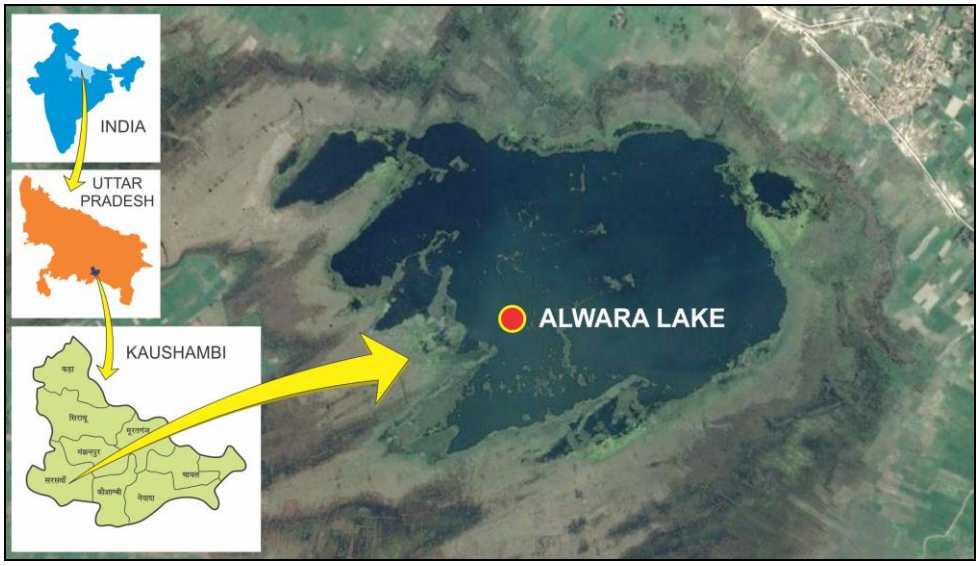

Fig 1: Google map of study area in Kaushambi (U.P.)

Authors used binocular, camera, motorbike, chappu boat, field stick etc. for various purposes. Since sarus crane is a huge bird and visible from a distance hence sarus count was easy. The study area was visited and examined regularly but the counting of sarus crane was done during any two days of every month in the year 2018. This counting was accomplished on a single day to avoid the possible double counting due to local movements of the birds to neighbouring habitat. Authors recorded this water bird in maximum number during first Sunday of June 2018 as they remain confined around the wetlands in search of water. Besides actual sightings, inquiries from local people were also made to ensure the estimate of existing population and their perceptions about the existence of the crane. All the observations were made while moving through the chappu boat and walking along the croplands, mud lands, natural areas using binoculars (7x35 and 8x40-BEZIF BM-9) and canon cameras.

Identification, counting methods and other demographic parameters were aided by using standard guides such as Ali (1941) [1], Wild Life Institute of India Wetland Research Methodology (1999) [22] and methods adopted by Ali *et al.*, (1980) [2], Aryal *et al.*, (2009) [4] and Jha *et al.*, (2014) [6].

Fig 2: A view of Alwara Lake with sarus crane pair (symbol of marital fidelity)

Result and discussion

Sarus crane, the monogamous, graceful water bird occurs mostly in pair (Fig. 3) or in pair with one juvenile (Fig. 4) or in pair with two juveniles or in group (Fig. 5) and rarely in single. During non-breeding season, cranes are seen in groups mostly in evening for mate finding or pair formation activities.

Fig 3: Paired sarus crane in study area around Alwara Lake

Prakash *et al.*, (2014) [20] counted a population of 335 cranes in 2012; Verma *et al.*, (2016a) [16] counted their population as 425 in 2013; Verma *et al.*, (2016b) [17] reported 510 cranes in 2014; Verma *et al.*, (2017) [20] recorded 537 cranes in total in 2015, Verma *et al.*, (2018a) recorded 575 cranes in 2016 and Verma *et al.*, (2018b) [21] recorded 605 cran./es in and around Alwara lake in 2017. In the latest study, authors collected a data of 625 cranes in the same study area in 2018. The result is shown in table and bar diagram (Fig. 6).

