

SURVEY OF AVIAN FAUNA IN AND AROUND KURUKSHETRA, HARYANA, INDIA

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Introduction

Kurukshetra (30°N, 76.45' E) is one of the holy cities of India. It is a land of the historical battle of Mahabharata and the great message of The Srimad Bhagwad Gita. Kurukshetra is a district headquarters located in the North-eastern part of the Haryana State. It is situated 160 km north of Delhi on National Highway No. 1 (NH1). Climate is tropical monsoonal, with rainy (July to September), a cool dry (October-February) and the hot dry season (March-May). Temperature is as high as 45°C in summer and as low as 2°C in winter. It is one of the agriculturally prosperous districts of Haryana, with wheat and rice being the main crops. Kurukshetra along with Karnal and Kaithal districts is known as the 'Rice Bowl of India' and is famous for Basmati Rice. The soil is generally alluvial. Kurukshetra has many water tanks in and around it. These water bodies constitute an important habitat for aquatic birds, attracting a number of migratory birds particularly during winter (Gupta and Bajaj, 1997). The flora of Kurukshetra includes trees like *Mangifera indica*, *Syzigium cumini*, *Eucalyptus* hybrid, *Morus alba*, *Citrus jambhiri*, *Psidium quajava*, *Ficus carica*, *Azadirachta indica*, *Alstonia scholaris*,

Ficus bengalensis, *Aegle marmelos*, *Emblica officinalis*, *Polyalthia longifolia*, *Thuja compacta*, *Delonix regia*, *Terminalia arjuna*, *Bauhinia variegata*, *Ficus religiosa*, *Cassia fistula*, *Populus* sp., *Grevillea robusta*, *Mimusops elengi*, *Albizia procera*, *Dalbergia sisoo*, *Albizia lebbek*, *Cordia dichotoma*, *Callistemon citrinus*, *Nyctenthes* sp., *Araucaria* sp., *Cupressus* sp. and shrubs like *Cassia javanica*, *Bougainvillea* sp., *Thevitia peruviana*, *Hibiscus-rosa sinensis*, *Zizyphus jujuba*, *Zizyphus numularia*, *Acacia arabica*, *Capparis decidua*, *Jasminum* sp., *Calotropis procera*, *Euphorbia* sp., *Nerium oleander*, *Duranata* sp. and *Lantana camara*. The study area has prominent weeds like *Parthenium*, *Amaranthus spinosus*, *Chenopodium ambrosioides*, *Canabis sativa* etc. and aquatic plants such as *Eichornia* and *Nelumbo*.

The varied habitats support a rich avian fauna. The present study was designed to document the richness of avian fauna in and around Kurukshetra.

Study Area

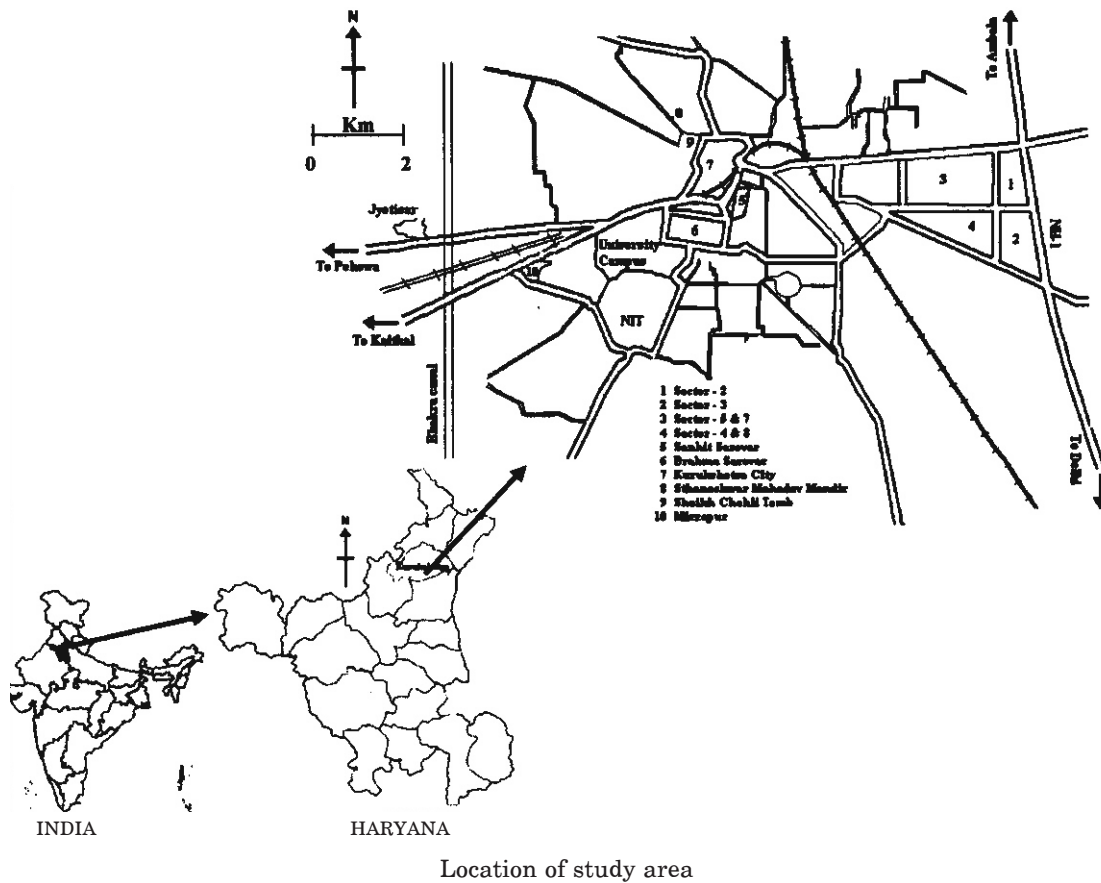
The study area included Kurukshetra University Campus, National Institute of

