

## SALT RANGE WETLANDS COMPLEX, EXPLORATORY / BASELINE SURVEY

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### ABSTRACT

This was an exploratory / baseline survey to assess the ornithofauna of Salt Range Wetlands Complex. The team started the survey from Kalar Kahar Lake. A total of seven days (15 December to 22 December, 2006) were deployed on the survey. Bird data was collected at each lake by walking across the shore line, by boat and on vehicle in surrounding buffer zone of two kilometers. Field observers recorded all birds seen or heard on the site. The survey found significant populations of waterfowl, including House Crow (20,910), Black or Eurasian Coot (7,036), Common Pochard (3,524), Mallard (2,556), Gadwall (2,225), Northern Pintail (1,200), Dabchick (690), Northern Shoveler (678), Black Winged Stilt (482), Common Myna (461) and other birds (2,061) with a total count of 42,663 birds of 121 species. The financial support for survey was provided by Pakistan Wetlands Project.

### INTRODUCTION

The wetlands in Pakistan encompass a wide variety of dynamic ecosystems ranging from mangrove forests, natural lakes, manmade reservoir, freshwater marshes, fish ponds and tanks, estuaries and seasonally inundated extensive floodplains. The wetlands are the key to Pakistan's economy and environment. Pakistan's permanent and ephemeral wetlands are globally significant in two ways: first, in terms of the intrinsic value of their indigenous biodiversity and secondly, as an acute example of the *poverty/subsistence-use nexus* that constitutes one of the most fundamental threats to biodiversity worldwide. The high global significance of Pakistan's wetlands is attributable to the diversity of species that they support (PWP, 2002).

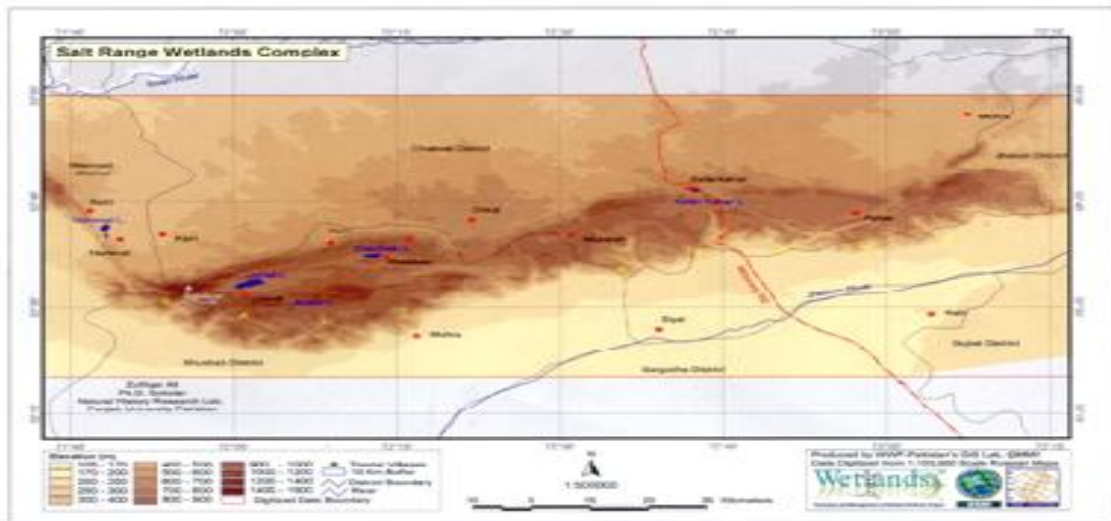
Apparently the wetlands are static, inert and unchanging. In reality they are self destructive ecosystems which are in process of transition from permanently wet to generally dry environment. In the ultimate analysis, the wetlands are doomed to die. Usually the natural process of change takes place so slowly over so many years that it may seem that nothing at all is happening (Niering, 1966).

