

Occurrence dataset of birds in Sihong Hongze Lake Wetlands National Nature Reserve in China

Huali Hu[‡], Wei Hu[‡], Zheping Xu[§], Changhu Lu[‡]

[‡] College of Life Science, Nanjing Forestry University, Nanjing, China

[§] National Science Library, Chinese Academy of Sciences, Beijing, China

Corresponding author: Changhu Lu (luchanghu@njfu.com.cn)

Academic editor: Caio J. Carlos

Abstract

Background

Hongze Lake is China's fourth largest freshwater lake and is also an important habitat for hundreds of thousands of migratory birds on the East Asian-Australian Flyway (EAAF). Sihong Hongze Lake Wetlands National Nature Reserve is located on the northwest of Hongze Lake, Sihong County, Jiangsu Province. The Reserve is a protected large area of natural lake wetlands, marsh wetlands and riverine wetlands and used as a stopover and wintering habitats for migratory birds. Previous studies have conducted bird diversity and temporal-spatial variation in this Reserve, but only for species of Anseriformes. There is still a lack of a comprehensive dataset on the number of bird species and individuals in this Reserve throughout the year. Our study was conducted from July 2020 to June 2021 to observe bird species composition and individual numbers at Sihong Hongze Lake Wetlands National Nature Reserve and provides an occurrence dataset with detailed species and geographic information.

New information

This occurrence dataset is the first public record of birds in Sihong Hongze Lake Wetlands National Nature Reserve for a whole year, which includes the taxonomic information, location information, number, investigation date and endangered level for each species. All data have been published on GBIF.

Keywords

Sihong Hongze Lake, wetland, birds, dataset

Introduction

A lake wetland ecosystem consists of shallow water, marshes, mudflats and sparse grass flats that are natural habitats and feeding grounds for migratory birds and other wetland-dependent wildlife, especially some endangered species (Paszkowski and Tonn 2000, Lyche-Solheim et al. 2013, Wang et al. 2019). The middle and lower reaches of the Yangtze River Basin have the most representative and largest concentration of freshwater lakes in China and provides an important habitat for globally significant numbers of birds (Zhang et al. 2022). However, intensive human activities (agriculture, urbanisation, land reclamation and conversion) and anthropogenic factors (global climatic variation and flooding) have led to the reduction of the lake area and ecological degradation, making the middle and lower reaches of the Yangtze River Basin one of the most endangered areas in China (Cui et al. 2013, Wang X et al. 2020).

Since the 20th century, the Chinese government has taken active measures to protect wetlands. At present, a wetland protection network system has been basically formed with wetland nature reserves as the main body and internationally important wetlands and wetland parks as a combination, which have become an effective measure to protect endangered and rare birds (Zheng et al. 2012). Nature reserves have been established in important lakes, such as Poyang Lake and Dongting Lake and systematic bird research has been carried out in these areas. For example, Debela et al. (2020) have clarified the composition and diversity of the over-wintering aquatic bird community in three nature reserves around Poyang Lake. Yang et al. (2016) have explored the spatiotemporal pattern of bird habitats in Poyang Lake. Zhu et al. (2021) have studied habitat suitability of migratory birds to the water level fluctuations on Dongting Lake.

Hongze Lake is the fourth largest freshwater lake in China and the largest water storage lake along the Eastern Route of the South-North Water Diversion Project (Yang et al. 2021, Zhu et al. 2022). Sihong Hongze Lake Wetlands National Nature Reserve (SHLWNNR) is located at the northwest of Hongze Lake, which is the most completely preserved and representative reserve in China with the breeding of plentiful biological species (Qin et al. 2020). The total area of the Reserve is 49365 hm², the wetland types mainly including lake wetlands, marsh wetlands and river wetlands, accounting for 92.26% of the total area of the Reserve (Ye et al. 2004). In addition, the Reserve is located in a dense intersection area of the East Asian-Australian Flyway (EAAF), which is an important stopover site and overwintering ground for migratory birds and a crucial area for the protection of rare and endangered bird species (Jiang et al. 2017).

Bird studies in SHLWNNR are generally lacking and available reports are not specific and incomplete. For instance, Wang et al. (2014) conducted a comprehensive scientific expedition to the Reserve and recorded 147 bird species, belonging to 15 orders and 47 families. The management office of the Reserve prepared the "2016-2019 Bird Survey Report of Sihong Hongze Lake Wetlands National Nature Reserve", based on the observations and records from 2016 to 2019. From the results of the four-year bird

survey, a total of 207 species of birds were recorded, belonging to 14 orders and 53 families. As of July 2021, a total of seven bird observation reports have been collected from the Reserve in the China Bird Report (<http://www.birdreport.cn/>), belonging to 84 species of birds in 14 orders and 34 families. Wang et al. (2022) discussed the population distribution and interannual variation of Anatidae in the Reserve during the wintering period and showed that there were 24 Anatidae species with the number of recorded species and population increasing year by year. Qin et al. (2020) studied different vegetation planting schemes to promote the protection of typical summer migratory birds (*Chlidonias hybrid* (Pallas, 1811)) and winter migratory birds (*Fulica atra* Linnaeus, 1758) in the Reserve. However, these studies recorded and published bird data for only some months or for some species and the research of overall bird diversity are from many years ago. Therefore, we conducted a more comprehensive and systematic field survey to publish an occurrence dataset for updating the bird species list and identifying the status of bird resources in the Reserve throughout the year. It also provides basic data for subsequent researchers to conduct bird research and endangered species conservation in the future.

