Government of Rajasthan
Forest Department

UDAIPUR BIRD FESTIVAL

Udaipur Bird Festival

11th Edition

17th to 19th January, 2025

Souvenir

DEPUTY CONSERVATOR OF FORESTS (WILDLIFE), UDAIPUR

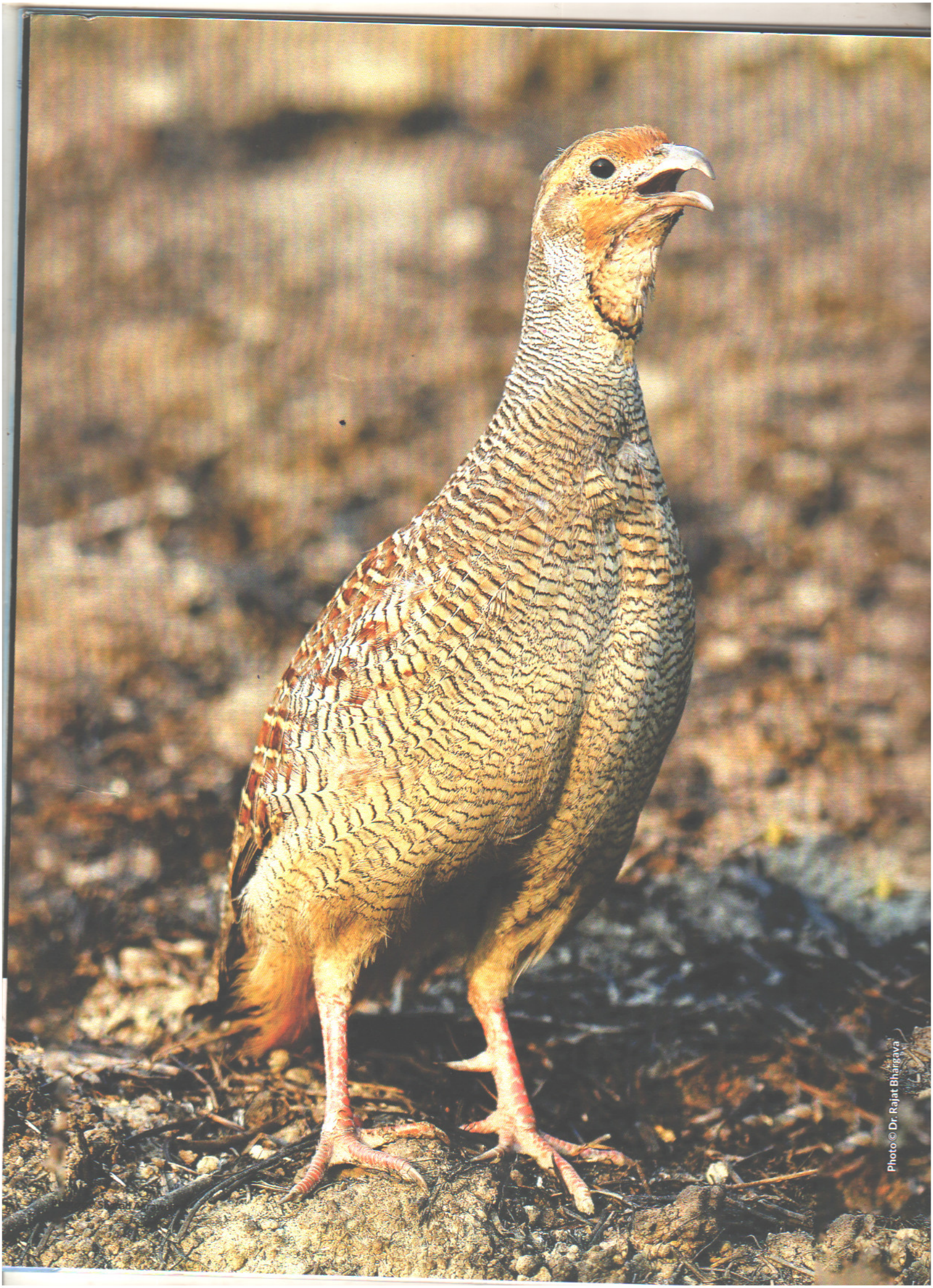


Photo © Dr. Rajat Bhargava

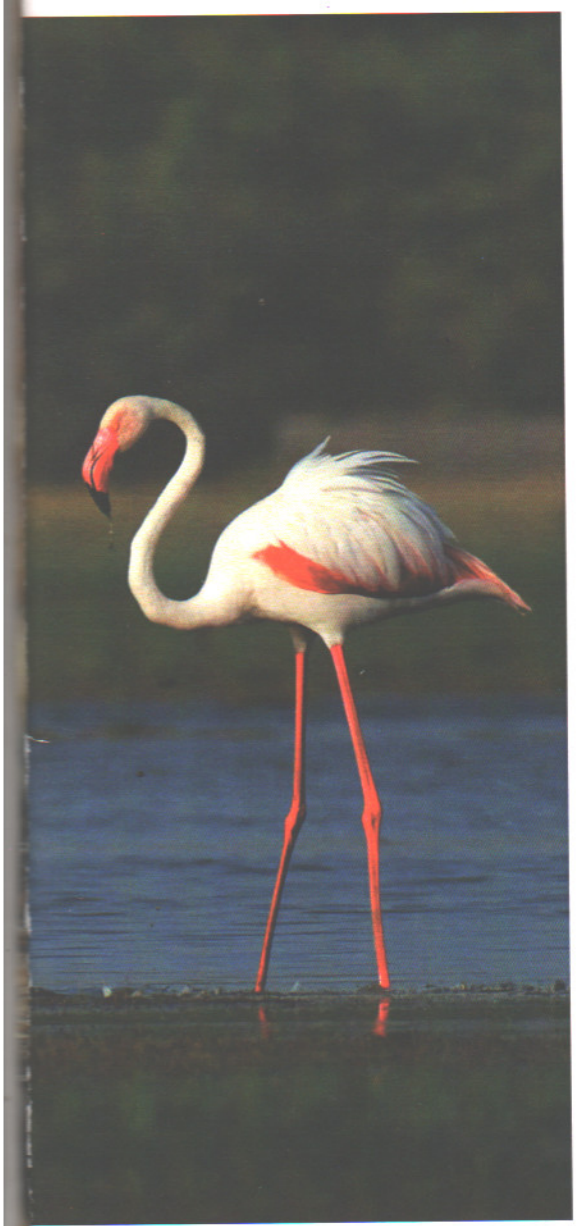
S.R.V. Murthy IFS
Chief Conservator of Forests
Wildlife, Udaipur

सत्यमेव जयते

ACKNOWLEDGEMENTS

Existence of mankind depends on existence of biodiversity of flora, fauna, hills, streams and other components of mother nature. Biodiversity, especially avian diversity also plays a vital role in survival of humanity. Southern Rajasthan is well known for its dense forest, IBAS, sanctuaries, wet lands, bird's diversity and conservation ethos.

Besides many lakes situated amidst Udaipur city, a large number of water bodies viz, Kishan Kareri, Badwai, Mangalwar etc. host large number of bird's life. The water bodies of Menar, Kheroda, Nagavali, Sei dam, Vallabhnagar etc., that fall in Udaipur district are 40 to 80 kilometer away from Udaipur city. Jawai dam in Pali district is a very important water body where birds of desert and Aravallis can be seen together. Rajsamand, Udaisagar, Baghdarrah, Piladar, Ranakpur etc. are other important water bodies where diverse varieties of birds can be seen in good numbers. Various taxonomic groups of aquatic birds like Ducks, Goose, Rails, Waders etc. can be commonly seen in water bodies. The conservation of avifauna could be enhanced through participation of local people. In view of more and more local participation, Forest Department, Udaipur celebrates Bird Festival every year. Looking to rich avifaunal biodiversity the Forest Department Udaipur started "Bird Fair" in 2014 with a serene involvement of local people, birders, WWF etc. This bird fair turned into Udaipur Bird Festival in 2016-17. This year, we are celebrating the "11th edition of Udaipur Bird Festival"



On this journey, I take privilege to acknowledge here the sincere efforts put in by Udaipur city people, students, researchers, event partners, professionals, armed forces, electronic and print media. corporates, members of Eco-Development Committees and VFPMCS. specialized NGOs like WWF, BNHS and all VFPMC members who have contributed to organize "Udaipur Bird Festival" and to bring the souvenir in existence. This has led to recognize number of birders in Udaipur and other wetlands areas.

I congratulate the Forest Department Udaipur and organizing teams for their efforts and to wish this event for a grand success.

S.R.V. Murthy

सत्यमेव जयते

भजन लाल शर्मा
मुख्य मंत्री
राजस्थान

संदेश

मुझे यह जानकर प्रसन्नता है कि उदयपुर में 11 वे बर्ड फेस्टिवल का आयोजन किया जा रहा है। इस अवसर पर एक स्मारिका का प्रकाशन भी किया जा रहा है।

झीलों की नगरी उदयपुर अपने नैसर्गिक सौंदर्य के लिए विश्व विख्यात है। यहां का प्राकृतिक परिवेश अत्यधिक खूबसूरत है। यहां की झील एवं तालाब जैसे जलाशय देश-विदेश से बड़ी संख्या में पक्षियों को आकर्षित करते हैं। इन पक्षियों का आगमन उदयपुर बर्ड फेस्टिवल को नयनाभिराम एवं मनमोहक बना देता है। यह फेस्टिवल पक्षी प्रेमियों को विविध प्रजातियों के पक्षियों के बारे मैं जानने और पारिस्थितिकी में उनके अहम योगदान को समझने का अवसर प्रदान करता है।

मुझे आशा है कि यह बर्ड फेस्टिवल लोगों को पक्षियों एवं उनके संरक्षण के प्रति संवेदनशील बनाएगा। साथ ही युवा पीढ़ी का पक्षियों के सुंदर संसार एवं पर्यावरण से जुड़ाव बढ़ाने का मंच बनेगा। इस अवसर पर प्रकाशित की जा रही स्मारिका उदयपुर संभाग के वन्यजीवों, विशेष रूप से पक्षियों एवं उनके आवासों के बारे में सारगर्भित जानकारी मुहैया कराने का माध्यम बनेगी।

मैं इस बर्ड फेस्टिवल के आयोजन और स्मारिका के प्रकाशन की सफलता के लिए अपनी शुभकामनाएं प्रेषित करता हूं।

(भजन लाल शर्मा)

सत्यमेव जयते

संजय शर्मा
राज्य मंत्री (स्वतंत्र प्रभार)
वन, पर्यावरण एवं जलवायु परिवर्तन विभाग
राजस्थान

संदेश

मुझे यह जानकर प्रसन्नता है कि हर वर्ष की भाँति इस वर्ष भी 16 से 19 जनवरी 2025 तक उदयपुर में ग्यारहवें "बर्ड फेस्टिवल 2025" का आयोजन किया जा रहा है। साथ ही स्मारिका का प्रकाशन किया जायेगा।

मेरा मानना है कि इस प्रकार के आयोजन से पक्षी प्रेमियों को विविध प्रजातियों के पक्षियों के बारे में जानने और उनके प्रति प्रेम भाव बनाए रखने का अवसर मिलता है।

आशा है स्मारिका में वन्यजीवों से संबंधित विभिन्न पहलुओं, पर्यावरण की दृष्टि से उनके महत्व, खासकर पक्षी एवं उनके आवासों से संबंधित तकनीकी जानकारी युक्त आलेख एवं अन्य उपयोगी सामग्री का समावेश हो सकेगा।

मै आयोजन एवं स्मारिका प्रकाशन की सफलता के लिये अपनी शुभकामनाएं प्रेरित करता हूँ।

(संजय शर्मा)

सत्यमेव जयते

SUDHANSH PANT IAS
Chief Secretary
Government of Rajasthan

MESSAGE

It is heartening to note that the Department of Forest is organizing the 11th `Udaipur Bird Festival from January 16 to 19, 2025.

The Fair promises to offer an opportunity to amateur bird watchers and ornithology enthusiasts to appreciate avian fauna around Udaipur's fabulous lakes and to interact with the eminent ornithologists of the country.

An event like this, at this time of the year when a good number of popular and endangered avian species visit our lakes, not only helps stimulating young minds for environment and wild life awareness but augments meaningful engagement of tourists too.

I hope that the Souvenir the Department proposes to release on this occasion, will further the cause by showcasing the biodiversity of the Southern Rajasthan.

I congratulate the organizers for their efforts and wish the event a grand success.

With best wishes,

Sudhansh Pant

(Sudhansh Pant)

सत्यमेव जयते

APARNA ARORA IAS
Additional Chief Secretary Department of Forest
Environment & Climate Change
Government of Rajasthan

MESSAGE

I feel immense pleasure that the Rajasthan Forest Department is organizing the 11th Edition of "Udaipur Bird Festival" in the city of lakes from 17th to 19th January, 2025. Udaipur has a long history of wildlife conservation and this event would add another milestone to Udaipur's Conservation culture.

I hope that the event creates an opportunity for school and college students to visit the wetlands in and around Udaipur and make them more sensitive towards conservation of lakes, birds and environment.

My best wishes and greetings to the organizers and participants for their dedicated efforts. I wish this event a grand success.

(Aparna Arora)

सत्यमेव जयते

ARIJIT BANERJEE IFS
Principal Chief Conservator of Forests
& Head of Forest Force, Rajasthan

MESSAGE

It gives me immense pleasure that the Forest Department, Rajasthan in organizing the 11th edition of "Udaipur Bird Festival" in the city of lakes, Udaipur.

Southern Rajasthan especially Udaipur, with all its green hills and water bodies is ideal place for organizing a festival dedicated to birds and their conservation. Many protected Areas and Important Bird Areas are confined to southern Rajasthan. The bird life in hills waters and in woods is remarkable in Udaipur area. Without help and co-operation from local public, we cannot conserve avian life and their habitat. Awareness about the birds and their habitat is the most important step for better conservation. Such birding events would definitely help to protect and conserve the avian-fauna and their habitat. So such events would be very fruitful to enhance eco-tourism in the area.

I am happy to know that the Department is bringing out this souvenir on the occasion of this mega event to provide an insight of rich avian life of the area. The efforts being taken by the Udaipur circle to protect and conserve the birds are commendable.

I send my best wishes and greetings to the organizers and participants for their dedicated efforts. I wish this event a grand success.

(Arijit Banerjee)

सत्यमेव जयते

Shikha Mehra

PAWAN KUMAR UPADHYAY IFS
Principal Chief Conservator of Forests
and Chief Wildlife Warden, Rajasthan

MESSAGE

On behalf of the Rajasthan Forest Department, I am pleased to extend my warm greetings to all bird enthusiasts conservationists. and nature lovers on the occasion of the Annual Bird Festival held in Udaipur.

Avian diversity of the State is remarkable. From the majestic Indian Bustard and vibrant Sarus Crane to the rare migratory species that flock to our wetlands. Rajasthan is a haven for birdlife. The wetlands of Keoladeo National Park, the desert landscape of the Thar, and the rich forests of the Aravallis are some of the diverse habitats that support wide range of resident and migratory birds. Making our state one of the most important birding destinations in India.

This festival Provides a unique opportunity to connect with nature, deepen our understanding of the article role birds play in maintaining ecological balance, and highlight the importance of preserving our natural habitats. The diversity of bird species in Rajasthan reflects not only the richness of our environment but also the success of conservation efforts over the years.

The Rajasthan Forest Department, in collaboration with local communities and conservation organizations is committed to safeguarding these species and their habitats for future generations. Through various initiatives including habitat restoration and awareness programs, we aim to ensure that Rajasthan continues to be a safe haven for both migratory and resident birds.

I encourage all attendees to immerse themselves in the festivities. engage in meaningful destinations and take away valuable insights that will contribute to the ongoing efforts in wildlife preservation let us continue to work together to ensure that the beauty and diversity

(Pawan Kumar Upadhyay)

MESSAGE

RAVI SINGH
SG and CEO
WWF-India

Since its inception in 2014, the Udaipur Bird Festival has touched the lives of a diverse set of stakeholders—local citizens, youth, nature lovers, researchers, technical experts, organisations and policy makers, inspiring action for the cause of avian fauna and their habitats—the wetlands. This festival has created a unique platform for ongoing dialogue/conversations, knowledge sharing, collective action and positive change for one of our most valuable ecosystems. On behalf of WWI'-India, I would like to congratulate the Government of Rajasthan, the Rajasthan Forest Department and the nature lovers of Udaipur for its leadership and commitment in curating and sustaining this initiative—probably one of India's biggest citizen led programme on wetlands and birds. When Wetland Mitras (friends of wetlands) and nature lovers from all across the country convene for the eleventh edition of the Udaipur Bird Festival from January 16-19, 2025, it is time for us to celebrate our journey and to chart out a course of action on wetlands for the decade ahead. I am sure, that the rich experience and expertise of the participants will help LT BF 2025, draw a visionary yet pragmatic framework for advancing wetland conservation in Rajasthan and across the country. On February 2, World Wetlands Day will be celebrated nationally and internationally to highlight the importance of protecting wetlands for our common future. Udaipur Bird Festival has for many years demonstrated this in letter and spirit and will remain an inspiration for years to come.

