

# Occurrence dataset of birds in the Xinjizhou National Wetland Park, Nanjing, China

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## Abstract

## Background

Xinjizhou National Wetland Park is located in Jiangning District, Nanjing, Jiangsu, China. With diverse wetland landscape types, Xinjizhou National Wetland Park maintains high biodiversity all year around. Meanwhile, as an important hub on the East Asian-Australasian Flyway, Xinjizhou National Wetland Park also occupies a core ecological position in the middle and lower reaches of the Yangtze River in Jiangsu Province. Therefore, carrying out systematic bird surveys and consequently understanding the distribution of birds and the seasonal variation of their communities can provide important insights for conservation. We conducted a one-year bird survey in the Xinjizhou National Wetland Park from 2021 to 2022 and provided occurrence datasets, including detailed species and geographic information. This dataset fills the knowledge gap in avian community composition for the Wetland Park and more importantly provides a basis to assess the conservation effectiveness of conservation measures taken in the Wetland Park.

## New information

This occurrence dataset is the first public record of birds in Xinjizhou National Wetland Park. All data have been published on GBIF.

## Keywords

Xinjizhou National Wetland Park, wetland, birds, dataset

## Introduction

Wetlands have a crucial ecosystem function and play a key role in maintaining the survival and reproduction of many organisms (Zedler and Kercher 2005). Birds are rich in species, widely distributed and easy to observe, their population dynamics, community structure and diversity are often used as important indicators for wetland environmental dynamic monitoring (Bart 2005, Zhou et al. 2019, Wang et al. 2022). Wetland parks are important type of constructed wetlands. As a supplement to natural wetlands, wetland parks organically integrate wetland protection, ecological restoration and sustainable utilisation of wetland resources and play an increasingly important role in global ecological protection and sustainable development (Wu et al. 2015).

Xinjizhou National Wetland Park is located in Jiangning District, Nanjing City. It lies in the upstream of the Jiangsu section of the Yangtze River, mainly including Xinji zhou, Xinsheng zhou, Zaisheng zhou, Zimu zhou and Zihui zhou. Xinjizhou National Wetland Park is an important representative of seasonally flooded wetlands in the middle and lower reaches of the Yangtze River. With diverse wetland landscape types, the Park maintains high biodiversity all the year round and, hence, is an important node for biodiversity conservation in the Basin (Wang et al. 2006, Cao et al. 2021).

At the same time, as an important transit station in the East Asian-Australasian Flyway (EAAF), it also occupies an important ecological position in Jiangsu and even the middle and lower reaches of the Yangtze River (Yong et al. 2015). Therefore, carrying out systematic bird surveys and consequently understanding the distribution of birds and the seasonal variation of their communities can provide important insights for conservation of regional bird resources (Ellis et al. 2019, Chen et al. 2021).

In this study, a systematic bird census was carried out monthly in Xinjizhou National Wetland Park from March 2021 to February 2022 to collate the bird distribution and community composition in the Wetland Park. Based on the annual monitoring results, the bird diversity and the seasonal variation of its community are analysed. The results can provide a scientific basis for the protection of bird diversity in Xinjizhou National Wetland Park and a detailed reference for the management and protection of beach wetlands in the middle and lower reaches of the Yangtze River.

## Sampling methods

**Sampling description:** A total of 10 survey transects were set up in Xinjizhou National Wetland Park according to the beach area, habitat types and accessibility. The length of the transect ranged from 1.0 to 3.3 km, covering all habitat types in the Wetland Park (Fig. 1). From March 2021 to February 2022, a monthly bird survey was carried out on each of the 10 lines with binoculars (Shuntu 339FT 10\*42) and monoculars (Swarovski ATS 20\*60), recording birds species and their abundances. For species which were difficult to

identify in the field, we used a camera (Canon Eos R6) with telephoto lens (Sigma 150-600mm f/5-6.3 DG OS HSM C) to take pictures and identify them later in the lab. The classification of birds was based on *A Checklist on the Classification and Distribution of the Birds of China (Third Edition)* (Zheng 2017). The final dataset was organised according to the Darwin Core format and uploaded to GBIF upon the conclusion of annual survey (Shen et al. 2023).

## Geographic coverage

**Description:** We downloaded the Landsat8 satellite image and drew the investigation scope by using ArcGIS (10.7). A total of 10 survey lines were set up, with length between 1.0~3.3 km, covering all habitat types of Wetland Park, including four lines in Xinji Zhou (No. 2, 3, 4, 5), two lines in Xinsheng Zhou (No. 1, 6), two lines in Zaisheng Zhou (No. 7, 10), one line in Zimu Zhou (No. 9) and one line in Zihui Zhou (No.8) (Table 1).