Sampling methods

Sampling description: In this study, the fixed-point observation method was used to record the individual number of bird species in SHLWNNR. A total of 16 study sites were set up, based on habitat characteristics and the accessibility to conduct field surveys in the Reserve and every study site functioned as a fixed point for bird surveys (Fig. 1). The investigation time of the bird survey was generally chosen in the morning or evening in good weather conditions and each survey lasted for 5-7 days. During the bird survey, the investigators used a Nikon 20×60 monocular telescope and 10 × 42 binoculars (Shuntu) to survey each fixed-point and the species and numbers of all birds within the observation range were recorded. The observation range consisted of a circular area with a radius of 1 km and the observation time of each study site was 30-40 minutes. Only the birds flying into the sample area were counted, while the birds flying out of the area were not. The counting method adopted a combination of the accurate counting method and the estimation method, the small number of groups adopting the direct accurate counting method, while the larger number of groups adopted the group statistics method. At the same time, a Canon EOS 70d camera with an EF 100-600 mm f/4.5-5.6L ISII USM lens was used to photograph birds and their habitats in the study sites. The determination of species names and bird classifications was mainly 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 surveys (Hu et al. 2023) .

Geographic coverage

Description: We downloaded the image of land-cover type from GlobeLand30 (<http://www.globallandcover.com/>) and drew the investigation scope by using ArcGIS 10.8. A total of 16 study sites were set up, covering all habitat types of the Reserve.

Coordinates: 33.19 N and 33.32 N Latitude; 118.22 E and 118.58 E Longitude.

Taxonomic coverage

Description: SHLWNNR is an important habitat for rare and endangered birds and, after a year of bird surveys, a total of 201918 detections for 215 species belonging to 18 orders and 55 families were recorded in this occurrence dataset (Table 1), including 37 species which were listed in the category of national key protected wild animals (National Forestry and Grassland Administration, Ministry of Agriculture and Rural Affairs 2021) and seven species listed in the IUCN Red List as Threatened Species (IUCN 2023). Twenty-five new species were recorded compared to previous records in the Reserve, 11 bird species were not recorded and all of the birds that were not rediscovered were recorded in the last century of history, which may be a function of the distribution of birds in relation to changes in global temperatures. In the category of China's key protected wildlife; *Aythya baeri* (Radde, 1863), *Ciconia nigra* (Linnaeus, 1758), *Ciconia boyciana* Swinhoe, 1873, *Platalea minor* Temminck & Schlegel, 1849 and *Aegypius monachus* (Linnaeus, 1766) were ranked as National First-class Protected Wildlife; *Anser cygnoid* (Linnaeus, 1758), *Anser albifrons* (Scopoli, 1769), *Cygnus columbianus* (Ord, 1815), *Aix galericulata* (Linnaeus, 1758), *Nettapus coromandelianus* (Gmelin, 1789), *Sibirionetta Formosa* (Georgi, 1775), *Mergellus albellus* (Linnaeus, 1758), *Centropus bengalensis* (Gmelin, 1788), *Hydrophasianus chirurgus* (Scopoli, 1786), *Numenius arquata* (Linnaeus, 1758), *Platalea leucorodia* Linnaeus, 1758, *Pandion haliaetus* (Linnaeus, 1758), *Elanus caeruleus* (Desfontaines, 1789), *Accipiter nisus* (Linnaeus, 1758), *Accipiter gentilis* (Linnaeus, 1758), *Circus spilonotus* Kaup, 1847, *Circus cyaneus* (Linnaeus, 1766), *Circus melanoleucos* (Pennant, 1769), *Milvus migrans* (Boddaert, 1783), *Buteo japonicus* Temminck & Schlegel, 1844, *Otus sunia* (Hodgson, 1836), *Glaucidium cuculoides* (Vigors, 1831), *Athene noctua* (Scopoli, 1769), *Asio flammeus* (Pontoppidan, 1763), *Falco tinnunculus* Linnaeus, 1758, *Falco amurensis* Radde, 1863, *Falco peregrinus* Tunstall, 1771, *Paradoxornis heudei* David, 1872, *Zosterops erythropleurus* Swinhoe, 1863, *Garrulax canorus* (Linnaeus, 1758), *Calliope calliope* (Pallas, 1776) and *Saxicola insignis* J.E.Gray & G.R.Gray, 1847 were ranked as National Second-class Protected Wildlife. In the IUCN Red List, *Aythya baeri* (Radde, 1863) was ranked as Critically Endangered (CR); *Ciconia boyciana* Swinhoe, 1873 and *Platalea minor* Temminck & Schlegel, 1849 were ranked as Endangered (EN); *Anser cygnoid* (Linnaeus, 1758), *Aythya ferina* (Linnaeus, 1758), *Saxicola insignis* J.E.Gray & G.R.Gray, 1847 and *Emberiza rustica* Pallas, 1776 were ranked as Vulnerable (VU).

Temporal coverage

Data range: 2020-7-20 - 2021-6-24.

Notes: The specific dates of this period were: 2020-07-20~2020-07-24 ; 2020-08-21~2020-08-25 ; 2020-09-20~2020-09-25 ; 2020-10-21~2020-10-25 ;

2020-11-17~2020-11-23 ; 2020-12-19~2020-12-24 ; 2021-01-22~2021-01-27 ;

2021-02-22~2021-02-28 ; 2021-03-19~2021-03-25 ; 2021-04-21~2021-04-26 ; 2021-05-20~2021-05-25 ;

2021-06-19~2021-06-24.

Usage licence

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

IP rights notes: Creative Commons Attribution Non Commercial (CC-BY-NC) 4.0 License

Data resources

Data package title: Occurrence dataset of birds in the Sihong Hongze Lake Wetland National Nature Reserve, Jiangsu, China

Resource link: <http://www.gbif.org/dataset/c5ccfa7e-eda3-47e3-9652-ab1104576125>

Alternative identifiers: <https://doi.org/10.15468/p2h2f9>; http://www.gbifchina.org.cn/resource?r=sihong_hongze_lake_bird

Number of data sets: 1

Data set name: Occurrence dataset of birds in the Sihong Hongze Lake Wetland National Nature Reserve, Jiangsu, China

Download URL: http://www.gbifchina.org.cn/resource?r=sihong_hongze_lake_bird&v=1.2

Data format: Darwin Core Archive format

Description: Our occurrence data contains 34 column labels. All occurrence records are georeferenced.

