



MID-WINTER WATERFOWL CENSUS 2015



(January-February 2015)

ZOOLOGICAL SURVEY OF PAKISTAN

MINISTRY OF CLIMATE CHANGE

GOVERNMENT OF PAKISTAN

Mehrban Ali Brohi

Zoologist

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(A view of Jhalar lake Soan valley)

Introduction: -

The Asian waterfowl census (AWC) is a coordinated International scheme for the collection and dissemination of knowledge and information on wetland birds and wetlands. This scheme is a regular activity and has been conducted globally since 1970's and was coordinated by international waterfowl and wetlands research survey and Asian wetlands bureau,(currently by Birds International) results of which are being published since 1987. Presently the coordination center is wetlands International (Wetlands International 2007).

The main objectives of these surveys are to monitor waterfowl population annually and also study the trends of their population at various wetlands during migratory season i.e. winter (non-breeding). In addition to monitor the status and condition of wetlands, create awareness and interest among local communities about migratory water birds and wetlands and thereby promote their conservation.

In Pakistan these surveys have been carried out since 1972 and Zoological Survey of Pakistan (ZSP) is a part and parcel of these surveys. In addition to studies for Conservation of Migratory Species (CMS), these studies were continuation of Midwinter waterfowl census at the wetlands of Pakistan. Thus for better management and conservation of waterfowl it is necessary to monitor their migratory pattern, analyze population trends, status and distribution of waterfowl species, assessing wetland values and identification of important sites for protection of threatened species.

The current report deals with the counts of waterfowl population on some major wetlands of Punjab in the months of January and February 2015. Which include: -

Chashma, Jinnah Barrage, Jhalar, Khabbaki, Ucchali lakes, Kalar Kahar ,Nammal Lakes, Rasul Barrage, Head Qadirabad and Head Marrala.

DESCRIPTION OF THE SITES

1. Chashma Barrage

Chashma Barrage is located at 32° 25'N 75° 22'E 25 km Southwest of Mianwali on the Mianwali to Dera Ismail Khan Road in Punjab Province. The wetland comprises of a large barrage on the Indus River with a series of embankments or flood bunds, which divide the wetland in to five lakes each of up to 250 ha in area. Depth of the five lakes varies from 0.2 meter in the dry season to 8 meters at the height of the flood season. Depth of the main river varies from 4.6m to 8.8m.

The aquatic vegetation consists of *Hydrilla verticillata*, *Nelumbium speciosum*, *Nymphaea lotus*, *Typha angustata*, *Pragmites karka*, *Potamogeton pectinus*, *Saccharum spontaneum*, *Vallisneria spiralis* and *Zannichellia palustris*. The natural vegetation of the region is a mixture of subtropical semi-evergreen scrub and tropical thorn forest with species such as *Olea ferruginea*, *Acacia modesta*, *A. nilotica*, *Adhatoda vasica*, *Dodnea viscosa*, *Tamarix aphylla*, *T. dioica*, *Zizyphus mauritiana*, *Z. nummularia*, *Chrsopogon aucheri*, *Lasiurus hirsutus*, *Heteropogon contortus* and *Panicum antidotale*.

Considering importance of the wetland it was declared as wildlife Sanctuary with an area of 33, 082ha in 1974 and has been re-notified many times. The wetland has also been declared as Ramsar Site.



(White-eyed Pochard at Chashma Barrage December 2014)

2. Jinnah Barrage:

Jinnah barrage is situated (32° 55'N, 71° 31'E) about 50Km Northwest of Mianwali city. It has a voluminous watershed in the main downstream (river Indus). Few small ponds are also located at the adjacent peripheries. The wetland has light submerged vegetation. The barrage is unique in having good concentration of anatids both at upstream and downstream of the barrage and also supports a variety of water birds.

3. Nammal Lake

Nammal lake is situated at 32' 41°N, 71' 49°E 29 km North east of Mianwali, Punjab Province. It has an area of 486ha. It is a shallow lake partly impounded by a dam at one corner and fed by a spring and several intermittent streams arising in the hills of salt range. Depth of the lake varies up to 6m with average of 4.6m. Water is slightly saline. The water level fluctuates widely and is particularly confronted by the removal of water for irrigation.