**Coordinates:** 31.78 N and 31.93 N Latitude; 118.48 E and 118.59 E Longitude.

## Taxonomic coverage

**Description:** A total of 42,542 birds were recorded in this occurrence dataset, belonging to 162 species, 47 families and 16 orders (Table 2). Most species are listed in the Red List of China's Vertebrates and the IUCN Red List (Jiang et al. 2016, IUCN 2022). In the Red List of China's Vertebrates, *Ciconia boyciana* (Swinhoe, 1873) was ranked as National First-class Protected Wildlife; *Anser albifrons* (Scopoli, 1769), *Cygnus columbianus* (Ord, 1815), *Aix galericulata* (Linnaeus, 1758), *Nettapus coromandelianus* (Gmelin, 1789), *Sibirionetta formosa* (Georgi, 1775), *Centropus bengalensis* (Gmelin, 1788), *Podiceps auritus* (Linnaeus, 1758), *Hydrophasianus chirurgus* (Scopoli, 1786), *Platalea leucorodia* (Linnaeus, 1758), *Elanus caeruleus* (Desfontaines, 1789), *Accipiter trivirgatus* (Temminck, 1824), *Accipiter soloensis* (Horsfield, 1982), *Accipiter nisus* (Linnaeus, 1758), *Accipiter gentilis* (Linnaeus, 1758), *Milvus migrans* (Boddaert, 1783), *Buteo japonicus* (Temminck & Schlegel, 1844), *Halcyon smyrnensis* (Linnaeus, 1758), *Falco tinnunculus* (Linnaeus, 1758), *Falco subbuteo* (Linnaeus, 1758), *Falco peregrinus* (Tunstall, 1771), *Alauda arvensis* (Linnaeus, 1758) and *Garrulax canorus* (Linnaeus, 1758) were ranked as National Second-class Protected Wildlife. In the IUCN Red List, *Mareca falcata* (Georgi, 1775), *Aythya nyroca* (Güldenstädt, 1770) and *Vanellus vanellus* (Linnaeus, 1758) were ranked as Near Threatened (NT); *Aythya ferina* (Linnaeus, 1758), *Podiceps nigricollis* (Brehm, 1831) and *Emberiza rustica* (Pallas, 1776) were ranked as Vulnerable (VU); *Ciconia boyciana* (Swinhoe, 1873) was ranked as Endangered (EN).

## Temporal coverage

**Notes:** We conducted this survey from March 2021 to February 2022. The specific dates of this period were: 23/03/2021; 24/03/2021; 21/04/2021; 25/04/2021; 24/05/2021;

25/05/2021; 24/06/2021; 25/06/2021; 14/07/2021; 15/07/2021; 25/08/2021; 26/08/2021; 28/09/2021; 13/10/2021; 26/10/2021; 18/11/2021; 19/11/2021; 21/12/2021; 22/12/2021; 11/01/2022; 12/01/2022; 22/02/2022; 23/02/2022 (Table 3).

## Usage licence

**Usage licence:** Creative Commons Public Domain Waiver (CC-Zero)

## Data resources

**Data package title:** Occurrence dataset of birds in the Xinjizhou National Wetland Park, Nanjing, China

**Resource link:** <https://www.gbif.org/dataset/e631a759-36c9-4c34-98c4-35f9d110a1f5#description>

**Alternative identifiers:** <http://www.gbifchina.org.cn/resource?r=xinjizhou>

**Number of data sets:** 1

**Data set name:** Occurrence dataset of birds in the Xinjizhou National Wetland Park, Nanjing, China

**Download URL:** [https://www.gbif.org/zh/occurrence/download?dataset\\_key=e631a759-36c9-4c34-98c4-35f9d110a1f5](https://www.gbif.org/zh/occurrence/download?dataset_key=e631a759-36c9-4c34-98c4-35f9d110a1f5)

**Data format:** Darwin Core Archive format

**Description:** Our occurrence dataset contains 35 column labels. All occurrence records are georeferenced. Due to the limitations of the sample line method, the positions of all recorded birds are replaced by lines' ID.

Column label	Column description
eventID	An identifier for the set of information associated with an Event (something that occurs at a place and time).
samplingProtocol	The names of, references to, or descriptions of the methods or protocols used during an Event.
samplingEffort	The amount of effort expended during an Event.
sampleSizeValue	A numeric value for a measurement of the size (time duration, length, area or volume) of a sample in a sampling event.
sampleSizeUnit	The unit of measurement of the size (time duration, length, area or volume) of a sample in a sampling event.
year	The four-digit year in which the Event occurred, according to the Common Era Calendar.

eventDate	The date-time or interval during which an Event occurred. For occurrences, this is the date-time when the event was recorded. Not suitable for a time in a geological context.
eventTime	The time or interval during which an Event occurred.
country	The name of the country or major administrative unit in which the Location occurs.
countryCode	The standard code for the country in which the Location occurs.
stateProvince	The name of the next smaller administrative region than country (state, province, canton, department, region etc.) in which the Location occurs.
locality	The specific description of the place.
locationID	An identifier for the set of location information (data associated with dcterms:Location). May be a global unique identifier or an identifier specific to the dataset.
location	A spatial region or named place.
decimalLatitude	The geographic latitude (in decimal degrees, using the spatial reference system given in geodeticDatum) of the geographic centre of a Location. Positive values are north of the Equator, negative values are south of it. Legal values lie between -90 and 90, inclusive.
decimalLongitude	The geographic longitude (in decimal degrees, using the spatial reference system given in geodeticDatum) of the geographic centre of a Location. Positive values are east of the Greenwich Meridian, negative values are west of it. Legal values lie between -180 and 180, inclusive.
geodeticDatum	The ellipsoid, geodetic datum or spatial reference system (SRS) upon which the geographic coordinates given in decimalLatitude and decimalLongitude are based.
coordinateUncertaintyInMetres	The horizontal distance (in metres) from the given decimalLatitude and decimalLongitude describing the smallest circle containing the whole of the Location. Leave the value empty if the uncertainty is unknown, cannot be estimated or is not applicable (because there are no coordinates). Zero is not a valid value for this term.
type	The nature or genre of the resource.
ownerInstitutionCode	The name (or acronym) in use by the institution having ownership of the object(s) or information referred to in the record.
language	A language of the resource.
occurrenceID	An identifier for the Occurrence (as opposed to a particular digital record of the occurrence). In the absence of a persistent global unique identifier, construct one from a combination of identifiers in the record that will most closely make the occurrenceID globally unique.
basisOfRecord	The specific nature of the data record.