Column label	Column description
--------------	--------------------

eventID (Event Core, Occurrence Extension)	An identifier for the set of information associated with an Event (something that occurs at a place and time). May be a global unique identifier or an identifier specific to the dataset.
parentEventID (Event Core)	An identifier for the broader Event that groups this and potentially other Events.
eventDate (Event Core)	The date when the event was recorded.
samplingProtocol (Event Core)	The names of, references to, or descriptions of the methods or protocols used during an Event.
samplingEffort (Event Core)	The amount of effort expended during an Event.
sampleSizeValue (Event Core)	A numeric value for a measurement of the size (time duration, length, area or volume) of a sample in a sampling event.
sampleSizeUnit (Event Core)	The unit of measurement of the size (time duration, length, area or volume) of a sample in a sampling event.
decimalLongitude (Event Core)	The geographic longitude of the geographic centre of a Location.
decimalLatitude (Event Core)	The geographic latitude of the geographic centre of a Location.
geodeticDatum (Event Core)	The ellipsoid, geodetic datum or spatial reference system (SRS), upon which the geographic coordinates given in decimalLatitude and decimalLongitude are based.
countryCode (Event Core)	The standard code for the country in which the Location occurs.
country (Event Core)	The name of the country in which the Location occurs.
stateProvince (Event Core)	The name of the next smaller administrative region than country (state, province, canton, department, region etc.) in which the Location occurs.
county (Event Core)	The full, unabbreviated name of the next smaller administrative region than stateProvince (county, shire, department etc.) in which the Location occurs.
locality (Event Core)	The specific description of the place.
coordinateUncertaintyInMetres (Event Core)	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.
occurrenceID (Occurrence Extension)	An identifier for the bird occurrence.
basisOfRecord (Occurrence Extension)	The specific nature of the data record.

recordedBy (Occurrence Extension)	A list (concatenated and separated) of names of people, groups or organisations responsible for recording the original Occurrence. The primary collector or observer, especially one who applies a personal identifier (recordNumber), should be listed first.
individualCount (Occurrence Extension)	The number of individuals present at the time of the Occurrence.
organismQuantity (Occurrence Extension)	A number or enumeration value for the quantity of organisms.
organismQuantityType (Occurrence Extension)	The type of quantification system used for the quantity of organisms.
occurrenceStatus (Occurrence Extension)	A statement about the presence or absence of a Taxon at a Location.
scientificName (Occurrence Extension)	The full scientific name.
scientificNameAuthorship (Occurrence Extension)	The authorship information for the scientificName formatted according to the conventions of the applicable nomenclaturalCode.
kingdom (Occurrence Extension)	The full scientific name of the kingdom in which the taxon is classified.
phylum (Occurrence Extension)	The full scientific name of the phylum in which the taxon is classified.
class (Occurrence Extension)	The full scientific name of the class in which the taxon is classified.
order (Occurrence Extension)	The full scientific name of the order in which the taxon is classified.
family (Occurrence Extension)	The full scientific name of the family in which the taxon is classified.
genus (Occurrence Extension)	The full scientific name of the genus in which the taxon is classified.
taxonRank (Occurrence Extension)	The taxonomic rank of the most specific name in the scientificName as it appears in the original record.
ownerInstitutionCode (Occurrence Extension)	The name (or acronym) in use by the institution having ownership of the object(s) or information referred to in the record.
dynamicProperties (Occurrence Extension)	A list of threatened level about the record according to the IUCN Red List of Threatened Species (Version 2022-2). Meant to provide a mechanism for structured content.

Acknowledgements

This research was supported by the Jiangsu Province Important Wetland Flora and Fauna Diversity Monitoring Project (Project No. 202004120). We are grateful to Manyu Zhang, Taiyu Chen, Silu Wang and Mengmeng Liu for participating in the field investigation. This research was also assisted by the Administrative Office of Sihong Hongze Lake Wetlands National Nature Reserve.

Author contributions

Huali Hu - Data preparation, GIS processing, manuscript editing; Wei Hu - Species identification; Zheping Xu - Review and upload data to GBIF; Changhu Lu - Review and editing

References

- Cui L, Gao C, Zhao X, et al. (2013) Dynamics of the lakes in the middle and lower reaches of the Yangtze River basin, China, since late nineteenth century. *Environmental Monitoring and Assessment* 185: 4005-4018. <https://doi.org/10.1007/s10661-012-2845-0>
- Debela MT, Wu Q, Chen L, et al. (2020) Composition and diversity of over-wintering aquatic bird community on Poyang Lake, China. *Diversity* 12 (8): 308. <https://doi.org/10.3390/d12080308>
- Hu H, Lu C, Xu Z (2023) Occurrence dataset of birds in the Sihong Hongze Lake Wetland National Nature Reserve, Jiangsu, China. Chinese Academy of Sciences (CAS). URL: <https://doi.org/10.15468/p2h2f9>
- IUCN (Ed.) (2023) The IUCN Red List of Threatened Species. <https://www.iucnredlist.org/>
- Jiang W, Hou G, Li J, et al. (2017) Novel variants of clade 2.3. 2.1 H5N1 highly pathogenic avian influenza virus in migratory waterfowl of Hongze Lake. *Veterinary Microbiology* 198: 99-103. <https://doi.org/10.1016/j.vetmic.2016.12.011>
- Lyche-Solheim A, Feld C, Birk S, et al. (2013) Ecological status assessment of European lakes: A comparison of metrics for phytoplankton, macrophytes, benthic invertebrates and fish. *Hydrobiologia* 704: 57-74. <https://doi.org/10.1007/s10750-012-1436-y>
- National Forestry and Grassland Administration, Ministry of Agriculture and Rural Affairs (2021) Category of National Key Protected Wild Animals. [In Chinese]. URL: <http://www.forestry.gov.cn/main/5461/20210205/122418860831352.html>
- Paszkowski C, Tonn W (2000) Community concordance between the fish and aquatic birds of lakes in northern Alberta, Canada: The relative importance of environmental and biotic factors. *Freshwater Biology* 43 (3): 421-437. <https://doi.org/10.1046/j.1365-2427.2000.00512.x>
- Qin J, Yin X, Liu H, et al. (2020) Analysis of effect of lake water level changes on emergent plants: A case study in the Hongze lake. *Environment Engineering* 38 (10): 53-60. [In Chinese]. <https://doi.org/10.13205/j.hjgc.202010009>
- Wang G, Ma X, Chang Q (2014) Survey report on Jiangsu Sihong Hongze Lake Wetlands National Nature Reserve. Science Press, Beijing, China. [In Chinese]. [ISBN 9787030420916]
- Wang S, Zhang M, Chen T, et al. (2022) Composition of Anatidae community in Sihong Hongze Lake Wetland National Nature Reserve and its seasonal dynamics. *Wetland Science* 20 (6): 801-809. [In Chinese]. <https://doi.org/10.13248/j.cnki.wetlandsci.2022.06.010>
- Wang X, Chen J, Zhou L (2020) Effects of human activities on the diversity of waterbirds wintering in a shallow lake of the middle and lower Yangtze River floodplain, China. *Diversity* 12 (8): 302. <https://doi.org/10.3390/d12080302>