Table 1: Year wise population of sarus crane from 2012 to 2018

No. of cranes in 2012	No. of cranes in 2013	No. of cranes in 2014	No. of cranes in 2015	No. of cranes in 2016	No. of cranes in 2017	No. of cranes in 2018
335	425	510	537	575	605	625

Fig 4: Sarus crane pair with one juvenile in wheat field near Alwara Lake

Fig 5: A group of sarus crane near Alwara Lake

During systematic study in and around Alwara Lake, authors noted that the presence of abundant paddy fields, land under irrigation, vegetation at the edge of the crop field, type of crop grown, wetland and the openness of habitat are the major factors for the existence and survival of sarus crane. Moreover, decrease in pollution level and reduction in harmful anthropogenic activities is other significant factors. Verma (2018) reported a positive correlation between the crane numbers and the area of agricultural land.

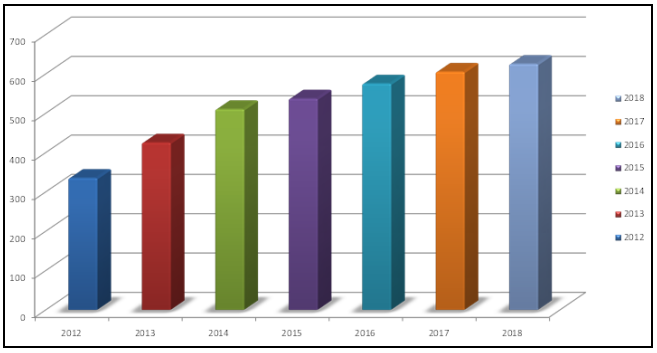

Fig 6: Bar –Diagram to show year wise population of sarus cranes from 2012-2018

The authors and their team visited the villages concerned a number of times atleast two days per month, contacted the people and told as well as convinced them not to kill or hunt the sarus cranes, their eggs and juveniles. The authors organized awareness programme regularly with group of local people and continued it even when 1 or 2 villagers were there. They were detailed about legal aspect, protection, conservation and maintenance of its natural (Prakash *et al*, 2016c) [10].

In the area studied, increasing trend of sarus crane number is seen from 2012 to 2018, as clearly shown by table and bar diagram. All these positive efforts and proper management finally led such a state of sustainable increase in the number of this vulnerable bird. It is not only a favourable site for sarus crane distribution but also support a wide variety of other biota.

Conclusion

Thus, it can be concluded that there is a sustainable increase in the number of sarus crane, as indicated in the table and bar diagram. Prakash *et al*, (2014) and Verma *et al*, (2015, 2016a, 2016b, 2017, 2018a and 2018b) [15, 16, 17, 15, 20, 21] strongly argued that this is happening because of awareness of local people, sustainable conservation and management and quite supportive nature of ecological and environmental conditions in and around the Alwara Lake. The authors strongly recommend continuous population census of this bird and declaration of the entire Alwara Lake as *Sarus Sanctuary* to make it safe zone for the conservation of Sarus crane. The sarus crane has now been declared as 'State Bird' by the Government of Uttar Pradesh.

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References

1. Ali S. The Book of Indian Birds. The Bombay Natural History Society, Bombay, 1941, 457.
2. Ali, Salim Ripley SD. Handbook of the Birds of India and Pakistan, 2. Oxford University Press, New Delhi, 1980.
3. Archibald GW, Sundar KSG, Barzen J. A review of the three subspecies of Sarus Cranes Grus antigone. Journal of Ecological Society. 2003; 16:5-15.
4. Aryal A, Shrestha TK, Sen DS, Upreti B, Gautam N. Conservation regime and local population ecology of Sarus Crane (*Grus antigone antigone*) in west-central region of Nepal. Journal of Wetlands Ecology, 2009. 1–11; http://dx.doi.org/10.3126/jowe.v3i0.2224
5. Bird Life International. Country profile: India. Available from, 2017, http://www.birdlife.org/datazone/country/india. Checked: 2017-11-26
6. Jha KK, McKinley CR. Demography and Ecology of Indian Sarus Crane *Grus antigone antigone* in Uttar Pradesh, Northern India. Asian Journal of Conservation Biology. 2014; 3(1):8-18.
7. Linnaeus Carolus. Systema naturæ per regna tria naturæ, secundum classes, ordines, genera, species,