individualCount	The number of individuals present at the time of the Occurrence.
organismQuantity	A number or enumeration value for the quantity of organisms.
organismQuantityType	The type of quantification system used for the quantity of organisms.
occurrenceStatus	A statement about the presence or absence of a Taxon at a Location.
scientificName	The full scientific name, with authorship and date information, if known. When forming part of an Identification, this should be the name in the lowest level taxonomic rank that can be determined. This term should not contain identification qualifications, which should instead be supplied in the IdentificationQualifier term.
kingdom	The full scientific name of the kingdom in which the taxon is classified.
phylum	The full scientific name of the phylum or division in which the taxon is classified.
class	The full scientific name of the class in which the taxon is classified.
order	The full scientific name of the order in which the taxon is classified.
family	The full scientific name of the family in which the taxon is classified.
taxonRank	The taxonomic rank of the most specific name in the scientificName.
recordedBy	A person, group or organisation responsible for recording the original Occurrence.

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## Author contributions

Wei Shen - data preparation, species identification, manuscript editing; Zixi Zhao - GIS processing; Zheping Xu - review and upload data to GBIF; Yong Zhang - supervising, review and editing.

## References

- Bart J, et al. (2005) Monitoring the abundance of bird populations. *The Auk* 122 (1): 15-25. <https://doi.org/10.1093/auk/122.1.15>
- Cao L, Meng FJ, Zhao QS (2021) Understanding effects of large-scale development on bird migration and habitats through cutting edge avian monitoring techniques. *Bulletin of Chinese Academy of Sciences* 36 (4): 436-447. [In Chinese]. <https://doi.org/10.16418/j.issn.1000-3045.20210309002>

- Chen S, Zhang Y, Borzée A, et al. (2021) Landscape attributes best explain the population trend of wintering greater white-fronted goose (*Anser albifrons*) in the Yangtze River floodplain. *Land* 10 (8): 856. URL: <https://doi.org/10.3390/land10080865>
- Ellis MS, Kennedy PL, Edge WD, et al. (2019) Twenty-year changes in riparian bird communities of east-central Oregon. *The Wilson Journal of Ornithology* 131 (1): 43-61. <https://doi.org/10.1676/18-35>
- IUCN (2022) The IUCN Red List of threatened species. <https://www.iucnredlist.org/>
- Jiang Z, Jiang J, Wang Y, et al. (2016) Red List of China's vertebrates. *Biodiversity Science* 24 (5): 500-551. [In Chinese]. <https://doi.org/10.17520/biods.2016076>
- Shen W, Xu Z, Zhang Y (2023) Occurrence dataset of birds in the Xinjizhou National Wetland Park , Nanjing , China. Chinese Academy of Sciences (CAS). URL: <https://www.gbif.org/dataset/e631a759-36c9-4c34-98c4-35f9d110a1f5>
- Wang B, Ji J, Luo L, et al. (2006) Ecological Restoration for the Wetland of the Xinjizhou Shoals, Nanjing. *Wetland Science* 4 (4): 210-218. [In Chinese]. <https://doi.org/10.13248/j.cnki.wetlandsci.2006.03.009>
- Wang Y, Cheng Y, Dong Z, et al. (2022) Diversity and distribution of birds in Zhaojue County, Sichuan Province. *Journal of Forest and Environment* 37 (8): 909-914. [In Chinese]. <https://doi.org/10.19741/j.issn.1673-4831.2021.0457>
- Wu H, Dan X, Shu Y, et al. (2015) Status quo, challenges and strategies of national wetland parks in China. *Wetland Science* 13 (3): 306-314. [In Chinese]. <https://doi.org/10.13248/j.cnki.wetlandsci.2015.03.006>
- Yong D, Liu Y, Low B, et al. (2015) Migratory songbirds in the East Asian-Australasian Flyway: a review from a conservation perspective. *Bird Conservation International* 25 (1): 1-37. <https://doi.org/10.1017/s0959270914000276>
- Zedler J, Kercher S (2005) Wetland resources: status, trends, ecosystem services, and restorability. *Annual Review of Environment and Resources* <https://doi.org/10.1146/annurev.energy.30.050504.144248>
- Zheng G (2017) A checklist on the classification and distribution of the birds of China. 3rd Edition. Science Press, Beijing. [In Chinese]. [ISBN 9787030547514]
- Zhou Y, Jiao S, Jiang S, et al. (2019) Avian diversity and seasonal dynamic in the Tingjiang National Wetland Park. *Journal of Forest and Environment* 39 (1): 42-47. [In Chinese]. <https://doi.org/10.13324/j.cnki.jfcf.2019.01.008>