(Ravi Singh)

RAHUL BHATNAGAR IFS (Retd.)
Expert Member, NTCA.
Chairman, State Level Environmental Assessment Committee-4
President - Green Peepal Society Udaipur

MESSAGE

It is indeed a matter of great pleasure and honour to be a part of the "Bird Festival" being organised on the 16th to 19th January 2025. The Forest Department and other organisations deserve special appreciation for making all possible arrangements for conduct of this event, that has entered into its 11th edition.

I distinctly recall the year 2014 with a sense of satisfaction and pride when the seeds of this programme were sown during my tenure as Chief Conservator of Forest, Wildlife, Udaipur Circle.

During the last ten years it has spread awareness among the Birders and all those dedicated to the cause of conservation of the environment. It is my firm belief that in the times to come it will attract more Birders and take the form of a public awareness campaign highlighting the importance of the environmental conservation at large.

I wish the event a great success.

(Rahul Bhatnagar)

CONTENTS

AN OVERVIEW OF GALLIFORM BIRDS IN SOUTHERN RAJASTHAN

Dr. Dhirendra Devarshi
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Birds, which are grouped in Class Aves of Kingdom Animalia, are divided into 46 orders as per the Checklist of Birds of the World (Clements et al., 2024). Out of these 46 orders, Galliformes is the seventh largest order of birds with 306 extant species. Galliformes is an order of heavy-bodied, ground-feeding birds, some of which are reared by humans for their meat and eggs, or hunted as game birds. The members are also known as game fowl or gamebirds, landfowl, gallinaceous birds, or galliforms, and includes pheasants, turkeys, chickens, partridges, quails, etc. The name Galliformes derives from the Latin word "gallus" which means "rooster". Land fowls (Galliformes) and waterfowls (Anseriformes), collectively referred to as fowls, bear anatomical and molecular similarities. They also exhibit close evolutionary relationship to each other and hence placed in a clade named Galloanseres (Gallo= land fowl + anser = geese/water fowl).

This order represents one of the oldest of all lineages of modern birds, with roots in the Cretaceous Period. The members of this order are weak fliers hence non-migratory. They mainly rely on their running skills to escape predators. This order is cosmopolitan in distribution as its members occur in all continents except Antarctica. The galliforms inhabit a wide variety of vegetational types, including open to dense forest, scrub and second-growth forest, open grasslands, and flooded riparian (river) forests.

The smallest member of the order is the Blue-breasted Quail (*Synoicus chinensis*), about 13 cm (5 inches) long and about 45 grams in weight. The heaviest galliform is the wild turkey (*Meleagris gallopavo*), wild specimens of which may weigh up to 11 kg (about 24 pounds); the longest is the Great Argus (*Argusianus argus*), the male of which reaches 2 meters (79 inches) in breeding plumage, including wing and tail feathers the length of which may exceed one meter.

The order has 306 species out of which 43 are known to occur in India, which is about 14% of total number of species (Table-1). No doubt that in context of this taxon too, our country justifies its title of being a mega-biodiversity country. It is a well-known fact that India has only 2.4% of land area of the World but supports higher percentage of species in comparison to its land area. Out of the 43 species of landfowls that occur in India, 12 are reported from Rajasthan (28% of Indian Galliform). All, except Blue-breasted Quail, have been reported from southern Rajasthan (Table-1).

Table-1: Galliform families, genera and species

Region	Families	Genera	Species
World	5	87	306
India	2	22	43
Rajasthan	1	7	12
Southern Rajasthan	1	6	11

The order has been divided into five extant families. The family Phasianidae [including chicken, quail, partridge, pheasant, turkey, peafowl (peacocks) and grouse] with 186 species is the largest family of the order. Odontophoridae is a small family with natural distribution of its members restricted to North and South Americas. A couple of species of this family have been introduced in New Zealand. The members are known as New World Quails and differ from Old World Quails of Phasianidae in lacking spur in their feet. Numididae with only 8 extant species of Guineafowls is the smallest family of the order. The Cracidae (cracids), with about 34 species, are restricted to tropical woodlands of Central and South America and is considered the second oldest family of Galliforms. Their divergence from other galliform birds over 35 million years ago was influenced by the breakup of Gondwana. Megapodidae is the second smallest and the most primitive of the extant families of landfowls. It is a family of specialized mound builders. Unlike other galliforms, they don't incubate their eggs with their body-heat but build large mounds of decaying vegetation to lay eggs and are hence also known as incubator-birds. The male attends to the nest to regulate the internal heat by adding or removing litter while the eggs develop. The Megapodes are super-precocial, hatching from their eggs in the most mature condition of any bird i.e. with open eyes, bodily coordination and strength, full wing feathers, and downy body feathers, and are able to run, pursue prey and, in some species, fly on the day they hatch. The megapods, like reptiles, lay a large number of eggs.They belong to the Australasian realm, predominantly distributed south-west of Wallace's line. However, one species has been reported from the Nicobar Island (India) in Bay of Bengal. Thus, out of the five Galliforms families two, Phasianidae and Megapodidae, are represented in India (Table-2).

Table-2: Species account of families of Galliformes

Taxa	Genera			Species		
Family	World	India	Rajasthan	World	India	Rajasthan
Phasianidae	54	21	7	186	42	12
Odontophoridae	10	0	0	34	0	0
Numididae	4	0	0	8	0	0
Cracidae	12	0	0	57	0	0
Megapodidae	7	1	0	21	1	0
Total	**87**	**22**	**7**	**306**	**43**	**12**

Three species of Buttonquails, which occur in Rajasthan and are generally depicted along with quails in pictorial guides, are not included in the order Galliformes. These are the members of the family, Turnicidae and belong to the order Charadriiformes (Ali & Ripley, 1980).

Conservation Status of Galliform birds:

Although a good number of Galliform species is found in India, it is a matter of concern that roughly one third of this fall under threatened categories of IUCN (Table-3). Himalayan Quail (*Ophrysia superciliosa*) has not been reported since 1876 and has been put under the 'Critically Endagered' category. It was reported four times between 1836 to 1876 from localities near Mussoorie and Nainital (Uttarakhand). It may have gone extinct alike another New Zealand Quail (*Coturnix novaezelandiae*) which was last reported in 1875. The status of Indian Galliforms as per IUCN categories is summarized in Table-3. Luckily, none of the species of the concerned order from Rajasthan or southern Rajasthan, is facing threat and all are placed under 'Least Concern' category in IUCN 2024 listing.

Table-3: IUCN conservation status of Galliform in India and Rajasthan

	India	Rajasthan	Southern Rajasthan
Not Evaluated	0	0	0
Data Deficient	0	0	0
Least Concern	29	12	11
Near threatened	4	0	0
Vulnerable	7	0	0
Endangered	2	0	0
Critically endangered	1	0	0
Extinct in the wild	0	0	0
Extinct	0	0	0
Total	**43**	**12**	**11**

Endemicity

High degree of endemicity can be expected in birds which h weak flights. Accordingly, 13 species (30%) are endemic India in general or to a specific area of endemicity (Table These include 1 critically endangered (or feared extinct) vulnerable and 1 endangered species. The 5 species which endemic to India in general have been put under the Le Concern category (Table-5).

Table-4: Endemic genus and species of Galliforms in India

	India	Andaman & Nicobar Islands	Assam Plains	Eastern Himalayas	Western Himalaya
Genus	2	0	0	0	2
Species	5	1	1	3	3

Red Spurfowl (*Galloperdix spadicea*), Painted Spurfo (*Galloperdix lunulate*), Rock Bush Quail (*Perdicula argoonda* and Grey Junglefowl (*Gallus sonneratii*) are four Indi endemic species that are found in Rajasthan as well.

Galliform species of Rajasthan

As stated earlier, the state of Rajasthan is represented by 1 species from the order Galliformes. All species from the stat have been placed under the Least Concern category. Four c these species are Indian endemics. Out of these 12 specie Blue-breasted Quail (*Synoicus chinensis*) has been reporte only once from Sariska, Alwar (Sankar, et al. 1993). The norma distribution range of this species is predominantly in Easter India hence it may be a rare case vagrancy if not an erroneou record. The other 11 species have been regularly reporte from Rajasthan and southern Rajasthan. Some species such a Grey Francolin, Black Francolin and Peafowl may be found i agricultural fields, scrubs, grasslands and gardens whereas some such as painted francolin, spurfowls and junglefowl are partial to landscapes made by hill ranges.

It is an interesting fact that 4 new sub-species of galliforms have been reported from Rajasthan, out of which 3 were from southern Rajasthan. Thomas Hardwicke had collected specimen of birds from India. Out of these specimens, one from Udaipur was described as a new sub-species (*Francolinus pictus pallidus*) of Painted Francolin by Gray in 1831. Another subspecies (*Galloperdix spadicea caurina*) was reported by Blandford in 1898 on the basis of a specimen of Red Spurfowl collected on 7th July 1868 from Mount Abu. This collection was being made by G. King for A. O. Hume. One sub-species of Rock Bush Quail was reported on the basis of collection of a specimen from Nasirabad. W. Koelz described a new sub-species of Grey Junglefowl on the basis of a specimen collected from Mount Abu. However, this sub- species is not considered a valid subspecies and the species is regarded as monotypic (Ripley, 1982).

A list of species of Indian Galliforms along with endemicity and conservation status is presented in table-5. This table also shows species that are known to occur in Rajasthan and southern Rajasthan.

Table-5: Annotated list of Galliform species of India*

S.No.	Common name (scientific name)	Distribution in Rajasthan	Endemic to	Conservation status (IUCN)
1.	Nicobar Megapode (*Megapodiusnicobariensis*)	x	A & N	VU
2.	Hill Partridge (*Arborophila torqueola*)	x		LC
3.	Chestnut-breasted Partridge (*Arborophila mandellii*)	x	E. Him.	VU
4.	Rufous-throated Partridge (*Arborophila ufogularis*)	x		LC
5.	White-cheeked Partridge (*Arborophila atrogularis*)	x		NT
6.	Indian Peafowl (*Pavo cristatus*)	Raj;SR		LC
7.	Green Peafowl (*Pavo muticus*)	x		EN
8.	Red Spurfowl (*Galloperdix spadicea*)	Raj;SR	India	LC
9.	Painted Spurfowl (*Galloperdix lunulata*)	Raj;SR	India	LC
10.	Grey Peacock Pheasant (*Polyplectron bicalcaratum*)	x		LC
11.	Blue-breasted Quail (*Synoicus chinensis*)	Raj?		LC
12.	Japanese Quail (*Coturnix japonica*)	X		NT
13.	Common Quail (*Coturnix coturnix*)	Raj;SR		LC
14.	Rain Quail (*Coturnix coromandelica*)	Raj;SR		LC
15.	Chukar Partridge (*Alectoris chukar*)	X		LC
16.	Tibetan Snowcock (*Tetraogallus tibetanus*)	X		LC
17.	Himalayan Snowcock (*Tetraogallus himalayensis*)	X		LC
18.	Jungle Bush Quail (*Perdicula asiatica*)	Raj;SR		LC
19.	Rock Bush Quail (*Perdicula argoondah*)	Raj;SR	India	LC
20.	Painted Bush Quail (*Perdicula erythrorhyncha*)	X	India	LC
21.	Manipur Bush Quail (*Perdiculamanipurensis*)	X	A. Plains	EN
22.	Himalayan Quail (*Ophrysia superciliosa*)	X	W. Him.	CR
23.	Black Francolin (*Francolinus francolinus*)	Raj;SR		LC
24.	Painted Francolin (*Francolinus pictus*)	Raj;SR		LC
25.	Chinese Francolin (*Francolinus pintadeanus*)	X		LC
26.	Grey Francolin (*Francolinus pondicerianus*)	Raj;SR		LC
27.	Swamp Francolin (*Francolinus gularis*)	X		VU
28.	Mountain Bamboo Partridge (*Bambusicola fytchii*)	X		LC
29.	Red Junglefowl (*Gallus gallus*)	X		LC
30.	Grey Junglefowl (*Gallus sonneratii*)	Raj;SR	India	LC
31.	Blood Pheasant (*Ithaginis cruentus*)	X		LC
32.	Himalayan Monal (*Lophophorusimpejanus*)	X		LC
33.	Sclater's Monal (*Lophophorus sclateri*)	X	E. Him.	VU
34.	Snow Partridge (*Lerwa lerwa*)	X		LC
35.	Western Tragopan (*Tragopanmelanocephalus*)	X	W. Him.	VU
36.	Satyr Tragopan (*Tragopan satyra*)	X		NT
37.	Blyth's Tragopan (*Tragopan blythii*)	X	E. Him.	VU
38.	Temminck's Tragopan (*Tragopan temminckii*)	X		LC
39.	Mrs Hume's Pheasant (*Syrmaticus humiae*)	X		NT
40.	Cheer Pheasant (*Catreus wallichii*)	X	W.Him.	VU
41.	Kalij Pheasant (*Lophura leucomelanos*)	X		LC
42.	Tibetan Partridge (*Perdix hodgsoniae*)	X		LC
43.	Koklass Pheasant (*Pucrasia macrolopha*)	X		LC

***Distribution:** Raj = Reported from Rajasthan; SR=reported from Southern Rajasthan; ? = doubtful or single record, x = not reported from the State

Endemicity : A &N = Andaman & Nicobar; E. Him. = Eastern Himalaya; W. Him. = Western Himalaya;

IUCN conservation status: CR = Critically endangered; EN = Endangered; LC = Least concern; NT = Near Threatened, VU = Vulnerable

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GALLIFORMES OF SOUTHERN RAJASTHAN

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We are proud to state that the Udaipur Bird Festival held each year has completed ten years in 2024, and we are now celebrating the 11th edition of this well-known and popular event of birders and nature lovers. During the preliminary meeting held for discussing the festival intricacies, it was unanimously decided to have a themed based event and similarly the associated souvenir. The conservation emphasis for this year shall be "Galliformes of Southern Rajasthan." In this article we highlight the various Galliformes species present in our areas. The beautiful species pictures beyond say add the much-needed focus, along with the need for conserving the habitats of Galliformes inhabit and the prevailing threats on this assemblage of birds. Galliformes is an order of birds which include pheasants, partridges, and quails. These birds have played an important role in the human culture due to their aesthetic appeal and value as food.

The Galliformes more popularly known as 'gamebirds" and consist of five families of birds worldwide: Phasianidae (members are turkey and partridges, grouse, pheasants, francolins, junglefowls, peafowls, spurfowls and Asiatic partridges), Odontophoridae (New World quails), Numididae (Guinea fowl), Cracidae (including Guans and Currasows), and Megapodiidae (Megapodes).

Relationship with man

Galliformes species have been closely associated with man. For example, the domestic chicken originating from Red Junglefowl *Gallus gallus* found in India has been long in demand by mankind for its meat and other products.

Red Junglefowl Rajat Bhargava

Similarly, all over the world, Galliformes species such as turkey *Meleagris* spp., Guinea fowl *Guttera* spp. and Japanese Quail *Coturnix japonica* are unrivalled among other birds for their use by humans. Galliformes species and their eggs are considered protein rich-meal for which they are snared, shot, or otherwise caught. Over the years, numbers of pheasar have been bred for generations for their meat and eg worldwide.

Some pheasants, due to their spectacular colours are al popular as ornamental birds. Extravagant plumes ar relatively easy upkeep of these birds has created a hi demand for them by zoos and private aviculturists. The Indi peacock's beguiling feather eye-spots and its dazzling displ have made it one of the most recognizable birds worldwid The tail feathers of the male Indian Peafowls are used for variety of purposes and as such this has created a hug domestic as well as international demand.

Furthermore, the aggressiveness of the males amongst thes species and their territorial nature, has resulted in them beir tamed as pets for cock-fighting - a sport, though illegal, ye popular in several rural parts of India and other countries.

