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Preliminary study on bird diversity and abundance in Lalsot Area District Dausa Rajasthan

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Abstract
Study on bird diversity in the Lalsot area of dausa district rajasthan, was done, over a period of 24 months from march 2020 to February 2021. The main objective of this study was to assess the diversity and abundance of birds from two study sites in lalsot region. During this study, A total number of 115 bird species belonging to 48 families and 14 Orders were recorded during the study covering an area of about 2.5 km.. From the 48 identified species of birds, 36 (72%) of the species were recorded from bushland habitats, The study was divided into two different regions that are: Meda bheruji and Pancheswar mahadev lalsot region, bird species observed, 14 were migratory namely Blue rock-thrush, Rosy-starling, Blue-cheeked bee-eater, Eurasian wryneck, European roller, White-eared bulbul, Little grebe, Pied cuckoo, Common cuckoo, Greater painted-snipe, Sirkeer malkoha, Small minivet, White-bellied drongo, Blyth's reed warbler. Birds' survey is the best method to understand different species distribution, abundance, and diversity. The present study aimed to survey wild birds, using point count method, in two area of lalsot distric dausa Rajasthan.The meda bheruji and pancheswar mahadev place is situated in aravali hills has wide variety of trees and water bodies which may be one of the major contributing factor for the richness of bird species.

Keywords: lalsot, rosy-starling, spotted dove, blue rock pigeon, house crow, pied cuckoo

Introduction
Since earliest times birds have been not only a material but also a cultural resource. Bird figures were created by prehistoric humans in the Lascaux Grotto of France and have featured prominently in the mythology and literature of societies throughout the world. Long before ornithology was practiced as a science, interest in birds and the knowledge of them found expression in conversation and stories, which then crystallized into the records of general culture. Ancient Egyptian hieroglyphs and paintings, for example, include bird figures. The Bible refers to Noah's use of the raven and dove to bring him information about the proverbial Flood. Birds are very important ecological indicators to understand the quality of habitat. Birds are among the key components of the earth's biodiversity. and being sensitive to environmental changes [1]. They act as a key indicator for assessing the status of ecosystem health. They are integral part of food chain and food web. Birds play a vital role in keeping balance of nature. They also help in pollination of flowers and dispersal of seeds. Richness, abundance and community composition of birds are often used by ecologists to understand the diversity of species in natural occurrence [2]. There are more than 10000 bird species in the world, out of these 1313 species recorded from Indian subcontinent [3] American Museum of Natural History suggest that there are about 18,000 bird species in the world [4]. A check-list of bird of India authored by Praveen et al., published by the journal Indian Bird 2016, there are about 1,263 species of bird present in India, which 12% of total bird species in the world [5-6].

Birds are well known bio-indicators and they have a significant role in ecosystem functioning and balancing. Thus, they are agents of nutrient cycles, plant gene flow through pollination, seed dispersal, controls population size of harmful insects, environmental sanitation through scavenging of carrion. [7] They are also used as a food sources, artistic and spiritual inspiration for many people throughout the world. [8] Birds are also important components of tourism industries in many countries and they support the economic growth of a particular a country. [9] These ecosystem services are important for many communities, and to ensure that birds can fulfill these biological roles at an appropriate level for current and future generations, there is a pressing need to study the dynamics and socioeconomics of bird diversity outside protected areas, especially in urban areas. The major factor affecting the bird diversity is habitat destruction.

Among all wildlife, birds are one of the most common wildlife in urban areas such as neighborhoods and cities, and many bird populations have been declining as a result of landscape changes due to urban expansion [10]. At the local level, these major changes include high rates of land conversion into urban uses and increasing human pressure on biodiversity due to rapid population growth.

The present study aims to document the checklist of bird diversity in the lalsot area as no work on bird diversity was carried out in lalsot, district Dausa, Rajasthan. The proposal will be helpful in preparing a baseline data on bird diversity. The study will assess the difference in avian community among these areas.

Materials and methods
This report is based on the observations made from march 2019 to march 2021. The birds are observed and recorded at various locations of the selected site, water bodies and adjacent areas, wasteland area of the meda bheruji and pancheswar mahadev.