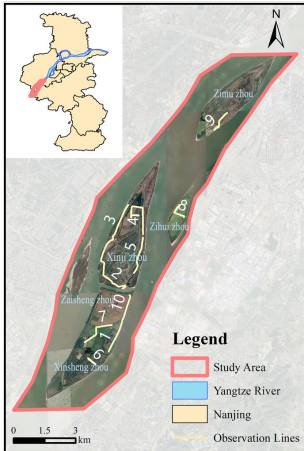


Figure 1.  
The location of the study area and the name of each island.



Table 1.

Distribution of survey transects for bird monitoring in Xinzhou National Wetland Park.

Line number	Line location	Starting coordinates	Ending coordinates	Habitat type
1	Zaisheng Zhou	31.82 N, 118.52 E	31.80 N, 118.51 E	wetland, woodland
2	Xinji Zhou	31.83 N, 118.52 E	31.85 N, 118.51 E	wetland, woodland
3	Xinji Zhou	31.85 N, 118.51E	31.87 N, 118.52 E	wetland, woodland
4	Xinji Zhou	31.86 N, 118.53 E	31.86 N, 118.52 E	woodland
5	Xinji Zhou	31.84 N, 118.53 E	31.85 N, 118.53 E	wetland, woodland
6	Xinsheng Zhou	31.80 N, 118.51 E	31.80 N, 118.50 E	wetland, woodland
7	Xinsheng Zhou	31.82 N, 118.51 E	31.81 N, 118.50 E	wetland, woodland, grassland
8	Zihui Zhou	31.86 N, 118.55 E	31.87 N, 118.55 E	wetland, reedbed
9	Zimu Zhou	31.90 N, 118.57 E	31.91 N, 118.58 E	wetland, reed swamp
10	Zaisheng Zhou	31.83 N, 118.52 E	31.82 N, 118.52 E	wetland, woodland, reed swamp

Table 2.

Birds species list in the Xinjizhou National Wetland Park.

ID	Order	Family	English name	Scientific name	Total number of species	Red List of China's Vertebrates	IUCN Red List category	Quantity proportion
1	Accipitriformes	Accipitridae	Black-winged Kite	<i>Elanus caeruleus</i>	4	LC	LC	0.01%
2	Accipitriformes	Accipitridae	Crested Goshawk	<i>Accipiter trivirgatus</i>	1	LC	LC	0.00%
3	Accipitriformes	Accipitridae	Chinese Sparrowhawk	<i>Accipiter soloensis</i>	2	LC	LC	0.00%
4	Accipitriformes	Accipitridae	Eurasian Sparrowhawk	<i>Accipiter nisus</i>	4	LC	LC	0.01%
5	Accipitriformes	Accipitridae	Northern Goshawk	<i>Accipiter gentilis</i>	1	NT	LC	0.00%
6	Accipitriformes	Accipitridae	Black Kite	<i>Milvus migrans</i>	81	LC	LC	0.19%
7	Accipitriformes	Accipitridae	Eastern Buzzard	<i>Buteo japonicus</i>	5	NT	LC	0.01%
8	Anseriformes	Anatidae	Bean Goose	<i>Anser fabalis</i>	72	EN	LC	0.17%
9	Anseriformes	Anatidae	Greater White-fronted Goose	<i>Anser albifrons</i>	9	NT	LC	0.02%
10	Anseriformes	Anatidae	Tundra Swan	<i>Cygnus columbianus</i>	20	LC	LC	0.05%
11	Anseriformes	Anatidae	Ruddy Shelduck	<i>Tadorna ferruginea</i>	7	LC	LC	0.02%
12	Anseriformes	Anatidae	Mandarin Duck	<i>Aix galericulata</i>	3	NT	LC	0.01%
13	Anseriformes	Anatidae	Asian Pygmy Goose	<i>Nettapus coromandelianus</i>	7	LC	LC	0.02%
14	Anseriformes	Anatidae	Baikal Teal	<i>Sibirionetta formosa</i>	6810	LC	LC	16.01%
15	Anseriformes	Anatidae	Gadwall	<i>Mareca strepera</i>	104	LC	LC	0.24%
16	Anseriformes	Anatidae	Northern Shoveler	<i>Spatula clypeata</i>	28	LC	LC	0.07%
17	Anseriformes	Anatidae	Falcated Duck	<i>Mareca falcata</i>	1011	LC	NT	2.38%