Technology (NIT), Brahma Sarovar, Sanhit Sarovar, The Sheikh Chehli tomb, Sthaneshwar Mahadev Mandir, Kurukshetra city and surrounding villages like Jyotisar and Mirzapur (Fig. 1). Based upon the general ecological conditions following eight different habitats were distinguished in the study area :

Urban Inhabitations : These comprised of modern residential areas in Sectors 2, 3, 5 and 7 of Kurukshetra. The sectors are well planned with roads, parks and green belt areas.

Rural Inhabitations : These included residential areas in village Jyotisar (about 3 km from Kurukshetra University on Kurukshetra-Pehowa road) and Mirzapur (about 2 km from Kurukshetra University on Kurukshetra-Kaithal road). The houses were primarily with 'kacha' mud roofs, with some modern houses built in between. The lanes were both cemented as well as mud roads. The habitat was having usual village landmarks like 'Kurdi' (heaps of cattle dung 'uplas' along with domestic waste).

Fig. 1



Plantations : These included plantation of *Eucalyptus* near Brahma Sarovar, along Bhakra drain, University and NIT campus; and *Acacia* plantation in University campus.

Aquatic Habitats : These included Brahma Sarovar, Sanhit Sarovar, Jyoti Sarovar and Bhakhra drain, Bhakhra and Satluj-Yamuna Link (SYL) canals. These are man made water tanks or water channels. Brahma Sarovar is a vast water body, located in the heart of Kurukshetra city. The eastern section of the tank is 548.64 m (1,800 ft) long and 457.20 m (1,500 ft) wide while the western section is a square of 457.20 m (1,500 ft) length and breadth. The tank is 4.57 m (15 ft) deep. This large waterbody is edged with 6.09 m (20 ft) wide platforms, stairs and a 12.19 m (40 ft) wide 'parikarma'. The Sarovar is surrounded with trees, which provide roosting and nesting sites. Sanihit Sarovar is another holy water body about 1 km. from Brahma Sarovar. It is 457.20 m (1,500 ft) x 137.16 m (450 ft) in size. Jyoti Sarovar is a holy water body with bathing ghats and small temples at village Jyotisar. Bhakhra drain connects Bhakra canal to Brahma Sarovar.

Grasslands : Large open areas with grass cover near the Sheikh Chehli Tomb and Brahma Sarovar.

Crop fields : These included crop fields of village Mirzapur, Jyotisar and farmlands adjoining NIT. Wheat and rice are the major crops.

Xerophytic Shrub Land : It comprised barren land patches with shrubs and weeds in university campus and undeveloped sectors of Kurukshetra.

