A Report on

Indo-Nepal Transborder Dialogue on Sarus Crane Conservation

29-31 January 2025

Lumbini, Nepal

Department of National Parks and Wildlife Conservation

Kathmandu, Nepal

&

Central Department of Zoology, Tribhuvan University

Kathmandu, Nepal

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Organizers

Department of National Parks and Wildlife Conservation (DNPWC), Kathmandu, Nepal

Department of Forests and Soil Conservation (DoFS), Kathmandu, Nepal

Central Department of Zoology (CDZ), Tribhuvan University, Kathmandu, Nepal

Nepal Zoological Society (NeZoS), Kathmandu, Nepal

Technical Team

Mr. Bed Kumar Dhakal, DNPWC

Mr. Haribhadra Acharya, DNPWC

Dr. Hari Prasad Sharma, CDZ

Mr. Rajendra Narsingh Suwal, WWF Nepal

Dr. Bishnu Prasad Bhattarai, CDZ

Dr. Hem Bahadur Katuwal, NeZoS

Supporters

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Cover photo – A flock of Sarus Crane feeding in Bajaha wetland, Tulshidihawa, Kapilvastu – A transboundary wetland between Nepal and India.

Acknowledgements

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We acknowledge the valuable insights, data exchange, and policy recommendations that emerged from the discussions and look forward to continued cooperation in implementing effective conservation strategies. We thank International Crane Foundation, USA and WWF-Nepal Program for financial support to this program. We would like to thank Dr. Mahendra Shrestha, and Dr. Triet Tan, ICF for their support throughout the program. We thank Lumbini Development Trust for their support I logistic management. In addition, we would also like to thank Dr. Muddit Gupta, Dr. Jatinder Kaur and other delegates from India with their participation and other supports from the beginning of program schedule. We thank officials of Ministry of Forest and Environment, Lumbini Province, Division Forest Offices of Lumbini Province, Chitwan National Park, Bardia National Park, Shuklaphanta National Park and Blackbuck Conservation Area for their active participation in this dialogue. We highly appreciate the cooperation and support from Dr. Ananta Bhandari, WWF Nepal for this dialogue.

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Abbreviation

CBAPUs	Community Based Anti-Poaching Units
CDZ	Central Department of Zoology
CFUGs	Community Forest User Groups
CNP	Chitwan National Park
DNPWC	Department of National Parks and Wildlife Conservation
DoFSC	Department of Forest and Soil Conservation
GoN	Government of Nepal
IBAs	Important Bird and Biodiversity Areas
ICF	International Crane Foundation
INGO	International Non- Governmental Organization
IUCN	International Union for Conservation of Nature
LDT	Lumbini Development Trust
m	Meter
mm	Millimeter
NeZos	Nepal Zoological Society
NGOs	Non- Governmental Organizations
OECM	Other Effective Area Based Conservation Measures
RSPG	Rural Sarus Protection Group
ShNP	Shuklaphanta National Park
TAL	Terai Arc Landscape
TU	Tribhuvan University
WTI	Wildlife Trust of India
WWF	World Wildlife Fund

Summary

The Indo-Nepal Transborder Dialogue on Sarus Crane Conservation, held from January 29 to 31, 2025, in Lumbini, Nepal, was a crucial event aimed at strengthening bilateral cooperation between Nepal and India for the conservation of the Sarus Crane. Bringing together experts, policymakers, and conservationists, the dialogue focused on the ecological significance, population status, and major threats to the species. As the tallest flying bird, the Sarus Crane holds cultural importance in Buddhist and Hindu traditions but faces increasing threats from habitat destruction, wetland encroachment, agricultural expansion, electrocution from power lines, poaching, and climate change. Given its frequent transboundary movements, the dialogue emphasized the need for collaborative conservation efforts, particularly in the western Terai Arc Landscape, which is home to several endangered species.

The event began with an inaugural session where government officials and conservationists stressed the importance of integrating traditional knowledge with modern conservation strategies. Technical sessions featured expert presentations on Sarus Crane conservation in Nepal, India, Southeast Asia, and Australia, offering valuable comparative insights. Discussions centered on habitat restoration, sustainable agriculture, and infrastructure modifications to mitigate threats. Proposed solutions included rerouting transmission lines, installing bird reflectors, and promoting wildlife-friendly infrastructure. Participants also highlighted the importance of community engagement, advocating for local conservation groups and incentives for farmers who protect Sarus Cranes.

Group discussions focused on research, conservation practices, transboundary cooperation, and alternative conservation measures. Recommendations included satellite tracking of migration patterns, stronger law enforcement to combat poaching, and integrating Sarus conservation into national policies.

A panel discussion with government officials and experts from both countries addressed transboundary conservation challenges. Experts stressed that conservation must extend beyond research and policy intervention to actively involve local communities, particularly farmers whose land-use practices impact Sarus Crane habitats.

Field visits to Bajaha Lake and the Jagadishpur Ramsar site provided firsthand insights into conservation challenges. Interactions with local communities emphasized the need for conservation strategies that align with sustainable livelihoods, ensuring long-term protection of the Sarus Crane and its habitat.

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1. Background

1.1 Ecology of Sarus Crane

Globally, 15 species of cranes are found, four of which have been recorded in Nepal (Grimmett et al. 2016). Among them, three species—the Common Crane (*Grus grus*), Demoiselle Crane (*Anthropoides virgo*), and Black-necked Crane (*Grus nigricollis*)—are migratory, while the Sarus Crane (*Grus antigone*) is a resident species in Nepal (BirdLife International 2016; Grimmett et al. 2016).

The Sarus Crane is a large, elegant bird belonging to the crane family, Gruidae. It is a nationally protected species in Nepal, known for its impressive height, striking plumage, and graceful behavior (Figure 1). It stands between 152 and 183 cm tall (BirdLife International 2016) with a wingspan of up to 675 mm (Johnsgard 1983). Males are generally larger than females, with an average weight ranging from 5 to 12 kg.

The Sarus Crane's long, broad wings enable efficient flight and soaring over long distances. Adults are characterized by gray plumage, a red, naked head and upper neck, and pale red legs that become more vibrant during the breeding season (Figure 1). Males typically exhibit brighter and more vivid plumage, especially on the head and upper neck. In contrast, juveniles have a distinct yellow-brown head, distinguishing them from adults (Figure 1; Johnsgard 1983).

The Sarus Crane's long, slender legs allow it to wade through wetland habitats. The upper portion of the legs is typically red, while the lower legs and feet are grayish-black. Its beak is long, slender, and pointed-generally gray, with a darker tip—used for foraging in wetlands by probing soil and water for food.

It is omnivorous but appears to consume less plant-based food, relying heavily on fish when available. It also feeds on various animals, including crustaceans, frogs, lizards, locusts, grasshoppers, water snakes, snails, and other large insects. Its vegetarian diet consists of grains left on stalks after harvest—such as paddy, wheat, maize, mustard, soybean, chickpea, green pea, and millet—as well as tubers and corms of aquatic and marsh plants, young shoots of grasses and cereals, and groundnut pods (Ali & Ripley 1980; Johnsgard 1983; Jha & McKinley 2014; Tomar et al. 2018). The Sarus Crane is known for its loud, trumpeting calls. It produces a variety of vocalizations, including bugling, trumpeting, and rattling sounds, which are used for communication, territorial displays, and courtship rituals. These distinctive morphological characteristics make the Sarus Crane easily identifiable among other crane species.

Figure 1: A pair of Sarus Crane with its young chick in Kapilvastu, Nepal (Photo: Hem Bahadur Katuwal)

Sarus Cranes are social birds, often seen in pairs or flocks, particularly during the breeding season (Suwal 1994). They are well known for their lifelong pair bonds, a behavior so revered in India that it has contributed to their protection by local communities (Ali & Ripley 1980). The breeding season occurs between July and September. Sarus Cranes build large nests—typically about 1 meter in diameter—using reeds, rushes, and straw. These nests are usually placed on a bund in flooded paddy fields or on an island in a swamp or *jheel*. A clutch typically consists of two eggs, which are greenish or pinkish-white with brown or purple spots and have a bright orange inner membrane. The average egg weight is 238 grams.

Both male and female cranes share responsibilities for nest building, incubation, and caring for the young, though the male plays a crucial role in protecting the chicks from predators. The

incubation period lasts around 30 days (Ali & Ripley 1980). Sarus Cranes have a lifespan of approximately 20–25 years.

1.2 Distribution of Sarus Crane

The Sarus Crane has a wide global distribution, with records from Australia, Cambodia, India, Laos, Myanmar, Nepal, Pakistan, and Vietnam (BirdLife International 2016). It exists in three disjoint populations across the Indian subcontinent, Southeast Asia, and northern Australia (Archibald et al. 2003).

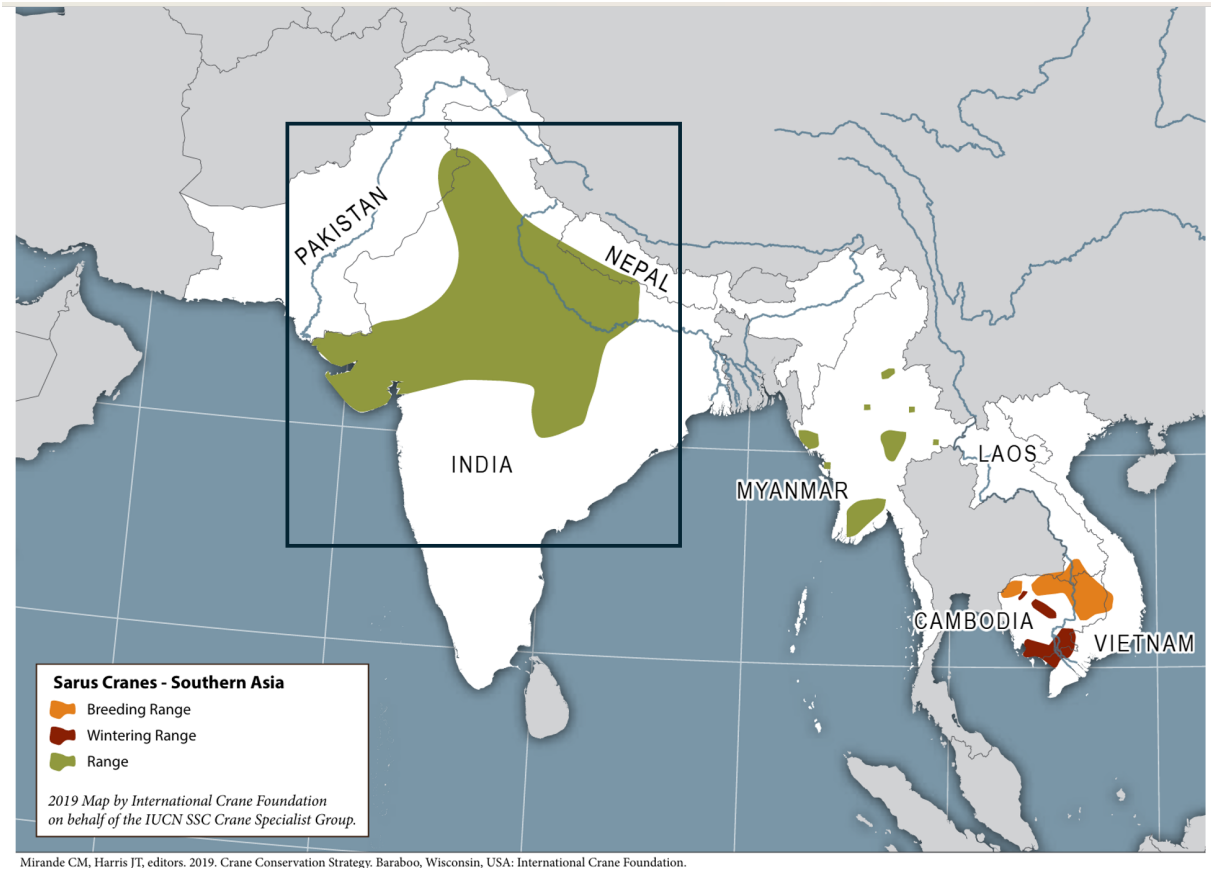

Figure 2: Sarus Crane distribution in South Asia and South East Asia (highlighted) based on International Crane Foundation, 2019)

The subspecies *antigone* is found in the Indian subcontinent, including India, Nepal, and Pakistan. The subspecies *sharpii* occurs in Southeast Asia, including Myanmar, Cambodia, Vietnam, and Thailand, while the subspecies *gilliae* is primarily found in Australia (BirdLife International 2016).