18	Anseriformes	Anatidae	Eurasian Wigeon	<i>Mareca penelope</i>	28	LC	LC	0.07%
19	Anseriformes	Anatidae	Eastern Spot-billed Duck	<i>Anas zonorhyncha</i>	6528	NT	LC	15.34%
20	Anseriformes	Anatidae	Mallard	<i>Anas platyrhynchos</i>	4521	LC	LC	10.63%
21	Anseriformes	Anatidae	Northern Pintail	<i>Anas acuta</i>	276	LC	LC	0.65%
22	Anseriformes	Anatidae	Green-winged Teal	<i>Anas crecca</i>	648	LC	LC	1.52%
23	Anseriformes	Anatidae	Common Pochard	<i>Aythya ferina</i>	30	LC	VU	0.07%
24	Anseriformes	Anatidae	Ferruginous Duck	<i>Aythya nyroca</i>	8	LC	NT	0.02%
25	Bucerotiformes	Upupidae	Common Hoopoe	<i>Upupa epops</i>	45	LC	LC	0.11%
26	Charadriformes	Recurvirostridae	Black-winged Stilt	<i>Himantopus himantopus</i>	1	LC	LC	0.00%
27	Charadriformes	Recurvirostridae	Pied Avocet	<i>Recurvirostra avosetta</i>	120	LC	LC	0.28%
28	Charadriformes	Charadriidae	Northern Lapwing	<i>Vanellus vanellus</i>	444	LC	NT	1.04%
29	Charadriformes	Charadriidae	Grey-headed Lapwing	<i>Vanellus cinereus</i>	208	LC	LC	0.49%
30	Charadriformes	Charadriidae	Little Ringed Plover	<i>Charadrius dubius</i>	6	LC	LC	0.01%
31	Charadriformes	Charadriidae	Kentish Plover	<i>Charadrius alexandrinus</i>	1	LC	LC	0.00%
32	Charadriformes	Jacaniidae	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	69	LC	LC	0.16%
33	Charadriformes	Scolopacidae	Common Snipe	<i>Gallinago gallinago</i>	9	LC	LC	0.02%
34	Charadriformes	Scolopacidae	Common Sandpiper	<i>Actitis hypoleucos</i>	3	LC	LC	0.01%
35	Charadriformes	Scolopacidae	Green Sandpiper	<i>Tringa ochropus</i>	24	LC	LC	0.06%
36	Charadriformes	Scolopacidae	Common Redshank	<i>Tringa totanus</i>	2	NT	LC	0.00%

37	Charadriiformes	Scolopacidae	Marsh Sandpiper	<i>Tringa stagnatilis</i>	1	LC	LC	0.00%
38	Charadriiformes	Scolopacidae	Wood Sandpiper	<i>Tringa glareola</i>	1	LC	LC	0.00%
39	Charadriiformes	Scolopacidae	Spotted Redshank	<i>Tringa erythropus</i>	184	LC	LC	0.43%
40	Charadriiformes	Scolopacidae	Common Greenshank	<i>Tringa nebularia</i>	24	LC	LC	0.06%
41	Charadriiformes	Glareolidae	Oriental Pratincole	<i>Glareola maldivarum</i>	20	LC	LC	0.05%
42	Charadriiformes	Laridae	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	2	LC	LC	0.00%
43	Charadriiformes	Laridae	Whiskered Tern	<i>Chlidonias hybrida</i>	15	LC	LC	0.04%
44	Ciconiiformes	Ciconiidae	Oriental Stork	<i>Ciconia boyciana</i>	16	NT	EN	0.04%
45	Columebiformes	Columbidae	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	421	LC	LC	0.99%
46	Columebiformes	Columbidae	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	4	LC	LC	0.01%
47	Columebiformes	Columbidae	Red Turtle Dove	<i>Streptopelia tranquebarica</i>	19	LC	LC	0.04%
48	Columebiformes	Columbidae	Spotted Dove	<i>Streptopelia chinensis</i>	502	LC	LC	1.18%
49	Columebiformes	Alcedinidae	Common Kingfisher	<i>Alcedo atthis</i>	20	LC	LC	0.05%
50	Columebiformes	Alcedinidae	Crested Kingfisher	<i>Megaceryle lugubris</i>	1	LC	LC	0.00%
51	Columebiformes	Alcedinidae	Pied Kingfisher	<i>Ceryle rudis</i>	64	LC	LC	0.15%
52	Columebiformes	Alcedinidae	White-throated Kingfisher	<i>Halcyon smymensis</i>	3	LC	LC	0.01%
53	Cuculiformes	Cuculidae	Lesser Coucal	<i>Centropus bengalensis</i>	8	LC	LC	0.02%
54	Cuculiformes	Cuculidae	Chestnut-winged Cuckoo	<i>Clamator coromandus</i>	2	LC	LC	0.00%
55	Cuculiformes	Cuculidae	Common Koel	<i>Eudynamys scolopaceus</i>	17	LC	LC	0.04%