Study area
The study area was stratified into two main region named

as Meda bheruji and pancheswar mahadev place is situated in hills and plane area of lalsot district dausa rajasthan fall in aravali range of eaestern rajasthan. Lalsot is located at 26.56 N 76.32 E has an average elevation of 298 metres (978 feet). Lies at the latitudes of 32.732998 and the longitudes of 76.329091and has an average elevation of 298m amsl. However, the study area particularly bushland and hill forests are highly distributed due to human activities.

The Aravalli range in Rajasthan acts as a barrier between the Thar desert and the eastern rajasthan. So as to prevent the desert from spreading to the eastern parts of the rajasthan where one of the town lalsot situated in distric dausa. Dausa district is located in the eastern part of Rajasthan. It is bounded in the north by Alwar district, in the east Bharatpur district, south by SawaiMadhopur and Karauli districts and Jaipur district in the west. It Coordinates 26.56°N 76.32°E. The district is drained by three important rivers and the district falls within the three corresponding river basins namely 'Banganga River Basin' in northern part, 'Banas River Basin' in southern part, and 'Gambhir River Basin' is in lower eastern part. The general topographic average elevation in the lalsot is 298.0 m above mean sea levelThe distribution and occurrence of avifauna correlate well with the vegetations patterns of the area, which is of great significance.The vegetation found in this area mainly consists of naturally grown herbs and shrubs. The study area supports a number of native as well as exotic floral species. Different species of grown up trees like Acacia Arabica, Acacia Senegal , Ziziphus mauritiana,Capparis deciduas, Prosopis juliflora, Cassia fistula, Butea monosperma, Holoptelea integrifolia, Ficus benghalensis, Ficus religiosa,Anogeissus pendula, Mangifera indica, Delbergia Sisso, Tamarindus indica, Corchorus olitorius, Caesalpinia pulcherrima, Guazoma ulmifolia, etc. No research work on bird diversity,their population and assessment was carried out in the selected study area of lalsot region. The present study is focused not only on preparing the checklist of birds, but also to find out their occurrence, status as well as to create awareness for their conservation. I selected this study site, as it was natural habitat with four small water bodies, manmade temple with garden, richness of Aravali hills flora and fauna where many species of bird and other wild animals live.

Instrument used

A binocular 10x50 was used for close observation of birds and for photography of birds SONY ALT 56 camera was used. The photo sampling was done between 6.30 to 10 hrs. and 16.00 to 18.00 hrs. when birds are active. Observation were made evry 3days for the period of February 2019 to march 2021.The entire study was based on photographs,video with audio recordings. Birds were identified using field guides Kazmierczak, K. (2000). Grimmett,et al (2011) [4]. Salim Ali (1984) [7] The Book of Indian Birds, the internate birds database and the online bird identification platforms like Ask id's of Indian Birds, eBirds, etc. proved quite handy in bird identification.

Bird watching technique

Field observations were started in the early morning (6:00-10:00 a.m.) and in the late afternoon (4:00-6:00 p.m.) when birds are active. Continuous observations were made regarding their movement, songs, feeding habit and size. Simultaneously specific calls and songs were also

Identified. General size, shape, distinctive strips and patches of colour including crown strips, eye lines, nape colour, eye arcs or rings and birds bill size were noted. Wing bars, colour patches, and marking on bird body during stationary stage or flying stage were noted. Leg colour and length were also noted in each observation. then bird species were identified and taxonomically classified using bird guide book of Redman et al., and other standardized references.