In India, the Sarus Crane is recognized as the state bird of Uttar Pradesh and is widely distributed across the Gangetic plains of Uttar Pradesh, Bihar, and Assam (Figure 2). It also occurs in other regions of India, including Gujarat, Rajasthan, and Madhya Pradesh. In

Pakistan, its distribution is limited, primarily to the eastern province of Punjab and the southern province of Sindh (Figure 2). In Nepal, the Sarus Crane inhabits mostly in lowland within 300 m of elevation from Central to West including Chitwan, Nawalparasi East and West, Rupandehi, Kapilvastu, Dang, Banke, Bardiya, Kailali and Kanchanpur of Nepal (Figure 3; Katuwal 2016; Sharma et al. 2024).

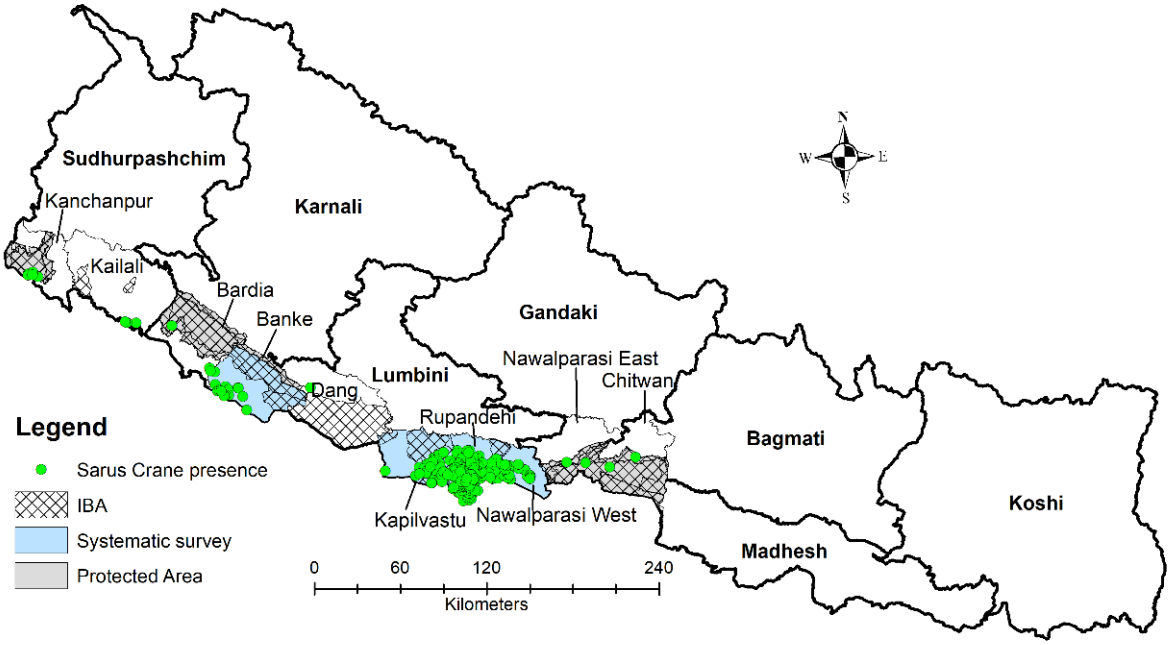

Figure 3: Sarus Crane distribution in Nepal (Sharma et al. 2024)

1.3 Population status

The global population of the Sarus Crane is declining and is estimated to be between 13,000 and 15,000 individuals (BirdLife International 2016). However, a large proportion, approximately 8,000–10,000 individuals, is found in India, Nepal, and Pakistan (BirdLife International 2016). Recent reports suggest that the population in India alone may be around 15,000, indicating the need for more detailed studies. In India, the highest populations are found in Uttar Pradesh, Gujarat, and Rajasthan, with smaller populations in Maharashtra and Madhya Pradesh. In Nepal, the species is distributed across 10 districts from central to far-western regions, with an estimated population of 690 individuals, the majority of which are found in Lumbini Province (Sharma et al. 2024).

1.4 Cultural and religious aspects of Sarus Crane

The term "Sarus" originates from the Sanskrit word *Sarasa*, meaning "bird of the lake." The Sarus Crane holds significant cultural and mythological importance, particularly in Buddhist and Hindu traditions. In Buddhist mythology, the Sarus Crane is linked to Prince Siddhartha. According to legend, Prince Siddhartha rescued and healed an injured Sarus Crane that had been struck by Devdatta. When the dispute over the bird was brought before the royal court, it was ruled that the crane rightfully belonged to the one who saved its life rather than the hunter. As a result, the Sarus Crane is considered a bird associated with Buddha. The Sarus Crane also appears in Hindu mythology. According to legend, the poet Valmiki placed a curse on a hunter who killed a Sarus Crane, an event that inspired him to compose the epic Ramayana (Adesh & Amita 2017; Figure 4).

Beyond mythology, the Sarus Crane is regarded as a symbol of ecological well-being. Its presence in farmland is believed to indicate good rainfall and a healthy agricultural landscape, while in wetlands, it serves as an indicator of ecosystem health. Overall, the Sarus Crane symbolizes unconditional love, loyalty, devotion, compassion, and longevity, making it a

timeless emblem depicted in various forms of art, paintings, and sculptures in both Hindu and Buddhist traditions.

Figure 4: Sarus Crane in Mythology (Source: Adesh & Amita 2017)

1.5 Threats to Sarus Crane

The Sarus Crane is found in human-dominated landscapes and faces several anthropogenic threats across its distribution range (Figure 5). Its population is declining due to habitat degradation, wetland conversion into agricultural land, livestock grazing, and various human disturbances. Additional threats include land plotting, riverbed mining, industrial pollution, pesticide use, electrocution, poaching of chicks and eggs for food and medicinal purposes, and nest destruction (Gosai et al. 2016; DNPWC & GoN 2021). Due to these threats, the Sarus Crane is classified as Vulnerable on the IUCN Red List of Threatened Species (BirdLife International, 2016).

1.6 Need of transborder dialogue between Nepal and India

Although the Sarus Crane is a resident species in Nepal, frequent transboundary movements between Nepal and India have been observed. During the dry season, when water resources become scarce, some Sarus Cranes migrate to India, where water availability is higher (Sharma et al. 2024). Conversely, with the onset of the monsoon season, many Sarus Cranes return to Nepal for breeding. For example, flocks of 50–100 individuals regularly move along the Nepal-India border at the Dano River in Rupandehi, while approximately 200 cranes are observed migrating between Nepal and India in the Bajaha Wetland of Kapilvastu. Similar movements occur in Banke, Kailali, and Kanchanpur districts, highlighting the urgent need for transboundary collaboration in research and conservation efforts (Sharma et al. 2024).

Despite these significant movements, there is currently no unified monitoring protocol, conservation measures, or community awareness programs specifically designed for Sarus Crane conservation in the border regions. The primary habitat of the Sarus Crane in Nepal and India lies within the western Terai Arc Landscape, an area that also supports globally threatened large mammals such as the Bengal Tiger (*Panthera tigris*), Asian Elephant (*Elephas maximus*), and Greater One-horned Rhino (*Rhinoceros unicornis*). Both Nepal and India conduct regular transboundary meetings and conservation initiatives for these species. However, despite the Sarus Crane being the world's tallest flying bird and classified as Vulnerable on the IUCN Red List, no formal transboundary discussions or collaborative conservation measures exist for this species.

Given the increasing anthropogenic threats to Sarus Crane populations, a transboundary conservation framework between Nepal and India is essential. Such a dialogue would help protect habitats, raise community awareness, identify Sarus Safe Zones, and foster cooperation between the two countries. This need for collaboration is emphasized in Nepal's Sarus Crane Conservation Action Plan (2021–2025), which suggest coordinated monitoring, habitat protection, threat mitigation, and community engagement to ensure the long-term survival of this iconic species.

1.7 Objectives of the transborder dialogue

The primary objective of the transborder meeting was to exchange experiences, share existing research findings, and discuss ongoing conservation practices in both Nepal and India.

The specific objectives were as follows:

- To share and develop a standardized monitoring protocol for the Sarus Crane.
- To identify and implement joint collaborations for habitat management and restoration.

- To address the major threats faced by Sarus Cranes in the border areas.
- To strengthen local community participation in Sarus Crane conservation.
- To facilitate transboundary data sharing and establish long-term conservation frameworks.

Figure 5: A flock of Sarus Crane in fallow field of Rupandehi district (Photo by Hem Bahadur Katuwal)

2. Details of the Transborder Dialogue between Nepal and India

Day -1

2.1 Arrival of the Guests

All guest arrived by 29 January 2025 in Buddha Maya Garden Hotel, Lumbini, Nepal. Altogether, there were 80 (9 female and 71 Male participants), 11 from India and 69 from Nepal (Table 2). The Indian participants represented various organizations, including Wildlife Trust of India, Division of Wetland Ecology, Salim Ali Centre for Ornithology and Natural History (SACON), WWF India, members from NGO, local farmers, while the Nepalese participants included representatives from DNPWC, DFO, WWF Nepal, Zoological Society of London, National Trust for Nature Conservation, mayors, CDZ, NeZoS, and various district forest offices, national parks, and conservation organizations such as Bird Conservation Nepal, Nepalese Ornithological Union, Green Youth of Lumbini, Lumbini Development Trust, Lumbini Crane Sanctuary, among others.

Photo 1: Prof. Dr. Kumar Sapkota delivering welcome speech.

Day - 2

2.2 Main event – Indo-Nepal transborder dialogue on Sarus Crane

The main event was conducted on January 30, 2025, and was structured into an inauguration session followed by technical sessions.

2.2.1 Inauguration session

- Haribhadra Acharya, Senior Ecologist of DNPWC, conducted the inaugural session.

The program was inaugurated by: **Chief Guest: Sajaruddin Musalman, Mayor of Lumbini Sanskrit Municipality.**

- **Professor Dr. Kumar Sapkota, Central Department of Zoology, Tribhuvan University**
  Prof. Sapkota delivered the welcome speech on behalf of Organizing Committee of the dialogue. He emphasized that this event marked a historic moment, bringing together experts, conservationists, stakeholders, and policymakers in a shared commitment to

protect one of the most magnificent birds—the Sarus Crane—through environmental stewardship and biodiversity conservation.

Photo 2: Ramu Jaishi, Executive Director, PTDC

Prof. Sapkota highlighted that while the Sarus Crane is revered as a symbol of grace in countries like Nepal and India, it faces significant challenges, including habitat loss, environmental degradation, and other anthropogenic threats. He stated that the Indo-Nepal Transboundary Sarus Crane Conservation initiative, aims to identify critical habitats, assess threats, and implement sustainable conservation strategies to ensure the long-term survival of this species.