56	Cuculiformes	Cuculidae	Large Hawk Cuckoo	<i>Hierococcyx sparverioides</i>	16	EN	LC	0.04%
57	Cuculiformes	Cuculidae	Indian Cuckoo	<i>Cuculus micropterus</i>	15	LC	LC	0.04%
58	Cuculiformes	Cuculidae	Common Cuckoo	<i>Cuculus canorus</i>	9	NT	LC	0.02%
59	Falconiformes	Falconidae	Common Kestrel	<i>Falco tinnunculus</i>	2	LC	LC	0.00%
60	Falconiformes	Falconidae	Eurasian Hobby	<i>Falco subbuteo</i>	3	LC	LC	0.01%
61	Falconiformes	Falconidae	Peregrine Falcon	<i>Falco peregrinus</i>	2	LC	LC	0.00%
62	Galliformes	Phasianidae	Chinese Bamboo Partridge	<i>Bambusicola thoracicus</i>	25	LC	LC	0.06%
63	Galliformes	Phasianidae	Common Pheasant	<i>Phasianus colchicus</i>	339	LC	LC	0.80%
64	Galliformes	Rallidae	Brown-cheeked Rail	<i>Rallus indicus</i>	3	LC	LC	0.01%
65	Galliformes	Rallidae	Brown Crake	<i>Zapornia akool</i>	3	LC	LC	0.01%
66	Galliformes	Rallidae	White-breasted Waterhen	<i>Amauromis phoenicurus</i>	4	LC	LC	0.01%
67	Galliformes	Rallidae	Common Moorhen	<i>Gallinula chloropus</i>	393	LC	LC	0.92%
68	Galliformes	Rallidae	Common Coot	<i>Fulica atra</i>	510	LC	LC	1.20%
69	Passeriformes	Campephagidae	Ashy Minivet	<i>Pericrocotus divaricatus</i>	2	LC	LC	0.00%
70	Passeriformes	Campephagidae	Swinhoe's Minivet	<i>Pericrocotus cantonensis</i>	18	LC	LC	0.04%
71	Passeriformes	Campephagidae	Black-winged Cuckoo-shrike	<i>Lalage melaschistos</i>	18	NT	LC	0.04%
72	Passeriformes	Laniidae	Brown Shrike	<i>Lanius cristatus</i>	66	NT	LC	0.16%
73	Passeriformes	Laniidae	Long-tailed Shrike	<i>Lanius schach</i>	175	LC	LC	0.41%
74	Passeriformes	Oriolidae	Black-naped Oriole	<i>Oriolus chinensis</i>	58	NT	LC	0.14%

75	Passeriformes	Dicruridae	Black Drongo	<i>Dicrurus macrocercus</i>	170	LC	LC	0.40%
76	Passeriformes	Dicruridae	Ashy Drongo	<i>Dicrurus leucophaeus</i>	7	LC	LC	0.02%
77	Passeriformes	Monarchidae	Oriental Paradise Flycatcher	<i>Terpsiphone affinis</i>	8	LC	LC	0.02%
78	Passeriformes	Corvidae	Azure-winged Magpie	<i>Cyanopica cyanus</i>	458	LC	LC	1.08%
79	Passeriformes	Corvidae	Red-billed Blue Magpie	<i>Urocissa erythroryncha</i>	29	LC	LC	0.07%
80	Passeriformes	Corvidae	Grey Treepie	<i>Dendrocitta formosae</i>	316	LC	LC	0.74%
81	Passeriformes	Corvidae	Common Magpie	<i>Pica pica</i>	874	LC	LC	2.05%
82	Passeriformes	Paridae	Great Tit	<i>Parus major</i>	535	LC	LC	1.26%
83	Passeriformes	Remizidae	Chinese Penduline Tit	<i>Remiz consobrinus</i>	70	LC	LC	0.16%
84	Passeriformes	Alaudidae	Oriental Skylark	<i>Alauda gulgula</i>	33	LC	LC	0.08%
85	Passeriformes	Alaudidae	Eurasian Skylark	<i>Alauda arvensis</i>	1	LC	LC	0.00%
86	Passeriformes	Pycnonotidae	Collared Finchbill	<i>Spizixos semitorques</i>	10	LC	LC	0.02%
87	Passeriformes	Pycnonotidae	Light-vented Bulbul	<i>Pycnonotus sinensis</i>	2693	LC	LC	6.33%
88	Passeriformes	Pycnonotidae	Black Bulbul	<i>Hypsipetes leucocephalus</i>	11	LC	LC	0.03%
89	Passeriformes	Hirundinidae	Barn Swallow	<i>Hirundo rustica</i>	342	NT	LC	0.80%
90	Passeriformes	Hirundinidae	Red-rumped Swallow	<i>Cecropis daurica</i>	142	LC	LC	0.33%
91	Passeriformes	Cettiidae	Rufous-faced Warbler	<i>Abroscopus albogularis</i>	6	LC	LC	0.01%
92	Passeriformes	Cettiidae	Manchurian Bush Warbler	<i>Horomis canturians</i>	56	LC	LC	0.13%
93	Passeriformes	Cettiidae	Brownish-flanked Bush Warbler	<i>Horomis fortipes</i>	39	LC	LC	0.09%