A brief glance through the Indian Galliformes

India has a rich diversity of francolins, partridges, pheasants and quails found throughout its states. There are 43 species o Galliformes represented by two families namely Phasianida and Megapodiidae in India. Among the Galliformes specie found in India, seven species are endemic to India. These ar Nicobar Megapode *Megapodius nicobariensi*, Rock Bush-quai *Perdicula argoondah*, Painted Bush-quail *Perdicul erthrorhyncha*, Red Spurfowl *Galloperdix spadicea*, Painte Spurfowl *Galloperdix lunulata*, Himalayan Quail *Ophrysi superciliosa* and Grey Junglefowl *Gallus sonneratii*.

The family Phasianidae has 42 species comprising of the following groups: pheasants, francolins, partridges, quails, spurfowls and snowcocks. The second family Megapodiidae consists of only one species found in India (Nicobar group of islands)—the Nicobar Megapode.

The family Phasianidae are small to large terrestrial birds, with plump body, short stout bill, short rounded wings and short or very long tails. The plumages may be drab or spectacular depending on the habitat of a particular species. Birds of this family inhabit open areas or forest ranging from the sea-level up to the snow-line. The size of various species under the family Phasianidae ranges from 14 - 250 cm of which the maximum length of the tail could be up to 160 cm. The Indian Peafowl *Pavo cristatus*, our national bird, also belongs to this family with Rajasthan hosting a substantial population. Most Galliformes especially francolins prefer to run for cover rather than to fly.

A look at the Galliformes species of Southern Rajasthan

Out of the 43 species of Galliformes found in India, a total of 12 Galliformes species are recorded from Rajasthan (Ali & Ripley, 1983; Ghorpade, 2016; Grimmett *et al.* 1999; Rasmussem & Anderton, 2012; Sangha & Devershi,2006; Sharma et al. 2013 and Sharma 2024) Among the twelve species regularly recorded from Rajasthan, the Painted Spurfowl, Blue-breasted Quail and Black Francolin have negligible records from Southern Rajasthan.

(1) Grey Francolin *Ortygornis pondicerianus*

Size: 33 cm, Vernacular name – *Bhura teetar, Khateek*

Best seen at - Kumbhalgarh sanctuary, Pratapgarh and Baghdarrah conservation reserve.

Grey Francolin is a highly cursorial and as most francolin species, it prefers to run for cover rather than to fly. Grey Francolin is probably the most adaptable widespread species and their omnivorous diet has allowed them to adapt to human-altered environments such as cultivated fields, irrigated plantations, and even roadsides. Calls of francolins are loud and are heard through most of the year.

Francolins are monogamous, and both parents tend their young ones. Sedentary and gregarious, young stay with parents for several months. Nests are simple scrapes on the ground, sometimes lined with vegetation. A small gamebird with an orangish face and fine barring throughout. Males and females are similar. Occurs in open grassy areas such as dry grasslands, scrub, and agricultural land. Often found in groups. This species is commonly seen in all protected areas and forests of Southern Rajasthan. A good population can always be observed in Jaisamand, Sajjangarh, Kumbhalgarh, Todgarh-Raoli and Bassi sanctuary and is equally present outside the forest areas.

(2) Black Francolin *Francolinus francolinus*

Size: 34 cm, Vernacular name – *Kala Teetar, Kalda*

Best seen at – Tal Chhapar, Sariska Tiger Reserve, but rarely in Southern Rajasthan.

One of the most sexually dimorphic francolin species. A strikingly patterned male is unmistakable with his jet-black face and breast, white cheek patch, dark rust-brown collar, and bright white spots. Brownish females have a small orange

nape patch, pale throat, and dense black-and-white markings all over the body. A resident francolin locally common in well-watered tracts of grasslands and cultivation often encountered being a shy sulking species known for its breeding calls. This species is present in eastern and northern edges of Mewar area. It is mostly absent in most interior zones of 'Mewar'.

(3) Painted Francolin *Francolinus pictus*

Size: 31 cm, Vernacular name – *Makhaniya teetar, Taliyo teetar, Keela.*

Best seen at outskirts of Udaipur in semi-dry undulating grasslands with scrub and cultivation. More common in grasslands of Bhilwara district.

Looks very similar to female Black Francolin but lacks rufous hind collar and has a brighter rufous face and throat. Boldly patterned francolin with heavily white-spotted under and upperparts. Endemic to peninsular India and Sri Lanka, but recently has not been recorded in most of south India. Occurs in cultivated and open habitat with scattered trees and dense undergrowth where it remains hidden most of the year. This species become quite vocal during summer months and near the onset of monsoon season. Its presence can be seen in or near the wheat fields at the time of Rabi crops harvesting in Southern Rajasthan. Sometimes its nests are seen among the hedges present on the bunds of the agricultural fields. Males have a tendency to call from some high perches.

(4) Common Quail *Coturnix coturnix*

Size: 20 cm, Vernacular name – *Ghagus bater*
Best seen at – Tal Chhapar, Sajjangarh and Baghdarrah during winter.


Rajat Bhargava

Small pear-shaped migratory quail to India which breeds in western Europe east to central Asia and winters in Africa, southern Europe, and South Asia. Plumage cryptic and streaky brown with pale eyebrow; male has black throat stripe.

A very secretive quail species locally common in cropland and grassland, preferring flat areas, often seen only when flushed at close range, flying vertically than flying straight.

(5) Rain Quail *Coturnix coromandelica*

Size: 18 cm, Vernacular name – *China bater*

Best seen at – Sonkhaliya, Baghdarrah and grasslands of Pratapgarh.


Rajat Bhargava

A summer visitor to north-west India, it is a small ball-shaped bird, most often seen in flight as it flushes from almost underfoot. Male unmistakable, with natty black-and-white face pattern and triangular black splotch on the chest that resembles spilled paint. Found in grassy, open areas such as farmland, meadows, and grasslands in small flocks that flush together and then are difficult to flush a second time.

(6) Blue-breasted Quail *Excalfactoria chinensis*

Size: 14 cm, Vernacular name – *Neela lavva*

Best seen at – It is a rarely encountered species in area, although potential habitat is available in many parts of southern Rajasthan.

A tiny highly sexually dimorphic quail. Males appear very dark with white lores and females are duller. Largely residential species found in secondary scrub on margins of cultivation. Calls are rich down slurred crowing whistle with 2-3 notes given repeatedly.


Rajat Bhargava

(7) Jungle Bush-Quail *Perdicula asiatica*

Size: 17 cm, Vernacular name – *Jungli lawwa*

Best seen at – Almost everywhere. After rains when gras becomes tall this species can be easily seen at Maharana Pratap Nature Trail in Sajjangarh Wildlife Sanctuary.


Rajat Chordia

A small, plump terrestrial bird, roughly spherical in shape. Identified by their rusty throat and rusty-and-white eyebrow. Males have barred underparts while females have uniform pinkish cinnamon underparts. Found in dry stony scrub jungles and dry grasslands. Often seen in groups of 2–7, but can occur in coveys up to 20 birds.

(8) Rock Bush-Quail *Perdicula argoondah*

Size: 17 cm, Vernacular name – *Patthar lawwa*

Best seen at – Sonkhaliya and in southern Rajasthan can be seen in Kumbhalgarh and Bassi sanctuaries while moving on various paths after departure of monsoon.

Very similar looking to Jungle Bush-quail with slightly less contrasting markings being overall a squat and rotund bush-quail. Males have a dull chestnut forecrown and face, a thin white eyebrow over a dark brown eyeline that broadens behind the eye. Lightly barred brown above and boldly barred in black and white below. Females have a similar but duller head pattern with vinaceous underparts without barring. Found in pairs or family groups in dry rocky areas with scrub.

(9) Red Spurfowl *Galloperdix spadicea*

Size: 36 cm, Vernacular name – *Chokhara, Jhapta*

Best seen at – Mount Abu and Kumbhalgarh sanctuary. In Kumbhalgarh it is best seen from *Thandiberi* to *Areth* gate trek. *Gamdi-ki-nal* and *Beejfadiya* area in Phulwari Wildlife Sanctuary are also good localities to see the Red Junglefowl.

A resident species slightly smaller than a domestic chicken, but longish-tailed rufous gamebird with red facial skin and legs with dusky tail. Females have more barring on the upperparts than males. A bird fairly common in dry-and-moist-deciduous forest in stony, scrubby foothills with water course and bamboo jungle in patches of lantana.

(10) Painted Spurfowl *Galloperdix lunulata*

Size: 32 cm, Vernacular name – *Askal murg*

Best seen at – Ranthambore and Sariska. Bassi sanctuary is also a good place to see this bird in Southern Rajasthan.

The only resident spurfowl lacking red facial skin with dark bill and legs and black tail and yellow-ochre belly. The brightly coloured male is unmistakable with dense white spots while the female is more drab brown overall.

This is a bird of the rockier foothill habitat than Red, including broken terrain with dense thorn scrub and bamboo forest in

the Indian peninsula. It is mostly found in pairs or in small groups.

(11) Grey Junglefowl *Gallus sonneratii*

Size: Male 70 cm / female 46 cm, Vernacular name – *Jungli murgha, Veri Kukda, Vagdaoo kukda and Uzadi kukda*

Best seen at – Mount Abu and in Kumbhalgarh especially in Thandiberi, also Areth gate trek is one of the best places to see and hear this bird speices.

A species endemic to peninsular India where it occurs in deciduous and evergreen forest. Males look grey with heavily golden spangled black cape with long glossy-black tail and yellowish legs. In some places, they are illegally hunted for their neck hackles that are often smuggled for their use in fishing flies in some foreign countries.

(12) Indian Peafowl *Pavo cristatus*

Size: Male 110 cm / female 86 cm, Vernacular name – *Mor, Moriyo (Male), Moldi, Dheldi* (female)

Best seen at – Sajjangarh, Banki forest and in almost all habitats and localities. In Sajjangarh, Indian Peafowl roosts on trees atop of the high hill in front of Sajjangarh palace. At sunrise roosting birds take flight to come down. This scene at this time is an unforgettable experience.

India's most popular bird enjoying the status of being our national bird. Recognised by the unmistakable iridescent blue tail ornamental upper tail feathers that the male spreads out its when courting females. Females have a shorter tail, an iridescent green neck, and browner plumage. Found in forest, forest edge, and agricultural land.


Niramay Upadhyay

Often tamed and semi-tamed. Indian Peafowl are often seen in groups with one or more adult males. Roost at some high trees during night. Very distinctive and loud trumpeting long call, followed by several shorter yowls, decelerating, and becoming longer near end.

Threats, Legislation and Conservation

Habitat loss and degradation, agriculture expansion, rampant use of insecticides, pesticides combined with poaching has pushed 15 species into the threatened categories of the IUCN Red list. WPA, the abbreviated word for Wildlife (Protection) Act, 1972, (as amended in 2022) of India, completely bans the hunting, trapping, trade, export, import and use of all native species of Galliformes and their body parts.

However, the WPA under Chapter V, Section 43 gives a clear exception to use and trade of tail feather of peacock and the article made therefrom. Similarly, the farm bred varieties of Japanese Quail (also listed in native avifauna list of India) are excluded from the WPA. The trade of exotic Galliformes listed in CITES Appendices is regulated under Schedule IV of the WPA. For non-CITES exotic Galliformes there is no restriction in the domestic scenario for their possession, breeding, or transport. The Foreign Trade Policy (EXIM policy through DGFT) of Government of India controls imports and exports of wild birds from India and bans international trade in all Indian Galliformes or their derivatives from India.

Galliformes are supposedly trapped for food, pet trade, sport (cock-fight), feathers, taxidermy, medicinal purpose and for aviculture across the country. Sometimes eggs of the francolins and pheasants are collected from the wild, eithe for consumption or to raise chicks which are then hatche under domestic hens. Decoy call birds or cell phone are used t lure wild counterparts into snares, drive nets, variety c nooses and bamboo-traps that are practised for capturin Galliformes.


Rajat Bhargava

Apart from the native Galliformes, several exotic pheasant are bred in captivity and traded for ornamental aviculture i India. Other farm bred Galliformes such as Guineafowls an turkeys are also traded as poultry in several Indian bird an poultry markets.

As they are mostly ground nesting birds with young being precocial and nidifugous, they need safe breeding places free of predation from the increasing dog-menace especially for species inhabiting close human-habitation. Agricultural intensification and continuous decline and exploitation of grasslands are some more threats to Galliformes. Although the chicks are capable of flight at early age, their remains a lot of predations from various predator species. Rajasthan beyond doubt remains a stronghold for or Galliformes despite all odds and we need to have a strict control on local level poaching and organised trade. Hope our article gets more attention for our esteemed Galliformes across our nation and off course Rajasthan.

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GALLINACEOUS BIRDS IN HUMAN LANDSCAPE AND PROTECTED AREAS WITH SPECIAL REFERENCE TO SOUTHERN RAJASTHAN

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Recent rapid surveys using revised IUCN guidelines indicate that in India ,76 bird species, 98 amphibians, 198 reptiles and 178 mammal species and around 1,500 endemic plant species are facing varying degrees of threats. Gallinaceous birds, also known as "land fowl," are a group of birds that belong to the order Galliformes. These birds are characterized by their heavy bodies, strong legs, and relatively short wings. They are primarily ground-dwelling and include some of the most well-known domestic and wild species. Gallinaceous birds found in both human landscape and Protected Areas. These birds are generally omnivorous, feeding on seeds, insects, and small animals. Gallinaceous birds, belonging to the order Galliformes, include species like pheasants, partridges, quails, turkeys, junglefowls, and guinea fowls. These birds are primarily ground-dwelling and are known for their adaptability to various habitats, including human-modified landscapes. Their presence in areas like farmlands, villages, and urban fringes highlights their ecological flexibility and their interactions with human activities. Interestingly many invasive exotic plant species have entered in the forest areas of Udaipur, Rajasamand, Dungarpur, Banswara, Chittorgarh and Pratapgarh in Southern Rajasthan. Species like *Prosopis juliflora, Lantana camara, L. wightiana, Cassia uniflora, Hyptis suveolens* etc. are visible in different habitats of these districts. They are taking heavy tall from the natural habitats of the area, but they provide ideal habitat for breeding to the many Gallinaceous birds in the protected areas of southern Rajasthan. The details for the Gallinaceous birds in the protected areas of southern Rajasthan are given in the Table 1.

Table1: Gallinaceous birds in the Protected Areas of southern Rajasthan

S. No	Name of Protected Area	District	Gallinaceous birds recorded*
1.	Mukundara Hills Tiger Reserve	Kota, Bundi, Jhalawar, Chittorgarh	Grey Francolin, Black Francolin, Painted Francolin, Common Quail, Rain quail, Jungle Bush-Quail, Rock Bush Quail, Painted Spurfowl, Indian Peafowl
2.	Mukundra Hills National Park	Kota, Chittorgarh	Grey Francolin, Black Francolin, Painted Francolin, Common Quail, Rain quail, Jungle Bush-Quail, Rock Bush Quail, Painted Spurfowl, Indian Peafowl
3.	Jaisamand Sanctuary	Udaipur	Grey Francolin, Common Quail, Rain quail, Jungle Bush-Quail, Indian Peafowl
4.	Mount Abu Sanctuary	Sirohi	Grey Francolin, Painted Francolin, Common Quail, Rain quail, King Quail, Jungle Bush-Quail, Rock Bush Quail, Indian Peafowl, Grey Junglefowl
5.	Kumbhalgarh Sanctuary	Rajsamand, Udaipur, Pali	Grey Francolin, Black Francolin, Painted Francolin, Common Quail, Rain Quail, Jungle Bush-Quail, Rock Bush Quail, Indian Peafowl, Grey Junglefowl
6.	Sitamata Sanctuary	Pratapgarh, Chittorgarh,Salumbar	Grey Francolin, Painted Francolin, Common Quail, Rain Quail, Jungle Bush - Quail, Rock Bush Quail, Indian Peafowl, Grey Junglefowl
7.	Jawahar Sagar Sanctuary	Kota, Bundi, Chittorgarh	Grey Francolin, Black Francolin, Common Quail, Rain Quail, Jungle Bush-Quail, Rock Bush Quail, Indian Peafowl, Painted Spurfowl
8.	Bhainsrorgarh Sanctuary	Chittorgarh	Grey Francolin, Black Francolin, Common Quail, Rain Quail, Jungle Bush - Quail, Rock Bush Quail, Painted Spurfowl
9.	Todgarh -Raoli Sanctuary	Rajsamand, Beawar, Pali	Grey Francolin, Black Francolin, Painted Francolin, Common Quail , Rain Quail, Jungle Bush-Quail, Rock Bush Quail, Red Spurfowl, Indian Peafowl, Grey Junglefowl
10.	Pulwari ki Nal Sanctuary	Udaipur	Grey Francolin, Painted Francolin, Common Quail , Rain Quail, Jungle Bush - Quail, Rock Bush Quail, Red Spurfowl, Indian Peafowl, Grey Junglefowl

11.	Sajjangarh Sanctuary	Udaipur	Grey Francolin, Painted Francolin, Common Quail , Rain Quail, Indian Peafowl, Red Spurfowl
12.	Bassi Sanctuary	Chittorgarh	Grey Francolin, Painted Francolin, Common Quail , Rain Quail, Jungle Bush-Quail, Rock Bush Quail, Indian Peafowl,
13.	Baghdarrah Crocodile Conservation Reserve	Udaipur	Grey Francolin, Common Quail, Rain quail, Jungle Bush-Quail, Indian Peafowl
14.	Mahseer Conservation Reserve	Udaipur	Grey Francolin, Common Quail, Rain quail, Jungle Bush-Quail, Indian Peafowl
15.	Amrakh Mahadev Leopard Conservation Reserve	Udaipur	Grey Francolin, Common Quail , Rain quail, Jungle Bush-Quail, Indian Peafowl, Red Spurfowl

* Blue-breasted Quail is a rare species. Potential habitat of this species is present in many sanctuaries of Rajasthan.