Expressing his sincere gratitude to all collaborators whose support made this initiative possible, Prof. Sapkota underscored the importance of continued progress in conservation efforts. He acknowledged the workshop as a vital platform for discussing threats, exploring mitigation measures, and sharing conservation practices across national borders. Concluding his address, he urged collective action to secure a future for the Sarus Crane, emphasizing that sustained cooperation and commitment are essential for the success of this conservation endeavor.

- **Ramu Jaishi**, **Executive Director, Lumbini Province Tourism Development Council**

  He stated that tourism is increasingly being linked to biodiversity conservation in the present scenario. Since wildlife does not recognize political boundaries, he expressed hope that this workshop would facilitate the exchange of successful Sarus Crane conservation efforts between Nepal and India while also providing valuable guidelines for local and federal governments.

  He highlighted that Sarus Cranes migrate between different parts of Lumbini Province including Bardiya National Park in Nepal and the Uttar Pradesh region in India, emphasizing the need to examine and align conservation policies between both governments for their effective protection. Additionally, he noted that the Sarus Crane holds deep religious significance, particularly in Buddhism, and integrating this cultural value into the economy could further strengthen conservation efforts for the species.

He expressed hope that the workshop's outcomes would contribute to shaping effective policies and promoting nature-based and cultural tourism to support local livelihoods. Until now, such programs have been largely limited to Lumbini, but expanding this Indo-Nepal transboundary dialogue on Sarus Crane conservation would benefit conservationists, local communities, and all levels of government. He affirmed his and his organization's commitment to collaborating on wildlife conservation efforts and looked forward to working together to protect the Sarus Crane.

- **Dr. Mahendiran Mylswamy, Senior Scientist, India**

  According to him this workshop is a great initiative. Watching birds is a beautiful mental activity which provides us with internal realization and it is also connected with well-being. Being specific to Sarus Crane as it is linked to Gautam Buddha relating with peace and harmony, conserving them on transborder level is beneficial for environment and society.

Photo 3: Dr. Mahendiran Mylswamy, Senior Scientist, SACON, India

- **Chief Guest: Sajaruddin Musalman, Mayor of Lumbini Sanskrit Municipality**

The mayor stated that the Sarus Crane has already been declared the "Nagar Panchi" (municipal bird) and expressed his commitment to implementing all necessary conservation strategies within his municipality. He emphasized that any activities that could potentially harm the Sarus Crane or disrupt its life cycle would be strictly intolerable. Furthermore, he asserted that individuals responsible for such activities would be held accountable and brought under judicial action.

Photo 4: Sajaruddin Musalman, Mayor of Lumbini Sanskrit Municipality

- **Thaneshwor Ghimire, Chairman of Siyari Rural Municipality**

After being elected as the chairman of Siyari Rural Municipality, he became concerned about the declining Sarus Crane population and sought to understand the reasons behind it. Determined to address this issue, he initiated conservation efforts within his municipality and allocated a dedicated budget for conservation activities.

Despite the implementation of public awareness programs, challenges persist. He stated that strict measures have been enforced to protect the species, including fines of up to 1 lakh rupees for anyone caught stealing eggs or hunting the birds. While he acknowledged that Sarus Cranes can tolerate human presence to some extent, he identified electrocution as a major threat in his region.

To further promote conservation awareness, a video documentary highlighting the habitat, importance, and conservation of the Sarus Crane has been produced. This documentary has also been covered by BBC commentator Madhav Nepali.

He shared that Siyari Rural Municipality has identified 4–5 roosting sites, while Suddhodhan Municipality has 6–7 roosting sites where effective conservation practices are in place and can be observed regularly.

- **Bed Kumar Dhakal, Deputy Director General of DNPWC**

Bed Kumar Dhakal stated that the primary objective of this workshop is to share experiences among locals, conservationists, policymakers, and implementers regarding Sarus Crane conservation. He emphasized the importance of understanding the species' general ecology, conservation measures, and population status. He acknowledged that conservation challenges arise due to the Sarus Crane's presence in human-dominated landscapes and stressed the need for mutual coexistence among all life forms.

He highlighted the importance of maintaining and protecting wetlands, particularly during peak summer, as a priority for Sarus Crane conservation. Given that wildlife does not adhere to political boundaries, he underscored the necessity of transboundary cooperation for effective conservation efforts. He expressed hope that the workshop would also help explore potential funding opportunities for future initiatives.

Photo 5: Bed Kumar Dhakal, Deputy Director General, DNPWC

Furthermore, he emphasized that local communities and stakeholder participation are crucial for conservation success. He noted that linking conservation efforts with local economic benefits would yield the most effective and sustainable outcomes. Then, at last he closed the inaugural session.

2.2.2 Technical Session

There were four presentations about the Sarus Crane in this session. This session was chaired by Professor Dr. Kumar Sapkota. The presenters and their main findings were discussed below:

- **Dr. Triet Tran from ICF presented on "Cranes in Southeast Asia and Australia**

He stated that witnessing 150 Sarus Cranes in the transborder region of Nepal and India was a rare and remarkable sight, unlike in other Southeast Asian countries.

In Southeast Asia, approximately 1,000 Sarus Cranes exist in fragmented populations across Myanmar, Cambodia, Vietnam, and Thailand. In Myanmar, around 600 cranes which is 90% of the total population are concentrated in a single region, primarily utilizing rice fields for both breeding and non-breeding seasons. However, habitat degradation due to flooded fields and intensified rice cultivation poses a significant threat.

Photo 6: Dr. Triet Tran, Program Director, ICF

In Vietnam, an estimated 200 individuals remain in critical condition due to the rapid loss of natural wetlands, intensive rice farming, inadequate habitat management at crane sites, and poisoning from agricultural practices.

Thailand's wild population stands at approximately 200 individuals, with an additional 80 in captivity. Over the past 30 years, conservation efforts have focused on captive breeding, with the first 20 years dedicated to research and learning. In the last decade, 30 Sarus Cranes have survived and reproduced, with the second generation now thriving.

Over the past five years, a sharp population decline prompted Cambodia and Vietnam to collaborate on habitat restoration and sustainable rice farming, with a particular emphasis on organic rice cultivation. A sight as remarkable as that in Nepal remains extremely rare in Vietnam.

He further highlighted that in Australia, the least-documented Sarus Crane population is estimated at 5,000–10,000 individuals. Research and surveys are ongoing to better understand their status. Conservation efforts across all regions rely heavily on habitat restoration and sustainable agricultural practices to ensure the long-term survival of the species.

- **Haribhadra Acharya presented on "Review of action plan of Sarus Crane (2021-2025)"**

  He emphasized that among the 15 crane species found worldwide, four occur in Nepal, with the Sarus Crane being the only resident species. This iconic bird is classified as Vulnerable and is legally protected under Nepal's National Parks and Wildlife Conservation Act (1973). Culturally and ecologically significant, the Sarus Crane derives its name from the Sanskrit

word “Saras”, which refers to a lake, pond, or large water body, reflecting its close association with wetland habitats.

He noted that the National Biodiversity Strategy and Action Plan (NBSAP) 2014–2020 included a directive to develop action plans for key threatened species. As a result, the Sarus Crane Action Plan was formulated to address conservation challenges, engage stakeholders, and implement protective measures. The primary objectives of the plan include:

Identifying the species’ distribution and population status.

- Assessing and enhancing habitat quality.
- Minimizing intentional and accidental killings.
- Raising awareness among stakeholders.
- Strengthening conservation partnerships at local, national, and international levels.

He highlighted that ten districts from Chitwan to Kanchanpur have been prioritized for Sarus Crane conservation, with Lumbini Province recognized as a critical stronghold. The Greater Lumbini Area (Kapilvastu, Rupandehi, and Nawalparasi West) supports the largest Sarus Crane population in Nepal. Habitat suitability modeling has identified 6,659 km² as potential habitat, covering 4.5% of Nepal’s total land area.

Photo 7: Haribhadra Acharya, Senior Ecologist, DNPWC

Agricultural lands and wetlands serve as crucial foraging and breeding grounds for Sarus Cranes. While an increase in wetland and farmland areas has positively influenced their presence, rapid urbanization continues to threaten their survival. The Lumbini Crane Sanctuary, established in 1994, remains a vital refuge for the species. In 2022, ten wetlands covering 20 hectares were restored, with ongoing management efforts including grass cutting and the planting of wild rice (*Oryza rufipogon*) to support crane populations.

He identified anthropogenic threats such as electrocution and infrastructure collisions as major conservation concerns. Between 2010 and 2023, 47 Sarus Crane mortalities were recorded in

farmlands due to these hazards. The Wildlife-Friendly Linear Infrastructure Guidelines (2022) recommend rerouting transmission lines away from key crane habitats, and discussions are underway regarding the redesign of power lines and the installation of bird reflectors.

He emphasized that stakeholder engagement has been central to Sarus Crane conservation. Awareness campaigns, the establishment of 30 eco-clubs, and birdwatching activities for youth have played a key role in fostering conservation efforts. The organizations actively involved in Sarus Crane conservation include:

- Department of National Parks and Wildlife Conservation
- Department of Forests and Soil Conservation
- Municipalities and local government bodies
- Lumbini Development Trust
- WWF-Nepal
- International Crane Foundation
- Central Department of Zoology (Tribhuvan University)
- Nepal Zoological Society
- Bird Conservation Nepal
- Other conservation organizations

Recognizing that Sarus Cranes frequently cross international borders, he stressed the importance of transboundary conservation efforts between Nepal and India. Future strategies will focus on:

- Conducting breeding ecology surveys, including population counts, nesting site identification, and monitoring breeding success.
- Estimating annual survival rates.
- Implementing satellite tagging to study seasonal movements, home range dynamics, habitat use, and transboundary migration patterns.
- Strengthening youth participation through Sarus Crane and wetland awareness programs.
- Empowering local communities with sustainable livelihood opportunities such as Kalanamak rice cultivation and market development.
- Enhancing conservation outreach through radio, FM stations, newspapers, and video documentaries.

Finally, he emphasized that these comprehensive efforts aim to secure the long-term survival of the Sarus Crane while fostering sustainable human-wildlife coexistence in Nepal.

- **Dr. Jatindar Kaur presented on "Sarus Crane: Population and Conservation Practices in India"**

She stated that the Indian Sarus Crane (is classified as Vulnerable by the IUCN (2016) and is protected under Schedule I of the Wildlife (Protection) Act, 1972. According to her, the highest resident and breeding populations are found in Uttar Pradesh, Gujarat, and Rajasthan, while smaller populations exist in Punjab, Haryana, Madhya Pradesh, Bihar, and northeastern Maharashtra. She mentioned that occasional sightings have also been recorded in Andhra Pradesh, Telangana, and Odisha.

Photo 8: Dr. Jatindar Kaur, Head, UPL Sarus Conservation

She reported that the population of Sarus Cranes has increased significantly from 500 individuals in 2015–16 to 1,254 in 2023, covering 310 sq. km. She stated that the highest population numbers were recorded in 2023 across 155 sites with the involvement of 85 volunteers. She noted that eleven summer and six winter congregation sites have been identified, with the highest numbers recorded in Gobrapura wetland (410 cranes) and Limbasi agricultural land (130 cranes). According to her, Sarus Cranes prefer open marshes and Jheels with submerged and emergent vegetation and use cultivated fields, fallow lands, flooded fields, and rice paddies for nesting, particularly along canals, irrigation ditches, and village ponds.

She explained that nesting preferences vary regionally, with a higher proportion of nests in agricultural fields in Gujarat, while more nests are found in wetlands in Uttar Pradesh. She stated that a total of 54 nests were documented, with 54% in agricultural fields and 46% in wetlands. She reported that out of 92 eggs recorded, 89 successfully hatched, leading to a hatchling success rate of 97%, while the fledging success rate was 94%. However, she pointed out that habitat destruction due to human activities such as wetland drainage, industrialization, and agricultural expansion poses a significant threat to the species. She further highlighted that

encroachment, canal siltation, pesticide use, predation by stray dogs, and infrastructure development are additional concerns.