94	Passeriformes	Aegithalidae	Silver-throated Bushtit	<i>Aegithalos glaucoocularis</i>	326	LC	LC	0.77%
95	Passeriformes	Aegithalidae	Black-throated Bushtit	<i>Aegithalos concinus</i>	66	LC	LC	0.16%
96	Passeriformes	Phylloscopidae	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	89	LC	LC	0.21%
97	Passeriformes	Phylloscopidae	Pallas's Leaf Warbler	<i>Phylloscopus proregulus</i>	65	LC	LC	0.15%
98	Passeriformes	Phylloscopidae	Dusky Warbler	<i>Phylloscopus fuscatus</i>	35	NT	LC	0.08%
99	Passeriformes	Acrocephalidae	Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	3	LC	LC	0.01%
100	Passeriformes	Cisticolidae	Zitting Cisticola	<i>Cisticola juncidis</i>	17	LC	LC	0.04%
101	Passeriformes	Cisticolidae	Plain Prinia	<i>Prinia inornata</i>	11	LC	LC	0.03%
102	Passeriformes	Sylviidae	Grey-headed Parrotbill	<i>Psittiparus gularis</i>	1	LC	LC	0.00%
103	Passeriformes	Leiothrichidae	Hwamei	<i>Garrulax canorus</i>	3	LC	LC	0.01%
104	Passeriformes	Leiothrichidae	Greater Necklaced Laughingthrush	<i>Garrulax pectoralis</i>	7	LC	LC	0.02%
105	Passeriformes	Leiothrichidae	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	799	LC	LC	1.88%
106	Passeriformes	Sylviidae	Vinous-throated Parrotbill	<i>Sinosuthora webbiana</i>	1546	LC	LC	3.63%
107	Passeriformes	Sturnidae	Crested Myna	<i>Acridotheres crystalinus</i>	125	LC	LC	0.29%
108	Passeriformes	Sturnidae	Silky Starling	<i>Spodiopsar sericeus</i>	255	LC	LC	0.60%
109	Passeriformes	Sturnidae	White-cheeked Starling	<i>Spodiopsar cinereus</i>	1031	LC	LC	2.42%
110	Passeriformes	Sturnidae	Black-collared Starling	<i>Gracupica nigricollis</i>	2	LC	LC	0.00%
111	Passeriformes	Turdidae	White's Thrush	<i>Zoothera aurea</i>	4	LC	LC	0.01%
112	Passeriformes	Turdidae	Grey-backed Thrush	<i>Turdus hortulorum</i>	2	LC	LC	0.00%

113	Passeriformes	Turdidae	Japanese Thrush	<i>Turdus cardis</i>	4	LC	LC	0.01%
114	Passeriformes	Turdidae	Chinese Blackbird	<i>Turdus mandarinus</i>	666	LC	LC	1.57%
115	Passeriformes	Turdidae	Naumann's Thrush	<i>Turdus naumanni</i>	5	LC	LC	0.01%
116	Passeriformes	Turdidae	Dusky Thrush	<i>Turdus eunomus</i>	3	LC	LC	0.01%
117	Passeriformes	Muscicapidae	Oriental Magpie Robin	<i>Copsychus saularis</i>	6	LC	LC	0.01%
118	Passeriformes	Muscicapidae	Grey-streaked Flycatcher	<i>Muscicapa griseisticta</i>	1	LC	LC	0.00%
119	Passeriformes	Muscicapidae	Orange-flanked Bluetail	<i>Tarsiger cyanurus</i>	34	LC	LC	0.08%
120	Passeriformes	Muscicapidae	Blue Whistling Thrush	<i>Myophonus caeruleus</i>	6	LC	LC	0.01%
121	Passeriformes	Muscicapidae	Mugimaki Flycatcher	<i>Ficedula mugimaki</i>	1	LC	LC	0.00%
122	Passeriformes	Muscicapidae	Daurian Redstart	<i>Phoenicurus aureus</i>	163	LC	LC	0.38%
123	Passeriformes	Muscicapidae	Siberian Stonechat	<i>Saxicola maurus</i>	14	LC	LC	0.03%
124	Passeriformes	Passeridae	Eurasian Tree Sparrow	<i>Passer montanus</i>	403	NT	LC	0.95%
125	Passeriformes	Estrildidae	White-rumped Munia	<i>Lonchura striata</i>	23	LC	LC	0.05%
126	Passeriformes	Motacillidae	Gray Wagtail	<i>Motacilla cinerea</i>	1	LC	LC	0.00%
127	Passeriformes	Motacillidae	White Wagtail	<i>Motacilla alba</i>	89	LC	LC	0.21%
128	Passeriformes	Motacillidae	Olive-backed Pipit	<i>Anthus hodgsoni</i>	181	LC	LC	0.43%
129	Passeriformes	Motacillidae	Buff-bellied Pipit	<i>Anthus rubescens</i>	1	LC	LC	0.00%
130	Passeriformes	Fringillidae	Brambling	<i>Fringilla montifringilla</i>	622	LC	LC	1.46%
131	Passeriformes	Fringillidae	Chinese Grosbeak	<i>Eophona migratoria</i>	873	LC	LC	2.05%