University and NIT Campus: University campus is situated on the western bank of the holy tank, Brahma Sarovar and extends over an area of over 400 acres. The sprawling campus is set in a salubrious, natural landscape and has in its range a number of buildings, lawns, swimming pool, plantations and residential complexes. NIT campus is situated on the southern side of University campus, with an area of 300 acres imaginatively laid down on picturesque landscape.

Methods

Observations were carried out over a period of three years i.e. from August, 2005 to July, 2008. Birds were observed using Nikon, 7X35 binoculars. The regular visits were made in the morning, afternoon and evening hours to cover all habitats and seasons. Birds were recorded whilst the observers were walking slowly or sitting. Birds seen were identified and recorded along with habitat type, season and status (resident/migrant, breeding/non breeding and frequency of occurrence).

The status of species was established upon the following criteria :

Very common - more than ten birds of a species during a survey or at any time of the day,

Common - more than five birds of a species during a survey or at any time of the day,

Less common - Less than five birds of a species during a survey or at any time of the day,

Uncommon - one or two sightings of a species during the entire study period.

The common names and scientific

Table 1

List of bird species recorded in and around Kurukshetra, Haryana, India

Sr. No.	Order	Family	Common Name	Scientific Name	Status	Habitat
1	2	3	4	5	6	7
1.	Galliformes	Phasianidae	Grey Francolin	<i>Francolinus pondicerianus</i>	Vc,R,B	3,6,7,8
2.			Black Francolin	<i>Francolinus francolinus</i>	Lc,R,B	3,6,8
3.			Indian Peafowl	<i>Pavo cristatus</i>	Vc,R,B	1,2,3,6,7,8
4.	Anseriformes	Anatidae	Lesser Whistling-Duck	<i>Dendrocygna javanica</i>	Lc,Sm,B	4
5.			Cotton Pygmy-Goose	<i>Nettapus coromandelianus</i>	Lc,Sm,B	4
6.			Mallard	<i>Anas platyrhynchos</i>	C,Wm,B	4
7.			Spot Billed Duck	<i>Anas poecilorhyncha</i>	C,R,B	4
8.	Piciformes	Picidae	Black-Rumped Flameback	<i>Dinopium benghalense</i>	C,R,B	6,8
9.			Eurasian Wryneck	<i>Jynx torquilla</i>	U,Wm,Nb	8
10.		Capitonidae	Brown-Headed Barbet	<i>Megalaima zeylanica</i>	C,R,B	3,6,7,8
11.			Coppersmith Barbet	<i>Megalaima haemacephala</i>	C,R,B	3,6,7,8
12.	Bucerotiformes	Bucerotidae	Indian Grey Hornbill	<i>Ocyeros birostris</i>	C,R,B	3,67,8,
13.	Upupiformes	Upupidae	Common Hoopoe	<i>Upupa epops</i>	Vc,R,B	1,2,3,5,67,8
14.	Coraciiformes	Alcedinidae	White-Throated Kingfisher	<i>Halcyon smyrnensis</i>	Vc,R,B	1,2,3,4,6,7,8
15.			Pied Kingfisher	<i>Ceryle rudis</i>	C,R,B	4
16.		Meropidae	Green Bee-Eater	<i>Merops orientalis</i>	C,R,B	1,2,3,5,6,8
17.	Cuculiformes	Cuculidae	Pied Cuckoo	<i>Clamator jacobinus</i>	Lc,Sm,	8
18.			Common Hawk Cuckoo	<i>Hierococcyx varius</i>	C,Sm	7,8,
19.			Drongo Cuckoo	<i>Surniculus lugubris</i>	Lc,R	7,8
20.			Asian Koel	<i>Eudynamys scolopacea</i>	Vc,R,B	1,2,3,6,7,8

Contd...