She stated that to mitigate these threats, conservation strategies emphasize the protection of small wetlands, mapping and demarcating natural and man-made wetlands, and installing bird diverters on power lines. She reported that community engagement initiatives, including exposure visits, birdwatching programs, and awareness campaigns, are crucial for conservation efforts. She mentioned that the Rural Sarus Protection Group (RSPG) has been established to train volunteers in population monitoring, first aid, and habitat conservation. She stated that volunteers are recognized for their contributions, which helps strengthen local conservation efforts.

She explained that sustainable conservation measures also include supplementary livelihood opportunities, such as training volunteers as nature guides to promote eco-tourism. She reported that a uniform population count is conducted twice a year, in June and December, to track recruitment and total numbers. She stated that additional research includes satellite tracking of movement patterns and studying the impact of changing cropping patterns on breeding success. She concluded that strengthening conservation networks and integrating Sarus Crane conservation into regional wetland management plans remain crucial for the species' long-term survival.

- **Rajendra Suwal presented on "Sarus Crane in Nepal: Population and Conservation Practices"**

  He stated that the Sarus Crane (the tallest flying bird in the world, derives its name from the Sanskrit word "Sarasa," meaning "Bird of the Lake." According to him, Sarus Cranes hold cultural significance in Hindu and Buddhist traditions, often depicted in art, sculptures, and mythology. He mentioned that they are considered a sign of rainfall when seen in farmlands and symbolize love, devotion, and longevity.

  He reported that the population distribution of Sarus Cranes in Nepal varies across the Terai region. He stated that the species has been extirpated from the Eastern Terai, is thriving in the Central Terai despite human-dominated landscapes, and is experiencing a decline in the Western Terai. He noted that the estimated population in Nepal stands at 690 individuals, with the highest numbers recorded in Rupandehi (382), followed by Kapilvastu (200), Nawalparasi West (70), Banke (33), and Kanchanpur (5). He explained that their distribution is significantly

influenced by the presence of wetlands, built-up areas, and farmlands, while the length of transmission lines negatively affects their occurrence. He highlighted that in Greater Lumbini, where over 60% of the land is covered by farmlands and less than 2% by water bodies, the availability of suitable habitats is a growing concern.

He pointed out that major threats to Sarus Cranes include habitat destruction, linear infrastructure development, and electrocution from power lines. He reported that with over 7,000 km of transmission cables in Rupandehi and Kapilvastu, birds frequently suffer fatal collisions, citing an instance where a pair of Sarus Cranes died from a powerline strike. He stated that mechanized harvesting of rice poses a threat to juvenile cranes, while farmland burning depletes food sources by destroying insects and invertebrates. He also noted that illegal hunting using nets spread over wetlands and agricultural lands further endangers the species. He explained that industrial expansion in Kapilvastu and Rupandehi has led to increased pollution, degrading wetland ecosystems and affecting aquatic life. He further reported that the rapid expansion of roads and infrastructure in these areas has facilitated human population growth while simultaneously reducing Sarus Crane habitats.

Photo 9: Rajendra Narsingh Suwal, Head, Partnerships Development, WWF Nepal

He highlighted that climate change further exacerbates conservation challenges for the species. He explained that extreme temperatures exceeding 40°C, prolonged droughts, and unpredictable rainfall patterns threaten nesting success. He reported that in 2022, insufficient monsoon rainfall resulted in fewer nesting attempts, while in other years, excessive rainfall caused flooding of nests. He also mentioned that cold spells in the Terai region have affected foraging activities, although cranes have been observed nesting even during harsh winters. He stated that another growing concern is the increasing interaction between birds and airplanes, leading to potential risks for both wildlife and passengers.

He noted that WWF Nepal has recognized the importance of Sarus Crane conservation and aims to increase the population to 2,000 individuals by 2030. He reported that the conservation

strategy includes habitat management, wetland restoration, and the promotion of organic farmlands. He stated that creating water impoundments to collect monsoon rain will provide year-round nesting and feeding sites. He explained that government agencies, including the Ministry of Forest and Environment and Lumbini Development Trust, along with NGOs, farmer cooperatives, students, and youth groups, are engaged in conservation efforts. He also noted that the promotion of local products like Kalanamak rice, which supports Sarus-friendly farming practices, is encouraged.

He reported that ex-situ conservation efforts involve managing orphaned and injured cranes, rehabilitating healthy individuals, and establishing a captive breeding facility for restocking. He highlighted that the 15 km industry-free zone around Lumbini, Buddha's birthplace, is expected to benefit farmland biodiversity, including the Sarus Crane. He further mentioned that transboundary conservation efforts under the Terai Arc Landscape program aim to protect wetland habitats across Nepal and India. He stated that collaboration with WWF India and other stakeholders will strengthen conservation measures, ensuring the survival of the Sarus Crane.

He concluded that while Buddha's teachings emphasize harmony with nature, the Sarus Crane he once saved is now in peril. He stressed that protecting this majestic species requires collective action to address habitat loss, infrastructure development, and climate-related threats. He emphasized that conservation initiatives must focus on habitat restoration, community engagement, and sustainable land-use practices to secure a future where Sarus Cranes continue to thrive in Nepal's human-dominated landscapes.

Prof. Dr. Kumar Sapkota provided his remarks at the conclusion of the first technical session, expressing gratitude to all the speakers for their insightful presentations. Following the session, a group photo was taken to commemorate the event.

Photo 10: Group photo of the participants (Photo by Manoj Paudel, Kantipur)

2.2.3 Group Discussion

In this session, all participants were divided into four groups based on their expertise to discuss Sarus Crane research, conservation scenarios in both Nepal and India, and the way forward.

- The group A- Research on Sarus Crane (Existing research and monitoring techniques used and potential areas)
- The group B - Activities on Sarus Crane Conservation practices on the ground in Nepal and India (Sarus Protection Society/Sarus Mitra/Lumbini Crane Sanctuary)
- The group C - TAL mechanism between India and Nepal and its potential expansion to include biodiversity in human dominated landscape such as Sarus Crane Conservation (e.g., Transboundary Bajaha Lake model)
- The group D - Potential of OECM model to include Sarus Crane conservation in India and Nepal

Each group consisted of approximately 10-15 participants and was given around 45 minutes for discussion. After the discussion, each group was required to present their key findings on their respective topics.

The major findings of each group were given below:

Group-A Research on Sarus Crane (Existing Research and monitoring techniques and potential areas

Group A focused on studying the population dynamics of Sarus Cranes, particularly their status and distribution across different regions. Their discussions highlighted the need for tracking movements through tagging to understand migratory patterns, seasonal habitat use, and critical protection zones. The group emphasized research on breeding behaviors, nest locations, and feeding habits in wetland and agricultural landscapes to guide habitat management strategies.

Photo 11: Group A discussion

Additionally, Group A stressed the importance of assessing toxicology and parasitology through annual water and soil testing to identify potential threats from pollutants and parasites. They also recommended mapping population hotspots and prioritizing key conservation areas to enhance protection efforts.

For improved monitoring, the group proposed developing standardized tools such as mobile applications and data sheets to ensure consistent data collection. These tools would facilitate the recording of crane sightings, tracking of environmental variables, and engagement of local communities in conservation initiatives. The group also highlighted the potential of modern technologies, including drones, to capture high-resolution imagery for monitoring nesting sites, breeding behaviors, and habitat quality in remote areas.

Overall, Group A's discussions aimed at strengthening research efforts and developing a comprehensive understanding of Sarus Crane ecology, ultimately contributing to more effective conservation strategies across Nepal and India.

Group-B Activities on Sarus Crane Conservation Practice on the ground in Nepal and India

Group B discussed on the major threats and challenges and provided solutions as below:

Habitat Loss and Encroachment

Sarus Cranes faces significant threats due to habitat loss and encroachment. The expansion of open electric wires and high-tension power lines poses a severe risk, leading to accidental electrocution. Additionally, linear infrastructure development, such as roads and transmission line, further fragments their habitat. Anthropogenic activities, including human disturbances near nesting and foraging sites, also contribute to habitat degradation, making survival increasingly difficult for the species.

Major Threats and Challenges

Habitat Loss and Encroachment

Sarus Cranes face significant threats due to habitat loss and encroachment. The expansion of open electric wires and high-tension power lines poses a severe risk, leading to accidental electrocution. Additionally, linear infrastructure development, such as roads and transmission line, further fragments their habitat. Anthropogenic activities, including human disturbances near nesting and foraging sites, also contribute to habitat degradation, making survival increasingly difficult for the species.

Reproduction Challenges

The reproduction of Sarus Cranes is threatened by egg theft, which significantly reduces their breeding success. Human interference, including the collection of eggs for consumption or other uses, disrupts their natural nesting cycles, leading to population decline in certain areas.

Agricultural and Industrial Practices

Intensive agricultural and industrial practices pose significant threats to Sarus Crane populations. The extensive use of pesticides and chemicals contaminates their habitat, affecting their health and reproductive success. Additionally, mechanized and intensive farming

practices destroy nesting sites and foraging areas, reducing the availability of suitable habitats for breeding and raising chicks.

Diseases and Lack of Awareness

Sarus Cranes are susceptible to diseases such as bird flu, which can have devastating impacts on their populations. The lack of proper law enforcement to regulate harmful activities further exacerbates the issue. Additionally, a lack of awareness among local communities regarding the importance of Sarus Crane conservation leads to unintentional harm, such as habitat destruction and disturbance during the breeding season.

To address these threats, various conservation activities have been proposed and implemented. Awareness programs in schools aim to educate young students about Sarus Crane conservation. Conservation education has been introduced in 32 schools, accompanied by art competitions and community education initiatives. Marketing sustainable agricultural products, such as Kalanamak rice and handmade products from grass, helps support farmers who adopt bird-friendly practices. Training programs for tour guides and youth at the higher education level (Bachelor's degree) contribute to conservation efforts by fostering local expertise.

Crane Conservation Camps have been organized for school children (grades 5-8) to engage them in conservation activities. In India, collaborative efforts focus on forming farmer communities that share sustainable practices between Nepal and India. Educating farmers about the importance of not removing Sarus Crane nests, organizing exposure visits to conservation sites, and hosting Crane Festivals are also key strategies to promote awareness and encourage community involvement in conservation.

Other solutions

Transboundary Cooperation

Since Sarus Cranes are distributed across Nepal and India, transboundary cooperation is crucial for their conservation. Joint efforts between both countries can help in habitat management, research, and policy formulation to protect the species.

Community-Based Conservation

Engaging local communities is essential for sustainable conservation. A model for producing unpaid volunteers can help build a strong network of conservationists. Additionally, incentive programs for communities can encourage habitat protection and ensure active participation in conservation initiatives.

Strengthening Law Enforcement

Defining the responsibility of law enforcement agencies, such as the District Forest Office (DFO), is critical for effective protection measures. Strengthening coordination, collaboration,

and communication between government agencies and non-governmental organizations can lead to better policy implementation and enforcement.

Declaration of Community Sarus Crane Reserves

Establishing dedicated Sarus Crane reserves managed by local communities can provide long-term protection. Setting up a separate institution within the government for Sarus Crane conservation can help streamline efforts. Expanding networks of rural volunteers and implementing financial incentive schemes for farmers who protect Sarus habitats can further enhance conservation outcomes. Capacity-building programs for volunteers focusing on population monitoring, breeding documentation, first aid, and habitat conservation will ensure effective grassroots conservation efforts.