cum characteribus, differentiis, synonymis, locis 1 (10th ed.). Stockholm: Laurentius Salvius. 1758; [1–4], 1-824.
8. Prakash S, Verma AK. Marital fidelity and congregation of Indian sarus crane, *Grus antigone antigone* in and around Alwara lake of district Kaushambi (Uttar Pradesh), India. International Journal of Biological Research; 4(1):10-13 pp. http://www.science pubco.com/ index.php/IJBR/article/view/5692.
9. Prakash S, Verma AK. Studies on Use of Local Medicinal Flora in Nest Building by Threatened Bird, *Grus antigone antigone* in and around Alwara Lake of District Kaushambi (U.P.), India. Journal of Applied Life Sciences International. 2016b; 5(3):1-7 pp. DOI: 10.9734/JALSI/2016/26383.
10. Prakash S, Verma AK. Impact of awareness programme on growth and conservation of vulnerable avian species *Grus antigone antigone* in and around Alwara lake of District Kaushambi (Uttar Pradesh), India. The Journal of Zoology Studies. 2016c; 3(2):1-5.
11. Prakash S, Narain S, Kumar S. Conservation of the threatened Sarus Crane *Grus antigone* (Linnaeus, 1758) around Alwara Lake in Kaushambi District, Uttar Pradesh, India. Journal of Threatened Taxa. 2014; 6:5726-5730. http://dx.doi.org/10.11609.
12. Sundar KSG, Choudhary BC. The Indian Sarus Crane *Grus a. antigone*: a literature review. J. Ecol. Soc. (India). 2003; 16:16-41.
13. The IUCN Red List of Threatened Species. Version 2017-2. <www.iucnredlist.org>. Downloaded on 26 2017.
14. Verma AK. Positive correlation between Indian Sarus Crane and Agriculture. Journal of Experimental Zoology India. 2018; 21(2):801-803.
15. Verma AK, Prakash S, Kumar S. Status and Ecology of Sarus Crane, *Grus antigone antigone* in and around the Alwara Lake of District Kaushambi (U.P.). International Journal on Environmental Sciences. 2015; 6(2):331-335.
16. Verma AK, Prakash S. Demographic studies of Indian Sarus Crane, *Grus antigone antigone* in and around Alwara Lake of District Kaushambi (U.P.), India. International Journal of Innovative Biological Research. 2016a; 5(1):1-4 http://sci-edit.net/journal/index.php/ ijibr/ issue/view/22/showToc.
17. Verma AK, Prakash S. Population dynamics of Indian Sarus Crane, *Grus antigone antigone* (Linnaeus, 1758) in and around Alwara lake of Kaushambi district (Uttar Pradesh), India. International Journal of Biological Research. 2016b; 4(2):206-210.
18. Verma AK, Prakash S. Selective behaviour of Indian Sarus Crane in choosing plant species for nest construction in and around Alwara Lake of district Kaushambi (U.P.), India. International Journal of Zoology and Research. 2016c ; 6(3):1-6.
19. Verma AK, Prakash S. Continuous Increase in Population of Indian Sarus Crane, *Grus antigone antigone* in and around Alwara lake of district Kaushambi (U. P.), India. National Journal of Life Sciences. 2017; 14(2):143-146.
20. Verma AK, Prakash S. A study on the population scenario of Indian Sarus crane (*Grus antigone antigone*) in and around Alwara Lake of District Kaushambi (U.P.), India. Asian Journal of Biology. 2018a ; 5(1):1-8.
21. Verma AK, Prakash S. Sustainable Conservation and Management of Indian Sarus crane (*Grus antigone antigone*) in and around Alwara Lake of District Kaushambi (U.P.), India. Indian Journal of Biology. 2018b; 5(2):150-153.
22. Wildlife Institute of India Training workshop on wetland research methodology measuring and monitoring biological diversity. WII. Dehra Dun. 1999; 5-10.