1	2	3	4	5	6	7
21.	Psittaciformes	Psittacidae	Greater Coucal	<i>Centropus sinensis</i>	C,R,B	3,5,6,7,8
22.			Alexandrine Parakeet	<i>Psittacula eupatria</i>	Lc,R	1,3,8
23.			Rose-Ringed Parakeet	<i>Psittacula krameri</i>	Vc,R,B	1,2,3,6,7,8
24.			Slaty-Headed Parakeet	<i>Psittacula himalayana</i>	Lc,Wm	8
25.			Plum-Headed Parakeet	<i>Psittacula cyanocephala</i>	Lc,Wm	8
26.	Apodiiformes	Apodidae	House Swift	<i>Apus affinis</i>	Vc,R,B	4,6,8
27.	Strigiformes	Strigidae	Barn Owl	<i>Tyto alba</i>	U,R	8
28.			Collared Scops Owl	<i>Otus bakkamoena</i>	Lc,R,B	3,8
29.			Spotted Owllet	<i>Athene brama</i>	Vc,R,B	1,2,3,6,8
30.	Columbiformes	Columbidae	Rock Pigeon	<i>Columba livia</i>	Vc,R,B	1,2,6,7,8
31.			Laughing Dove	<i>Streptopelia senegalensis</i>	Lc,R,B	1,2,6,7,8
32.			Spotted Dove	<i>Streptopelia chinensis</i>	Vc,R,B	1,2,6,7,8
33.			Red Collared Dove	<i>Streptopelia tranquebarica</i>	C,R,B	1,2,6,7,8
34.			Eurasian Collared Dove	<i>Streptopelia decaocto</i>	C,R,B	1,2,6,7,8
35.			Yellow-Footed Green Pigeon	<i>Treron phoenicoptera</i>	Lc,R,B	1,6,7,8
36.	Gruiformes	Rallidae	White-Breasted Water Hen	<i>Amaurornis phoenicurus</i>	Vc,R,B	4,8
37.			Purple Swamphen	<i>Porphyrio porphyrio</i>	C,R,B	4
38.			Common Moorhen	<i>Gallinula chloropus</i>	C,R,B	4
39.			Common Coot	<i>Fulica atra</i>	C,Wm	4
40.	Ciconiiformes	Scolopacidae	Common Snipe	<i>Gallinago gallinago</i>	C,Wm	4
41.		Jacaniidae	Pheasant-Tailed Jacana	<i>Hydrophasianus chirurgus</i>	Lc,R,B	4
42.			Bronze-Winged Jacana	<i>Metopidius indicus</i>	Lc,R,B	4
43.		Burhinidae	Eurasian Thick-Knee	<i>Burhinus oedicnemus</i>	Lc,R,B	6
44.		Recurvirostridae	Black-Winged Stilt	<i>Himantopus himantopus</i>	C,Wm,B	4
45.		Charadriidae	Yellow-Wattled Lapwing	<i>Vanellus malarbaricus</i>	Lc,R,B	1

Contd...

1	2	3	4	5	6	7
46.			Red-Wattled Lapwing	<i>Vanellus indicus</i>	Vc,R,B	1,2,3,4,5, 6,7,8
47.	Accipitridae		Oriental Honey-Buzzard	<i>Pernis ptilorhynchus</i>	Lc,R	8
48.			Black-Shouldered Kite	<i>Elanus caeruleus</i>	Lc,R,B	1,2,3,6,7,8
49.			Black Kite	<i>Milvus migrans</i>	Vc,R,B	1,2,3,6,7,8
50.			Brahmainy Kite	<i>Haliastur indus</i>	Lc,Wm	1,2,3,6,7,8
51.			Shikra	<i>Accipiter badius</i>	Vc,R,B	1,2,3,6,7,8
52.	Phalacrocoracidae		Little Cormorant	<i>Phalacrocorax niger</i>	C,R,B	4
53.			Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	C,R,B	4
54.			Great Cormorant	<i>Phalacrocorax carbo</i>	C,R,B	4
55.	Ardeidae		Little Egret	<i>Egretta garzetta</i>	C,R,B	4
56.			Grey Heron	<i>Ardea cinerea</i>	C,R,B	4
57.			Purple Heron	<i>Ardea purpurea</i>	C,R,B	4
58.			Great Egret	<i>Casmerodius albus</i>	C,R,B	4
59.			Intermediate Egret	<i>Mesophoyx intermedia</i>	C,R,B	4
60.			Cattle Egret	<i>Bubulcus ibis</i>	C,R,B	1,2,4,6,8
61.			Indian Pond Heron	<i>Ardeola grayii</i>	C,R,B	1,2,4,6,8
62.			Black-Crowned Night Heron	<i>Nycticorax nycticorax</i>	C,R,B	4
63.	Passeriformes	Laniidae	Bay-Backed Shrike	<i>Lanius vittatus</i>	Lc,R	1,2,3,6,7,8
64.			Long-Tailed Shrike	<i>Lanius schach</i>	Lc,R	1,2,3,6,7,8
65.	Corvidae		Rufous Treepie	<i>Dendrocitta vagabunda</i>	Vc,R,B	1,2,3,6,7,8
66.			House Crow	<i>Corvus splendens</i>	Vc,R,B	1,2,3,5,6,7,8
67.			Large-Billed Crow	<i>Corvus macrorhynchos</i>	Lc,Wm,	1,2,3,8
68.	Oriolini		Long-Tailed Minivet	<i>Pericrocotus ethologus</i>	C,Wm,Nb	8
69.	Rhipidurinae		White-Browed Fantail	<i>Rhipidura aureola</i>	C,Wm,Nb	8

Contd...