By integrating these solutions, the conservation of Sarus Cranes can be significantly strengthened, ensuring the protection of this iconic species across Nepal and India.

Photo 12: Group B discussion

Group-C TAL Mechanism between India and Nepal & Potential expansion to include biodiversity in human dominated landscape

One of the primary recommendations is to integrate Sarus Crane conservation within the broader Terai Arc Landscape (TAL) strategy for both Nepal and India, enhancing cross-border collaboration. This approach would involve updating Nepal's Sarus Crane Conservation Action Plan and aligning it with state-level action plans in India while prioritizing Sarus conservation within the policies and strategies of provincial and local governments.

To facilitate coordination among stakeholders and promote a unified conservation approach, the establishment of a transboundary Sarus Crane Conservation Society is proposed. This society would serve as a key platform for policy advocacy, community engagement, and the promotion of a culture of coexistence in regions where Sarus Cranes share landscapes with human populations.

At the program level, integrating Sarus conservation into the annual plans of all tiers of government—federal, provincial, and local would ensure its formal inclusion in development initiatives. Incorporating Sarus conservation into broader wetland management strategies, as well as climate change adaptation and mitigation plans, would create a more holistic conservation framework. Key activities to support this strategy include incentivizing farmers to adopt crane-friendly agricultural practices, such as cultivating Kalanamak rice, which provides critical habitat for Sarus Cranes. Additionally, exchange visits between farmers in India and Nepal would foster knowledge-sharing on sustainable agricultural methods.

Awareness and outreach campaigns targeting local governments, communities, and schools would strengthen public understanding of Sarus conservation. Protecting key transboundary nesting and roosting sites within the Terai Arc Landscape through joint patrols and anti-snare walks would directly mitigate threats to crane populations.

Furthermore, promoting birdwatching as an educational tool, particularly for school children, would help instill a sense of responsibility for wildlife conservation from an early age. Capacity-building programs, such as nature guide training, would enhance local expertise in Sarus Crane conservation and improve monitoring efforts across both countries.

Collectively, these actions aim to establish a comprehensive, collaborative, and sustainable framework for Sarus Crane conservation across the India-Nepal border, ensuring the long-term protection of this iconic species.

Photo 13: Group C discussion

Group-D Potential of OECM model to include Sarus Crane Conservation in India and Nepal

Other Effective Area-Based Conservation Measures (OECMs) play a crucial role in protecting biodiversity beyond conventional protected areas. These areas can be managed by various entities, including the government, local communities, and private stakeholders, ensuring a more inclusive and adaptive approach to conservation. Examples of such areas include community forests, forest conservation zones, wetlands, riverine ecosystems, Important Bird and Biodiversity Areas (IBAs), and even archaeological and cultural sites that hold ecological significance.

For OECMs to be effective, they must be supported by strong policies, legal frameworks, dedicated institutions, and sufficient resources. Engaging local stakeholders such as fishery groups and farmer cooperatives can enhance conservation efforts while providing economic benefits. For instance, integrating Sarus Crane conservation with Kalanamak rice farming can create incentives for sustainable agricultural practices, linking conservation with economic gains through eco-tourism and organic farming markets. Additionally, local compensation schemes can help mitigate potential conflicts between conservation needs and livelihoods.

Establishing Sarus Crane sanctuaries, alongside the protection and management of community and private ponds and wetlands, would provide essential habitats for the species. Encouraging

private landowners to maintain wetlands and participate in conservation programs can further strengthen habitat connectivity. By integrating conservation with local economies and governance structures, these measures can ensure long-term protection for Sarus Cranes and other wildlife while benefiting local communities.

Photo 14: Group D discussion

After all group presentations, there was short questions and answered session. The questions and answers were given below:

Question 1: Why do you want to conserve Sarus Crane and why are you working for conservation?

Answered by Ravindra Kumar Trupathi

Ravindra Kumar Trupathi responded by highlighting the Wildlife Trust of India's (WTI) 12-year commitment to Sarus Crane conservation, which has led to a significant population increase. He emphasized the deep-rooted connection between agriculture and conservation, as traditional beliefs among farmers suggest that land inhabited by Sarus Cranes is highly fertile. However, conflicts arise during the rice planting season when Sarus Cranes gather nesting materials from fields, frustrating farmers and sometimes leading to nest destruction. This directly impacts breeding success, resulting in fewer eggs, chicks, and ultimately a declining

Sarus Crane population. To mitigate this, awareness programs have been implemented to educate communities on the cultural and historical significance of the Sarus Crane. As the state bird of Uttar Pradesh, the species is linked to religious and historical figures such as those in the Ramayana and Gautam Buddha, reinforcing its status as a revered bird that should be protected.

From a scientific perspective, Sarus Cranes are indicators of fertile land, underscoring the ecological importance of their conservation. Since they breed only once a year, any disturbance during the breeding season severely hampers population recovery. Conservation strategies have involved various approaches, including Saam (persuasion), Daam (incentives), Danda (regulation), and Bhed (strategic reasoning). In Uttar Pradesh, persuasion and incentives alone have been effective in gaining farmer support for conservation efforts.

A major ongoing threat to Sarus Crane conservation is wetland destruction due to development activities. Protecting these wetlands is crucial, as they serve as essential breeding and foraging habitats. Ensuring the long-term survival of the Sarus Crane requires a combination of habitat protection, community engagement, and sustainable agricultural practices.

Answered by Chandra Prasad Pathak (Volunteer in Sarus Conservation)

Sarus Crane conservation is closely linked to Kalanamak rice, a traditional variety known for its late harvesting period. Unlike other rice species that are harvested in October, Kalanamak rice is harvested in late November, providing essential cover for Sarus Crane chicks and significantly increasing their chances of survival. In contrast, early harvesting of other rice varieties exposes the chicks to predators and environmental threats, leading to higher mortality rates and a decline in the Sarus population.

Recognizing this vital connection, the Kalanamak Campaign was launched to promote the cultivation of this rice variety as a conservation-friendly practice. By encouraging farmers to grow Kalanamak rice, conservationists aim to create a safer habitat for Sarus Cranes while preserving an important cultural and agricultural tradition.

The local community shares a deep cultural bond with the Sarus Crane, a connection reflected in traditional songs passed down through generations. One such song, sung by locals, expresses their affection for the bird:

"Saras mama, saras mama, mor kodo khaile, nachiyo naidekhiale, nachiya dekhaideuto,
Saras mama, tohor baap hamar kodo khaile, nachiyo naidekhiale, nachiya dekhaideuto."

This folk song signifies the community's respect and reverence for the Sarus Crane, illustrating their long-standing coexistence with the species. By integrating traditional agricultural

practices with conservation efforts, both biodiversity and local livelihoods can be safeguarded, ensuring a sustainable future for Sarus Cranes in agricultural landscapes.

After this, the program chair provided closing remarks, summarizing key discussions and acknowledging the valuable contributions of the participants. He emphasized the importance of collaborative efforts in Sarus Crane conservation and encouraged continued engagement in research, policy development, and community-based initiatives. The session concluded with a vote of thanks to all participants for their active involvement and meaningful insights, officially marking the end of the event.

2.2.4 Panel Discussion on transboundary issues in Sarus Crane conservation: India and Nepal perspective - facilitator Dr. Mahendra Shrestha

There were four panelists for the session, representing both Nepal and India. From Nepal, the panelists were Mr. Bed Kumar Dhakal and Dr. Hem Sagar Baral, while from India, the panelists included Dr. Mudit Gupta, and Dr. Amita Kanaujia.

Photo 15: Panelists: Mr. Bed Kumar Dhakal, Dr. Hem Sagar Baral, Dr. Amita Kanaujia and Dr. Mudit Gupta with moderator Dr. Mahendra Shrestha

Rajendra Narsingh Suwal set the context on the probability for the transboundary conservation of Sarus Cranes, based on the success stories and learning of the Terai Arc Landscape conservation linking the protected areas of Nepal and India through existing and restored forest for a safe dispersal and movement of megafauna (Tiger, Rhino, Elephants). He highlighted that the United Nations has recognized Terai Arc Landscape as one of the best restoration projects of the decade. He emphasized the need to consider wetlands, farmlands, and river systems conservation as a crucial ecological corridor for both flying and Terrestrial ~~land-dwelling~~ species in the farmlands of TAL.

He also highlighted an interesting contrast in Sarus Crane population trends—a declining trend in Vietnam versus an increasing trend in Nepal. The Vietnam protected area the Tram Chin National Park bears more water all year round, that means no feeding habitat, due to depth and non-exposure of tuber production as there is no contact to fresh air by the roots of certain species of rushes, no sprouts and no vertebrates and invertebrates exposed for a easy feeding. He suggested that overly stringent conservation regulations might not always be beneficial Sarus Crane and other large waders. In some cases, excessive restrictions can discourage local communities from participating in conservation efforts, leading to unintended negative consequences. For instance, Sarus Cranes are found in less numbers in the Nepal PAS too, as the vegetation is either too high, or there are few open marshy area and less meadows and mowed effect due to less grazers.

In the Greater Lumbini Region, the Yadav community has played a significant role in Sarus Crane conservation. Their traditional knowledge and sustainable agricultural practices have contributed to maintaining suitable habitats for the species. By integrating community-led conservation with scientific approaches, the region has successfully supported a stable and growing Sarus Crane population.

During the discussion, Dr. Mahendra and several participants posed insightful questions to the panelists, addressing key issues related to Sarus Crane conservation. The questions focused on topics such as habitat protection, community involvement, transboundary conservation efforts, challenges in law enforcement, role of sustainable agriculture in supporting Sarus Crane populations and linking Sarus Crane with tourism. The panelists provided detailed responses, offering expert perspectives and potential solutions to enhance conservation efforts across both countries, as given below:

Question 1 to Bed Kumar Dhakal: How can trans-boundary conservation be expanded for wetland birds in human dominated landscape?

Answer: The principle of "No political boundaries for wildlife" should be the foundation of conservation efforts. Wildlife conservation must transcend national borders, recognizing that species move freely across landscapes regardless of human-imposed boundaries.

WWF India/Nepal, along with various other organizations and agencies, has been actively facilitating collaboration between the two governments for effective conservation. A leading example of such transboundary conservation is the Terai Arc Landscape (TAL) initiative.

Protected areas (PAs) are often isolated like islands within human settlements. Without connectivity through forests, rivers, and other natural corridors, the survival of mammalian species becomes increasingly difficult. Given the limited space in the lowlands, transboundary conservation remains the most viable solution for long-term biodiversity conservation.

Key transboundary conservation complexes include:

- Valmiki–Parsa–Chitwan Complex
- Bardia–Katarniaghat Complex
- Suklaphanta–Pilibhit Complex

To increase Sarus Crane populations and decrease threats in both Nepal and India, local communities should play a pivotal role in conservation efforts. The active participation of NGOs, Community-Based Anti-Poaching Units (CBAPUs), and local stakeholders strengthens conservation by fostering collaboration between communities and governments. This integrated approach ensures a sustainable and unified strategy for Sarus Crane and broader wildlife conservation across borders.

Question 2 to Dr. Mudit Gupta: From TAL roof, what do you think about the idea of integrating conservation of Sarus Crane in human dominated landscape?

Answer: Uttar Pradesh is home to around twenty thousand Sarus Cranes, which are concentrated along twelve major rivers. These birds rely on a network of ecosystems, including forests, wetlands, and rivers, for their survival. The Terai Arc Landscape (TAL) primarily focuses on key wildlife species, but to include Sarus Crane conservation, specific regions like Maharajgunj, Balarampur, and Siddharthnagar, which harbor large populations, must be prioritized. Both the Terai regions of Nepal and India face immense pressure from human activities, making it critical to involve local communities in conservation efforts. For this integration to be successful, a clear narrative must be established—why should communities

engage in conservation, and who will bear the costs? Involving stakeholders is essential, as their needs and concerns must be considered and addressed for conservation to succeed.