A total of 112 species of birds (Table 1) belonging to 46 families were recorded in Lalsot Division. The present investigation also revealed that Muscicapidae family (8species) dominated the avian species in this area, followed by Cisticolidae, Columbidae, (7 species each), Motacillidae, (6 species), Sturnidae, Cuculidae, Laniidae, Alaudidae (5species each), Scolopacidae (4 species) Leiothrichidae, Corvidae, Phasianidae, Accipitridae, Picidae (3 species each), Hirundinidae,Acrocephalidae, Nectaridae ,Passeridae, Dicruridae, Emberizidae, Pycnonotidae, Ardeidae, Meropidae, Coraciidae , Rallidae, Megalaimidae, Psittaculidae , Rostratulidae Phalacrocoracidae and Strigidae (2 species each)(Table 1). Moreover, 13 families- Vangidae, Zosteropidae, Paridae, Rhipiduridae , Estrildidae , Oriolidae,Campephagidae, Ploceidae, Bucerotidae , Upupidae ,Turnicidae , Recurvirostridae, and Podicipedidae were poorly represented in the study area with a single species each (Table 1).Among the avifauna, 67 (59.82 %) were residents, 45 (40.17%) were migrants including 23 (51.11 %) winter visitors, 22(48.32 %) summer visitors (Fig. 3). Further analysis of avian abundance revealed that 53 (47.32 %) species were common, 33 (29.46 %) species as uncommon, and 16(14.28 %) are abundant, 10 (8.92 %) as rare. Among the recorded species, All the remaining (112) were places in the Least Concern category (Table 1) according to the International Union for Conservation of Nature (IUCN) Global Red List. The most frequently found birds are: House Sparrow, Jungle Babbler, Common babbler, Common Myna, Blue Rock Pigeon, Spotted Dove, Indian robin, Jungle babbler, Black Drongo, and Red Wented Bulbul. Hoopoe There are also some birds which were rarely sighted during the study period such as- Indian Grey Hornbill, Woodpecker, Shikra, Papiha, Indian Golden Oriole, Indian Roller etc. Also there were some migratory birds such as Rosy Starling, Common cuckoo, blue cheeked bee eater, blue rock thrush, blyths reed warbler, Rufous-tailed lark, Crested lark, Variable wheatear, Black redstart, Pied bush chat, Clamorous reed warbler, White-bellied drongo,

Yellow-eyed babbler, Small minivet, Rufous-fronted prinia, Graceful prinia, Isabelline shrike Great grey shrike, Gray wagtail, Tree pipit, Blyth's pipit, White wagtail, Paddyfield pipit, White-eared bulbul, Spotted dove, European roller , Brown-headed barbet ,Yellow-crowned woodpecker, Eurasian wryneck, Wood sandpiper, Common greenshank, Common sandpiper, Green sand piper, Greater painted-snipe, Sirkeer malkoha, Pied cuckoo, Black-winged kite, etc. (Fig).