Gallinaceous Birds found in Human Landscapes are Indian Peafowl (Pavo cristatus), Grey Francolin *(Francolinus pondicerianus)*, Common Quail *(Coturnix coturnix)*, Black Francolin *(Francolinus francolinus)*, etc. are commonly seen in human dominated areas, villages, temple grounds, agricultural fields, gardens, village outskirts and common property resources. Mostly supported by the human subsidy, they feed on seeds, grains, insects, and food scraps. Uses tall crops as cover, benefitting from the availability of food in cultivated areas, often seen foraging in fields and around human settlements, especially in rural areas. Revered in Indian culture, they are protected and encouraged in many areas. Gallinaceous birds play an important ecological role in our ecosystem, especially they are excellent insect controller birds. By consuming and excreting seeds, they help in seed dispersal also. By eating a wide variety of insects, contributing to insect pest control in agricultural and horticulture areas. Their foraging behavior disturbs the soil, aiding in aeration. Chickens and quails are economically significant as sources of protein (meat and eggs).

Table1: Gallinaceous Birds of Rajasthan seen in Human dominated Landscape and Protected Areas

S.No.	Common Name	Scientific Name	Main Habitat
Francolins			
1	Grey Francolin	*Francolinus pondicerianus*	Human dominated landscape and Protected area
2	Black Francolin	*Francolinus francolinus*	Protected area
3	Painted Francolin	*Francolinus pictus*	Protected area
Quails			
4	Common Quail	*Coturnix coturnix*	Human landscape and Protected area
5	Rain Quail	*Coturnix coromandelica*	Human landscape and Protected area
6	Blue - breasted Quail (King Quail),	Coturnix chinensis	Potential habitat is available in many Protected areas of the state
7	Jungle Bush-Quail	*Perdicula asiatica*	Protected area
8	Rock Bush Quail	*Perdicula argoondah*	Human landscape and Protected area
Spurfowls			
9	Painted Spurfowl	*Galloperdix lanulata*	Protected area
10	Red Spurfowl	*Galloperdix spadicea*	Protected area
Pheasants			
11	Indian Peafowl	*Pavo cristatus*	Human landscape and Protected area
12	Grey Junglefowl	*Gallus sonneratii*	Protected area

Many gallinaceous birds, like quails and pheasants are bred and hunted for sport and food. Birds like the Indian Peafowl hold religious, cultural and aesthetic significance. Gallinaceous Birds face variety of challenges in Human landscapes like urbanization and intensified agriculture which reduce the availability of suitable habitats. Pesticides and chemicals exposure to agro-chemicals affect their food sources and health. Illegal unregulated hunting threatens some populations, especially in rural, tribal and remote areas. Unnatural predation by increased presence of domestic animals (e.g., cats and dogs) and invasive species can lead to higher predation rates. Many of the Gallinaceous birds facing hybridization risks because of interbreeding with domesticated relatives (e.g., Red Jungle fowl with chickens) threatens the genetic integrity of wild species. Sustainable farming practices, minimize pesticide use and organic farming should be encouraged to protect their food sources. Community involvement is very important to promote awareness about the ecological importance of these birds. Hunting and egg lifting should be discouraged. Giant-sized old tall trees should be protected in and around human habitation as this bird prefers them as night roosts. Green spaces of the cities having tall trees should be protected so that these beautiful birds can survive and local biodiversity of the area can be saved.

SEEN THE BIRDS, WHAT NEXT?

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Galliformes are a group of birds such as pheasants, quails, etc., and are threatened by habitat loss, poaching, and anthropogenic disturbance. Habitat loss commenced during fifties when there was no wildlife protection act to assess or stop wanton destruction and degradation of wild areas. Poaching continues to be another concern throughout the distribution range of such birds. In eastern parts of the country, age old tradition is maintained to this day to bag such birds as a token of better living.

Five of the six threatened pheasant species in India are found in the Himalayas. The Himalayan Quail is listed as critically endangered though has not been observed for decades, presumably extinct though not acknowledged. The Indian Himalaya is home to 16 species of pheasants, which is 94% of the total pheasant species in India. The Game Birds and Wild Fowl of India by T.C. Jerdon continues to be the seminal scientific work in the country. It is a comprehensive guide book that provides detailed descriptions. The book also includes beautiful illustrations of birds, which have been reproduced from the author's own sketches. Jerdon was a medical doctor, not a zoologist, during 19th century.

Indian peafowl is the generalist species in this group and thriving well despite its feather-trade still thriving. Owing to depletion of grasslands, pheasants face rapid decline. Red junglefowl's genetic integrity continues to cause concern – owing to dilution with the genes of domestic fowl. Grey junglefowl is understood to be surviving well, south of Udaipur is its conserved habitat in Kumbhalgarh. India prides having launched special projects such as Project Tiger, Project Elephant, and Project Dolphin. They offer better scope for threatened species. The decisions had been piloted at New Delhi level. Any reason why State authorities not initiate similar projects for Galliformes. The forest officers have the capability and authority and can procure financial support to cause a start-up. Udaipur based officers succeeded in ex situ breeding of Green Munia (2022-23).

Udaipur's landscape is replete with significant wilderness owing to the Aravalli range causing innumerable lakes. Hence avian survival happens to be better than elsewhere in the state. The city is characterized by lake-connectivity, promising more availability of monsoon water to distant regions.

Pichhola's backwater is haven for birds thanks to aquatic vegetation and shallow depth in certain areas. Mound plantations need to be attempted to facilitate some prominent species commence breeding, like what is observed across wetlands of Keoladeo National Park, Bharatpur. Feed is in plenty. So storks will thank once they receive tree branches.

Feed continues to be a major concern for birds, getting more grave as this quintessential need is seldom recognized, nay attended to. Menar is an example. Siltation appears depleting depth of monsoon fed water body. Fish is not available in huge quantity especially small size. Mound plantation also is missing. The objective of upgrading this water body to an international repute, therefore, needs attention beyond 'development.' Amazing popularity is received by birds over the years. Thanks to Bird Fairs, being staged at newer locations all over the country, avian species started gaining new space across mental floppies of humans. Happy augury that forest officials stick to a definite calendar for fairs . Udaipur has earned an envious name.

Seen a new species and many birds! What next?

Polish up own lens and drive back home. The events deserve to take this still rather unpopular topic to a round-the-year programme. May be as an extra curricular activity at school levels. 'Catch-them-young' is the 'mantra' and young generation is in look out. Who shall bell the cat? The mantle falls on non government organizations to make it a year-round exercise. Ideal way ahead is to do what the officials cannot attempt. Hope the ecosystem shall receive its dues. Best wishes for organizers of yet another Bird Fair at Udaipur.

AVIAN DIVERSITY FROM SARDARSAMAND

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Sardarsamand belongs to district Pali, located (25°59'39.0"N 73°23'22.4"E) east of the village sardarsamand is a revenue village, Tehsil Sojat of Pali district, situated 50 kms south-east of jodhpur and 20 kms north-east of water body and the castle, being the summer resort of Maharajas of erstwhile Marwar state. This lake has been named after the erstwhile ruler of the area Maharaja Sardar Singh Ji (1895 to 1991 A.D.) It is situated at the converging point of Sukri and Guhiya rivers which are tributaries of river Luni. Water spread area of this reservoir is 35.5 sq. km. It attracts large number of avian species and is known for its many micro- habitats which provide food, water, and shelter for both resident and migratory birds. This region sustains a diverse array of bird species due to unique ecological conditions. The surrounding arid and semi-arid scrublands, interspersed with patches of vegetation, support a variety of bird species. Seasonal changes in water levels also influence existence of micro-habitats of aquatic, terrestrial, and arboreal habitats. It has maximum depth of 7.6 m, and capacity of 8.8 cubic mm. The reservoir is getting its water from 1634.11 sq. km. catchment area of the two rivers originating from Aravalli ranges. Its northern, eastern and south-eastern banks are sloppy and far extended and have shallow water. South to south-western banks abound with eastern and beyond towards west, has extended masonry dam. Western bank also has sluice gated which regulates water level in the reservoir through its discharge into irrigation canal. West bank is guarded by the castle which summer resort of erstwhile Maharaja's of Marwar state, which at western side has terrace garden extended over fairly large area. Due to yearlong water retention in this water body, it witnesses congregation of varieties of birds even during peak of summer.

Many ornithologists and wildlife enthusiasts have documented the avifauna of Sardarsamand extensively. On one such sultry summer day of June 1981, record of 275 spoonbills with painted storks and white ibis is at Sardarsamand tank. A large flock of 61 saras cranes and several comb ducks, shovelers sand Spot -billed ducks have also been sighted on this occasion. A large congregation of migratory and resident birds can be sighted during winter season. Specially to mention that Demoiselle Cranes *(Anthropoides virgo),* Greater Flamingo *(Phoenicopterus roseus),* Lesser Flamingo *(Phoeniconaias minor),* Great white pelican *(Pelecanus onocrotalus),* Dalmatian pelican *(Pelecanus crispus),* and Oriental darter *(Anhinga melanogaster)* are recorded in large flocks. Other birds like Eurasian Spoonbill *(Platalea leucorodia),* and Black-headed Ibis *(Threskiornis melanocephalus),* Common Teal *(Anas crecca),* Northern Pintail *(Anas acuta),* Ruddy Shelduck *(Tadorna ferruginea)* can be seen in this waterbody. The shallow lake edges often support good number of waders including the Black-winged Stilt *(Himantopus himantopus),* and the Common Redshank *(Tringa totanus).* The presence of potential prey species explains why birds such as the Shikra *(Accipiter badius)* and the Indian Eagle Owl *(Bubo bengalensis)* are reported in the region along with the Osprey *(Pandion haliaetus haliaetus).* However, significant challenges arise through human activities and environmental changes; hence, coordinated conservation efforts must be adopted for protection and conservation of avian fauna of Sardarsamand. Since avian life of Sardarsamand is interesting, rich and varied hence it deserves to be declared as a bird sanctuary to ensure effective management.

CHANGING CLIMATE & ITS IMPACT ON MIGRATORY BIRDS

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Introduction

One of the most enthralling indicators of the ecosystem health is migratory birds which traverse continents to escape the adverse conditions of their home ground. However, the rising specter of global climate change has introduced unprecedented challenges to these avian guests, disrupting their conventional routes and behavior. Out of eight or say nine migratory pathways, two migratory pathways (West Asia/East Africa Flyway and Central Asian Flyway) provide a stopover opportunity to the habitats of Southern Rajasthan for avian guests. The eleven types of habitats of Southern Rajasthan harbors near about 300 bird species, and one-third of which are the guest species (Mehra, 2012).

Methodology

Based on the authors' studies of last three decades (1990s, 2000s, and 2010s) (Mehra 2023, Mehra 2020, Mehra & Mehra 2017; Mehra & Mehra 2016, Mehra *et al.* 2014, Mehra *et al.* 2013, Banerjee 1996, Sharma & Tehsin 1994, Hume 1878) and the historic records (pre-1990s) (Mehra 2012), the following observations were made to record the migratory pattern and the composition from the selected habitats of southern Rajasthan. The investigation also included the lost habitats (both green and blue spaces) to assess the proportion of the habitat alterations with focus on avifaunal composition. The observations are based on the key selected habitats from existing boundaries of the Udaipur Region.

Southern Rajasthan, especially Udaipur Region, with its diverse habitats ranging from terrestrial semi-arid open areas of grasslands/ fields and woodlands of deciduous forests to wetlands like lakes, streams, ponds, etc. serves as a critical stopover and resting ground for numerous winged guests. The region's strategic location makes it a vital link in the Central Asian Flyway, one of the most significant migratory routes in the world with the integration of the West Asia/ East Africa Flyway. Though the wetlands such as Jaisamand, Rajsamand, Udaipur's Urban Wetland Complex, Reservoirs of Vagad, Chittorgarh/ Pratapgarh, and the terrestrial habitats of the Protected Areas along with the Urban Green Spaces support large populations of migratory birds but the small pockets of the scattered habitats too have the significance to hold the winged guests (Singhal & Mehra 2024, Singhal & Mehra 2022). However, these scattered habitats are increasingly vulnerable to the cascading effects of anthropogenic activities and human induced micro- climatic features.

Notable observations (Mehra *et al.* in prep.) from southern Rajasthan - the arrival pattern of the waterfowls, species composition in the selected habitats (both blue and green species), the avian population (selected species), etc. The challenges are briefed in the subsequent paragraphs for the future research.

Shifting Pattern of Migration: Phenology, or the timing of biological events, is a key aspect of migratory bird behavior. Changes in the rainfall pattern and aftereffects on the vegetation altering the habitats, along with the changes in the temperature regime of the sites have caused shifts in phenological patterns - the time (months) of arrival and departure, of the species. Further, the presence-absence, and the number of individuals of migratory species in the habitats had given an indication of the changing perspectives of the avian fauna due to changes in the climatic features of the region. Such observations were remarkable in the urban habitats though the anthropogenic activities (disturbances) were main cause for such sites. On the other side the habitats of the suburban, peri-urban, rural and the wild areas had shown remarkable decline the avian population as well as changing pattern of avian composition. These shifts are often linked to warming temperatures in the birds' breeding grounds, which alter the availability of food and suitable nesting conditions.

Disruption of Stopover Sites: Stopover sites are critical for migratory birds to rest and refuel during their long journeys. In southern Rajasthan, the availability and quality of these sites are being compromised by changing rainfall patterns, rising temperatures, and anthropogenic pressures. For instance, erratic monsoon rains have caused fluctuations in water levels in wetlands, sometimes leading to prolonged dry spells which directly affects the waterbird species. Further, the lost blue spaces which provided the temporary ground for the winged guests greatly affected the presence of the species. Therefore, the wetland and wetland dependent species were mostly affected due to lack of water availability for the defined stopover period. Whereas changes in the ecological flows focused on water availability had the impact on the aquatic habitats, the associated micro-habitats lost their significance, and cumulatively affected the presence of species.

Altered Migration Routes: One of the most significant impacts of climate change on migratory birds is the alteration of traditional migration routes. Southern Rajasthan has witnessed a decline in the diversity and number of migratory birds passing through the region. Changes in wind patterns, atmospheric pressure, and thermal currents force birds to deviate from established routes, leading to increased energy expenditure and mortality. The habitat alterations (urban sprawling) changed the micro-climatic features of the flyway routes which forced the migratory birds to alter their routes.

Habitat Fragmentation and Loss: The (un)sustainable development had a major impact on fragmenting the habitats in the green and blue spaces. Further, the fragmented habitats could not able to sustain its natural climatic features, thus, losing the preference of the winged guests. Climate change exacerbates fragmented habitats and cause loss at local level, stressing migratory bird populations. In Southern Rajasthan, removal of indigenous/ native vegetation due to urban sprawling, agricultural expansion, and road networks are reducing the availability of contiguous habitats. Fragmented habitats not only limit the availability of resources but also expose birds to increased predation and competition.

Impact on Food Availability: Human-induced shifts in precipitation and temperature have profound effects on the availability of food for migratory birds. Many species rely on specific prey items (like the decline in insect populations) or plant resources (indigenous/native species like fruits) during migration. Similarly, wetland/ wetland- dependent species are vulnerable to the fluctuating water levels which have impact on the abundance of fish, crustaceans, and aquatic vegetation. The species had experienced reduced foraging success in drought-stricken wetlands, forcing them to travel longer distances in search of food.