The aquatic vegetation consists of *Carex fedia*, *Hydrilla verticillata* *Juncus sp*, *Phragmites karka*, *Potamogeton crispus*, *Saccharum spontaneum*. *Typha angustale* and *Zannichellia palustris*. The natural vegetation of the region is a mixture of subtropical semi-evergreen scrub and tropical thorn scrub with species such as *Acacia modesta*, *Acacia nilotica*, *Adhatoda vasica*, *Dodonea viscosa*, *Gymnosporia royleana*, *Olea ferruginea*, *Prosopis cineraria*, *Reptonia buxifolia*, *Salvadora oleoides*, *Tamarix aphylla*, *T. dioica*, *Zizyphus mauritiana*, *Z. nummularia*, *Chrysopogon aucheri*, *Lasiurus hirsutus*, *Heteropogon contotus* and *Panicum antidotale*. *Proopis glandulosa* has been introduced in the area. Most of the land adjacent to the lake has been cleared for agriculture.

The wetland was first designated wildlife sanctuary with an area of 486ha in 1970 and has been re-notified many times

4. Uchali Lake

Uchali lake is situated at 13 km west of Nowshehra town and 42 km North west of Khushab at 32' 33°N 72' 01°E. It is a saline lake with a little marsh vegetation and almost entirely surrounded by agriculture land. It is fed by a small spring from adjacent agriculture lands. It has

been one of the largest lakes of the Punjab province but its area shrank in the past years becoming a small marshy area.

Marsh vegetation is confined to a few small patches along the lakeshore, but there is a very rich growth of plankton in the lake. The dominant aquatic plants are *Carex fedia*, *Hydrilla verticillata*, *Juncus sp*, *Phragmites karka*, *Potamogeton crispus*, *Saccharum spontaneum*, *Typha angustata*, *Vallisneria spiralis* and *Zannichellia palustris*. The natural vegetation of the region is a mixture of subtropical semi-evergreen forest and tropical thorn forest with species such as *Acacia modesta*, *Adhatoda vasica*, *Dodonea viscosa*, *Gymnosporia royleana*, *Olea ferruginea*, *Reptonia buxifolia*, *Tamarix aphylla*, *Withania coagulans* and *Zizyphus spp*. The natural vegetation around the lake has been cleared for agricultural land.

5. Khabbaki Lake

Khabbaki lake is 32' 37°N 72' 14°E, 10 km north of Nowshehra and 38 km North West of Khushab. The lake has an area of 283ha. Water level of the lake increased excessively in the 1985-1987 but after wards it became completely dry in past few years. Currently it has regained some water since 2007.

As lake has been completely dry in the past many years it is almost without aquatic vegetation. Natural vegetation of the surroundings is like that of Uchali Lake.

6. Jhallar Lake

Jhallar Lake is situated on 32' 29°N 72' 07°E, approximately 10 km South east of uchali lake and 10 km South west of Nowshehra, Khushab District. It has an area of 100ha. It is a small brackish lake with little vegetation similar in general character to nearby Uchali and Khabbaki lakes. The lake was fed by seasonal streams from surrounding hills.

7. Khalar Kahar Lake

The lake is situated at 32° 46'N, 72° 42'E, about 25 km Southwest of Chakwal is adjacent to Kalar Kahar town having an area of 220ha. It is a small brackish lake in salt range. The lake has dense marginal vegetation having *Typha angustifolia*, *Saccharum spp* and *phragmites karka*. The lake has also light submerged vegetation. There are fruit orchards at southern hanks of the lake. Vegetation in surrounding of the lake is typical of salt range.

8. Rasul Barrage

Rasul Barrage (32° 40'N, 73 °31'E) is constructed on River Jhelum in the Mandi Bahaudin District of the Punjab province. It is situated 72 km down stream of Mangla Dam. The Rasul Barrage is used to control water flow in the River Jhelum for irrigation and flood control purposes. Climatically the area falls in to sub tropical monsoon belt with hot summers and cool winters. The annual rainfall varies from 200 to 500mm, and the relative humidity from 25-85%.

The aquatic vegetation includes *Carex fedia*, *Hydrilla verticillata*, *Nelumbo nucifera*, *Nymphaea lotus*, *Phragmites karka*, *Potamogeton crispus*, *P. pectinatus*, *Typha angustata*, *Vallisneria spiralis*, and *Zannichellia palustris*

9. Head Maralla

Head Maralla is located at 32°45 N, 74°31 E 25 Km north of Sialkot. The wetland consists of a reservoir on the Chanab River, constructed for irrigation purpose and surrounded by agriculture lands. The embankments extend out into the reservoir and hold back shallow lagoons as the water level in main river channel falls. The depth of water in the lagoons varies from 0.2-5.0 m.