Table 1

S.no.	Order	Family	Scientific name	Common name	Abundance	Status
1	Passeriformes	Alaudidae	Eremopterix griseus	Ashy-crowned sparrow-lark	UC	R
2	Passeriformes	Alaudidae	*Mirafra erythroptera*	Indian Bushlark	UC	R
3	Passeriformes	Alaudidae	*Ammomanes phoenicura*	Rufous-tailed lark	UC	WM
4	Passeriformes	Alaudidae	*Galerida cristata*	Crested lark	UC	WM
5	Passeriformes	Alaudidae	Mirafra cantillans	Singing bush lark	UC	R
6	Passeriformes	Muscicapidae	(*Copsychus fulicatus*	Indian robin	A	R
7	Passeriformes	Muscicapidae	*Copsychus saularis*	Oriental magpie-robin	A	R
8	Passeriformes	Muscicapidae	*Oenanthe fusca*	Brown rock chat	A	R
9	Passeriformes	Muscicapidae	*Saxicola maurus*	Siberian stonechat	UC	WM
10	Passeriformes	Muscicapidae	*Oenanthe picata*	Variable wheatear	RA	WM
11	Passeriformes	Muscicapidae	*Monticola solitarius*	Blue rock-thrush	RA	WM
12	Passeriformes	Muscicapidae	*Phoenicurus ochruros*	Black redstart	UC	WM
13	Passeriformes	Muscicapidae	*Saxicola caprata*)	Pied bush chat	UC	WM
14	Passeriformes	Leiothrichidae	*Argya striata*	Jungle babbler	A	R
15	Passeriformes	Leiothrichidae	*Argya caudata*	Common babbler	A	R
16	Passeriformes	Leiothrichidae	*Argya malcolmi*	Large gray babbler	C	R
17	Passeriformes	Sturnidae	*Sturnia pagodarum*	Brahminy starling	A	R
18	Passeriformes	Sturnidae	*Acridotheres tristis*	Common myna	C	R
19	Passeriformes	Sturnidae	*Gracupica contra*	Asian pied starling	A	R
20	Passeriformes	Sturnidae	*Acridotheres ginginianus*	Bank myna	A	R
21	Passeriformes	Sturnidae	*Pastor roseus*	Rosy starling	UC	WM
22	Passeriformes	Hirundinidae	*Cecropis daurica*	Red-rumped swallow	C	R
23	Passeriformes	Hirundinidae	*Ptyonoprogne concolor*	Dusky crag-martin	UC	R
24	Passeriformes	Vangidae	*ephrodornis pondicerianus*	Common woodshrike	C	R
25	Passeriformes	Acrocephalidae	*Acrocephalus dumetorum*	Blyth's reed warbler	RA	WM
26	Passeriformes	Acrocephalidae	*Acrocephalus stentoreus*	Clamorous reed warbler	RA	WM
27	Passeriformes	Nectariniidae	*Cinnyris asiaticus*	Purple sunbird	C	R
28	Passeriformes	Dicruridae	*Dicrurus macrocercus*	Black drongo	C	R
29	Passeriformes	Dicruridae	*Dicrurus caerulescens*	White-bellied drongo	C	WM
30	Passeriformes	Passeridae	*Gymnoris xanthocollis*	Yellow-throated sparrow	C	R
31	Passeriformes	Passeridae	*Passer domesticus*	House sparrow	A	R
32	Passeriformes	Corvidae	*Dendrocitta vagabunda*	Rufous treepie	C	R
33	Passeriformes	Corvidae	*Corvus splendens*	House crow	C	R
34	Passeriformes	Corvidae	*Corvus macrorhynchos*	Large-billed crow	C	R
35	Passeriformes	Paradoxornithidae	*Chrysomma sinense*	Yellow-eyed babbler	C	WM
36	Passeriformes	Zosteropidae	*Zosterops palpebrosus*	Indian white-eye	C	R
37	Passeriformes	Emberizidae	*Emberiza striolata*	Striolated bunting	C	R
38	Passeriformes	Emberizidae	*Emberiza lathami*	Crested bunting	C	R
39	Passeriformes	Paridae	*Parus cinereus*	Cinereous tit	C	R
40	Passeriformes	Rhipiduridae	*Rhipidura aureola*	White-browed fantail	C	R
41	Passeriformes	Estrildidae	*Euodice malabarica*	Indian silverbill	C	R
42	Passeriformes	Oriolidae	*Oriolus kundoo*	Indian golden oriole	C	SM
43	Passeriformes	Campephagidae	*Pericrocotus cinnamomeus*	Small minivet	C	WM
44	Passeriformes	Cisticolidae	*Prinia hodgsonii*	Gray-breasted prinia	UC	R
45	Passeriformes	Cisticolidae	*Orthotomus sutorius*	Common tailorbird	C	R
46	Passeriformes	Cisticolidae	*Prinia sylvatica*	Jungle prinia	UC	R
47	Passeriformes	Cisticolidae	*Prinia inornata*	Plain prinia	C	R
48	Passeriformes	Cisticolidae	*Prinia buchanani*	Rufous-fronted prinia	RA	SM
49	Passeriformes	Cisticolidae	*Prinia socialis*	Ashy prinia	C	R
50	Passeriformes	Cisticolidae	*Prinia gracilis*	Graceful prinia	C	SM
51	Passeriformes	Laniidae	*Lanius schach*	Long-tailed shrike	C	R
52	Passeriformes	Laniidae	*Lanius vittatus*	Bay-backed shrike	C	R
53	Passeriformes	Laniidae	*Lanius cristatus*	Brown shrike	C	R
54	Passeriformes	Laniidae	*Lanius isabellinus*	Isabelline shrike	RA	WM
55	Passeriformes	Laniidae	*Lanius excubitor*	Great grey shrike	UC	WM
56	Passeriformes	Ploceidae	*Ploceus philippinus*	Baya weaver	C	R
57	Passeriformes	Motacillidae	*Motacilla cinerea*	Gray wagtail	UC	WM
58	Passeriformes	Motacillidae	*Anthus trivialis*	Tree pipit	UC	SM
59	Passeriformes	Motacillidae	*Anthus godlewskii*	Blyth's pipit	UC	SM
60	Passeriformes	Motacillidae	*Motacilla alba*	White wagtail	UC	WM
61	Passeriformes	Motacillidae	*Anthus campestris*	Tawny pipit	C	SM
62	Passeriformes	Motacillidae	*Anthus rufulus*	Paddyfield pipit	RA	SM
63	Passeriformes	Pycnonotidae	*Pycnonotus leucotis*	White-eared bulbul	UC	SM
64	Passeriformes	Pycnonotidae	(*Pycnonotus cafer*	Red-vented bulbul	A	R
65	Columbiformes	Columbidae	*Spilopelia chinensis*	Spotted dove	C	SM