Increased Vulnerability to Extreme Weather Events: Extreme weather events, including heatwaves, storms, and unseasonal rainfall, are becoming more frequent in the southern Rajasthan. Migratory birds are especially vulnerable to these events, as they often coincide with critical stages of their journey. Southern Rajasthan, already characterized by a harsh climate, has seen a rise in temperature extremes, which can cause dehydration and heat stress in birds. Additionally, unexpected storms can disorient migratory flocks and lead to significant mortalities.

Competition and Predation: The interspecific interactions, potentially increasing competition and predation pressures on migratory birds are the result of the changing pattern of the climate resulting into alterations of the vegetation and stressing the sensitive species. In Southern Rajasthan, resident bird species are expanding their ranges in response to the warming temperatures, leading to overlapping niches with migratory species. This overlap isresulting in competition for limited resources such as food and nesting sites. Predators, too, benefit from altered conditions, posing increased risks to migratory birds.

Conservation Challenges and Strategies

The challenges (Mehra 2020) posed by climate change (Singh *et al.* 2020) to migratory birds in Southern Rajasthan demand urgent and coordinated conservation efforts. Protecting and restoring critical habitats is paramount.

Collaboration & Coordination: One of the biggest challenges is the collaboration and coordination of the government departments and the local communities which is essential to ensure the success of any conservation action.

Urban Sprawling & Smart City Project: Need to understand the concept of green and blue spaces. The urban biodiversity through protection and retention of the terrestrial and wetland bodies need to be taken at the priority level.

Wetland Restoration Projects: To maintain optimal water levels with the natural characteristics is only possible when the natural ecological flows are undertaken in the wetland restoration projects. Further, to control the invasive species through checking the eutrophication of the water bodies, can improve the quality of stopover sites.

Monitoring: The continuous monitoring of the development projects focusing the conservation of the habitat and biodiversity should be the priority. The green initiatives mandatorily undertake the indigenous and native interventions based on local ecological importance.

Research & Documentation: Research is vital for understanding the long-term impacts of climate change on migratory birds. Ongoing Bird Festivals, Bird Counts, under the Citizen Science initiatives provide valuable data on population trends and behavioral changes. Documentation of such data (online) is vital for keeping the long-term record.

Key Thrust

The sustainable livelihood options linked with the nature-based interventions (Enviropreneurship) (Mehra 2023) can help reduce anthropogenic pressures on key habitats. On a broader scale, mitigating the effects of climate change requires administrative (governance) cooperation to implement climate-resilient policies honestly and strictly. Protecting migratory bird species is not only an ecological imperative but also a reflection of our commitment to preserving the interconnectedness of life on Earth.

The Way Forward

Southern Rajasthan's rich avian diversity and its role as a crucial link in migratory pathways underscore the importance of addressing the impacts of climate change on migratory birds. While the challenges are formidable, the region also presents opportunities for innovative conservation strategies that integrate scientific research, community participation, and policy interventions. By safeguarding these avian travelers, we contribute to the resilience of ecosystems and the health of our planet as a whole.

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PAINTED SPURFOWL : A MORNING ENCOUNTER AT RANTHAMBORE

Dr. Dharmendra Khandal

On a morning safari in Ranthambore, while driving along the Ganesh Road, I noticed a family of Painted Spurfowl *(Galloperdix lunulata)* feeding on pearl millet grains scattered by pilgrims. Among them were three maroon-coloured chicks, a rare sight in the bright sunlight. I stopped the vehicle to observe them. As soon as I did, a Rufous Treepie suddenly swooped in and snatched one of the chicks.

The mother frantically darted around in distress, while the male called out, visibly agitated. The remaining chicks quickly hid in the underbrush. Moments later, the mother returned to her routine, pecking at the grains, seemingly unaware that one of her chicks was missing. Her calm demeanour suggested she hadn't realized the loss yet.

Ranthambore is one of the best places to observe Painted Spurfowl. These birds prefer rocky habitats and are typically found in shaded, cool areas. During tiger monitoring in Kailadevi and Dholpur forests, camera traps set up near tiger dens often captured two frequent visitors: porcupines and Painted Spurfowl. It seems tigers may choose locations frequented by these birds.

Habitat and Behaviour

The Painted Spurfowl is typically seen in pairs or small family groups. It is more commonly found in rocky hill terrain, or prefer rocky waterholes places. and breeds between March and May. The female lays no more than five eggs in a small depression on the ground, often lined with leaves. The eggs are smooth and light brown in colour.

These birds feed on berries *(*including *Ziziphus* and *Lantana)* and insects. They use their legs to probe the ground, skilfully sweeping away leaves and debris in search of food. These birds are typically found in humid, mulched areas where decomposed leaf litter retains moisture and attracts a higher abundance of insects. Although they mainly feed on grains, they are naturally shy. However, they may occasionally become accustomed to human presence and venture closer. Despite this, their preference remains for dark, cool, and humid corners that offer them a sense of security and comfort.

Appearance

The Painted Spurfowl stands out among its kin due to the absence of bare facial skin, a characteristic common in the Red Spurfowl. The male, with its striking appearance, boasts a black tail and vibrant ochre underparts that sharply contrast with its darker upper plumage. Its upper feathers are intricately patterned with white spots, bordered in black, adding a captivating texture. The head and neck gleam with a metallic green sheen on a black base, interspersed with delicate white specks. The chestnut tones of the mantle, rump, and wing coverts further enhance its vibrant look, while the wings showcase an artistic design of black-edged white ocelli. The chest and abdomen display a scaly pattern, with triangular black-tipped feathers resting on a yellowish background. The tail, with its dark brown hue and olive-green sheen, completes the male's vivid appearance.

In contrast, the female exhibits much softer tones. Her brow and ear coverts are rufous, complementing her pale throat, which carries faint spotting similar to that of the male. However, the female lacks the prominent white spotting on her body, making her overall appearance more subdued. Her plumage leans towards muted shades, emphasizing simplicity over vibrance. Both the male and female share dark grey bills and legs. While males are adorned with two to four sharp tarsal spurs, females may have one or two spurs of their own. Occasionally, the Painted Spurfowl carries its tail upright, adding a touch of elegance to its stance.

The dramatic difference between the male's flamboyant plumage and the female's understated beauty makes the Painted Spurfowl a fascinating species to encounter in its rocky and shaded natural habitats.

Breeding and Courtship

The courtship and breeding behavior of the Painted Spurfowl *(Galloperdix lunulata)* are fascinating aspects of its life cycle. During the breeding season, the male exhibits a series of elaborate courtship displays to attract a mate. These displays often include calling, feather fluffing, and wing-drooping, accompanied by a rhythmic movement to catch the attention of the female. The males also perform a distinctive "dance" where they raise their neck feathers and engage in exaggerated postures to showcase their vitality and physical fitness. Once a female is attracted, the pair typically forms a monogamous bond for the breeding season. Nesting usually occurs on the ground, in dense undergrowth, where the female builds a simple nest made of grasses and leaves. The female lays a clutch of 3-4 eggs, which she incubates alone, while the male stays nearby to guard the territory. After hatching, both parents play a role in protecting and guiding the chicks until they are old enough to fend for themselves.

Distribution in Rajasthan

The distribution of Painted Spurfowl in Rajasthan has been a subject of intrigue, as this species was not recorded in the state by Salim Ali and Ripley in their 1980 publication. However, subsequent studies by various renowned experts documented its presence in several locations across Rajasthan. In 1987, **V.S. Vijayan** reported its occurrence in Keoladeo National Park, Bharatpur. Later, in 1992, **K. Shankar** documented the species in Sariska, followed by **Shantanu Kumar** in 1994, who reported it from Ramgarh Vishdhari in Bundi. In 1997, **M.K. Ranjitsinh** recorded its presence in Ranthambore, and **Ashok Kumar** noted it in Jamwa Ramgarh. The following is a comprehensive district-wise list of its distribution across Rajasthan.

The Painted Spurfowl has been recorded in the following districts of Rajasthan: **1. Alwar, 2. Jaipur, 3. Bharatpur, 4. Sawai Madhopur, 5. Karauli, 6. Bundi, 7. Jhalawar, 8. Kota, 9. Baran, 10. Chittorgarh, 11. Bhilwara, 12. Pratapgarh, 13. Udaipur, 14. Dholpur and 15. Dausa.**

eBird also shows their distribution in **16. Ajmer, 17. Rajasmand, and 18. Sirohi** districts of Rajasthan. However, the Sirohi distribution needs to be double-checked, as the area is renowned for the Red Spurfowl. eBird is an online platform that allows

birdwatchers to record and share their bird sightings, contributing to global bird monitoring and conservation efforts.

The Painted Spurfowl remains a fascinating subject for bird enthusiasts and researchers alike, offering insights into their unique behaviour and habitat preferences.

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WINGED WONDERS OF UDAIPUR: MIGRATORY AQUATIC BIRDS OF THE CITY OF LAKES

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Udaipur, known for its rich biodiversity, is home to a variety of avian species, including migratory birds. The wetlands in Udaipur, such as Lake Pichhola, is crucial habitat that support a diverse range of bird species. Beside this, Important wetlands serve as birding hotspots in Udaipur includes Fateh Sagar, Menar, Jaisamand wildlife sanctuary, Mangalwar Lake, Krishna Kareri, Badwai and Baghdara Nature Park. These wetlands provide essential resources such as food, water, nesting and roosting sites for many resident and migratory birds. These natural resources are vital for the survival and reproduction of these birds (Chishty & Choudhary, 2020; Bhatnagar et al., 2007; Singh & Sushma, 2024; Kumar et al., 2020; Rao & Koli, 2017). The conservation of these wetland habitats is crucial for maintaining biodiversity and ecological balance in urban areas.

Moreover, Wetlands play a crucial role as stopover sites for migratory birds, providing essential resting and refueling opportunities during long-distance migrations (Donnelly et al., 2021; Londe et al., 2023). The wetlands of Udaipur serve as important stopover and wintering grounds for migratory birds, particularly those traveling along the Central Asian Flyway. These areas offer vital resources such as food and shelter, which are essential for the survival of migratory species during their long journeys. Availability of macro-invertebrates and small fishes in these wetlands are in plenty which attracts migratory shorebirds, highlighting their ecological significance (Byju et al., 2023).

The presence of diverse bird species, including insectivores, omnivores, and carnivores, highlights the ecological richness of these habitats (Chishty & Choudhary, 2020). Bird diversity and abundance in Udaipur's wetlands (Photo 1) serve as important indicators of the health of these ecosystems. The variety of bird species reflects the condition of both terrestrial and wetland habitats, which are influenced by urban and anthropogenic activities (Mehra *et al.*, 2014). The wetlands are particularly significant during the monsoon season, which is favoured Photo1: Upper left - Darter with prey; upper right - Asian openbill stork; below - Flock of Greater Flamingo; bottom - Courtship display of Greater Flamingo.

Photo1: *Upper left - Darter with prey; upper right - Asian openbill stork; below - Flock of Greater Flamingo; bottom - Courtship display of Greater Flamingo.*

by species like the Red-wattled Lapwing due to the abundance of resources (Gupta & Saxena, 2023). In this article, I highlighted some important 'wing wonders' of this city with special reference to large sized aquatic species such as:

1. Sarus Crane *(Grus antigone)*: The state bird of Uttar Pradesh, known for its tall stature, grey body, red head, and long legs, is often seen in Udaipur's shallow wetlands. This majestic species is recognized for its loud calls and graceful courtship dances. Primarily resident, Sarus Cranes may migrate locally due to water availability, inhabiting wetlands across northern and western India and occasionally arriving from nearby areas seeking suitable habitats (Photo 2).

Photo 2: *Showing landing of flock of Sarus crane at a cultivated land.*

2. Darter *(Anhinga melanogaster)*: The Darter, or Snakebird, is a medium-to-large aquatic bird with a slender, snake-like neck. It has a glossy black body and is adept at diving and spearing fish with its sharp beak. In Udaipur, Darters primarily undertake local migrations within South Asia, moving from waterbodies in Central and Southern India during the dry season to wetter areas.

3. Black-Crowned Night Heron *(Nycticorax nycticorax)*: The Black-Crowned Night Heron, a medium-sized bird with a stocky build, red eyes, and a black cap, is nocturnal, roosting by day and feeding at night. As partial migrants, they likely arrive in Udaipur from nearby areas or northern India during winter, attracted by the plentiful fish and amphibians in the lakes.

4. Asian Openbill Stork *(Anastomus oscitans)*

The Asian Openbill, a medium-sized stork with a notable gap between its mandibles, is specialized for eating molluscs. It has a greyish-white body and black flight feathers. These storks migrate locally within the Indian subcontinent, moving from the wetlands of the Gangetic plains and other water-rich regions to places like Udaipur during the dry season.

5. Great White Pelican *(Pelecanus onocrotalus)*: The Great White Pelican, a large and elegant bird with a pale pinkish-white body, yellow pouch, and long wings, excels at swimming and often hunts in groups. These pelicans migrate to India from Africa, Europe, and Central Asia, finding suitable habitats in Udaipur's large fish-rich lakes.

6. Dalmatian Pelican *(Pelecanus crispus)*: The Dalmatian Pelican, among the heaviest flying birds, features silvery-white plumage, curly nape feathers, and a large yellow-orange throat pouch. Often spotted in flocks, they glide over water bodies. In winter, they migrate from Central Asia and Eastern Europe, including Kazakhstan and Russia, to India.

7. Greater Flamingos *(Phoenicopterus roseus)*: These large, pale pink birds have long necks, thin legs, and a distinct downward-curved beak. They flock near shallow lakes and wetlands, feeding on algae, small crustaceans, and plankton. Greater Flamingos migrate from the Rann of Kutch, Gujarat, and Central Asia, attracted to Udaipur's lakes in winter for the favourable climate and abundant food.

Despite their importance, the wetlands in Udaipur face significant threats from anthropogenic activities, leading to habitat destruction and a decline in avian diversity (Bhatnagar et al., 2007). However, rapid urbanization and human activities pose significant threats to these fragile ecosystems (Vijayan & Vijayan, 2013). Efforts to protect and restore these wetlands are essential to ensure the long-term survival of avian populations and preserve the ecological services they provide to the surrounding communities. Encroachment and pollution are major concerns that threaten these ecosystems. Conservation efforts are necessary to protect these habitats and ensure the survival of the diverse bird populations they support. Effective management and conservation strategies are crucial to mitigate these threats and preserve the ecological balance (Bhatnagar et al., 2007; Mehra et al., 2014).© Dr. Aazad Prakash Ojha

In summary, the wetlands of Udaipur are vital for supporting migratory and resident bird species, serving as indicators of ecological health and providing essential ecosystem services. However, they face significant threats from human activities, necessitating focused conservation efforts to preserve these important habitats. The conservation of these wetland habitats is crucial for maintaining biodiversity and ecological balance in urban areas. However, rapid urbanization and human activities pose significant threats to these fragile ecosystems. Efforts to protect and restore these wetlands are essential to ensure the long-term survival of avian populations and preserve the ecological services they provide to the surrounding communities.

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OBLIGATE AVIAN SCAVENGERS OF THE GREAT INDIAN THAR DESERT OF RAJASTHAN

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Introduction

Vultures are large birds of prey and nature's most successful obligate avian scavengers. From the ecological point of view, vultures are important components of the ecosystem, as they are top consumers, eat carcasses, and provide a healthy environment to other living beings (prevent the spreading of disease by cleaning the carcasses before pathogenic bacteria and fungi can grow and multiply on them) so known as nature's clean-up crew. Cleaning of carcasses by vultures promotes the flow of energy and nutrient cycling through food webs in various terrestrial ecosystems so, they are the important markers of terrestrial biodiversity and the health of various landscape environments. Vultures also have cultural and religious significance in India and other parts of the world.

There are 23 species of vultures found globally (Order-Falconiformes) and they are grouped into 2 non-related groups i.e., New World Vultures and Old World Vultures. New World Vultures belong to the family Cathartidae (include 7 living species) and are restricted to the New World (North and South America) while Old World Vultures belongto the family Accipitridae (include 16 living species) and are native to the Old World (Asia, Africa and Europe). Out of 23, there are 9

species of vultures reported to be present in the Indian Subcontinent. Out of nine, 7 species are reported to be present in the Thar desert of Rajasthan. Out of seven, 4 species are resident i.e., Red-headed Vulture *(Sarcogyps calvus)*, Long-billed Vulture *(Gyps indicus)*, White-rumped Vulture *(Gyps bengalensis)* and Egyptian Vulture *(Neophron percnopterus)* which breed here in the Thar Desert. The remaining 3 species i.e., Cinereous Vulture *(Aegypius monachus)*, Himalayan Griffon *(Gyps himalayensis)*, and Eurasian Griffon *(Gyps fulvus)* are migratory winter visitors.