1	2	3	4	5	6	7
70.	Dicruridae	Black Drongo	<i>Dicrurus macrocerus</i>	Vc,R,B	1,2,3,4,5, 6,7,8	
71.	Musciicapinae	Grey-Headed Canary Flycatcher	<i>Culicicapa ceylonensis</i>	Lc,Wm	3	
72.	Turdinae	Dark-Throated Thrush	<i>Turdus ruficollis</i>	U,Wm	3,8	
73.		Bluethroat	<i>Luscinia svecica</i>	Lc,Wm,Nb	1,2,8	
74.		Oriental Magpie Robin	<i>Copsychus saularis</i>	Vc,R,B	1,2,3,5,6,7,8	
75.		Indian Robin	<i>Saxicoloides fulicata</i>	C,R,B	1,2,3,5,6,7,8	
76.		Black Redstart	<i>Phoenicurus ochruros</i>	Lc,R	1,2,6,8	
77.		Common Stonechat	<i>Saxicola torquata</i>	C,Wm,Nb	1,2,6,8	
78.		Pied Bushchat	<i>Saxicola caprata</i>	C,R,B	1,2,6,8	
79.		Brown Rock-Chat	<i>Cercomela fusca</i>	Lc,R,B	1,2,6,8	
80.	Sturnidae	Brahmainy Starling	<i>Sturnus pagodarum</i>	C,R,B	1,2,3,5,6,7,8	
81.		Common Starling	<i>Sturnus vulgaris</i>	Lc,Wm	5,8	
82.		Asian Pied Starling	<i>Sturnus contra</i>	C,R,B	1,2,3,5,6,7,8	
83.		Common Myna	<i>Acridotheres tristis</i>	Vc,R,B	1,2,3,5,6,7,8	
84.		Bank Myna	<i>Acridotheres ginginianus</i>	C,R,B	1,2,3,5,6,7,8	
85.		Jungle Myna	<i>Acridotheres fuscus</i>	Lc,Wm	3,8	
86.	Hirundinidae	Plain Martin	<i>Riparia paludicola</i>	C,R,B	6,8	
87.		Barn Swallow	<i>Hirundo rustica</i>	C,R,B	1,2,4,6,8	
88.		Wire-Tailed Swallow	<i>Hirundo smithii</i>	C,R,B	1,2,3,4,6,8	
89.	Pycnonotidae	Red-Vented Bulbul	<i>Pycnonotus cafer</i>	Vc,R,B	1,2,3,5,6,7,8	
90.	Zosteropidae	Oriental White-Eye	<i>Zosterops Palpebrosus</i>	Lc,R,B	3,8	
91.	Sylviinae	Ashy Prinia	<i>Prinia socialis</i>	C,R,B	1,2,3,6,7,8	
92.		Lesser Whitethroat	<i>Sylvia curruca</i>	C,Wm	1,2,7,8	
93.		Paddyfield Warbler	<i>Acrocephalus agricola</i>	Lc,R,B	6,8	
94.		Common Chiffchaff	<i>Phylloscopus collybita</i>	C,Wm	7,8	

Contd...