Wetlands provide sanctuary to a wide variety of wildlife. They provide sheltered habitat for fish and nursery and as natural surrounding for growth. Worldwide two thirds of fish for human consumption depend upon wetlands at some stage in their life cycle. About 350 bird species in Pakistan are dependent on wetlands resources.

**An Introduction to the Survey Area:** The *Salt Range Wetlands Complex* comprises of five independent wetlands: Kalar Kahar, Khabbeki, Ucchali, Jahlar and Namal Lakes (*Figure 1*). The entire SRWC has a total length of 175 km parallel to the Salt Range Escarpment

that runs from Jhelum, in the east, to Kalabagh in the west. The Ucchali Wetlands Complex, constituting Ucchali, Khabbeki and Jahlar Lakes, has been designated as a *Wetland of International Importance* under the *Ramsar Convention*, a distinction it shares with only eighteen other wetlands in Pakistan. The three lakes of Ucchali Wetlands Complex are situated inside a cup-shaped valley called the Soan Valley, while Namal and Kalar Kahar are located on the periphery of this valley (PWP, 2002).

Socio-economic conditions in the Salt Range Wetlands Complex present a picture of excessive population pressure combined with intensive use of natural resources for livelihoods and daily needs. The main occupations in the region comprise of agriculture and government service, especially in the armed forces. The level of industrial development is low. Agricultural plots tend to be small, usually quarter of an acre, and there is a clear trend towards land ownership as a form of wealth even if the land owned is not cultivable. All land in and around the lakes is privately owned, including the lake beds, which becomes available for cultivation when the water level has receded. Principal crops grown in the area are wheat in winter and vegetables in the summer. Wetlands provide a crucial source of irrigation in this essentially semi arid area. Grazing pressure in the region has badly eroded most communal grazing areas. Wood extraction is undertaken extensively both for the domestic fuel market and for supply to urban centres. The effects of deforestation on both *shamilat* (community forests) and Government forests have been extensive. Lack of infrastructure development has meant that the lakes are used for common household purposes such as watering cattle and washing clothes although the water of several



**Fig: 1 Map of Salt Range Wetlands Complex.**

lakes is reportedly too saline for human consumption (PWP-2002). WWF-P's endeavours in the SRWC consist of conservation of wetlands biodiversity in the *Uchchali Wetlands Complex* and the conservation of scrub forest in the Jhanger Valley, where an afforestation programme on communal lands has been completed with the participation of local communities. Additionally, communal protected areas have been declared in order to protect the indigenous natural resources of the area. With community participation, the Uchchali Wetlands Complex management plan has already been developed.

Under the Wetlands Survey Programme Section (WSPS) of the Pakistan Wetlands Project (PWP) the aim of the expedition was to increase the knowledge of sites and species of conservation importance in Pakistan and the objectives of the survey were;

- Assess the population status of migratory birds of the complex;
- Species abundance
- Digital point count

## MATERIAL AND METHODS

**Survey methods:** Survey methods that were mainly consist of direct and indirect field observations. Direct observations include direct counts and specimen collection and indirect observations include information gathered from interviews and general discussions with the local community.

**Direct physical counts / point counts:** In order to record, birds, direct physical count method was used. This was done by taking random points and recording species diversity and abundance directly from the field. The wide diversity of species was identified on the basis of identification guides, professional field experience and

the animal's habitat and ecology. Two types of survey equipment: i.e., spotting scope binoculars and still camera were used for counting and identification of the wide range of biodiversity.