- Wang Y, Molino JG, Shi L, et al. (2019) Drivers and changes of the Poyang Lake wetland ecosystem. *Wetlands* 39: 35-44. <https://doi.org/10.1007/s13157-019-01180-9>
- Yang P, Liu X, Xu B (2016) Spatiotemporal pattern of bird habitats in the Poyang Lake based on Landsat images. *Environmental Earth Sciences* 75: 1-8. <https://doi.org/10.1007/s12665-016-5941-6>
- Yang Z, Huang X, Fang G, et al. (2021) Benefit evaluation of East Route Project of South to North Water Transfer based on trapezoid cloud model. *Agricultural Water Management* 254: 106960. <https://doi.org/10.1016/j.agwat.2021.106960>
- Ye Z, Zhu G, Zhang Y (2004) An analysis on the characteristic of resources diversity in the Hongze Lake Wetland. *Journal of Huaiyin Teachers College (Natural Science Edition)* 3 (4): 334-339. [In Chinese]. <https://doi.org/10.16119/j.cnki.issn1671-6876.2004.04.019>
- Zhang Y, Shi H, Liu L, et al. (2022) Wintering waterbirds diversity and their impact factors in coastal lake wetlands of the Yangtze River in Jiangsu. *Journal of Lake Sciences* 34 (6). [In Chinese]. <https://doi.org/10.18307/2022.0616>
- Zheng G (2017) A checklist on the classification and distribution of the birds of China. 3rd Edition. Science Press, Beijing, China. [In Chinese]. [ISBN 9787030547514]
- Zheng Y, Zhang H, Niu Z, et al. (2012) Protection efficacy of national wetland reserves in China. *Science Bulletin* 57 (10): 1116-1134. <https://doi.org/10.1007/s11434-011-4942-9>
- Zhu J, Peng K, Li Y, et al. (2022) Characteristics and influence factors of carbon dioxide efflux from Lake Hongze under different hydrological scenarios. *Journal of Lake Sciences* 34 (4): 1347-1358. [In Chinese]. <https://doi.org/10.18307/2022.0425>
- Zhu Y, Wang H, Guo W (2021) The impacts of water level fluctuations of East Dongting Lake on habitat suitability of migratory birds. *Ecological Indicators* 132: 108277. <https://doi.org/10.1016/j.ecolind.2021.108277>

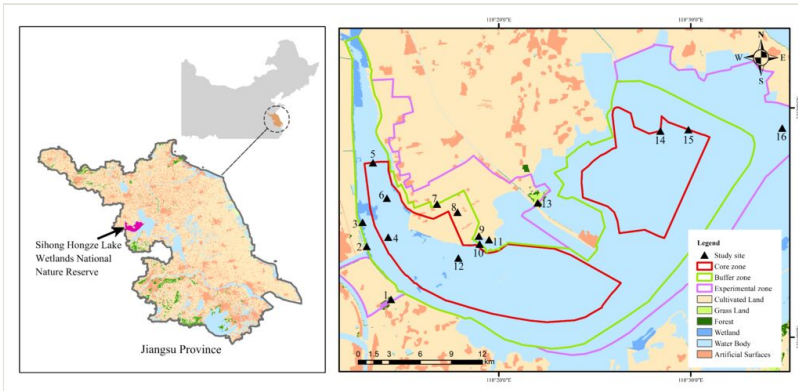


Figure 1. Location of the study sites in Sihong Hongze Lake Wetlands National Nature Reserve.

Table 1.

Bird list in Sihong Hongze Lake Wetlands National Nature Reserve.