The aquatic vegetation in the wetland consist of *Carex fedia*, *Hydrilla verticillata*, *Nelumbo nucifera*, *Nymphaea lotus*, *Phragmites karka*, *Potamogeton crispus* *P.pectinatus*, *Typha angustata*, *Vallisnaria spiralis* and *Zannichellia palustris*. The natural vegetation of the adjacent plain is tropical thorn forest mainly with species as *Acacia nilotica*, *Capparis decidua*,

Prosopis cinararia, *Tamarix aphylla*, *Ziziphus mauritiana*, *Z. nummularia*, *Eleusine compressa*, *Erianthis sp.*, *Dalbergia sisso*, *Acacia nilotica* etc.

10. Qadirabad Barrage

Qadirabad Barrage is situated 32° 19'N, 73 °39'E, 53 km NW of Gujranwala in Punjab province. The wetland consists of a water reservoir on the Chenab River, surrounded by agricultural land. The embankments extend out into the reservoir and have back shallow lagoons as the water level in the main river channel fall. The wetland has an area of 2,850 ha.

The pond area of the wetland has dense aquatic submerged, floating and marginal aquatic vegetation. The aquatic vegetation includes *Carex fedia*, *Hydrilla verticillata*, *Nelumbo nucifera*, *Nymphaea lotus*, *Phragmites karka*, *Potamogeton crispus*, *P. pectinatus*, *Typha angustata*, *Vallisneria spiralis*, *Zannichellia palustris*, *Saccharum spp* and *Chara sp.*

The natural vegetation of the surrounding plains is tropical thorn forest with species such as *Acacia nilotica*, *Capparis decidua*, *Prosopis cineraria*, *Tamarix aphylla*, *Zizyphus mauritiana*, *Z. nummularia*, *Calotropis procera*, *Eleusine compressa* *Panicum antidotale*, and *Dalbergia sissoo*.

MATERIALS AND METHODS

The wetlands were surveyed in the months of January and February 2015. Each wetland was visited at least three times during the survey period and counts were made at different selected points. The birds were directly observed, identified and counted with the help of binoculars (Olympus 8-16 X 40, DPS I) and spotting scopes (Nikon w/ 15-45 X). The GPS receiver (Magellan SporTrack) was also used to record the coordinates of the wetland. For the identification of water birds, Sonobe and Usui (1993) were referred. We paid great attention to the identification of each species of migratory water birds. Identifying as many species in each flock as possible, and then applying the observed ratios to unidentified members of the flocks to estimate total numbers of each species. The total number of the birds was determined by direct

counts by selecting plots at each site of the wetlands and counting the number of species and birds in each plot and then multiplying each plot with total area of the wetland to determine the number of birds present at the total area of wetland. The data collected and then computed to find out the total population of migratory water birds at each wetland.

Table -1 showing the details of water birds on some important wetlands of Punjab January 2015

S. No	Scientific Name	Common Name	Namal Lake	Khabbe ki	Jhalar Lake	Uchalli Lake	Chashma Barrage	Jinnah Barrage	Kalar Kahar	Head Qadirabad	Rasool Barrage	Head Maralla	Total
1	<i>Tachybaptus</i>	Little Grebe	08	113	32	39	767	07	267	63	12	02	1310
2	<i>Pediceps cristatus</i>	Great Crested Grebe	12	0	0	0	24	0	0	0	0	0	36
3	<i>Phalacrocorax carbo</i>	Large Cormorant	10	5	0	0	69	0	46	38	65	29	262
4	<i>Phalacrocorax niger</i>	Little Cormorant	38	9	2	0	896	12	217	187	142	325	1828
5	<i>Ardeola grayii</i>	Indian Pond Heron	29	2	13	43	432	09	109	78	39	23	777
6	<i>Ixobrychus minutus</i>	Little Bittern	0	0	0	0	05	0	5	0	0	0	10
7	<i>Bubulcus ibis</i>	Cattle Egret	25	8	08	21	47	0	0	0	0	27	136
	<i>Ciconia nigra</i>	Black Stork	0	0	0	0	0	0	0	0	0	22	22
8	<i>Egretta garzetta</i>	Little Egret	113	16	04	32	1029	21	167	1150	214	117	2863
9	<i>Egretta intermedia</i>	Intermediate Egret	03	0	0	4	61	0	42	354	12	14	490
10	<i>Egretta alba</i>	Large Egret	09	0	0	0	181	0	28	215	4	05	442
11	<i>Phoenicopterus ruber</i>	Greater Flamingo	0	42	0	0	0	0	0	0	0	0	42
12	<i>Ardea purperia</i>	Purple Heron	0	0	0	0	15	0	7	5	0	0	27
13	<i>Ardea cineria</i>	Gray Heron	17	12	0	06	47	06	28	48	16	16	196
14	<i>Platalea leucorodia</i>	White Spoon bill	08	0	0	0	0	0	0	0	0	39	47
	<i>Anser anser</i>	Grey lag Goose	0	0	0	0	0	0	0	0	0	145	145
15	<i>Tadorna tadorna</i>	Common Shelduck	0	0	0	02	0	0	0	0	0	0	02
16	<i>Tadorna ferruginea</i>	Ruddy Shelduck	06	0	0	0	61	29	0	0	0	2132	2228
17	<i>Anas penelope</i>	Eurasian Wigeon	0	05	0	38	510	72	24	0	0	0	649
18	<i>Anas streptera</i>	Gadwall	17	315	161	128	3692	45	229	0	0	157	4744
19	<i>Anas crecca</i>	Common Teal	132	765	22	1712	3126	35	559	132	12	317	6812
20	<i>Anas querquedula</i>	Garganey	0	0	0	0	315	0	0	0	0	0	315