132	Passeriformes	Fringillidae	Japanese Grosbeak	<i>Eophona personata</i>	43	LC	LC	0.10%
133	Passeriformes	Fringillidae	Grey-capped Greenfinch	<i>Chloris sinica</i>	143	LC	LC	0.34%
134	Passeriformes	Emberizidae	Tristram's Bunting	<i>Emberiza tristrami</i>	1	LC	LC	0.00%
135	Passeriformes	Emberizidae	Little Bunting	<i>Emberiza pusilla</i>	45	LC	LC	0.11%
136	Passeriformes	Emberizidae	Yellow-browed Bunting	<i>Emberiza chrysophrys</i>	73	LC	LC	0.17%
137	Passeriformes	Emberizidae	Rustic Bunting	<i>Emberiza rustica</i>	60	LC	VU	0.14%
138	Passeriformes	Emberizidae	Yellow-throated Bunting	<i>Emberiza elegans</i>	228	LC	LC	0.54%
139	Passeriformes	Emberizidae	Black-faced Bunting	<i>Emberiza spodocephala</i>	216	LC	LC	0.51%
140	Passeriformes	Emberizidae	Pallas's Bunting	<i>Emberiza pallasi</i>	35	LC	LC	0.08%
141	Passeriformes	Emberizidae	Reed Bunting	<i>Emberiza schoeniclus</i>	20	LC	LC	0.05%
142	Pelecaniformes	Threskiornithidae	Eurasian Spoonbill	<i>Platalea leucorodia</i>	272	LC	LC	0.64%
143	Pelecaniformes	Ardeidae	Eurasian Bittern	<i>Botaurus stellaris</i>	2	LC	LC	0.00%
144	Pelecaniformes	Ardeidae	Yellow Bittern	<i>Ixobrychus sinensis</i>	3	LC	LC	0.01%
145	Pelecaniformes	Ardeidae	Black Bittern	<i>Ixobrychus flavicollis</i>	4	LC	LC	0.01%
146	Pelecaniformes	Ardeidae	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	261	LC	LC	0.61%
147	Pelecaniformes	Ardeidae	Striated Heron	<i>Butorides striata</i>	12	LC	LC	0.03%
148	Pelecaniformes	Ardeidae	Chinese Pond Heron	<i>Ardeola bacchus</i>	197	LC	LC	0.46%
149	Pelecaniformes	Ardeidae	Cattle Egret	<i>Bubulcus ibis</i>	82	LC	LC	0.19%
150	Pelecaniformes	Ardeidae	Grey Heron	<i>Ardea cinerea</i>	402	LC	LC	0.94%
151	Pelecaniformes	Ardeidae	Purple Heron	<i>Ardea purpurea</i>	11	LC	LC	0.03%
152	Pelecaniformes	Ardeidae	Great Egret	<i>Ardea alba</i>	174	LC	LC	0.41%
153	Pelecaniformes	Ardeidae	Intermediate Egret	<i>Ardea intermedia</i>	25	NT	LC	0.06%

154	Pelecaniformes	Ardeidae	Little Egret	<i>Egretta garzetta</i>	364	LC	LC	0.86%
155	Piciformes	Picidae	Speckled Piculet	<i>Picumnus innominatus</i>	4	NT	LC	0.01%
156	Piciformes	Picidae	Grey-capped Woodpecker	<i>Dendrocopos canicapillus</i>	24	LC	LC	0.06%
157	Piciformes	Picidae	Great Spotted Woodpecker	<i>Dendrocopos major</i>	33	LC	LC	0.08%
158	Piciformes	Picidae	Grey-headed Woodpecker	<i>Picus canus</i>	1	LC	LC	0.00%
159	Podicipediformes	Podicipedidae	Little Grebe	<i>Tachybaptus ruficollis</i>	406	LC	LC	0.95%
160	Podicipediformes	Podicipedidae	Horned Grebe	<i>Podiceps auritus</i>	1	LC	VU	0.00%
161	Podicipediformes	Podicipedidae	Great Crested Grebe	<i>Podiceps cristatus</i>	55	LC	LC	0.13%
162	Suliformes	Phalacrocoracidae	Great Cormorant	<i>Phalacrocorax carbo</i>	1937	LC	LC	4.55%

Table 3.  
Survey details

No.	Start Date	End Date	Sites Completed	Sites Not Completed
1	23/03/2021	24/03/2021	1 2 3 4 5 6 7 8 9 10	
2	21/04/2021	25/04/2021	1 2 3 4 5 6 7 8 9 10	
3	24/05/2021	25/05/2021	1 2 3 4 5 6 7 10	8 (due to high water level)
4	24/06/2021	25/06/2021	1 2 3 4 5 6 7 8 9 10	
5	14/07/2021	15/07/2021	1 2 3 4 5 6 7 8 9 10	
6	25/08/2021	26/08/2021	1 2 3 4 5 6 7 8 9 10	
7	28/09/2021	-	1 2 3 4 5 6 7 10	8 9 (due to high water level)
8	13/10/2021	26/10/2021	1 2 3 4 5 6 7 8 9 10	
9	18/11/2021	19/11/2021	1 2 3 4 5 6 7 8 9 10	
10	21/12/2021	22/12/2021	1 2 3 4 5 6 7 8 9 10	
11	11/01/2022	12/01/2022	1 2 3 4 5 6 7 8 9 10	
12	22/02/2022	23/02/2022	1 2 3 4 5 6 7 8 9 10	