Question 3 to Dr. Amita Kanaujia: What is the mechanism via which the locals got interested in conservation?

Answer: In Gujarat, a significant number of farmers are actively involved in Sarus Crane conservation. The involvement of locals is driven by the need to create a sustainable conservation model at every level. The process begins with assessing the Sarus Crane population, followed by gathering perceptions from local farmers. This is followed by awareness campaigns focused on the importance of Sarus Cranes, eventually designating farmers as "Sarus Mitra" (friends of Sarus). To further engage them, platforms like WhatsApp are used to facilitate communication and coordination.

A key question that arises is, "Why would farmers not harm Sarus Cranes?" While the Sarus Cranes can pose a threat to crops, leading to potential economic loss, this concern is addressed through compensation and subsidies. The government often compensates farmers for losses or provides support in the form of fertilizers, tractors, or other agricultural equipment, alongside small monetary incentives, which encourage them not to harm the cranes.

In the Terai Arc Landscape (TAL), where numerous sanctuaries and parks are located, farmers who actively participate in conservation efforts are often granted free access to these areas. The main approach here is to support farmers and help them learn how to coexist with and conserve the Sarus Cranes, fostering a relationship between the local communities and wildlife. This approach has proven successful in engaging locals in conservation activities and ensuring the protection of the species.

Question 4 to Dr. Hem Sagar Baral: How can we involve stakeholders, and locals in Sarus conservation? How can we connect the bird conservation with digital share so that the locals can see their economy is being lifted?

Answer: Tourism in Nepal has considerable potential, but its scope remains limited. One of the primary challenges is determining how to support the conservation of Sarus Cranes effectively, especially given that their population is spread across various regions, far beyond just the Lumbini area. Conservation efforts should not be confined to a single location but should be broadened to include areas where Sarus Cranes are found.

Capacity building and the development of nature corridors are critical components of this process, and these efforts need to be continuous and improving over time. It is also essential to

provide incentives for farmers, who are vital to the success of conservation initiatives, while raising awareness about the habitats Sarus Cranes rely on. Recent observations indicate that Sarus Cranes are increasingly occupying paddy fields instead of wetlands, which calls for a shift in conservation strategies.

Farmers face significant economic challenges, and their involvement in conservation efforts is essential for long-term success. Changing agricultural practices and shifting human perspectives are crucial to achieving sustainable outcomes. While current conservation actions are largely site-specific, a broader and more integrated approach is necessary to address issues such as land degradation due to changing land use.

The first step should be identifying and understanding the connectivity of all wetlands in the region before promoting tourism as a conservation tool. If immediate action is not taken, the threats to Sarus Cranes could intensify. While tourism holds great potential, it must be combined with effective conservation strategies that address these threats directly.

In conclusion, we don't need to simply celebrate the sight of cranes in the fields. It's critical to acknowledge the need for development alongside conservation efforts. Rather than focusing on creating more Protected Areas (PAs), we should strengthen transboundary conservation initiatives to ensure the long-term survival of the species across both Nepal and India.

Question 5 to Bed Kumar Dhakal: Do you see some possibilities to restore the habitat and population in PA's from department level?

Answer: There are some possibilities for habitat restoration in Protected Areas (PAs) at the department level, but the feasibility depends on location-specific factors and the necessary interventions required for each site.

For example, Shuklaphanta National Park (ShNP), which is part of the Terai Arc Landscape (TAL) and has the largest area, provides extensive open grasslands that are critical for Sarus Crane habitat. However, regular intervention is essential to maintain and enhance these open spaces. The development of conservation guidelines for ShNP will aid in systematic restoration efforts, ensuring that the area continues to support Sarus Cranes and other wildlife.

In the case of Chitwan National Park (CNP), habitat restoration is more challenging within the core area, as it is already heavily managed. However, there are possibilities for improvement, particularly in the western Nawalparasi region, where interventions to manage wetlands could significantly benefit Sarus Cranes.

At the department level, both the Department of Forests and Soil Conservation (DoFSC) and the Department of National Parks and Wildlife Conservation (DNPWC) are coordinating

efforts to conserve natural habitats. Moreover, at the provincial level, the Provincial Forest Ministry oversees division offices, and at the local level, Community Forest User Groups (CFUG's) and community-based organizations play an indirect or direct role in protecting forested areas.

The Sarus Crane serves as a symbol of wetland conservation, highlighting the need to protect and restore water resources in these landscapes. Strengthening multi-level coordination and implementing targeted interventions could significantly improve habitat restoration for Sarus Cranes in Nepal's Protected Areas.

Question 6 to Bed Kumar Dhakal: The transboundary proposal that is due to be sign, do you see any possibility to integrate human dominated landscapes?

Answer: The transboundary proposal is in its final stages of agreement between both governments. It primarily focuses on biodiversity conservation, including major flora and fauna, sharing conservation experiences, and controlling poaching. The Sarus Crane is also included within the scope of this agreement.

There is potential to integrate human-dominated landscapes into this framework, especially at the field level. Effective conservation requires a landscape-level approach that extends beyond protected areas. This approach should include agricultural lands, wetlands, and community-managed areas where Sarus Cranes and other species thrive. By including these human-dominated landscapes, conservation efforts can have a broader impact, ensuring that biodiversity is preserved even in areas where human activities are prominent.

Question 7 to Dr. Arshad Hussain: What are the approaches used to convince the locals?

Answer: The key approach we use to engage locals in Sarus Crane conservation is "Community-Based Conservation." The first step involves raising awareness by sharing experiences and discussing the outcomes of conservation efforts. We focus on building relationships with farmers who live near wetlands, understanding the challenges they face, and emphasizing how their concerns can be addressed while simultaneously protecting the Sarus Crane in both agricultural lands and wetlands.

Our approach begins by identifying the primary threats to Sarus Cranes, such as accidental electrocution and other anthropogenic causes. To mitigate these threats, we created the Sarus Mitra program, which involves providing leadership training and capacity-building for farmers. This initiative has been highly successful, connecting over 13,000 farmers to our conservation efforts. Additionally, we work with NGOs focused on improving the livelihoods of farmers.

These organizations have played a critical role by educating farmers about the importance of Sarus Cranes, informing them about nesting sites and breeding times.

As a result of these efforts, farmers have become key informants in our conservation work, providing valuable information about Sarus Crane sightings. When we first started in 2013, we located 681 Sarus Cranes. By May 2024, thanks to the active involvement of local farmers, we had located 2,679 Sarus Cranes. This significant increase is directly attributed to the engagement of the local community in the conservation process.

However, there are boundary issues that pose significant challenges to Sarus Crane welfare. The areas where these cranes are most active often cross political and administrative boundaries, creating complications for conservation efforts. Cooperation between different local governments and communities is crucial for effective conservation. In some cases, a lack of clear jurisdiction among regions can hinder the enforcement of conservation measures, affecting the long-term welfare of the Sarus Crane.

Rajeev Chauhan, Secretary General, Society for Conservation of Nature, India

One of the most effective methods we have used to engage locals in Sarus Crane conservation is through Environmental Education. This education program has been integrated into the school curriculum for students from grades 5 to 8 since 2002. By educating young students about the importance of Sarus Cranes, their habitats, and the threats they face, we have not only raised awareness but also created a generation of informed individuals passionate about conservation. Many of these students, having completed their studies, are now actively working as volunteers and continue to contribute to the protection of Sarus Cranes. They regularly inform conservationists about the whereabouts of nests and play a crucial role in ensuring their protection.

We have also focused on educating farmers' groups about the importance of Sarus Crane conservation. This approach has been particularly effective because farmers are often the first line of defense in protecting the cranes, especially in areas where their habitats overlap with agricultural lands. Additionally, we established the Ground Sarus Protection Society, which focuses on protecting roosting areas close to human settlements, particularly near hamlets. This initiative has been instrumental in providing safe spaces for the cranes to roost while minimizing human-wildlife conflict.

A significant contributor to the success of these efforts has been the involvement of the Yadav ethnic group, who have traditionally been deeply connected to Sarus Crane conservation. For generations, the Yadav community has passed down knowledge and cultural practices related

to the protection of Sarus Cranes. However, there is a lack of knowledge sharing between generations. In earlier times, elders would tell stories and sing songs about the Sarus Crane, instilling a sense of cultural responsibility and connection to the bird. Unfortunately, this traditional knowledge seems to be fading in modern times, presenting a challenge to continuing the legacy of conservation.

Overall, the combination of formal education, community involvement, and traditional knowledge has been crucial in fostering a strong conservation ethic among local communities, ensuring the protection of Sarus Cranes for future generations.

Manoj Poudel (Journalist, Kantipur)

While there are some positive attitudes toward Sarus Crane conservation among farmers and local communities, the majority view it negatively due to the losses they have to bear. Farmers often face crop damage when Sarus Cranes inhabit their lands, leading to resistance against conservation efforts.

A significant issue is the lack of proactive involvement at the local and provincial levels. Despite some efforts, local governments and provincial authorities have not provided enough support or engagement to effectively address the concerns of the community. This lack of coordination hinders progress in convincing farmers and locals to embrace conservation initiatives. For effective conservation, it is crucial to engage local authorities and provide adequate incentives and support for farmers to reduce crop losses and encourage active participation in conservation efforts.

Ukesh Raj Bhuju (Former Dean of Lumbini Buddhist University)

Answer: We have practiced student collaboration by training them in bird watching, with a focus on the Sarus Crane, transferring knowledge about bird monitoring technologies, and mobilizing the younger generation. This has also involved integrating indigenous knowledge connected to wetlands and Sarus Crane conservation.

To further strengthen conservation efforts, we need to conduct community linkage programs and promote eco-clubs, which can play a key role in raising awareness and fostering local participation. Additionally, farmers should be encouraged to use traditional rice species like “Kala Namak,” highlighting the importance of these varieties for both conservation and agricultural sustainability. By linking conservation efforts to tangible benefits, such as promoting eco-friendly farming practices, we can enhance community engagement and contribute to the long-term protection of Sarus Cranes.

Qn. How can the workshop be fruitful?

Bijay Raj Subedi, Bardiya

Answer: The conservation of Sarus Cranes has often been neglected, but through this workshop, I have come to realize how serious and challenging it is to protect them, especially since they inhabit agricultural fields owned by farmers. For successful conservation, agricultural farms need to be connected to nearby wetlands, creating a more integrated landscape for the cranes. Additionally, forming farmer groups and offering subsidies will help incentivize their involvement in conservation efforts. By including farmers in the conservation process and promoting sustainable practices like fisheries management, we can create a more sustainable and effective model for Sarus Crane conservation.

Arjun Kurmi (President, Green Youths of Lumbini))

Answer: The Green Youths of Lumbini, promoted by WWF, has played a crucial role in raising awareness about the state and need for Sarus Crane conservation. When the Sarus population was low, we worked directly at the community level, particularly with the youth. Since many young people were previously engaged in activities like hunting birds and fishing for recreational purposes, their involvement in conservation efforts has led to significant positive change. Currently, there are thirty-two eco-clubs in Lumbini with around 500-600 members. These clubs are actively working at the community level, promoting Sarus Crane conservation and running wetland adaptation programs, which has had a measurable impact on the local ecosystem and bird populations.

Dr. Chiranjibi Pokhrel (Director, NTNC)

Answer: We need to work with an integrated approach, involving youth, farmers, and local stakeholders. They should be educated about the conservation of wetlands and the Sarus Crane.