Until the 1980s, vultures were a common sight across the country. According to a study since the early 1990s, 3 species have seen a drastic decline in their numbers namely White-rumped Vulture, Indian Vulture, and Slender-billed Vulture. Between 1992 and 2007, the population of these species declined by almost 99 %. The main reason for this decline was found to be diclofenac, an anti-inflammatory drug used to treat farm animals. When the scavengers fed on livestock carcasses, they were exposed to diclofenac which led to their kidney failure. Several researchers have documented evidence of large-scale declines in vulture populations across South Asia in the last 20 years and this decline emphasizes the importance of extensive and rigorous monitoringprograms to document species occurrence, population dynamics, feeding, and nesting ecology of these Critically Endangered raptors.A vulture crisis exploded first in South Asia, then spread across Africa. Old World vultures are more threatened, and their populations are decreasing faster than those of New World vultures. As a result of decline in Asian vulture population, 4 species namely, White-rumped Vulture (Gyps bengalensis), Indian Vulture (Gyps indicus), Slender-billed Vulture (Gyps tenuirostris) and Red-headed Vulture (Sarcogyps calvus) are listed as 'Critically Endangered' in the IUCN Red Data Book of threatened species (Birdlife International, 2021). Evidence of a catastrophic decline was first observed in the late 90s by the villagers of Northern India in 1996-97 and from Keoladeo National Park of Rajasthan. After that, declination was observed throughout India, Pakistan, Nepal, and Bangladesh. Several theories were established to determine the causation of this rapid vulture population decline. Due to scarcity of food and habitat destruction, vultures have disappeared from many areas of their historic habitats, but Diclofenac, a non-steroidal anti-inflammatory drug (NSAID), was the prominent reason for the rapid decline of the vulture population over the many regions of the Indian subcontinent. As a result of this, in 2006, the governments of India, Nepal, and Pakistan banned diclofenac for veterinary purposes. In addition to Diclofenac, some other veterinary drugs, i.e., Ketoprofen and Aceclofenac, are found to be toxic for vultures, so they are also banned in India. Recently on 30th December, 2024, an alternatively introduced drug namely Nimesulide, and its formulation for animal use was also banned with immediate effect which was found toxic to the vultures. Their population decline may also have been influenced by other factors including, habitat destruction, food scarcity, human persecution, electrocution, lead contamination, Trichobezoar, disease, trade, and use of the vulture body parts in traditional medicine. After the ban on the anti-inflammatory drug diclofenac, some local increase in the vulture population has been observed in many parts of India. A similar vulture population decline is observed in the Indian Thar Desert. Thus, population monitoring and conservation efforts are needed in the Thar region of Rajasthan. This area is under rapid eco-transformation due to various ongoing government projects related to energy infrastructures, refineries, national highways, and railway tracks. The changes in climatic and topographical information of an area for making future conservation strategies are significant as they modify the original habitats of animals. So, there is an urgent need to document the occurrence of species in the Thar Desert of Rajasthan.

S. NO.	VULTURE SPECIES	IUCN STATUS
1.	Red-headed Vulture (*Sarcogyps calvus*)	Critically Endangered
2.	White-rumped Vulture (*Gyps bengalensis*)	Critically Endangered
3.	Long-billed or Indian Vulture (*Gyps indicus*)	Critically Endangered
4.	Egyptian Vulture (*Neophron percnopterus*)	Endangered
5.	Cinereous Vulture (*Aegypius monachus*)	Near Threatened
6.	Himalayan Griffon (*Gyps himalayensis*)	Near Threatened
7.	Eurasian Griffon (*Gyps fulvus*)	Least Concern

In our society, vultures are frequently overlooked and misunderstood as mere scavengers, resulting in little public awareness about their conservation. Their scavenging lifestyle, which has earned them a bad reputation, is actually make them so important to the environment, nature, and society in the real world. Vultures play a key role in the habitats in which they live. They are nature's clean-up team, doing the clearance job after the death of animals, and contributing to the health of ecosystems by acting as natural carcass recyclers. This free cleaning service saves millions of rupees in waste management and prevents the potential em thousands of tons of CO_2 per year, benefitting environment and society as a whole. It is now well that promoting vulture scavenging services would r important ecological balance between vultu environment, and ultimately, people's socioeconor being so, since the last 15 years we have been wo conserve these gems of nature called obligat scavengers or nature's clean-up crew.

Photographs of the 7 species of vultures found in the Thar desert of Rajasthan

Red-headed Vulture
(Sarcogyps calvus)

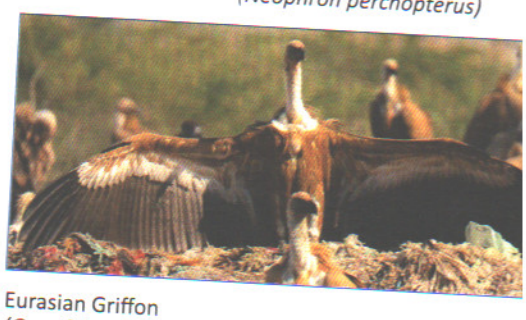
White-rumped Vulture
(Gyps bengalensis)

Long-billed Vulture
(Gyps indicus)

Egyptian Vultures
(Neophron percnopterus)

Cinereous Vulture
(Aegypius monachus)

Himalayan Griffon
(Gyps himalayensis)



Eurasian Griffon
(Gyps fulvus)

BLACK WINGED STILT : POTENTIAL THREATS IN THE BREEDING GROUND OF THE BIRD

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Black-winged stilt *(Himantopus himantopus)* is a marvelous beauty of our wetlands. The bird belongs to wader group, having long slender pink legs, striking black and white appearance with black wings and white lower belly. Though the juvenile of the species consists of brown wing coloration. Like other waders, this species is also adapted to walk in shallow water and on aquatic vegetation. The species is wide spread in many continents like Europe, Asia and Africa. It is a resident bird as well as a visitor to India. It breeds in many water bodies of the area. However, in the context of Udaipur the species is resident commonly seen in Fateh Sagar, Pichola, Udai Sagar, Govardhan Sagar, Swaroop Sagar and other water bodies of southern Rajasthan.

These birds can be seen in higher numbers during the summer season. After their breeding season (from March to July) their numbers gradually decreases in these wetlands. These birds prefer locations near edges of waterbodies and islets above water to build their nests. During their breeding season, the fluctuation of water level, roaming animal like pigs, buffalos, feral dogs and aerial predators become potential threats to their eggs and hatchlings. Water level rises due to early release of water for residential use and tourism purpose is a serious threat to their nests, eggs and chicks.

During breeding season of this bird, cattle movement should be checked near the breeding ground and water release should be done before the starting of breeding season. This process should be avoided during the peak of breeding season as it is responsible for high mortality of the chicks.

BIRDS AND ORGANOCHLORINE PESTICIDES

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As their name implies, pesticides are designed to kill pests, mainly of agricultural crops. They are thus seen as a great boon to human food production and health worldwide. But there are also environmental costs from their use. Firstly, if pesticides destroyed only the target pests and then quickly broke down to harmless by-products, problems from their use would be minimal. But most pesticides are **non-specific** and kill a wide range of organisms. Secondly, while some break down rapidly, others last for weeks, months or even years in animal bodies or in the physical environment, able to affect animals long after they were applied. Thirdly, some pesticides accumulate in animal bodies and readily pass from prey to predator, causing secondary poisoning, or even pass along several steps in a food chain, affecting animals far removed (in terms of trophic position) from the target pest. Depending on their chemical properties, all pesticides lie somewhere within this three-feature spectrum of variation, with respect to **specificity, persistence and cumulative propensity.** In addition, by contaminating air and water, some pesticides (like other pollutants) can reach areas and affect organisms far removed from points of application. (OCPs) are a group of synthetic chemicals that have been widely used in agriculture and public health for pest control. However, OCPs are also persistent, bioaccumulate, and toxic to humans and animals. OCPs can contaminate the environment, especially the soil, water, and air, and enter the food chain through various pathways. One of the main sources of exposure of birds to OCPs is the contamination of water bodies. This became shockingly apparent in the 1960s when residues of **DDT were detected in penguins and other Antarctic birds, thousands of kilometres from the places where they were made or used.** Other problems are caused by pesticide manufacture which, through accidents and discharges, often leads to pollution of rivers, lakes and coastal areas, with loss of aquatic life. These problems are accentuated by many local accidents and abuses, excessive application, drift and careless disposal.

Status in Udaipur Lake system:

For the first time reports on the detrimental effects of OCPs on birds was reported by ***Stanley Cramp, in the late 1950s,*** when thousands of birds were found dead and dying in recently sown cereal fields across Britain. The grains had been dressed with some newly released OCPs – the so-called cyclodiene compounds, such as aldrin, dieldrin and heptachlor. The aim was to protect the sown grains against insect attack, reducing the losses for farmers. But it turned out that these pesticides were also extremely toxic to birds and mammals, killing many individuals that fed on treated grains spilled on the soil surface. The birds usually died in convulsions, and were otherwise in good condition. Chemical analyses revealed the presence of OCPs residues in their body tissues. Affected species included not only seed-eaters, such as finches, buntings, pigeons and gamebirds, but also raptors, such as Eurasian Sparrowhawks Accipiter nisus, which fed on the dying birds. The many thousands of birds found dead around arable land were assumed to form a tiny proportion. Stanley Cramp published first report in 1962, the same year as ***Rachel Carson's influential book Silent Spring*** which drew attention to the problems of organochlorine use mainly in North America. On both continents, it soon became evident that birds of prey were in rapid decline and that broken eggshells were often found in the deserted nests. A breakthrough came in 1967, when Derek Ratcliffe published his discovery of eggshell- thinning in raptors and other species. After these reports there were intensive research carried out on the effects of OCPs on birds and mammals, endless battles with

the agricultural and agro-chemical lobbies, and eventually the progressive banning of these chemicals from agricultural use in most parts of the world. But still after being banned or restricted for use in many countries, OCP still persist in the environment due to their long half-lives and illegal use. The problems would further exacerbate in the coming year, as OCPs being lipophilic and non- biodegradable due to their great chemical solubility, low aqueous solubility and high fat-soluble character became concentrated and magnified as they move up in the food chain. Since birds are at the top of the food chain, they receive and accumulate OCPs residues that vegetables and animals have stored up in various periods of development thus posing a challenge to the ecologists and toxicologists. Keeping above points into consideration, a continued surveillance on the levels of pesticide pollutants in lakes and water bodies is an important task to ensure the wellbeing of avian and aquatic fauna who resides for their food and survival on these wetlands.

There are many reports from India and all over the world giving an idea about the concentration of detectable OCPs in the lakes and water bodies but no such report is available from Udaipur, City of Lakes, Rajasthan, India. A study was therefore, planned and carried out to see the levels of OCPs in the lakes of Udaipur. The water samples were collected from January 2024 -31 December 2024 from three lakes of Udaipur namely- Pichola, Fateh Sagar and Uday Sagar. Twenty water samples were collected randomly in all seasons from each lake and were analysed OCPs. We here report the results of the chemical analysis of 60 water samples for isomers of HCH, heptachlor, DDT, Endrin, Endosulphan, Chlordane and its metabolites and Methoxychlor, Dieldrin, Aldrin from Pichola, Fateh Sagar and Uday Sagar lakes of Udaipur by using very sensitive and well controlled chemical analysis technique Gas Liquid Chromatography (GLC).

Extraction of organochlorine pesticide residues of isomers of HCH, heptachlor, DDT, Endrin, Endosulphan, Chlordane and its metabolites and Methoxychlor, Dieldrin, Aldrin from the water samples as per the Method prescribed by APHA (1995) with some modification according to prevailing laboratory condition. Quantitative estimation of pesticide residues in all the extracts was done by GC model Agilent 8890, equipped with Electron Capture Detector (ECD) Ni63 device regulatory model no- G2397A. Capillary Column used was Agilent J & W GC Column (DB-CLP1). The Purified nitrogen (IOLAR-1) was used as a carrier gas at the flow rate of 65 ml per min.

High concentrations of OCPs were found in all the water samples analyzed for isomers of HCH, heptachlor, DDT, Endrin, Endosulphan, Chlordane and its metabolites and Methoxychlor, Dieldrin, Aldrin from Pichola, Fateh Sagar and Uday Sagar lakes of Udaipur. The observations shows that concentration values of different OCPs is either touching the permissible limits or higher than the permissible limits. Many of the OCPs have been banned in India like DDT for agriculture use but they are available in the common market for public health purposes. There are several factors which influence a pesticides' potential to contaminate water. The ability of the pesticide to dissolve in water (solubility). Environmental factors, such as, soil, weather, season, and distance to water sources. Application methods and other practices associated with the pesticide use.

Detrimental Effect of OCPs on Birds

DDT was first introduced into widespread agricultural use in the late 1940s and the cyclodienes after 1955. For a time, they were widely used throughout the developed world, but during the 1970s and 1980s, they were banned progressively in one country after another as their environmental effects became increasingly apparent. They continue to be used without regulatory constraint in third world countries. Three groups of birds were particularly affected by organochlorines:

(1) **Raptors,** especially bird- and fish-eating species such as the Peregrine Falcon Falco peregrinus, Sparrowhawk, Osprey Pandion haliaetus and White-tailed Eagle Haliaeetus albicilla;

(2) various other fish-eating birds, such as **cormorants and pelicans;** and

(3) seed-eating species, such as **finches and buntings, doves, gamebirds, geese and cranes** which, as described above, eat newly sown seeds of cereals and other plants that have been treated with organochlorines.

DDT and Cyclodienes are two important organochlorine as indicated below-

1. **DDT:** Once in the bird's body, most of the DDT is rapidly converted to a much more stable metabolite, DDE, which forms the bulk of the residue detected in bird eggs and carcases. At sub-lethal level, DDE reduces the availability of calcium carbonate during eggshell formation so that the eggs are thin shelled and break when the birds tread or sit on them. Some thin-shelled eggs survive incubation, but the embryo may die from dehydration caused by excess water loss through the thinned shell. If the resulting reduction in the average breeding rate of individuals is sufficiently marked, it leads to population decline, because reproduction is no longer sufficient to offset normal levels of annual mortality.
2. **Cyclodienes:** Other organochlorines, notably the cyclodienes (e.g. aldrin and dieldrin), are several hundred times more toxic to birds than DDT or DDE. These chemicals act mainly by killing birds outright, increasing mortality above the natural level sufficiently to cause rapid population decline. Within the bird's body, aldrin is rapidly metabolised to dieldrin, which is often denoted as HEOD. There is no firm evidence that HEOD causes eggshell thinning. The massive declines in the numbers of some bird- and fish-eating raptors in contaminated areas were thus attributed to the combined action of DDE reducing the breeding rate and HEOD (from aldrin and dieldrin) increasing the mortality rate. The relative importance of these mechanisms of population decline seems to have differed between regions, depending on the relative quantities of the different chemicals used.

Horrifying Incidences of Toxicity of OCPs on Birds

1. Decline in Raptor populations: Comparing various Raptor populations studied across the world, mean levels of DDE residues in eggs were highest in those populations showing

the most shell-thinning. All populations with an average of less than 17% shell-thinning maintained their numbers, while all those with more than 17% declined, some to the point of extinction. An average of 17% shell thinning thus emerged as critical to population persistence, associated with an average of 15–20 ppm DDE in the wet weight of egg content.

Disappearance of Peregrine from Britain: In Britain, the numbers of Peregrines and Sparrowhawks fell by more than 50% in the north and west of Britain, but the Peregrine disappeared altogether from the south and east, and the Sparrowhawk almost so, despite its much greater numbers

This pattern of decline matched the distribution of arable land, which was greater in southern and eastern districts, leading to greater pesticide use there. But it was the speed of the declines that shocked ornithologists.

Both species went from abundant to scarce within three years following the introduction of aldrine and dieldrin in the late 1950s. This could only have happened with increased mortality. Carcasses of these and other species were found in these years, and in some the cause of death was confirmed by chemical analyses.

Conclusion

Pesticides were originally developed 'in good faith' to enhance crop production, and in

ignorance of their subsequent environmental impacts. It is difficult to imagine whether the

rapidly expanding human population could have been supported at its current level without them. Nevertheless, widespread monitoring of bird populations, followed by appropriate research and experiment, has played a crucial role in highlighting some of the long-term consequences of pesticide use and in confirming pesticides as a major factor in reducing not just pest numbers but the entire spectrum of biodiversity in not only in farmed landscapes but also beyond, in the case of OCPs.