17	<i>Anas poecilorhynca</i>	Spot-bill Duck	0	0	0	0	0	0	0	0	0	514	514
21	<i>Anas platyrhynchos</i>	Mallard	277	67	04	953	1612	39	321	08	35	11	3327
22	<i>Anas acuta</i>	Northern Pintail	0	110	13	870	760	0	491	0	0	0	2244
23	<i>Anas clypeata</i>	Shovler	0	9	46	283	3743	0	153	12	0	12	4258
24	<i>Aythya ferina</i>	Common Pochard	532	2141	1769	123	4442	0	896	216	0	0	10119
25	<i>Netta rufina</i>	Red-crested Pochard	0	38	0	0	959	0	0	12	0	0	1009
26	<i>Aythya nyroca</i>	White-eyed Pochard	0	0	0	0	26	0	0	04	0	0	30
27	<i>Aythya fuligula</i>	Tufted Duck	0	12	6	20	4819	0	0	0	0	0	4857
28	<i>Bucephala clangula</i>	Common Goldeneye	0	0	0	0	03	0	0	0	0	0	03
	<i>Grus grus</i>	Common Crane	0	0	0	0	0	0	0	0	0	53	53
29	<i>Amaurornis phoenicurus</i>	White-Breasted Water Hen	0	0	3	0	05	0	3	5	0	0	16
30	<i>Galinula chloropus</i>	Indian Moorhen	05	0	12	0	91	0	151	46	367	02	674
31	<i>Porphyrio porphyrio</i>	Purple Moorhen	0	0	0	0	158	0	461	07	1754	0	2380
32	<i>Fulica atra</i>	Common Coot	129	1235	63	2364	32860	0	2334	326	05	0	39316
33	<i>Hydrophasianus chirurgus</i>	Pheasant-Tailed Jacana	0	0	0	0	56	0	0	0	0	0	56
34	<i>Himantopus himantopus</i>	Black-winged Stilt	19	38	13	37	483	12	37	32	12	23	706
35	<i>Recurvirostra avosetta</i>	Pied Avocet	0	123	05	0	0	0	0	0	0	0	128
36	<i>Vanellus vanellus</i>	Northern Lapwing	05	0	0	0	12	02	0	0	02	0	21
37	<i>Charadrius alexandrinus</i>	Kentish Plover	05	04	04	08	18	06	04	21	7	115	192
38	<i>Vanellus leucurus</i>	White-Tailed Plover	0	0	0	0	34	0	0	0	0	0	34
39	<i>Charadrius hiaticula</i>	Ringed Plover	5	0	0	04	13	0	0	34	0	35	91
40	<i>Holopterus indicus</i>	Red-wattled Lapwing	12	07	08	07	36	09	08	12	21	17	137
41	<i>Calidris minuta</i>	Little Stint	0	0	5	0	72	74	45	0	0	267	463
42	<i>Calidris alpina</i>	Dunlin	37	0	0	98	16	12	76	32	0	04	275
43	<i>Calidris temminckii</i>	Temminck's Stint	4	2	0	02	05	02	02	6	06	07	36
44	<i>Gallinago gallinago</i>	Common Snipe	0	0	0	0	10	06	02	07	02	0	27
45	<i>Tringa erythropus</i>	Spotted Redshank	08	0	0	0	34	0	0	0	0	0	42
46	<i>Tringa totanus</i>	Redshank	0	0	0	12	313	0	06	37	0	712	1080