**Boat survey:** An extensive boat survey was conducted in Namal Lake for counts and bird identification.

## RESULTS

**Avi-fauna of Salt Range Wetlands Complex:** Roberts (1991, 1992) has reported 331 species of birds from *Salt Range Wetlands Complex* and its surroundings, that consists of 167 non passerines and 164 species of passerines. Grimmett *et al.*, (2001) reports 346 species of birds from which 155 were breeding residents, 117 were winter visitors, 19 were summer visitors, 41 passage visitors, and 14 were occasionally recorded species. The complex has emerged as a very important staging and wintering area for waterbirds, particularly Anatidae and Shorebirds. Over 20,000 waterbirds can be seen in the mid winter counts on every year and during the present survey of 121 forms were observed with the maximum counts included House Crow (20,910), Black or Eurasian Coot (7,036), Common Pochard (3,524), Mallard (2,556), Gadwall (2,225), Northern Pintail (1,200), Dabchick (690), Northern Shoveler (678), Black Winged Stilt (482), Common Myna (461) and other birds (2,061) with a total count of 42,663 birds (A complete list of the birds observed during the survey has been given in the Table-3).

**Census index (Density) and Relative Abundance:** For Census Index, surveyed area under was calculated using GIS techniques to calculate avi-fauna density. Table-1 shows that *Salt Range Wetlands Complex* density of birds was (20.99 birds/ha<sup>2</sup>) and relatively abundant species

were *Corvus splendens*, *Fulica atra*, *Aythya ferina*, *Anas platyrhynchos*, *Anas strepera*, *Anas acuta*, *Tachybaptus ruficollis*, *Anas clypeata*, *Himantopus himantopus* and *Acridotheres tristis*.

**Dominant and sub-dominant index:** Dominant and Sub-Dominant Index described in Table-2 revealed that very few species were abundantly found. The most dominant species was *Corvus splendens* having a relative abundance value of 49.01 and *Fulica atra* was sub-dominant having value of 16.49.

**Table: 1: Results of different analysis at Salt Range Wetlands Complex.**

Analysis	Total
Area Surveyed (ha <sup>2</sup> )	2,032
Total Population	42,663
Number of Species	121 out of total 736 from Pakistan.
Census Index	20.99 /ha <sup>2</sup>
Shannon-Wiener Index	1.497795
Dominant Species	House Crow (49.01)
Sub-Dominant Species	Common Coot (16.49)

**Table: 2 Dominant and Sun-Dominant Index of the Birds observed at Salt Range Wetlands Complex.**

No.	Species	Total	Relative Abundance	Density (birds/ha <sup>2</sup> )
1	HOUSE CROW <i>Corvus splendens</i>	20,910	49.01	10.29
2	BLACK OR EURASIAN COOT <i>Fulica atra</i>	7,036	16.49	3.46
3	COMMON POCHARD <i>Aythya ferina</i>	3,524	8.26	1.73
4	MALLARD <i>Anas platyrhynchos</i>	2,556	5.99	1.26
5	GADWALL <i>Anas strepera</i>	2,225	5.22	1.09
6	NORTHERN PINTAIL <i>Anas acuta</i>	1,200	2.81	0.59
7	DABCHICK <i>Tachybaptus ruficollis</i>	690	1.62	0.34
8	NORTHERN SHOVELER <i>Anas clypeata</i>	678	1.59	0.33
9	BLACK WINGED STILT <i>Himantopus himantopus</i>	482	1.13	0.24
10	COMMON MYNA <i>Acridotheres tristis</i>	461	0.94	0.23
	Total	39,702	93.06	19.54
	Other Birds	2,061	6.94	1.01
	<b>Grand Total</b>	<b>42,663</b>	<b>100</b>	<b>20.99</b>