Constant monitoring of wetlands and lakes for organochlorine pesticides (OCPs) is crucial, especially to protect birds and raptors. These sensitive species are particularly vulnerable to the bioaccumulation of OCPs, which can lead to reproductive issues, weakened immune systems, and even death.

GREY FRANCOLIN : A WELL KONWN GALLIFORM OF MEWAR

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The **Grey francolin** *(Ortygornis pondicerianus)* is a species of **francolin** found in the plains and drier parts of the Indian subcontinent up to Iran. This species was formerly also called the **grey partridge,** not to be confused with the **European grey partridge.** They are mainly ground-living birds and are found in open cultivated lands as well as scrub forest and their local name of *teetar* is based on their calls, a loud and repeated ***Ka-tee-tar...tee-tar*** which is produced by one or more birds. The term ***teetar*** can also refer to other partridges and quails. During the breeding season calling males attract challengers, and decoys were used to trap these birds especially for fighting. Three related species are recognized:

1. *Ortygornis mecranensis* (Zarudny & Harms, 1913) – South Iran and South Pakistan
2. *Ortygornis interpositus* (Hartert, E, 1917) – East Pakistan, North India and Nepal
3. *Ortygornis pondicerianus* (Gmelin, JF, 1789) – South India and Sri Lanka

Morphology

This bird is a medium-sized francolin, with males averaging 11.6–13.4 in (29–34 cm) and females averaging 10.2–11.9 in (26–30 cm). The males weigh 9–12 oz (260–340 g) whereas the weight of the females is 7–11 oz (200–310 g). The francolin is barred throughout and the face is pale with a thin black border to the pale throat. The only similar species is the painted francolin, which has a rufous vent. The males have up to two spurs on the tarsi while females usually lack them.

Distribution and habitat

The grey francolin is normally found foraging on bare or low grass covered ground in scrub and open country, and is rarely found above an altitude of 500 m above sea level in India, and 1200 m in Pakistan. The distribution is south of the foothills of the Himalayas westwards to the Indus Valley and eastwards to Bengal. It is also found in north-western Sri Lanka.

Behaviour and Ecology

The loud calls of the birds are commonly heard early in the mornings. Pairs of birds will sometimes engage in a duet. The female call is a *tee...tee...tee* repeated and sometimes a *kila..kila..kila* and the challenge call *kateela..kateela..kateela* is a duet. They are usually seen in small groups.

The main breeding season is **April to September** and the nest is a ***hidden scrape*** on the ground. The nest may sometimes be made above ground level in a niche in a wall or rock. The clutch is six to eight eggs, but larger clutches, potentially reflecting intraspecific brood parasitism, have been noted.

Food

As herbivores (granivores) and carnivores (insectivores), grey francolins are both. They consume insects, especially termites and beetles, as well as seeds and grains. They may occasionally take larger prey such as snakes.

Roosting site

They roost in groups in low thorny trees.

Population

There is no estimate of the Grey Francolin's total population; however the IUCN Red List states that it is locally abundant across its range. On the IUCN Red List, this species is now listed as Least Concern (LC), and its population is stable. Despite being common in their range, Grey francolins face threats from habitat loss, hunting and predation. They are often hunted for sports and are a popular game bird in some regions.

Conservation efforts, including sustainable hunting practi and habitat protection, are essential to ensure their continu survival. The Grey Francolins with its resilience and melodic calls is a symbol of the harmony between nature a agriculture. Its presence in grasslands and farmlands add vibrant touch to these landscapes, reminding us of t importance of preserving our shared ecosystems.

Current Status

They are hunted in much of their range using low nets a easily caught using calling decoy birds.

GALLIFORMES : BIRDS OF IMMENSE BEAUTY IN INDIAN PHILATELY

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Birds are classified into many orders among which Galliformes are one of the most important and diverse groups. In general terms Galliformes are heavy-bodied and ground-feeding birds which have short round wings which are adapted for short-distance flights. This order includes approximately 290 bird species which are divided into five families and are distributed worldwide. Galliformes turkeys, chickens, quails, and other fowls. However, there are large variations in size observed among the Galliformes. As for example, the Small King Quail which weighs only 28–40 g to the large North American wild Turkey which weigh up to 14 kg. Several species have been domesticated during their long and extensive relationships with humans.

Galliformes have been domesticated and are raised for human consumption of meat and eggs. As for instance, Grouse, Quail, Partridges, Pheasants and Turkeys are hunted regularly in all parts of the world for the same. The majority of the birds in this group are granivorous and to some extent slightly omnivorous. Gallinaceous birds, as they are called, are important component of the ecosystem as seed dispersers and predators, and are often reared by humans for their meat and eggs, or hunted as game birds. Birds of this group inhabiting every continent except Antarctica.

Galliform birds are divided into five families like Phasianidae (including Chicken, Quail, Partridges, Pheasants, Turkeys, Peafowl and Grouses), Odontophoridae (New World Quail), Numididae (Guinea Fowl), Cracidae (including Chachalacas and Curassows), and Megapodiidae (incubator birds like Malleefowl and Brush-Turkeys). These birds are well adapted to the most diverse environments except deserts and ice. Many gallinaceous species are skilled runners and escape predators by running rather than flying. Males of most species are more colorful than the females and are mainly nonmigratory birds.

There are many species of Galliformes found in the Indian sub-continent ranging from Ladakh to the far eastern Himalayan states like Sikkim and Arunahchal Pradesh to Mizoram. In India, 45 species of Galliformes, having have been reported, out of which seven are endemic to India. The Himalayan regio has the highest diversity of Galliformes in India, with 3 species. Of these, 29 species are restricted to the Himalayas.

Due to their immense beauty and gracefulness these birc have enticed humans since time immemorial. Perhaps this the reason that the Postal Department of India now knows a India Post has issued myriad postage stamps, first day cover special covers, picture post cards as well as permanen pictorial cancellations commemorating particular events an also serving as a platform for mass awareness in general an crucial steps for their conservation in particular.

Few Galliformes In Indian Philately

UDAIPUR BIRD FESTIVAL : A DECADE OF CONSERVATION AND AWARENESS ACTIVITIES

Arun Soni
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Introduction: In January 2024, Udaipur celebrated the 10th edition of its iconic Bird Festival, marking a decade of fostering love and responsibility for avian biodiversity. Over the years, the festival has evolved into a model initiative, blending art, education, and field experiences to promote harmonious coexistence between humans and nature.

Vibrant Activities for All - The festival featured a range of activities tailored to various age groups to ensure widespread participation and impact.

For School Students	**On-the-Spot Painting Competition:** Showcased creativity, highlighting the beauty and importance of birds.
	Written Quiz: Enhanced understanding of bird species and conservation challenges.
	Bird Watching and Field Visits: Introduced students to local wetlands, forests, and lakes, fostering early ecological sensitivity.
	Workshops, Exhibitions, and Stalls: Featured photography workshops, eco-friendly stalls, and thematic exhibitions to equip participants with conservation tools and knowledge.
For College Students, Teachers, and Citizens	**Bird Race, Bird Watching and Field Visits:** Offered hands-on experience in identifying bird species and their habitats.
	Udaipur Nature Literature Festival: Brought together conservationists, authors, and storytellers to emphasize nature's cultural and ecological significance.
	Workshops, Exhibitions, and Stalls: Featured photography workshops, eco-friendly stalls, and thematic exhibitions to equip participants with conservation tools and knowledge.

Conservation Outcomes and Benefits - The festival achieved tangible conservation impacts beyond the celebrations, benefiting Udaipur's ecology and community.

Strengthened Community Engagement	Fostered shared responsibility for biodiversity.
	Popularized citizen science initiatives like bird counts and species documentation.
Enhanced Protection of Local Habitats	Awareness campaigns highlighted the importance of Udaipur's wetlands, forests, and bird habitats.
	Encouraged vigilance against encroachments and pollution.
Boost to Sustainable Tourism	Established Udaipur as a hub for eco-tourism, attracting bird enthusiasts and photographers.
	Promoted sustainable tourism practices that supported the local economy.
Educational Integration	Inspired schools and colleges to integrate environmental education into their curricula.
	Led to regular nature walks and bird-watching trips in many institutions.
Improved Biodiversity Awareness	Workshops and field visits emphasized birds' roles as pollinators, seed dispersers, and pest controllers.
	Motivated participants to protect avian species.
Collaborative Conservation Efforts	Strengthened partnerships between communities, NGOs, and government agencies.
	Implemented projects for wetland restoration, bird-friendly zones, and species monitoring.
Empowerment Through Knowledge	Photography workshops and exhibitions equipped participants with skills to document and share conservation stories.
	Created a ripple effect, inspiring broader community involvement.

Udaipur as a Role Model - The Udaipur Bird Festival exemplifies the successful integration of conservation, community participation, education, and tourism. It sets a benchmark for other regions aiming to engage their communities in biodiversity preservation.

Summary Table of Activities and Outcomes

Target Group	Key Activities	Outcomes
School Students	Painting, Quiz, Bird Watching and Wetland visits, Exhibitions and Photography workshop	Awareness, Creativity, Early Sensitization
College Students	Field Visits, Workshops, Exhibitions, Photography and Literature Festival	Practical Knowledge, Conservation Skills, Awareness
Citizens	Literature Festival, Exhibitions, Photography, Bird Watching and Wetland visits	Community Involvement, Skill Empowerment, Awareness

Conclusion

The 10th Udaipur Bird Festival celebrated over a decade of achievements in biodiversity conservation and community engagement. It reaffirmed Udaipur's commitment to a futur where birds and humans coexist harmoniously, bridgin knowledge, action, and community spirit.

PAINTED SPURFOWL SIGHTING IN KUMBHALGARH WILDLIFE SANCTUARY

Anil Rodgers
Wildlife Conservationist

Kumbhalgarh Wildlife Sanctuary is a hidden treasure of wildlife, where Leopard, Sloth Bear, Wolf, Hyena, Fox, Jackal, Sambar Deer, Four-horned Antelope, Porcupine, Pangolin, Rusty- Spotted Cat, Jungle Cat, Green Munia and many species of raptors are commonly seen. It is a heaven for nature lovers. Kumbhalgarh Wildlife Sanctuary is well known for Grey Junglefowl *(Gallus sonneratii)*. We can easily identify it by it's peculiar calls, especially those made by the male birds. Another interesting bird of the area is Aravalli Red Spurfowl. So far, a general belief was there among the birder that only Red Spurfowls & Grey Junglefowls are present in Kumbhalgarh Sanctuary. On January 11, 2024 during 10th Udaipur Bird Festival, one team of the participants (I was also in that team) of the bird race event while wondering near the Areth Gate of the Sanctuary, encountered a male Painted Spurfowl *(Galloperdix lunulata)*. The site was a hilly terrain with sparse vegetation. Scattered trees of *Boswellia serrata, Lanne coromandelica* and bushes like *Grewia tenax, Holarrhe antidysentrica* were growing in that patch of habitat. Th presence of *G. lunulata* in Kumbhalgarh Wildlife Sanctuary an interesting finding and worth placing on records.

ASIAN PALM CIVET (PARADOXURUS HERMAPHRODITUS) AND ITS RELATION TO VISH-TENDU (DIOSPYROS CORDIFOLIA) AND LOCAL AVIFAUNA

Devendra Mistry

As the common palm civet locally known as "Vijju" or "Bijju", is a key role player in the seed dispersal system of jungle trees and other plant species. But here I'll talk about the tree *Diospyros cordiflolia*, locally called Vish tendu, gaanglia and gaangli.

The fruit of "vish-tendu" are considered 'poisonous' by the folk. Its fruits are used for fish stupefaction by the local tribals which prove its name "Vish tendu" also. If this is true, the question arises, who is the prime seed dispersal agent of this tree ?

So, in order to get the clue, few sites were selected Ubeshwer, Jhameshwer, Badi, Neemuch Mata, Kharpi nursery stream and Gulab bagh where D. cordifolia growing in good numbers. The selected sites were regula visited and scats present below and around the vish ter trees were collected. The scats having seeds of vish ter were collected from the cliffs, near roads and along the stre banks. Seeds embedded in the scats were cleaned in running tap water to identify the tree/ bush species. The se found present in the scat and in uneaten and partially ea

fruits were compared and it was confirmed that someone is eating the so called 'poisonous' vish tendu fruits.

After above clues, radial coverage of field study increased around the *D. cordifolia* trees. It was noticed that same scats are present up to the hilly cliffs, road side and on stream banks. Same type of scats was also collected from the caves confined to hilly areas. The area, having seeds-filled scats were visited during dusk, dawn, evening and morning. Based on observation of last five years it was found that it is the Asian Palm Civets *(Paradoxurus hermaphroditus)* eating the ripened fruits of *D. cordifolia*.

PC: Vikramaditya Singh Chauhan

Paradoxurus hermaphroditus is not only helping the dispersal of seeds of vish tendu but also lodging then on the cliffs and along the stream banks. Many seeds germinated at their lodging sites during rainy season but many are further dispersed by the run off in hilly localities in downstream areas.

Vish tendu is an important shady tree of the area. It is useful for many avian species. The tree has very dense crown which provide shade to the wild animals during scorching sun. Sparrows use these trees for night roosting. Indian Eagle owl, Dusky Eagle Owl, Indian Scops Owl and Brown Fish Owl use these trees as their day roots. Since foliage is dense and green, owls remain invisible when perching inside the crown and spent their day time snugly.

For the benefit of birds *D. cordifolia* should be protected and propagated in the wild. Many wild animals take rest in the shade of these tree during hot season. Thus, by performing dispersal of seeds and treating then in their digestive system. Asian Plam Civet is playing a vital role in regeneration of Vish tendu and vis-a-vis creating habitat for many avian species in the nature.

DISTRIBUTION OF THE FOWLS IN PROTECTED AREAS OF SOUTHERN RAJASTHAN

Dr. Satish Kumar Sharma, RFS (Retd.)

Fowls are Gallinaceus terrestrial birds which are sexually dimorphic. They are long-tailed and relatively large - bodied birds. Fowls are omnivorous birds, feed and varieties of items like insects, snakes, earthworms, termites, fruits, grains, pieces of discarded human food and plant matters.

Four species of fowls are confined to Southern Rajasthan namely, Indian Peafowl *(Pavo cristatus)*, Grey Junglefowl *(Gallus sonneratii)*, Red Spurfowl *(Galloperdix spadicea)* and Painted Spurfowl *(Gallaperdix lunulata)*

As many as nine sanctuaries are confined to southern Rajasthan. Presence of fowls in these sanctuaries is depicted in Table 1.

Table 1: Presence of fowls in PAs of southern Rajasthan

S.M.	Name of Sanctuary	Forest Division	Main forest types*	Presence of the species**			
				IPF	GJF	RSF	PSF
1.	Mount Abu	Wildlife Mt. Abu	5A, 5B, 8A	P	P	P	-
2.	Phulwari ki nal	Wildlife Udaipur	5A, 5B	P	P	P	-
3.	Sajjangarh	Wildlife Udaipur	5B, 6B	P	-	P	-
4.	Jaisamand	Wildlife Udaipur	5B, 6B	P	-	P	-
5.	Kumbhalgarh	Wildlife Rajsamand	5B	P	P	P	P***
6.	Todgarh -Raoli	Wildlife Rajsamand	5B, 6B	P	P	P	-
7.	Sitamata	Wildlife Chittorgarh	5A, 5B	P	P	P	P
8.	Bassi	Wildlife Chittorgarh	5B	P	-	P	P
9.	Bhainsrorgarh	Wildlife Kota	5B	p	-	-	P

*5A = Southern Tropical Dry Deciduous Forests, 5B == Northern Tropical Dry Deciduous Forests, 6B = Northern Tropical Thorn Forest, 8A = Southern subtropical Broad-leaved Forest.

**P= Preset, IPF = Indian Peafowl, GJF= Grey Junglefowl, RSF= Red Spurfowl, PSF = Painted Spurfowl.

*** During 2023 Udaipur bird festival, a team of birders sighted a male in the sanctuary.

It is evident from table 1 that Indian Peafowl is present in all nine sanctuaries while Gray Jungle fowl, Red Spurfowl and Painted Spurfowl are present in five, eight and four sanctuaries respectively. Mount Abu and nearby area is the westernmost distribution limit of Grey Junglefowl and Red Spurfowl. Todgarh-Raoli is the present northern most distribution limit of both species in India. Grey junglefowl and Red spurfowl are more or less sympatric in distribution in Rajasthan. Both of these species are also present in Balaram Ambaji and Jessore sanctuaries of northern Gujarat, present near the border of Rajasthan state.