47	<i>Tringa nebularia</i>	C Greenshank	06	0	03	0	19	0	12	12	0	3	55
48	<i>Tringa ochronus</i>	Green Sandpiper	3	0	01	0	21	0	0	2	12	18	57
49	<i>Actitis hypoleucos</i>	Common Sandpiper	22	06	0	05	11	0	17	15	05	9	90
50	<i>Tringa glareola</i>	Wood Sandpiper	06	0	0	0	0	0	0	0	0	0	06
51	<i>Larus argentatus</i>	Herring Gull	25	0	0	12	87	0	11	12	0	0	147
52	<i>Larus ichthyaetus</i>	Great Black-Headed Gull	0	0	0	0	62	0	0	0	0	0	62
53	<i>Larus ridibundus</i>	Common Black-headed Gull	39	0	0	0	1210	0	16	12	0	0	1277
54	<i>Sterna aurantia</i>	Indian River Tern	29	0	0	0	117	0	28	25	14	165	378
55	<i>Sterna hirundo</i>	Common Tern	02	09	0	5	141	12	05	2	02	12	190
56	<i>Sterna albifrons</i>	Little Tern	0	0	0	0	05	05	2	0	0	0	12
		Total	1597	5093	2197	6828	63530	415	6809	3167	2760	5349	97745

Discussion

During the current waterfowl census (2015) a total of 56 species of water birds (both migratory and resident) were observed at the wetlands of Punjab. Chashma barrage had the largest population (53530) of migratory water birds, while smaller population was observed at Jinnah Barrage (415) birds. *Fulica atra* (common coot) was found most abundant species with highest population at almost all the wetlands i.e.39316 birds. Whereas from duck family *Aythya ferina* (common pochard) was found most common species (10119 total in number) at the wetlands followed by common Teal (*Anas crecca*) 6812 birds and Tufted Duck (*Aythya fuligula*) 4857 birds.

During the current survey White-eyed Pochard (*Aythya nyroca*), Common Goldeneye (*Bucephala clangula*) and Garganey (*Anas querquedula*) were observed at

Chashma Barrage, while Spot-billed duck (*Anas poecilorhynca*) and Grey lag Goose(*Anser anser*) and Common Crane (*Grus grus*)were observed at Head Marralla .



(A large flock of Migratory ducks at Khabbaki Lake February 2015)

These migratory waterfowls are randomly found on the wetlands of Punjab (pers.observation). The Bar-headed Goose (*Anser indicus*) which was found common at Head Marralla in previous years (Azam et al 2013, an unpublished report)but currently none of the birds were observed at the wetland. According to local Game Watchers at Head Marralla the bird visited the wetland from November till to December 2014 but after closure of canals of Head Marrala the bird went back to wetlands of India.

The ruddy Schelduck (*Tadorna ferruginea*) locally known as Surkhab was found common at Head Marrala. Besides this Pied Avocet (*Recurvirostra avosetta*), White Spoon-bill (*Platalea leucorodia*) and Northern Lapwing (*Vanellus vanellus*) were also observed at the wetlands of Punjab, these are also rare migratory water birds. A flock of Flamingos is resident to Uchali Lake and in previous years its population was 20 plus birds but currently about 42 birds were observed which indicates the bird is breeding at the wetland in sustainable manner.

If we compare our results with that of previous years there is no significant change was observed at the wetlands of Punjab. As compared to previous years the common Coot was found most abundant at Chashma Barrage. In previous year of 2014, the number of Common Coot counted at Chashma Barrage was 16890 birds, while in current census 32860 birds counted which is almost double in number as compared to previous year. The White-headed Duck which is a globally threatened duck species visiting the wetlands of Punjab was not observed in current survey, but this species was recorded from Jhalar lake (8 birds) in previous census of January 2014.



(Garganey at Chashma Barrage January 2015)

Recommendations

- During the migratory season of water birds i.e. September to March, the Provincial Wildlife Departments may depute field staff at major wetlands to protect the migratory birds from illegal hunting
- Detailed monitoring of migratory birds is required, so periodic surveys other than mid-winter may also be under taken. In addition studies on resident and migratory breeding water birds may also be undertaken
- Mid-winter waterfowl census on Barrages and Head works may be carried out in the month of December, because the de-siltation of Canals located on Head Works and Barrages is carried out in the month of January and for this purpose the doors of Barrages and Head works are opened thus the water at up streams are reduced and the migratory birds, therefore shift to other wetlands.

It is suggested that water bird counts may be carried out in December to record to record maximum number of migratory birds.

- . Uncontrolled reed harvesting at wetlands devoid water birds from their habitat, so it may be controlled
- Disturbance caused by fishing and recreational activities may be minimized
- Entrance of sewage water in wetlands that causes eutrophication like, at Kalar kahar Lake may be controlled