**Table : 3 Birds population at Salt Range Wetlands Complex, Pakistan.**

Species	Kalar Kahar Lake	Khabbaki Lake	Uchalli Lake	Jahlar Lake	Nammal Lake	Total
LITTLE GREBE OR DABCHICK <i>Tachybaptus ruficollis</i>	584	0	95	5	6	690
GREAT CRESTED GREBE <i>Podiceps cristatus</i>	17	0	11	0	0	28
BLACK-NECKED GREBE <i>Podiceps nigricollis</i>	26	0	17	11	0	54
GREAT CORMORANT <i>Phalacrocorax carbo sinensis</i>	4	0	0	0	0	4
INDIAN CARMORANT (SHAG) <i>Phalacrocorax fuscicollis</i>	0	0	0	0	165	165
LITTLE CARMORANT <i>Phalacrocorax niger</i>	37	0	0	0	52	89
INDIAN POND HERON <i>Ardeola grayii</i>	56	0	4	0	15	75
LITTLE WHITE EGRET <i>Egretta garzetta</i>	120	0	7	0	18	145
INTERMEDIATE EGRET <i>Egretta intermedia</i>	7	0	0	0	0	7
LARGE EGRET <i>Egretta alba</i>	37	0	0	0	6	43
PURPLE HERON <i>Ardea purpurea</i>	11	0	0	0	0	11
GREY HERON <i>Ardea cinerea</i>	2	0	0	0	18	20
GREATER FLAMIGOE <i>Phoenicopterus ruber</i>	0	0	40	0	0	40
RUDDY SHELDUCK <i>Tadorna ferruginea</i>	3	19	33	0	0	55
WIGEON <i>Anas penelope</i>	170	0	39	0	0	209
GADWAL <i>Anas strepera</i>	1575	42	533	15	60	2225
COMMON TEAL <i>Anas crecca</i>	340	5	19	0	0	364
MALLARD <i>Anas platyrhynchos</i>	1963	40	331	2	220	2556
NORTHERN PINTAIL <i>Anas acuta</i>	757	45	262	6	130	1200
SHOVELER <i>Anas clypeata</i>	535	0	137	0	6	678
TUFTED DUCK <i>Aythya fuligula</i>	2	0	4	5	0	11
COMMON POCHARD <i>Aythya ferina</i>	3215	13	212	4	80	3524