Rank	Order	Family	Scientific Name	The number of individual birds observed
1	Galliformes	Phasianidae	<i>Coturnix japonica</i> Temminck & Schlegel, 1849	3
2	Galliformes	Phasianidae	<i>Phasianus colchicus</i> Linnaeus, 1758	163
3	Anseriformes	Anatidae	<i>Anser cygnoid</i> (Linnaeus, 1758)	42
4	Anseriformes	Anatidae	<i>Anser fabalis</i> (Latham, 1787)	208
5	Anseriformes	Anatidae	<i>Anser anser</i> (Linnaeus, 1758)	38
6	Anseriformes	Anatidae	<i>Anser albifrons</i> (Scopoli, 1769)	4
7	Anseriformes	Anatidae	<i>Cygnus columbianus</i> (Ord, 1815)	353
8	Anseriformes	Anatidae	<i>Tadorna tadorna</i> (Linnaeus, 1758)	22
9	Anseriformes	Anatidae	<i>Tadorna ferruginea</i> (Pallas, 1764)	4
10	Anseriformes	Anatidae	<i>Aix galericulata</i> (Linnaeus, 1758)	8
11	Anseriformes	Anatidae	<i>Nettapus coromandelianus</i> (Gmelin, 1789)	1
12	Anseriformes	Anatidae	<i>Mareca strepera</i> (Linnaeus, 1758)	4856
13	Anseriformes	Anatidae	<i>Mareca falcata</i> (Georgi, 1775)	6061
14	Anseriformes	Anatidae	<i>Mareca penelope</i> (Linnaeus, 1758)	252
15	Anseriformes	Anatidae	<i>Anas platyrhynchos</i> Linnaeus, 1758	7358
16	Anseriformes	Anatidae	<i>Anas zonorhyncha</i> Swinhoe, 1866	11281
17	Anseriformes	Anatidae	<i>Anas acuta</i> Linnaeus, 1758	899
18	Anseriformes	Anatidae	<i>Anas crecca</i> Linnaeus, 1758	7164
19	Anseriformes	Anatidae	<i>Spatula clypeata</i> (Linnaeus, 1758)	1106
20	Anseriformes	Anatidae	<i>Spatula querquedula</i> (Linnaeus, 1758)	1134
21	Anseriformes	Anatidae	<i>Sibirionetta formosa</i> (Georgi, 1775)	7813
22	Anseriformes	Anatidae	<i>Aythya ferina</i> (Linnaeus, 1758)	933
23	Anseriformes	Anatidae	<i>Aythya baeri</i> (Radde, 1863)	17
24	Anseriformes	Anatidae	<i>Aythya nyroca</i> (Guldenstadt, 1770)	714
25	Anseriformes	Anatidae	<i>Aythya fuligula</i> (Linnaeus, 1758)	76
26	Anseriformes	Anatidae	<i>Mergellus albellus</i> (Linnaeus, 1758)	9

27	Anseriformes	Anatidae	<i>Mergus merganser</i> Linnaeus, 1758	2
28	Podicipediformes	Podicipedidae	<i>Tachybaptus ruficollis</i> (Pallas, 1764)	1246
29	Podicipediformes	Podicipedidae	<i>Podiceps cristatus</i> (Linnaeus, 1758)	169
30	Columbiformes	Columbidae	<i>Streptopelia orientalis</i> (Latham, 1790)	1888
31	Columbiformes	Columbidae	<i>Streptopelia decaocto</i> (Frivaldszky, 1838)	9
32	Columbiformes	Columbidae	<i>Streptopelia tranquebarica</i> (Hermann, 1804)	93
33	Columbiformes	Columbidae	<i>Streptopelia chinensis</i> (Scopoli, 1786)	300
34	Caprimulgiformes	Caprimulgidae	<i>Caprimulgus indicus</i> Latham, 1790	3
35	Caprimulgiformes	Apodidae	<i>Apus pacificus</i> (Latham, 1801)	23
36	Cuculiformes	Cuculidae	<i>Centropus bengalensis</i> (Gmelin, 1788)	3
37	Cuculiformes	Cuculidae	<i>Eudynamys scolopacea</i> (Linnaeus, 1758)	20
38	Cuculiformes	Cuculidae	<i>Hierococcyx sparveroides</i> (Vigors, 1832)	10
39	Cuculiformes	Cuculidae	<i>Cuculus micropterus</i> Gould, 1838	14
40	Cuculiformes	Cuculidae	<i>Cuculus canorus</i> Linnaeus, 1758	90
41	Gruiformes	Rallidae	<i>Rallus indicus</i> Blyth, 1849	2
42	Gruiformes	Rallidae	<i>Amauornis phoenicurus</i> (Pennant, 1769)	15
43	Gruiformes	Rallidae	<i>Gallinula chloropus</i> (Linnaeus, 1758)	1185
44	Gruiformes	Rallidae	<i>Fulica atra</i> Linnaeus, 1758	99216
45	Charadriiformes	Recurvirostridae	<i>Himantopus himantopus</i> (Linnaeus, 1758)	50
46	Charadriiformes	Recurvirostridae	<i>Recurvirostra avosetta</i> Linnaeus, 1758	8
47	Charadriiformes	Charadriidae	<i>Vanellus vanellus</i> (Linnaeus, 1758)	70
48	Charadriiformes	Charadriidae	<i>Vanellus cinereus</i> (Blyth, 1842)	55
49	Charadriiformes	Charadriidae	<i>Pluvialis fulva</i> (Gmelin, 1789)	2
50	Charadriiformes	Charadriidae	<i>Charadrius dubius</i> Scopoli, 1786	20
51	Charadriiformes	Charadriidae	<i>Charadrius alexandrinus</i> Linnaeus, 1758	4
52	Charadriiformes	Charadriidae	<i>Charadrius leschenaultii</i> Lesson, 1826	1