On Research and Monitoring

Samjhana Kawan, PhD Student at Central Department of Environment Science, TU

Answer: The Sarus Crane is an indicator of a healthy habitat, as they are typically found in wetlands and agricultural lands. However, in the context of present-day challenges, climate change is a significant issue. Due to reduced rainfall, farmers are increasingly using wetlands for agriculture, leading to the drying and deterioration of these wetlands. As a result, the Sarus

Cranes are facing difficulties in completing their life cycle. Therefore, research should focus on this part as well.

Dr. Mahendiran Mylswamy, Senior Scientist, Division of Wetland Ecology, Salim Ali Centre for Ornithology and Natural History (SACON)

There is a need to adopt a standardized method for population estimation of Sarus Cranes, as this is crucial for effective conservation. Healthy wetlands with rich vegetation are vital for the survival of Sarus Cranes. The population of Sarus Cranes tends to be higher in wetlands that support a diverse range of tuberous plants and healthy vegetation. In Uttar Pradesh, there is a higher incidence of electrocution during the summer months. On the other hand, in southern India (Karnataka), the use of plastic-coated wires on electric poles has been a successful practice to protect birds. This is a positive example that should be encouraged in other regions as well. Additionally, updating technologies and conducting ongoing research should go hand in hand with efforts to improve connectivity and engage local communities in conservation efforts.

Hemant Dhakal, Pokhara Bird Society, Pokhara

Answer: The main challenge in Sarus Crane conservation is the land use patterns of wetlands. In human-dominated landscapes where there is a lack of proper solid waste management, wetlands are increasingly being used as dumping grounds for waste. With the growing pollution and infrastructure development, the impact on land use patterns is being overlooked, and this needs urgent attention. We must ask ourselves what will happen to the wetlands that exist today in 20-30 years. Will they still be able to survive and provide suitable habitats for the Sarus Crane? This is a critical issue that must be addressed now, and necessary actions need to be taken to ensure the long-term viability of wetlands for the benefit of both the environment and wildlife.

Dr. Hari Prasad Sharma, Associate professor, CDZ, TU

The research study, conducted in collaboration with ICF and WWF, successfully identified the Sarus Crane population, which was recorded as 690 individuals. The study used a 5/5 km grid approach based on the minimum size and maximum number of individuals sighted in each grid. The outcomes of the study were published and expanded to include research on other large birds in human-dominated landscapes, not just the Sarus Crane.

Additionally, the Nepal Zoological Society has been actively involved in research across both the lowlands and high mountains of Nepal. Through the central department of zoology,

significant research activities are being carried out, and findings related to the environment and wildlife are regularly published. There is great potential for future collaboration with India, either through the Nepal Zoological Society or Tribhuvan University, to further enhance the conservation and research efforts in this region.

Ashish Basyal (Wetland Biodiversity Researcher)

During my childhood in Rupandehi, large farmlands were common, and Sarus Cranes thrived in those landscapes. However, with rapid development, these farmlands have been replaced by residential and commercial buildings, leading to a drastic decline in Sarus Crane sightings. In contrast, Lumbini still supports a significant population of Sarus Cranes, presenting an opportunity for conservation. To prevent Lumbini from facing the same habitat loss that occurred in my hometown, immediate action is essential. Conservation efforts must be strengthened to ensure that Sarus Cranes continue to thrive in this region. These initiatives must involve stakeholders at all levels, from local communities to national authorities. Through cross-country cooperation, we can achieve long-term conservation for the Sarus Crane.

Bed Kumar Dhakal, Deputy Director General, DNPWC

We have implemented wildlife-friendly infrastructure guidelines, although we haven't been able to formulate all the necessary acts yet, though we strive to do so. Local bodies, including INGOs and universities, need to be more active in supporting conservation efforts at the local level. Additionally, more research is needed to assess the feasibility of underground cables, lines, and transmission systems for better wildlife protection.

Concluding remarks from the panelists

1. **Dr. Mudit Gupta**

   Sustainable mechanism should be followed for conservation.

2. **Dr. Amita Kanaujia**

Wetlands must be integrated into Sarus Crane conservation efforts and need to be protected. The government should develop plans that balance wildlife conservation with the provision of services for local communities. For example, certain wetlands can be designated specifically for the protection of Sarus Cranes and other bird species, while other wetlands can be allocated for sustainable use by local people to meet their common needs, such as for fishing or agriculture. This balanced approach can ensure that both wildlife conservation and community well-being are supported, fostering a harmonious coexistence between nature and people.

3. Dr. Hem Sagar Baral

It is essential to identify, map, and provide protection to wetlands during the breeding period of the Sarus Crane. NGOs and INGOs should play a pivotal role in securing land areas critical to the species, ensuring their protection during vulnerable stages such as nesting and breeding. By focusing conservation efforts on these key habitats, we can help ensure the survival and successful reproduction of Sarus Cranes, while also raising awareness and mobilizing support from local communities and stakeholders for these vital conservation actions.

Day – 3 - Wetland site Visit

On the second day evening and third day morning, seven groups visited Bajaha lake and Jagadishpur Ramsar site to assess the current conditions, population status, public concerns, and threats to the Sarus crane and other wetland biodiversity. The visits aimed to gather insight and recommendations for the conservation and sustainable management of these important wetland and discussed potential conservation strategies.

Bajaha Tal

Bajaha Tal, also known as Bajaha lake, is a lesser- known but ecologically significant wetland located in the Kapilvastu District of Lumbini Province in Nepal. It is one of the important natural water bodies in the region, contributing to local ecosystem and supporting biodiversity. It is part of the larger network of wetlands in the Terai region of Nepal and Uttar Pradesh, which are crucial for maintaining ecological balance and supporting local livelihoods. It is home to a variety of aquatic and terrestrial species. It is also a vital habitat for fish, amphibians, and invertebrates.

Also, habitat for resident and migratory birds, making it an important site for watching. The lake plays a critical role in maintaining local ecosystem by recharging ground, regulation water flow and support agriculture in the surrounding areas. It is not well known as other tourist destinations in Nepal, it has significant potential for eco-tourism and nature-based tourism.

Bed Kumar Dhakal

He suggested that Bajaha Lake has the potential to be developed as a transboundary conservation site, fostering collaboration between Nepal and India to protect shared biodiversity.

Hari Bhadra Acharya

Proposed the establishment of a transboundary research center at Bajaha lake. He also emphasized the possibility of designation the lake as a transboundary Ramsar site to enhance its conservation status and promote international cooperation.

Photo 16: Delegates observing Bajaha wetland site during the event

Dr. Triet Tran

Recommendation initiating a joint research program focusing on issues such as threats to the Sarus Crane, conservation strategies, breeding season population dynamics, and species movement patterns. This research would provide valuable data for effective conservation planning.

Dr. Amita Kanaujia

Support the idea of joint transboundary research center to facilitate collaborative studies sharing between countries.

Dr. Mahendra Shrestha

Highlighted the importance of joint research initiatives and emphasized the need for wetland site restoration.

Jagadishpur Reservoir

Jagadishpur Reservoir in Nepal is a wetland area located in the Kapilvastu District of Lumbini Province. It is a significant ecological and cultural site in Nepal, Known for its natural beauty, biodiversity and religious importance.

Jagadishpur Reservoir is a man-made reservoir that was constructed in the early 1970s for irrigation purposes. The lake covers an area of 225 hectors and surrounded by greenery. It was listed in Ramsar sit in 2003, recognizing its international importance as a wetland. It supports numerous species of Fish, amphibians, and reptiles as well as a rich diversity of aquatic plants. The lake is particularly famous for its birdlife, attraction both migratory and resident birds. Tal is a growing tourism destination in Nepal, offering a peaceful retreat for natural and those interested in eco-tourism activities include: Bird watching, boating, natural walks, photographs.

The collective input from all team members

1. Control of Emerging Invasive plant species

   Team members emphasized the urgent need to address the spread of invasive plant species in the area. The species threaten local biodiversity and disrupt the natural ecosystem.

2. Design of concrete dams

   Concerns were raised about the artificial appearance of concrete dam in the region. To ensure better integration with the natural landscapes, it was suggested that the design of such structure should incorporate natural elements, such as using locally soured materials, adding vegetation and adopting eco- friendly construction technique.

3. **Boating and Eco-tourism**

   To enhance the recreation, the team proposed the introduction of eco-friendly boating facilities.

The visits to Bajaha Lake and Jagadishpur Ramsar site provide valuable insights into the current challenges and opportunities for wetland conservation. The recommendations from the team members, including the development of transboundary conservation sites, joint research programs, and community engagement, highlight the need for collaborative and sustainable approaches to protect these vital ecosystems and their biodiversity. These insights will guide future conservation efforts and ensure the long-term preservation of Bajaha Lake and Jagadishpur Reservoir.

Recommendations

Sarus Crane conservation requires a holistic approach integrating research, policy, community engagement, and transboundary cooperation between Nepal and India. Strengthening research and monitoring efforts is essential to understand population dynamics, habitat preferences, and threats. Standardized tracking tools, including mobile applications and drones, should be developed for consistent data collection and informed decision-making. Targeted studies on toxicology, climate change impacts, and breeding behaviors will further aid habitat management.

Habitat restoration and protection must be prioritized, especially in critical nesting and roosting sites. Since Sarus Cranes thrive in wetland and agricultural landscapes, promoting sustainable farming, such as organic agriculture and Sarus-friendly crops like Kalanamak rice, can help balance conservation with local livelihoods. Wetland restoration projects, including water impoundments and improved irrigation, will ensure a stable water supply year-round.

Community involvement is key to conservation success. Engaging local people through education, capacity-building, and incentive-based conservation programs will enhance grassroots support. Dedicated community-managed reserves and networks of rural volunteers will help safeguard the species. Strengthening law enforcement to prevent poaching, egg collection, and habitat encroachment is crucial in mitigating human-induced threats.

Transboundary collaboration between Nepal and India should be reinforced through joint conservation policies, research programs, and habitat protection initiatives. Expanding the Terai Arc Landscape (TAL) framework to include Sarus Crane conservation and establishing a transboundary Sarus Crane Conservation Society will enhance coordination. Knowledge exchange programs between farmers, conservationists, and policymakers will further promote sustainable conservation practices.

Linking conservation efforts with ecotourism and cultural heritage promotion can generate economic benefits for local communities while fostering ownership and responsibility. Given the Sarus Crane's religious and historical significance in Buddhism and Hinduism, incorporating its conservation into tourism can create broader awareness. Expanding birdwatching programs, nature guide training, and school-based campaigns will further strengthen conservation efforts.

Addressing major threats such as climate change, invasive species, and infrastructure development is essential. Conservation plans should incorporate climate adaptation strategies to mitigate extreme weather effects on crane breeding. Research on alternative energy

solutions, like underground power lines, should minimize electrocution risks. Policy advocacy at national and international levels should integrate Sarus Crane conservation into broader environmental agendas.

Ultimately, the long-term survival of the Sarus Crane depends on collective action across multiple sectors. By combining research, habitat management, community participation, policy enforcement, and transboundary cooperation, Nepal and India can ensure a thriving future for this iconic species.