Indian peafowl is a well-known species in Rajasthan. Gray junglefowl, Red spurfowl and Painted Spurfowl are forest species and don't seen outside the forest areas. While Indian peafowl is seen everywhere like in forests, grassla agricultural zone, human habitations and near relig locations.

Banki forest, which is situated only eight kilometers away f Udaipur town, is probably a best place to see Indian peaf near this city. Sajjangarh sanctuary is also well known Peafowls. Down ward flight of Peafowls at sunrise from hill tree roosts, to bottom hill side is worth seeing. Despite a g population of Leopards and other predators in Banki Sajjangarh, Peafowls are successfully breeding and survivir these localities.

While dancing, fan of tail feathers (i.e. trains) present unforgettable scene. Two types of tail feathers, called ' feathers and 'T' feathers are clearly visible from dista (Maizi et al. 2020). A third type of feather, having dagger apex are also seen towards the lowermost edge of the There three types of tail feathers are collected by the tri and non-tribals to make 'cattle ornaments' which are use adorn the cattle, especially cows and bullocks vary next da Diwali. Different nomenclature is in vouge in Rajasthan these three types of tail feathers as presented in table 2.

Table 2 : Nomenclature used in Rajasthan for different types of tail feathers of male Peafowl

S. No.	Type of tail feather	Local nomenclature in different parts of Rajasthan				
		Udaipur	Karauli, Dholpur, Sawai Madhopur	Alwar, Jaipur	Bharatpur	Dausa
1	'Eye' Feather	Sungla	Chandula, Chand, Chaeela	Chanduwa	Chandola	Chandol
2	'T' Feather	Moringa	Dhup	Chhad	Dadheel	Dhandhel
3	Dagger like Feather	Dantri	Kataar	Katara	Kataar	Kataar

Crest or crown of an Indian Peafowl is made of feathers while same is a muscular structure in Grey junglefowl and called Comb. Grey junglefowl possess single type of comb. The upper edge of comb has pointed teeth like structure called 'points of the comb'. During 2015 author counted 13 points on the comb of a fully grownup male Junglefowl at Thandiberi area of Kumbhalgarh sanctuary. The inter-teeth distance between first tooth and second tooth was more is comparison of rest teeth.

During the erstwhile time of princely state, Grey Junglefowl was introduced by the local rulers in Haridas ji ki Magri area but this experiment yielded failure (Dr. Raza Tehsil, pers. com., 2010). Now Haridas ji ki Magri area has lost its forest area and converted into a highly populated part of the Udaipur city.

Photo 1: (R to L) Dagger like feather, ' T' feather & 'E' feather of Indian Peafowl .

The railway track from Mavli to Marwar junction via Gor ghat is an engineering marvel in Rajasthan. It was construc during 1930s by the Britishers with the help of local rulers. said that when this railway line was constructed, countl wild fowls were killed for food purpose by the working fo engaged in laying the track.

A very interesting male wild fowl, looking like 'Red junglefo was photographed by Dr. Ajit Uchoi, IFS, thence DCF Wildli Udaipur during the month of November, 2020 in Mal Sarv area of Phulwari sanctuary. Its tail feathers are like that of w male junglefowls but colored details of different bc feathers and legs are not matching. It is regularly seen in t wild for last many years in Mal Sarvan area of Daiya For Block.

Photo 1: A Male Wild Fowl of Mal Sarvan area of Phulwari Sanctuary having different colour pattern

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बार्न उल्लू: एक रेसक्यु प्रकरण

डा. कमलेश शर्मा

जैव विविधता से समृद्ध लेकसिटी में जहां प्रतिवर्ष बर्ड फेस्टिवल का आयोजन करते हुए पक्षियों और पर्यावरण के प्रति प्रेम और इन्हें संरक्षण देने की वन विभागीय प्रतिबद्धता दिखाई दे रही है वहीं पशु पक्षियों को अभयदान देने की प्राचीन परम्परा का निर्वहन यहां के निवासियों और पशु.पक्षी प्रेमियों द्वारा किया जा रहा हैं। इसका साक्षात् उदाहरण इस वर्ष दीपावली से ठीक पहले शहर में वन्यजीवो के एक रेस्क्यूअर ने पेश किया उन्होने जब संकट में फंसे बार्न आउल के 4 चिक्स को जीवनदान दिया।

प्रकरणानुसार शहर के पंचवटी क्षेत्र में स्थित आरएसएमएम कार्यालय के पीछे छज्जे पर बार्न आउल ने एक कोटर में चार अंडे दिए थे। कालांतर में अंडो सें चीक्स निकले तो आउल ने चिक्स को फीडिंग कराना भी शुरु किया प्रतिदिन चिक्स की फिडिंग के लिए आउल जोडा चूहों का शिकार कर चिक्स को खिला रहा था। मरें हुए चूहों के अवशेषों के कारण परिसर में बदबू आने लगी तो कार्यालय के स्टाफ ने खोज की तो आउल के चिक्स और यहां पसरी हुई गंदगी को देखा। इस स्थिति की जानकारी मिलने पर कार्यालय के लोगों ने शहर में वन्यजीवों के एक रेस्क्युअर को सूचना दी। रेस्क्यूअर ने यहां पहुंच कर देखा तो आउल के छोटे छोटे चिक्स को देखकर कार्यालय के स्टाफ से समझाइश की और इन्हें नही हटाने का सुझाव दिया। इस स्टाफ ने कहा कि कार्यालय परिसर में आ रही बदबू का समाधान कर दिया जाए तो उन्हें पक्षियों के चिक्स से कोई आपत्ति नहीं है।

रेस्क्यूअर ने स्टाफ की समस्या और चिक्स की स्थिति को देखते हुए इन चिक्स को बचाने की पहल की। यदि चिक्स को हटाकर यहा शिफ्ट किया जाए तो इनके मां.बाप द्वारा फिल्डिंग के अभाव में चिक्स की मौत ऐसे में छज्जे के आसपास ही शिफ्ट कराने की जरूरत थी। दूसरी तरफ यदि आस पास भी शिफ्ट किया जाता है तो माता पिता के न आने की स्थिति में उनको कृत्रिम फिडिंग करवाने की भी जरूरत पडी। इन समस्त स्थितियों को जानकर तय की चूजो के चूजो को एक गत्ते के बॉक्स में रखकर छज्जे के आस पास ही रखने का निर्णय लिया ताकि बच्चे मां.बाप की नजरों में ही रहे। खुशी की बात रही कि शिशुओं को थोडा स्थानांतरित करने के बाद उसी रात उन के माता.पिता ने इस गत्ते के घौंसले तक पहुंच कर चिक्स को भोजन कराना शुरू कर दिया। अब समस्या इस बात की आ रही थी कि भोजन के अवशेषों से दुर्गण आ रही थी इस समस्या को दूर करने के लिये रेस्क्यूअर्स प्रतिदिन यहाँ पहुँच कर गत्ते में भोजन के अवशेषों और अन्य गंदगी की सफाई करना प्रारम्भ कर दिया। यह सिलसिला एक माह तक जारी रहा। प्रतिदिन भोजन ओर सेवाचर्या से चिक्स बडे हुए ओर वे उन्मुक्त गगन में उड भी गए। चिक्स को खुले आसमान में उडता देखकर खुशी मिली एवं छोटे जीवों को जीवन दान भी मिल गया।

इस प्रकरण से यह शिक्षा मिलती है कि रेस्क्यू कार्य एक जिम्मेदारी भरा कार्य हैं वही रेस्क्यू सफल कहा जा सकता हैं जहाँ मनुष्यों की समस्या का समाधान भी मिलें एवं वन्य प्राणी भी पूर्णतया सुरक्षित रहे। हमें भी मददायित्व कहा जाता है यह भावना हमारे समाज में आएगी तो हमारें प्राणी भी बचे रहेंगे जो मनुष्यों के साथ आबादी वाले आवासों को जाया करते हैं।

लोह सारंग का मेनार में सफल प्रजनन

दर्शन कुमार मेनारिया
(व्याख्याता,राजनीति विज्ञान MGG खेरोदा)
(पक्षी मित्र,वेटलैंड मित्र एवं पर्यावरण प्रेमी बर्ड विलेज मेनार)

वैश्विक रूप से एक निकट संकटग्रस्त प्रजाति है जो वन्य जीव (संरक्षण) संशोधित अधिनियम 2022 की अनुसूची 2 में एक संरक्षित जीव है यह बडे आकार का एक बहुत सुंदर पक्षी है। नर की ऑखें गहरे रंग की तो वहीं मादा की आंखों की पुतलियां पीले रंग की होती है। इस पक्षी की उंचाई 129–150 सेमी और पंखों का फैलाव 230 सेंटीमीटर होता है। वजन तकरीबन 4 किलो होता है। आईयूसीएन स्टेटस के अनुसार, दुनियाभर में ब्लैक नेक्ड स्टोर्क की आबादी तेजी से कम हो रही है। इसकी वजह यह है कि इनके हैबिटेट खोते जा रहे हैं। बर्ड लाइफ इंटरनैशनल के अनुसार दुनियाभर में इनकी अनुमानित आबादी 15000 से 35000 के करीब है। इसी वजह से यह प्रजाति 2004 से ही आईयूसीएन रेड लिस्ट का हिस्सा है। स्टेट ऑफ इंडियाज बर्डस के डेटा के अनुसार सन् 2000 के बाद से इनकी संख्या में भारी गिरावट का आंकलन किया गया है। उनका प्रजनन दुलर्भ है। लोह सारंग तभी प्रजनन करते हैं जब वे वातावरण को सुरक्षित पाते हैं। उनके घौंसले बडे होते हैं और जब तक वे पूरी तरह से संतुष्ट नहीं हो जाते तक

तक अंडे देने का विचार नहीं करते हैं। आमतौर पर वे दो चूजों के प्रजनन के लिए जाने जाते हैं।

मेनार में प्रजनन का रिकॉर्ड

ब्लैक नेक्ड स्टोर्क युगल विगत तीन वर्षो से मेनार वेटलैंड क्षेत्र में प्रजनन के प्रयास कर रहे थे किंतु दूसरे पक्षियों, व अन्य विभिन्न विपरीत परिस्थितियों के कारण सफल नहीं हो पाए। आखिरकार इस वर्ष (2024) में मेनार क्षेत्र में पर्याप्त वर्षा हुई और ब्रहा सागर लबालब हुआ। इस जलाशय के बीचों बीच टापू पर स्थित देसी बबूल का पेड होने से इनके लिए अनुकूल परिस्थितियां बनी और यह अपना प्रजनन करने में सफल हुआ। आमतौर पर ये अपने बडे घोंसले, पतों, लकडियों, घास आदि से एकांत जगह पर बनाती है। झीलों के आसपास बडे और बडे ऊचे कांटेदार पेडों पर इन्हें घोंसले बनाना पसंद होता है। मेनार के ब्रह्मसागर के बीचों बीच जल क्षेत्र से घिरे हुए देशी बबूल के बडे वृक्ष के ऊपरी छोर पर ब्लैक नेक्ड स्टोर्क युगल ने 2 घोंसले बनाए थें। ये ग्रीष्म ;तु में हटाए गए आईपोमिआ की टहनियों से बनाए गए हैं। उनमें से एक अच्छी तरह से बने बडे घोंसले में अपने एक चूजे के साथ देखा गया। मेनार वेटलैड क्षेत्र में इस नियर थ्रेटंड प्रजाति के दुर्लभ पक्षी की नेस्टिंग और प्रजनन मेनार की आर्द्रभूमि के पारिस्थितिकी महत्व को परिलक्षित करती है।

वाइल्डलाइफ फोटोग्राफर विशाल महाजन बताते हैं कि गत वर्ष इसी पक्षी द्वारा लाए गए घोंसले की सामग्री को स्पूनबिल पक्षी द्वारा बार–बार चुराया गया। जिससे इसके प्रजनन के लिए अंततः घोंसला नहीं बना पाए। लेकिन इस वर्ष इस पक्षी का मेनार में प्रजनन करना, सभी पक्षी प्रेमियों के लिए खुशी की बात है।

श्याम कंठी सारस को खतरे

आज के बंदलते मोसम और तीव्र शहरीकरण, जल क्षेत्र से घिरे बडे पेडों की कमी ने इस सुंदर प्रजाति को लुप्त होने की कगार पर पंहुचा दिया है। उन्हे आवासों का क्षतिग्रस्त होना, जल स्त्रोतों का क्षरण और जल निकासी, अपशिष्ट पदार्थो का जलाशयों में निष्कासन, इंसानों द्वारा अत्यधिक मत्स्याखेट एवं बिजली की तारो से टक्कर आदि समस्याओ का सामना करना पडता है। लगभग की यह प्रजाति अपनी विचित्र कीडाओं के लिए विख्यात है। इस प्रजाति के नर तथा मादा दोनों एक दूसरे से आमने सामने खडे होकर जोर–जोर से अपने पंख फडफडाते है और अपनी ऊंची गर्दन को इस प्रकार आगे बढाते है कि वह एक दूसरे से मिल जाए। फिर वे अपने चोंच को बंद कर लेते हैं। यह किया थोडी देर तक चलती है और कई बार दोहराई जाती हैं। यह प्रजाति अपने घोंसले कृषि क्षेत्रों या दलदली जलाशयों के निकट बनाती है तथा मानसून के चरम पर अर्थात सितंबर से नवंबर महीनों में बडे–बडे वृक्षो पर बनाना शुरू करती है। कुछ घोसलें जनवरी के बाद भी बनाये जाते है। इनके घेसलें पेडों या झाडियों की टहनियों, शाखाओं, पानी के बीच ऊंचे पेडों के सबसे उपरी छोर पर होते है। सामान्य तौर पर इस प्रजाति के अंडे हल्के सफेद रंग के और आकार के चौडे होते है। इनके चूजें सफेद रंग के होतें है, जिनकी गर्दन का रंग एक सप्ताह के भीतर गहरे भूरे रंग में परिवर्तित हो जाते है। कुछ माह तक वयस्क पक्षी चूजों के लिए घोंसले में भोजन लाता है परन्तु उसके बाद युवा पक्षियों को स्वयं ही परिश्रम करना पडता है। वयस्क जोडा चुजों की देखरेख साथ में करते है परंतु एक वर्ष के बाद भी यह सभी अलग–अलग हो जाते है। प्रकति संरक्षण के लिए अंतर्राष्ट्रीय संघ की लाल सूची के अनुसार काले गर्दन वाले सारस को खतरे के करीब अर्थात् निकट संकटग्रस्त घोषित किया गया है। हालांकि इसका मतलब है कि वे अभी तक गंभीर खतरे में नही हैं, लेकिन फिर भी काली गर्दन वाला सारस कई खतरों से गस्त है। इनकी प्रजाति पर प्रमुख खतरों में उपरूक्त आवास का नुकसान, उथले जल निकायो के क्षरण और जल निकासी, कचरे का क्षेपण, अत्यधिक मछली पकडना, शिकार करना और बिजली की तारों से टक्कर शामिल हैं।

मेनार वेटलैंड कोम्पलेक्स परिंदो के आवास और प्रजनन के लिए मुफीद

मेनार वेटलैंड कोम्पलैक्स भोजन की प्रचुरता ओर सुरक्षा कि दृष्टि से परिंदो को प्रजनन के लिए मुश्किल लगता है। विदेशी पक्षि ग्रेट केस्टेड ग्रीब जो कि शीतकालीन प्रवास पर भारत आता था विगत कई वर्षो से मेनार के जलाशयों में प्रजनन करना आरम्भ करके इसे अपना स्थाई आवास बना लिया है आस पास के कौन और तालाबों मे आबादी का विस्तार किया हैं। इसके अलावा सफेद गिद्ध, सारस क्रेन, स्पूनबिल, ब्लेक हेडेड आइबिस, वाइट ब्रेस्टेड वोटर हेन, कोमन कूट, पर्पल स्वाम्प हेन, स्पोट बिल्ड डक, कोम्ब डक जैसे एक दर्जन से अधिक पक्षी मेनार आर्द्रभूमि संकुल में घोंसले बनाकर प्रजनन करते हैं।

मौन की झंकार

मीनाक्षी नागदा

मेरे अन्तस् को छूकर,
मौन को झंकृत कर,
गूँज उठा है दूर कहीं,
चट्टानों से टकराकर अनहद नाद,
करुणामय निर्मल ऑखें,
देख रही है अद्भुत दृश्य,
खगों की चहचहाहट,
हिम से ढके पर्वत,
बादलों की अठखेलियाँ
देखकर दंग हूँ मैं,।

सुना रहा है कोई अनाम कहानी
मेरा मन
अनन्त गगन में
बादलों से पार
है कहीं बसा,
प्यार, द्वेष, राग, अनुराग,
से परे।

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