53	Charadriiformes	Rostratulidae	<i>Rostratula benghalensis</i> (Linnaeus, 1758)	5
54	Charadriiformes	Jacanidae	<i>Hydrophasianus chirurgus</i> (Scopoli, 1786)	79
55	Charadriiformes	Scolopacidae	<i>Gallinago stenura</i> (Bonaparte, 1831)	2
56	Charadriiformes	Scolopacidae	<i>Gallinago gallinago</i> (Linnaeus, 1758)	30
57	Charadriiformes	Scolopacidae	<i>Limosa limosa</i> (Linnaeus, 1758)	2
58	Charadriiformes	Scolopacidae	<i>Numenius arquata</i> (Linnaeus, 1758)	10
59	Charadriiformes	Scolopacidae	<i>Tringa erythropus</i> (Pallas, 1764)	46
60	Charadriiformes	Scolopacidae	<i>Tringa totanus</i> (Linnaeus, 1758)	91
61	Charadriiformes	Scolopacidae	<i>Tringa stagnatilis</i> (Bechstein, 1803)	1
62	Charadriiformes	Scolopacidae	<i>Tringa nebularia</i> (Gunnerus, 1767)	22
63	Charadriiformes	Scolopacidae	<i>Tringa ochropus</i> Linnaeus, 1758	43
64	Charadriiformes	Scolopacidae	<i>Tringa glareola</i> Linnaeus, 1758	4
65	Charadriiformes	Scolopacidae	<i>Actitis hypoleucos</i> (Linnaeus, 1758)	17
66	Charadriiformes	Scolopacidae	<i>Calidris alba</i> (Pallas, 1764)	6
67	Charadriiformes	Glareolidae	<i>Glareola maldivarum</i> J.R.Forster, 1795	2
68	Charadriiformes	Laridae	<i>Chroicocephalus ridibundus</i> (Linnaeus, 1766)	225
69	Charadriiformes	Laridae	<i>Larus smithsonianus</i> Coues, 1862	1
70	Charadriiformes	Laridae	<i>Sternula albifrons</i> (Pallas, 1764)	2
71	Charadriiformes	Laridae	<i>Sterna hirundo</i> Linnaeus, 1758	36
72	Charadriiformes	Laridae	<i>Chlidonias hybrida</i> (Pallas, 1811)	5499
73	Charadriiformes	Laridae	<i>Chlidonias leucopterus</i> (Temminck, 1815)	17
74	Ciconiiformes	Ciconiidae	<i>Ciconia nigra</i> (Linnaeus, 1758)	1
75	Ciconiiformes	Ciconiidae	<i>Ciconia boyciana</i> Swinhoe, 1873	37
76	Suliformes	Phalacrocoracidae	<i>Phalacrocorax carbo</i> (Linnaeus, 1758)	158
77	Pelecaniformes	Threskiornithidae	<i>Platalea leucorodia</i> Linnaeus, 1758	115
78	Pelecaniformes	Threskiornithidae	<i>Platalea minor</i> Temminck & Schlegel, 1849	1
79	Pelecaniformes	Ardeidae	<i>Botaurus stellaris</i> (Linnaeus, 1758)	14
80	Pelecaniformes	Ardeidae	<i>Ixobrychus sinensis</i> (Gmelin, 1789)	160

81	Pelecaniformes	Ardeidae	<i>Ixobrychus cinnamomeus</i> (Gmelin, 1789)	1
82	Pelecaniformes	Ardeidae	<i>Ixobrychus flavicollis</i> (Latham, 1790)	2
83	Pelecaniformes	Ardeidae	<i>Nycticorax nycticorax</i> (Linnaeus, 1758)	2503
84	Pelecaniformes	Ardeidae	<i>Ardeola bacchus</i> (Bonaparte, 1855)	2010
85	Pelecaniformes	Ardeidae	<i>Bubulcus ibis</i> (Linnaeus, 1758)	2443
86	Pelecaniformes	Ardeidae	<i>Ardea cinerea</i> Linnaeus, 1758	764
87	Pelecaniformes	Ardeidae	<i>Ardea purpurea</i> Linnaeus, 1766	117
88	Pelecaniformes	Ardeidae	<i>Ardea alba</i> Linnaeus, 1758	1044
89	Pelecaniformes	Ardeidae	<i>Ardea intermedia</i> Wagler, 1829	3128
90	Pelecaniformes	Ardeidae	<i>Egretta garzetta</i> (Linnaeus, 1766)	5064
91	Accipitriformes	Pandionidae	<i>Pandion haliaetus</i> (Linnaeus, 1758)	5
92	Accipitriformes	Accipitridae	<i>Elanus caeruleus</i> (Desfontaines, 1789)	17
93	Accipitriformes	Accipitridae	<i>Aegyptius monachus</i> (Linnaeus, 1766)	1
94	Accipitriformes	Accipitridae	<i>Accipiter nisus</i> (Linnaeus, 1758)	2
95	Accipitriformes	Accipitridae	<i>Accipiter gentilis</i> (Linnaeus, 1758)	1
96	Accipitriformes	Accipitridae	<i>Circus spilonotus</i> Kaup, 1847	20
97	Accipitriformes	Accipitridae	<i>Circus cyaneus</i> (Linnaeus, 1766)	16
98	Accipitriformes	Accipitridae	<i>Circus melanoleucos</i> (Pennant, 1769)	2
99	Accipitriformes	Accipitridae	<i>Milvus migrans</i> (Boddaert, 1783)	2
100	Accipitriformes	Accipitridae	<i>Buteo japonicus</i> Temminck & Schlegel, 1844	8
101	Strigiformes	Strigidae	<i>Otus sunia</i> (Hodgson, 1836)	1
102	Strigiformes	Strigidae	<i>Glaucidium cuculoides</i> (Vigors, 1831)	3
103	Strigiformes	Strigidae	<i>Athene noctua</i> (Scopoli, 1769)	1
104	Strigiformes	Strigidae	<i>Asio flammeus</i> (Pontoppidan, 1763)	1
105	Bucerotiformes	Upupidae	<i>Upupa epops</i> Linnaeus, 1758	42
106	Coraciiformes	Coraciidae	<i>Eurystomus orientalis</i> (Linnaeus, 1766)	1
107	Coraciiformes	Alcedinidae	<i>Halcyon pileata</i> (Boddaert, 1783)	1
108	Coraciiformes	Alcedinidae	<i>Alcedo atthis</i> (Linnaeus, 1758)	111
109	Coraciiformes	Alcedinidae	<i>Ceryle rudis</i> (Linnaeus, 1758)	38