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Appendices

Appendix Table 1: Program schedule

Day	**Schedule**	**Resource person/ moderator**
	Welcoming residential participants: Reach venue visit to the Lumbini Sanctuary/ Maya Devi Temple for early arriving participants.	Rajendra Narsingh Suwal, Hari Prasad Sharma, Bishnu Prasad Bhattarai,
Day-1	Arrival (15:00- 18:00)	Baburam Banjade
Day 2	**Schedule**	**Resource person/moderator**
	Registration: 8:30-9:00	
	Opening sessions: 9:00-10:00	
	Program chair: Bed Kumar Dhakal, DDG, DNPWC	Moderate: Haribhadra Acharya Senior Ecologist, DNPWC
	Welcome address and program outline and objectives	Nepal and India
Speaker 1	Speech (5 minutes)	Prof. Dr. Kumar Sapkota: Head, CDZ
Speaker 2	Speech (5 minutes)	· Ramu Jaishi, Executive Director, Province Tourism Development Council
Speaker 3	Speech (5 minutes)	Dr. Mahendiran Mylswamy, senior scientist
Speaker 4	Speech (5 minutes)	Chief Guest: Sajaruddin Musalman, Mayor of Lumbini Sanskrit Municipality
Speaker 5	Speech (5 minutes)	Bed Kumar Dhakal, deputy director of DNPWC
Speaker 6	Speech (5 minutes)	Thaneshwor Ghimire, Chairman of Siyari Rural Municipality
	Distribution of token of love	To the five speakers
	Technical session	**Session chair: Prof. Dr Kumar Sapkota**
	Sarus Crane conservation practices in southeast Asia and Australia (10:00-10:10)	Dr. Triet Tran, ICF
	Review on Sarus Crane Action Plan 2021-2025 (10:10-10:20)	Haribhadra Acharya, DNPWC

Day	Schedule	Resource person/ moderator
	Sarus crane in India (Population and conservation Practices) (10:20-10:30)	Dr. Jatinder Kaur
	Sarus crane in Nepal (Population and conservation and practices) (10:30-10:40	Rajendra Narsingh Suwal
	Questions and Answer	Moderator: Dr. Mahendra Shrestha
Question	Why do you want to conserve Sarus crane and why you are working for conservations?	Answer Farmer Nepal: Chandra Prasad Pathak Farmer India: Ravindra Kumar Trupathi
	Tea break	
	Group discussion Group divided based on the expertise and relevance to the topic and a facilitator identified	Session chair
	Research on Sarus crane (Existing research and monitoring technique used and potential areas) (Group A)	1. Dr. Laxman Prasad Poudel 2. Dr. Hem Bahadur Katuwal 3. Samjhana Kawan 4. Dr. Hem Sagar Baral 5. Hemanta Dhakal 6. Dr. Hari Prasad Sharma 7. Dr. Triet Tran 8. Padam Bahadur Budha 9. Baburam Banjade 10. Dr. Mudit Gupta 11. Dr. Arshad Hussian 12. Dr. Amita Kanaujia
	Activities on sarus crane conservation practice on the ground in Nepal and India (Sarus Protection Society / Sarus Mitra /Lumbini Crane Sanctuary) (Group B)	1. Niyam Shrestha 2. Dr. Mahendra Maharjan 3. Birendra Kadel 4. Bishnu Prasad Thapaliya 5. Kailash Jaiswal 6. Arjun Kurmi 7. Bhojraj Pantha 8. Dr. Ashok Kumar Ram 9. Dr. Chiranjibi Pokhrel

Day	Schedule	Resource person/ moderator
		10. Ishana Thapa
		11. Dr. Jatinder Kaur
	TAL mechanism between India and Nepal and its potential expansion to include biodiversity in human dominated landscape such as sarus crane conservation (e.g: Transboundary Bajaha Tal Model) (Group C)	1. Mahendiran Mylswamy
		2. Haribhadra Acharya
		3. Jatin Patel
		4. Ram Kishor Yadav
		5. Dr. Kumar Sapkota
		6. Rajendra Narsingh Suwal
		7. Ukesh Raj Bhuju
		8. Ganesh Pant
		9. Dr. Mahendra Shrestha
	Potential of OECM model to include Sarus Crane to include Sarus Crane conservation in India and Nepal (Group D)	1. Sabnam Pathak
		2. Prabhat Sapkota
		3. Basudha Rawal
		4. Manoj Kumar Shah
		5. Rajeev Chauhan
		6. Dr Bishnu Prasad Bhattarai
		7. Benju Budha
		8. Pradip Kadel
		9. Bishal Subedi
		10. Rabindra Kumar
		11. SanjayKumar
		12. Bed Kumar Dhakal
		13. Jivan Pageni
	Presentation from Group A	Prof. Dr. Amita Kanaujia
	Presentation from Group B	Niyam Shrestha
	Presentation from Group C	Dr. Ganesh Pant
	Presentation from Group D	Prabhat Sapkota
	Lunch break 12:20-13:20	
	Transboundary conservation mechanism between Nepal and India- how its scope can be expanded to include biodiversity in human dominated landscapes	Moderator: Dr. Mahendra Shrestha
	Government and outreach practices of Sarus Crane Conservation Society of Uttar Pradesh and approaches in Nepal	Q1. How can transboundary conservation be expanded for wetland birds in human dominated landscape?
		Answer: Bed Kumar Dhakal

Day	Schedule	Resource person/ moderator
		Q2. From TAL roof, what do you think about the idea of integrating conservation of Sarus Crane in human dominated landscapes?
		Answer: Dr Mudit Gupta
		Q3. What are the mechanisms via which the locals got interested in conservation?
		Answer: Prof. Dr. Amita Kanaujia
		Q 4. How can we involve stakeholders, and locals in Sarus conservation? How can we connect the bird conservation with digital share so that the locals can see their economy is being lifted?
		Answer: Dr. Hem Sagar Baral
		Q 5. Do you see some possibilities to restore the habitat and population in PA's from department level?
		Answer: Bed Kumar Dhakal
		Q.6 The transboundary proposal that is due to be sign, do you see any possibility to integrate human dominated landscapes?
		Answer: Bed Kumar Dhakal
		Q.7 What are the approaches used to convince the locals?
		Answer: Dr. Arshad Hussain
	Prospect of transboundary wetland and Sarus Crane Conservation (14:50- 17:00)	Audience
		Rajeev Chauhan
		Manoj Poudel

Day	Schedule	Resource person/ moderator
		Ukesh Raj Bhuju
		Bijaya Raj Subedi
	Research and monitoring	Arjun Kurmi
		Dr. Chiranjibi Prasad Pokhrel
		Samjana Kawan
		Dr Mahendrian Mylswamy
		Hemanta Dhakal
		Dr. Hari Prasad Sharma
		Ashish Basyal
		Bed Kumar Dhakal
	End of transboundary wetland and Sarus Crane Conservation Dinner	
Day 3.	Wetland site visit (optional)	
	Visit to transboundary wetlands Bajaha Tal	
	Interaction with local conservationist, farmers and journalist.	
	Discussion for way forward for community engagement	
	Share experience during field visit.	
	Departure of participants depending upon their travel plan	
	(Organizers – draft a plan as suggested during the resolution session)	

Appendix Table 2: List of delegates at the event

S.N.	Name	Affiliation	Gender
1	Chiranjibi Prasad Pokhrel	NTNC	Male
2	Keshav Mahat	NEZOS	Male
3	Hemanta Dhakal	Pokhara Bird Society	Male
4	Padam Bahadur Budha	DNPWC	Male
5	Haribhadra Acharya	DNPWC	Male
6	Hari Prasad Sharma	CDZ, TU	Male
7	Bishnu Prasad Bhattarai	CDZ, TU	Male
8	Baburam Banjade	NEZOS	Male
9	Hem Sagar Baral	Senior Ornithologist	Male
10	Arshad Hussain	WTI, India	Male
11	Ravindra Kumar Trupathi	WTI, India	Male
12	Radheshyam	WTI, India	Male
13	Ukesh Raj Bhuju	National College Kathmandu	Male
14	Samjhana Kawan	CDES, TU	Female
15	Yagya Murti Khanal	Forest directorate, Lumbini	Male
16	Kumar Sapkota	CDZ, TU	Male
17	Mahendra Maharjan	NeZoS	Male
18	Ram Kishor Yadav	TAL, Kohalpur	Male
19	Niyam Raj Shrestha	LCCC, Lumbini	Male
20	Bishnu Thapaliya	ZSL, Nepal Office	Male
21	Mahendra Shrestha	International Crane Foundation	Male
22	Triet Tran	International Crane Foundation	Male
23	Oli Mohammad Rayen	DFO, Kapilvastu	Male
24	Ram Gopal Chaudhary	DFO, Bardia	Male
25	Shiv Nandan Shah	DFO, Kapilvastu	Male
26	Jivan Pageni	DFO, Parasi	Male
27	Bed Kumar Dhakal	DNPWC	Male
28	Rajendra Narsingh Suwal	WWF-Nepal	Male
29	Hari D. Rai	Lumbini Development Trust	Male
30	Jatin Patel	UPL Sarus	Male
31	Sanjaya Parmar	ROPG, UPL	Male
32	Gyanin Rai	Lumbini Development Trust	Male
33	Amita Kanaujia	University of Lucknow	Female
34	Mahendiran Mylswamy	SACON, India	Male
35	Ganesh Pant	DNPWC/CNP	Male
36	Sabnam Pathak	DOFSC	Female
37	Mudit Gupta	WWF- India	Male
38	Bhoj Raj Pantha	KRCA, DNPWC	Male
39	Birendra Kandel	Banke National Park	Male
40	Mahendra Raj Wagle	DFO, Dang	Male
41	Laxman Prasad Poudel	NOU	Male
42	Bijaya Raj Subedi	DFO, Bardiya	Male
43	Prabhat Sapkota	MOFE, Lumbini	Male

44	Arjun Kurmi	Green Youth Lumbini	Male
45	Manoj Poudel	Kantipur Daily	Male
46	Manoj K. Shah	Suklaphanta National Park	Male
47	Sankhar Poudel	TDC, Lumbini	Male
48	Jatindar Kaur	UPLCSR, India	Female
49	Hem Bahadur Katuwal	NEZOS	Male
50	Kailash Jaiswal	Citizen Scientist, Lumbini	Male
51	Shailesh Gurung	Paklihawa Campus, Institute of Agriculture and Animal Science (IAAS), Tribhuvan University	Male
52	Rakesh Tripathi	Lumbini Social Service	Male
53	Laxman Yadav	Nirdeshanalaya, Butwal	Male
54	Dinesh Chaudhary	DFO, Rukum	Male
55	Rajeev Chauhan	SCON, India	Male
56	Kamal Bahadur	DFO, Bardia	Male
57	Dhani Ram	DFO, Bardia	Male
58	Surya Khatri	DFO, Bardia	Male
59	Thaneshwor Ghimire	Siyari Rural Municipality	Male
60	Teken Prasad Acharya	DFO, Dang	Male
61	Ishana Thapa	BCN	Female
62	Binod Lodh	Local Tour Guide	Male
63	Ramu Jaishi	PTDC	Male
64	Chandra Prakash Pathak	Lumbini Development Trust	Male
65	Prabesh Singh Kunwar	Directorate of Livestock and fish development	Male
66	Absas Ali	Directorate of Livestock and fish development	Male
67	Basudha Rawal	NEZOS	Female
68	Suvawati Pal	Farmer	Female
69	Purnima Pathak	Farmer	Female
70	Motilal Khohar	Farmer	Male
71	Benju Budha	CDZ	Female
72	Shree Ram Poudel	NeZoS, Lumbini	Male
73	Jeet B. Waiba	BNP	Male
74	Karna B. Tamanag	Division Forest Office, Nawalparasi	Male
75	Khem Raj Chaudhary	Division Forest Office, Nawalparasi	Male
76	Sushil Chaudhary	Division Forest, Dang, Ghorahi	Male
77	Vishwajeet Kanaujia	Lucknow University	Male
78	Bishal Subedi	NEZOS	Male
79	Ashish Basyal	Biodiversity Conservation, Nepal	Male
80	Pradip Kandel	NEZOS	Male

Appendix Photo 1: Token of love distribution to the presenter

Appendix Photo 2: Distribution of Token of love and certificates