66	Columbiformes	Columbidae	*Columba livia*	Rock pigeon	A	R
67	Columbiformes	Columbidae	*Spilopelia senegalensis*	Laughing dove	A	R
68	Columbiformes	Columbidae	*Treron phoenicoptera*	Yellow-footed green-pigeon	C	R
69	Columbiformes	Columbidae	*Streptopelia tranquebarica*	Red collared-dove	C	R
70	Columbiformes	Columbidae	*Streptopelia decaocto*	Eurasian collared -dove	A	R
71	Pelecaniformes	Ardeidae	*Ardeola grayii*	Indian pond-heron	C	R
72	Pelecaniformes	Ardeidae	*Bubulcus ibis*	Cattle egret	A	R
73	Galliformes	Phasianidae	*Francolinus pondicerianus*	Gray francolin	C	R
74	Galliformes	Phasianidae	(*Pavo cristatus*	Indian peafowl	C	R
75	Galliformes	Phasianidae	*Perdicula argoondah*	Rock bush-quail	RA	R
76	Galliformes	Phasianidae	*Francolinus francolinus*	Black francolin	UC	R
77	Coraciiformes	Meropidae	*Merops orientalis*	Green bee-eater	A	R
78	Coraciiformes	Meropidae	*Merops persicus*	Blue-cheeked bee-eater	UC	WM
79	Coraciiformes	Alcedinidae	*Halcyon smyrnensis*	White throated kingfisher	C	R
80	Coraciiformes	Coraciidae	*Coracias garrulus*	European roller	UC	WM
81	Coraciiformes	Coraciidae	*Coracias benghalensis*	Indian roller	C	R
82	Bucerotiformes	Bucerotidae	(*Ocyceros birostris*	Indian gray hornbill	C	R
83	Bucerotiformes	Upupidae	*Upupa epops*	Eurasian hoopoe	C	R
84	Gruiformes	Rallidae	*Amaurornis phoenicurus*	White-breasted waterhen	C	R
85	Gruiformes	Rallidae	*Gallinula chloropus*	Eurasian moorhen	C	SM
86	Piciformes	Megalaimidae	*Psilopogon haemacephalus*	Coppersmith barbet	C	R
87	Piciformes	Megalaimidae	(*Psilopogon zeylanicus*	Brown-headed barbet	RA	SM
88	Piciformes	Picidae	*Dinopium benghalense*	Black-rumped flameback	C	R
89	Piciformes	Picidae	*Leiopicus mahrattensis*	Yellow-crowned woodpecker	UC	SM
90	Piciformes	Picidae	*Jynx torquilla*	Eurasian wryneck	UC	SM
91	Charadriiformes	Scolopacidae	*Tringa glareola*	Wood sandpiper	C	WM
92	Charadriiformes	Scolopacidae	*Tringa nebularia*	Common greenshank	UC	WM
93	Charadriiformes	Scolopacidae	*Actitis hypoleucos*	Common sandpiper	UC	SM
94	Charadriiformes	Scolopacidae	*Tringa ochropus*	Green sand piper	UC	SM
95	Charadriiformes	Turnicidae	*Turnix suscitator*	Barred buttonquail	C	R
96	Charadriiformes	Rostratulidae	*Rostratula benghalensis*	Greater painted-snipe	UC	WM
97	Charadriiformes	Recurvirostridae	*Himantopus himantopus*	Black-winged stilt	C	R
98	Cuculiformes	Cuculidae	*Centropus sinensis*	Greater coucal	C	R
99	Cuculiformes	Cuculidae	*Taccocua leschenaultii*	Sirkeer malkoha	RA	SM
100	Cuculiformes	Cuculidae	*Cuculus canorus*	Common cuckoo	UC	SM
101	Cuculiformes	Cuculidae	*Clamator jacobinus*	Pied cuckoo	UC	SM
102	Cuculiformes	Cuculidae	*Hierococcyx varius*	Common hawk-cuckoo	C	SM
103	Psittaciformes	Psittaculidae	*Psittacula krameri*	Rose-ringed parakeet	A	R
104	Psittaciformes	Psittaculidae	*Psittacula cyanocephala*	Plum-headed parakeet	C	R
105	Strigiformes	Strigidae	*Athene brama*	Spotted owlet	C	R
106	Strigiformes	Strigidae	*Otus bakkamoena*	Indian Scops-owl	UC	R
107	Accipitriformes	Accipitridae	*Accipiter badius*	shikra	C	R
108	Accipitriformes	Accipitridae	*Milvus migrans*	Black kite	C	R
109	Accipitriformes	Accipitridae	*Elanus caeruleus*	Black-winged kite	UC	WM
110	Suliformes	Phalacrocoracidae	*Microcarbo niger*	Little cormorant	C	SM
111	Suliformes	Phalacrocoracidae	*Phalacrocorax fuscicollis*	Indian cormorant	UC	SM
112	Podicipediformes	Podicipedidae	*Tachybaptus ruficollis*	Little grebe	UC	SM