110	Piciformes	Picidae	<i>Jynx torquilla</i> Linnaeus, 1758	1
111	Piciformes	Picidae	<i>Dendrocopos canicapillus</i> (Blyth, 1845)	45
112	Piciformes	Picidae	<i>Dendrocopos major</i> (Linnaeus, 1758)	84
113	Piciformes	Picidae	<i>Picus canus</i> J.F.Gmelin, 1788	77
114	Falconiformes	Falconidae	<i>Falco tinnunculus</i> Linnaeus, 1758	8
115	Falconiformes	Falconidae	<i>Falco amurensis</i> Radde, 1863	9
116	Falconiformes	Falconidae	<i>Falco peregrinus</i> Tunstall, 1771	7
117	Passeriformes	Oriolidae	<i>Oriolus chinensis</i> Linnaeus, 1766	91
118	Passeriformes	Campephagidae	<i>Lalage melaschistos</i> (Hodgson, 1836)	12
119	Passeriformes	Dicruridae	<i>Dicrurus macrocercus</i> Vieillot, 1817	525
120	Passeriformes	Dicruridae	<i>Dicrurus leucophaeus</i> Vieillot, 1817	5
121	Passeriformes	Monarchidae	<i>Terpsiphone incei</i> (Gould, 1852)	6
122	Passeriformes	Laniidae	<i>Lanius tigrinus</i> Drapiez, 1828	12
123	Passeriformes	Laniidae	<i>Lanius bucephalus</i> Temminck & Schlegel, 1845	8
124	Passeriformes	Laniidae	<i>Lanius cristatus</i> Linnaeus, 1758	314
125	Passeriformes	Laniidae	<i>Lanius schach</i> Linnaeus, 1758	10
126	Passeriformes	Laniidae	<i>Lanius sphenocercus</i> Cabanis, 1873	306
127	Passeriformes	Corvidae	<i>Cyanopica cyanus</i> (Pallas, 1776)	244
128	Passeriformes	Corvidae	<i>Dendrocitta formosae</i> Swinhoe, 1863	3
129	Passeriformes	Corvidae	<i>Pica pica</i> (Linnaeus, 1758)	797
130	Passeriformes	Corvidae	<i>Corvus corone</i> Linnaeus, 1758	2
131	Passeriformes	Paridae	<i>Pardaliparus venustulus</i> (Swinhoe, 1870)	11
132	Passeriformes	Paridae	<i>Parus cinereus</i> Vieillot, 1818	143
133	Passeriformes	Remizidae	<i>Remiz consobrinus</i> (Swinhoe, 1870)	50
134	Passeriformes	Alaudidae	<i>Alauda gulgula</i> Franklin, 1831	151
135	Passeriformes	Cisticolidae	<i>Cisticola juncidis</i> (Rafinesque, 1810)	21
136	Passeriformes	Cisticolidae	<i>Prinia inornata</i> Sykes, 1832	26
137	Passeriformes	Acrocephalidae	<i>Acrocephalus orientalis</i> (Temminck & Schlegel, 1847)	131
138	Passeriformes	Acrocephalidae	<i>Acrocephalus bistrigiceps</i> Swinhoe, 1860	12

139	Passeriformes	Hirundinidae	<i>Riparia riparia</i> (Linnaeus, 1758)	463
140	Passeriformes	Hirundinidae	<i>Hirundo rustica</i> Linnaeus, 1758	2009
141	Passeriformes	Hirundinidae	<i>Cecropis daurica</i> (Laxmann, 1769)	1019
142	Passeriformes	Pycnonotidae	<i>Spizixos semitorques</i> Swinhoe, 1861	17
143	Passeriformes	Pycnonotidae	<i>Pycnonotus xanthorrhous</i> Anderson, 1869	1
144	Passeriformes	Pycnonotidae	<i>Pycnonotus sinensis</i> (Gmelin, 1789)	3421
145	Passeriformes	Phylloscopidae	<i>Phylloscopus fuscatus</i> (Blyth, 1842)	67
146	Passeriformes	Phylloscopidae	<i>Phylloscopus proregulus</i> (Pallas, 1811)	156
147	Passeriformes	Phylloscopidae	<i>Phylloscopus inornatus</i> (Blyth, 1842)	327
148	Passeriformes	Phylloscopidae	<i>Phylloscopus borealis</i> (J.H.Blasius, 1858)	12
149	Passeriformes	Phylloscopidae	<i>Phylloscopus tenellipes</i> Swinhoe, 1860	4
150	Passeriformes	Phylloscopidae	<i>Phylloscopus coronatus</i> (Temminck & Schlegel, 1847)	2
151	Passeriformes	Cettiidae	<i>Horornis canturians</i> (Swinhoe, 1860)	42
152	Passeriformes	Cettiidae	<i>Horornis fortipes</i> Hodgson, 1845	6
153	Passeriformes	Cettiidae	<i>Urosphena squameiceps</i> (Swinhoe, 1863)	1
154	Passeriformes	Aegithalidae	<i>Aegithalos glaucogularis</i> (Moore, 1855)	358
155	Passeriformes	Aegithalidae	<i>Aegithalos concinnus</i> (Gould, 1855)	4
156	Passeriformes	Sylviidae	<i>Sinosuthora webbiana</i> (Gould, 1852)	1918
157	Passeriformes	Sylviidae	<i>Paradoxornis heudei</i> David, 1872	131
158	Passeriformes	Zosteropidae	<i>Zosterops erythropleurus</i> Swinhoe, 1863	14
159	Passeriformes	Zosteropidae	<i>Zosterops japonicus</i> Temminck & Schlegel, 1845	127
160	Passeriformes	Leiotherichidae	<i>Garrulax canorus</i> (Linnaeus, 1758)	2
161	Passeriformes	Leiotherichidae	<i>Garrulax perspicillatus</i> (Gmelin, 1789)	14
162	Passeriformes	Sturnidae	<i>Acridotheres cristatellus</i> (Linnaeus, 1758)	47
163	Passeriformes	Sturnidae	<i>Spodiopsar sericeus</i> (Gmelin, 1789)	789
164	Passeriformes	Sturnidae	<i>Spodiopsar cineraceus</i> (Temminck, 1835)	2756