FERRUGINOUS DUCK <i>Aythya nyroca</i>	7	0	4	0	0	11
COMMON MERGANSER <i>Mergus merganser</i>	6	0	0	0	0	6
WHITE-HEADED DUCK <i>Oxyura leucocephala</i>	0	27	5	0	0	32
BLACK-SHOULDER KITE <i>Elanus caeruleus</i>	0	1	5	0	0	6
BLACK KITE <i>Milvus migrans</i>	6	6	9	0	15	36
MARSH HARRIER <i>Circus aeruginosus</i>	2	0	3	0	2	7
PALLID HARRIER <i>Circus macrourus</i>	0	0	1	0	0	1
EURASIAN SPARROWHAWK <i>Accipiter nisus</i>	1	0	0	0	0	1
SHIKRA <i>Accipiter badius</i>	0	1	2	0	0	3
COMMON BUZZARD <i>Buteo buteo</i>	2	0	0	2	0	4
LONG-LEGGED BUZZARD <i>Buteo rufinos</i>	0	0	1	1	0	2
BONNELIS EAGLE <i>Hieraaetus fasciatus</i>	2	0	0	0	0	2
TAWNY EAGLE <i>Aquila rapax</i>	2	0	1	2	0	5
STEPPE EAGLE <i>Aquila nipalelsis</i>	0	0	7	2	0	9
KESTREL <i>Falco tinnunculus</i>	2	0	2	1	0	5
RED NECKED FALCON <i>Falco chicquera</i>	0	0	1	0	0	1
IMPERIAL EAGLE <i>Aquila heliaca</i>	0	1	2	0	0	3
GREY PARTRIDGE <i>Francolinus pondicerianus</i>	0	2	17	0	7	26
BLACK FRANCOLIN <i>Francolinus francolinus</i>	0	2	0	0	0	2
LITTLE CRAKE <i>Porzana parva</i>	3	0	0	0	0	3
WHITE-BREASTED WATERHEN <i>Amaurornis phoenicurus</i>	6	0	0	0	0	6
COMMON MOORHEN <i>Gallinula chloropus</i>	11	0	0	0	0	11
PURPLE SWAMPHEN <i>Porphyrio porphyrio</i>	34	0	0	0	0	34
BLACK OR EURASIAN COOT <i>Fulica atra</i>	6500	0	312	150	74	7036
BLACK-WINGED STILT <i>Himantopus himantopus</i>	187	25	227	30	13	482
LITTLE-RINGED PLOVER <i>Charadrius dubius</i>	6	7	0	2	0	15
KENTISH OR SNOWY PLOVER <i>Charadrius alexandrinus</i>	6	0	0	3	0	9
NORTHERN LAPWING <i>Vanellus vanellus</i>	17	0	0	0	0	17
RED-WATTLED LAPWING <i>Hoplopterus indicus</i>	2	0	12	2	10	26
WHITE-TAILED LAPWING <i>Chettusia leucura</i>	0	0	2	0	4	6
LITTLE STINT <i>Calidris minuta</i>	12	0	2	0	0	14
TEMMINCK,S STINT <i>Calidris temminckii</i>	13	15	11	2	0	41
COMMON SNIPE <i>Gallinago gallinago</i>	2	0	0	0	0	2
COMMON GREENSHANK <i>Tringa nebularia</i>	6	0	7	0	0	13
GREEN SANDPIPER <i>Tringa octiropus</i>	11	0	17	3	0	31
WOOD SANDPIPER <i>Tringa glareola</i>	2	0	2	0	0	4
COMMON BLACK-HEADED GULL <i>Larus ridibundus</i>	9	0	1	0	6	16
GRAY RIVER TERN <i>Sterna aurantia</i>	0	0	0	0	54	54
BLUE ROCK PIGEON <i>Columba livia</i>	7	1	7	0	10	25
LAUGHING DOVE <i>Streptopelia senegalensis</i>	2	2	0	0	0	4
COLLARED DOVE <i>Streptopelia decaocta</i>	0	3	18	0	10	31
ORIENTAL TURTLE DOVE <i>Streptopelia orientalis</i>	0	0	0	0	4	4
ROSE-RINGED PARAKEET <i>Psittacula krameri</i>	4	5	3	0	0	12
COMMON CROW PHEASANT <i>Centropus sinensis</i>	2	2	3	0	8	15
HOUSE SWIFT <i>Apus affinis</i>	17	0	57	0	0	74
WHITE-BREASTED KINGFISHER <i>Halcyon smyrnensis</i>	7	0	9	0	10	26
COMMON KINGFISHER <i>Alcedo atthis</i>	3	0	0	0	0	3
PIED KINGFISHER <i>Ceryle rudis</i>	11	0	13	0	5	29
INDIAN ROLLER OR BLUE JAY <i>Coracias benghalensis</i>	0	0	2	0	0	2
HOPOE <i>Upupa epops</i>	6	2	3	0	7	18
ORIENTAL SKY LARK <i>Alauda gulgula</i>	2	0	9	5	0	16
CRESTED LARK <i>Galerida cristata</i>	15	65	26	0	0	106
SAND LARK <i>Calandrella raytal</i>	0	2	2	0	0	4
GREATER SHORT-TOED LARK <i>Calandrella brachydactyla</i>	0	3	3	0	0	6
GREAT TIT <i>Parus major</i>	2	0	0	0	3	5
PALE MARTIN <i>Riparia diluta</i>	30	0	0	0	0	30
PLAIN MARTIN <i>Riparia paludicola</i>	9	0	27	0	0	36
BARN OR COMMON SWALLOW <i>Hirundo rustica</i>	41	0	27	10	33	111
TAWNY PIPIT <i>Anthus campestris</i>	2	0	0	0	0	2
WATER PIPIT <i>Anthus spinoletta</i>	2	0	0	0	0	2
PADDY FIELD PIPIT <i>Anthus rufulus</i>	0	0	4	0	0	4
ROSY PIPIT <i>Anthus roseatus</i>	2	0	4	0	0	6