1	2	3	4	5	6	7
95.			Common Tailorbird	<i>Orthotomus sutorius</i>	C,R,B	1,2,3,6,7,8
96.	Timaliinae		Common Babbler	<i>Turdoides caudatus</i>	C,R,B	1,2,3,5,6,7,8
97.			Large Grey Babbler	<i>Turdoides malcolmi</i>	Vc,R,B	1,2,3,5,6,7,8
98.			Jungle Babbler	<i>Turdoides striatus</i>	Vc,R,B	1,2,3,5,6,7,8
99.	Alaudidae		Crested Lark	<i>Galerida cristata</i>	Lc,R,B	1,2,7,8
100.	Nectariniidae		Purple Sunbird	<i>Nectarinia asiatica</i>	C,R,B	1,2,3,5,6,7,8
101.	Passerinae		House Sparrow	<i>Passer domesticus</i>	C,R,B	1,2
102.	Motacillidae		White Wagtail	<i>Motacilla alba</i>	C,Wm	1,2,4,5,6,8
103.			White-Browed Wagtail	<i>Motacilla maderaspatensis</i>	C,R,B	1,2,4,5,6,8
104.			Citrine Wagtail	<i>Motacilla citreola</i>	Lc,Wm	1,2,4,5,6,8
105.			Yellow Wagtail	<i>Motacilla flava</i>	Lc,Wm	1,2,4,5,6,8
106.			Grey Wagtail	<i>Motacilla cinerea</i>	Lc,Wm	1,2,4,5,6,8
107.			Paddyfield Pipit	<i>Anthus rufulus</i>	Lc,R,B	6,8
108.	Ploceinae		Baya Weaver	<i>Ploceus philippinus</i>	Lc,R,B	1,2,6
109.	Estrildidae		Indian Silverbill	<i>Lonchura malabarica</i>	C,R,B	2,7,8
110.			Scaly-Breasted Munia	<i>Lonchura punctulata</i>	C,R,B	2,7,8

Status :

VC - Very common; C - Common; LC - Less common; U - Uncommon;

R - Resident; B - Breeding; NB - Non-breeding; SM - Summer migrant; WM - Winter migrant

Habitats :

1 - Urban Inhabitations; 2 - Rural Inhabitations; 3 - Plantations; 4 - Aquatic Habitats (Brahma Sarovar, Sanhit Sarovar, Jyoti Sarovar and Bhakhra drain, Bhakhra and SYL canals); 5 - Grassland; 6 - Crop fields; 7 - Xerophytic Shrub Land; 8 - University and NIT Campus

names of the birds have been listed according to online Oriental Bird Club checklist (www.orientalbirdclub.org/publications/checklist/index.html). Ali and Ripley (1987) and Grimmet *et al.* (1999) were followed for confirmation of bird identity.

Observations

A total of 110 bird species belonging to 41 families distributed in 14 orders have been identified and listed in Table 1. Of these 83 were resident and 27 were migrant species. Most of the migratory species were winter visitors except five species namely Pied Cuckoo, Common Hawk Cuckoo, Drongo Cuckoo, Cotton

Pygmy Goose and Lesser Whistling Duck, which were summer visitors. Passeriformes is the most crowded order represented by 19 families while families Turdinae and Ardeidae had the highest number of species, 8 each. Of 83 resident bird species, 76 species were observed to breed in present study area, while the breeding status of 7 species could not be determined. Barn Owl and Eurasian Wryneck could be sighted only once during the entire study period. Another important observation was complete absence of House Sparrow in Campus areas of Kurukshetra University and National Institute of Technology. The distribution of House Sparrow was patchy even in the urban localities.

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SUMMARY

Kurukshetra, a place of great historical and religious importance, 160 km North of Delhi on National Highway No. 1 (NH1) was surveyed for avian fauna from August, 2005 to July, 2008. Owing to different types of habitats, it harbours rich avian fauna. A checklist of 110 bird species is presented along with information on status and habitat.

Key words : Avian Fauna, Survey, Kurukshetra, Haryana.

कुरुक्षेत्र, भारत से तथा उसके आस-पास वाले क्षेत्र में पक्षिजात का सर्वेक्षण
संजीव के० गुप्त व परमेश्वर कुमार
सारांश

अत्यधिक ऐतिहासिक और धार्मिक महत्व के स्थान कुरुक्षेत्र, जो दिल्ली के उत्तर में उससे 160 कि०मी० दूर राष्ट्रीय राजमार्ग 1 पर स्थित है के पक्षिजात का पता लगाने के लिए अगस्त 2005 से जुलाई 2008 के दौरान सर्वेक्षित किया गया। विभिन्न तरह के प्राकृतावास यहां रहने के कारण इसमें सम्पन्न पक्षिजात रहते मिलते हैं। 110 पक्षिजातियों की एक पड़ताल सूची, उनकी स्थिति और प्राकृतावास सम्बन्धी जानकारी सहित यहां प्रस्तुत की गई है।

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