Key: C - Common, A - Abundant, RA-Rare, R-Resident, UC - Uncommon, WM - winter migrant, SM - Seasonal migrant.

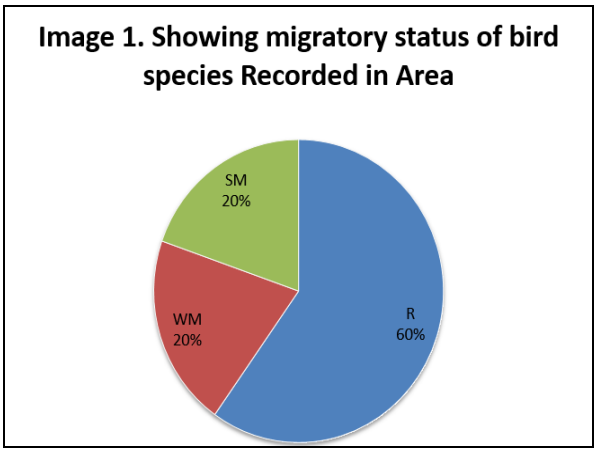

Fig 1: Showing migratory status of bird species recorded in Lalsot Area District Dausa Raj.

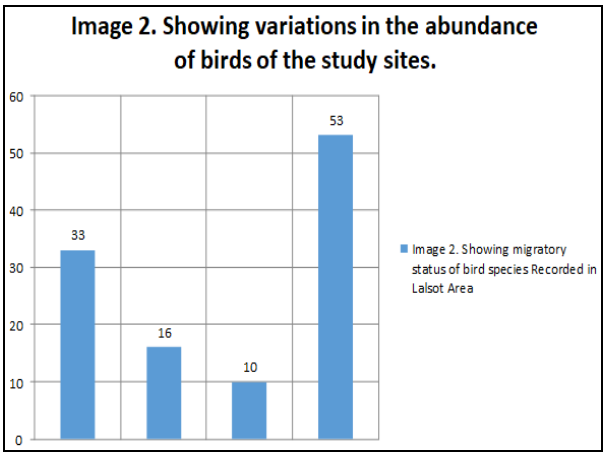

Fig 2: Showing migratory status of bird species recorded in Lalsot Area District Dausa Raj.

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