165	Passeriformes	Sturnidae	<i>Gracupica nigricollis</i> (Paykull, 1807)	4
166	Passeriformes	Turdidae	<i>Geokichla sibirica</i> (Pallas, 1776)	1
167	Passeriformes	Turdidae	<i>Zoothera aurea</i> (Holandre, 1825)	2
168	Passeriformes	Turdidae	<i>Turdus hortulorum</i> P.L.Sclater, 1863	24
169	Passeriformes	Turdidae	<i>Turdus cardis</i> Temminck, 1831	8
170	Passeriformes	Turdidae	<i>Turdus mandarinus</i> Bonaparte, 1850	648
171	Passeriformes	Turdidae	<i>Turdus pallidus</i> Gmelin, 1789	2
172	Passeriformes	Turdidae	<i>Turdus naumanni</i> Temminck, 1820	19
173	Passeriformes	Turdidae	<i>Turdus eunomus</i> Temminck, 1831	50
174	Passeriformes	Muscicapidae	<i>Larviva cyane</i> (Pallas, 1776)	1
175	Passeriformes	Muscicapidae	<i>Calliope calliope</i> (Pallas, 1776)	1
176	Passeriformes	Muscicapidae	<i>Tarsiger cyanurus</i> (Pallas, 1773)	37
177	Passeriformes	Muscicapidae	<i>Copsychus saularis</i> (Linnaeus, 1758)	2
178	Passeriformes	Muscicapidae	<i>Phoenicurus aureus</i> (Pallas, 1776)	159
179	Passeriformes	Muscicapidae	<i>Rhyacomis fuliginosa</i> (Vigors, 1831)	1
180	Passeriformes	Muscicapidae	<i>Myophonus caeruleus</i> (Scopoli, 1786)	2
181	Passeriformes	Muscicapidae	<i>Saxicola insignis</i> J.E.Gray & G.R.Gray, 1847	1
182	Passeriformes	Muscicapidae	<i>Saxicola maurus</i> (Pallas, 1773)	2
183	Passeriformes	Muscicapidae	<i>Muscicapa sibirica</i> Gmelin, 1789	5
184	Passeriformes	Muscicapidae	<i>Muscicapa dauurica</i> Pallas, 1811	24
185	Passeriformes	Muscicapidae	<i>Ficedula zanthopygia</i> (Hay, 1845)	3
186	Passeriformes	Muscicapidae	<i>Ficedula narcissina</i> (Temminck, 1836)	2
187	Passeriformes	Muscicapidae	<i>Ficedula mugimaki</i> (Temminck, 1836)	3
188	Passeriformes	Muscicapidae	<i>Ficedula albicilla</i> (Pallas, 1811)	1
189	Passeriformes	Muscicapidae	<i>Cyanoptila cyanomelana</i> (Temminck, 1829)	1
190	Passeriformes	Bombycillidae	<i>Bombycilla japonica</i> (Siebold, 1824)	25
191	Passeriformes	Estrildidae	<i>Lonchura striata</i> (Linnaeus, 1766)	37
192	Passeriformes	Passeridae	<i>Passer cinnamomeus</i> (Temminck, 1836)	1
193	Passeriformes	Passeridae	<i>Passer montanus</i> (Linnaeus, 1758)	869

194	Passeriformes	Motacillidae	<i>Dendronanthus indicus</i> (Gmelin, 1789)	1
195	Passeriformes	Motacillidae	<i>Motacilla tschutschensis</i> Gmelin, 1789	8
196	Passeriformes	Motacillidae	<i>Motacilla cinerea</i> Tunstall, 1771	200
197	Passeriformes	Motacillidae	<i>Motacilla alba</i> Linnaeus, 1758	190
198	Passeriformes	Motacillidae	<i>Anthus richardi</i> Vieillot, 1818	1
199	Passeriformes	Motacillidae	<i>Anthus hodgsoni</i> Richmond, 1907	215
200	Passeriformes	Motacillidae	<i>Anthus cervinus</i> (Pallas, 1811)	1
201	Passeriformes	Motacillidae	<i>Anthus spinoletta</i> (Linnaeus, 1758)	8
202	Passeriformes	Fringillidae	<i>Fringilla montifringilla</i> Linnaeus, 1758	257
203	Passeriformes	Fringillidae	<i>Eophona migratoria</i> Hartert, 1903	1779
204	Passeriformes	Fringillidae	<i>Eophona personata</i> (Temminck & Schlegel, 1848)	44
205	Passeriformes	Fringillidae	<i>Chloris sinica</i> (Linnaeus, 1766)	72
206	Passeriformes	Fringillidae	<i>Spinus spinus</i> (Linnaeus, 1758)	213
207	Passeriformes	Emberizidae	<i>Emberiza cioides</i> von J.F.Brandt, 1843	1
208	Passeriformes	Emberizidae	<i>Emberiza tristrami</i> Swinhoe, 1870	55
209	Passeriformes	Emberizidae	<i>Emberiza pusilla</i> Pallas, 1776	204
210	Passeriformes	Emberizidae	<i>Emberiza chrysophrys</i> Pallas, 1776	40
211	Passeriformes	Emberizidae	<i>Emberiza rustica</i> Pallas, 1776	132
212	Passeriformes	Emberizidae	<i>Emberiza elegans</i> Temminck, 1836	221
213	Passeriformes	Emberizidae	<i>Emberiza spodocephala</i> Pallas, 1776	499
214	Passeriformes	Emberizidae	<i>Emberiza pallasi</i> (Cabanis, 1851)	25
215	Passeriformes	Emberizidae	<i>Emberiza schoeniclus</i> (Linnaeus, 1758)	7