BLACK THROATED ACCENTOR <i>Prunella atrogularis</i>	2	0	0	0	0	2
YELLOW WAGTAIL <i>Motacilla flava</i>	6	0	12	0	0	18
CITRINE WAGTAIL <i>Motacilla citreola</i>	6	0	6	2	0	14
WHITE BROWED WAGTAIL <i>Motacilla maderaspatensis</i>	4	0	2	2	12	20
GREY WAGTAIL <i>Motacilla cinerea</i>	2	0	2	0	0	4
WHITE OR PIED WAGTAIL <i>Motacilla alba</i>	2	0	6	5	5	18
COMMON WOODSHRIKE <i>Tephrodornis pondicerianus</i>	4	0	2	0	0	6
RED-VENTED BULBUL <i>Pycnonotus cafer</i>	6	0	17	6	8	37
WHITE EARED BULBUL <i>Pycnonotus atriceps</i>	2	5	10	0	19	36
BLUE-THROAT <i>Luscinia svecica</i>	0	0	0	0	4	4
BLACK REDSTART <i>Phoenicurus ochruros</i>	0	0	0	0	10	10
COMMON STONE CHAT <i>Saxicola torquata</i>	0	4	4	0	0	8
VARIABLE WHEATEAR <i>Oenanthe picata</i>	0	0	1	1	0	2
PIED WHEATEAR <i>Oenanthe pleschanka</i>	0	0	0	5	0	5
GRACEFUL PRINIA <i>Prinia gracilis</i>	2	0	2	0	0	4
PLAIN PRINIA <i>Prinia inornata</i>	2	0	3	0	0	5
INDIANTAILER BIRD <i>Orthotomus sutorius</i>	3	0	2	0	0	5
STREAKED SCRUB WARBLER <i>Scotocerca inquieta</i>	2	0	0	0	0	2
BLYTH'S REED WARBLER <i>Acrocephalus dumetorum</i>	4	0	0	0	0	4
LESSER WHITETHROAT <i>Sylvia curruca</i>	2	0	1	0	9	12
EURASIAN CHIFF CHAF <i>Phylloscopus collybita</i>	2	0	0	0	3	5
COMMON BABBLER <i>Turdoides caudatus</i>	4	6	4	0	47	61
STRIATED BABBLER <i>Turdoides earlei</i>	2	0	7	0	0	9
JUNGLE BABBLER <i>Turdoides striatus</i>	6	0	8	0	30	44
BAY-BACKED SHRIKE <i>Lanius vittatus</i>	2	1	6	0	10	19
LONG-TAILED SHRIKE <i>Lanius schach</i>	3	2	2	0	11	18
GREAT GREY SHRIKE <i>Lanius excubitor</i>	0	1	0	0	0	1
BLACK DRONGO <i>Dicrurus macrocercus</i>	2	0	0	0	0	2
INDIAN TREE PIE <i>Dendrociitta vagabunda</i>	6	0	4	1	14	25
HOUSE CROW <i>Corvus splendens</i>	20000	15	92	0	803	20910
PUNJAB RAVEN <i>Corvus corax</i>	0	2	2	0	0	4
COMMON STARLING <i>Sturnus vulgaris</i>	17	0	0	0	0	17
COMMON MYNA <i>Acridotheres tristis</i>	157	20	65	5	154	401
BANK MYNA <i>Acridotheres ginginia</i>	14	10	9	0	29	62
HOUSE SPARROW <i>Passer domesticus</i>	15	20	18	2	56	111
BAYA WEAVER <i>Ploceus philippinus</i>	0	6	0	0	0	6
STREAKED WEAVER <i>Ploceus manyar</i>	4	0	2	0	0	6
<b>TOTAL NUMBER OF BIRDS</b>	<b>36765</b>	<b>428</b>	<b>2903</b>	<b>292</b>	<b>2275</b>	<b>42663</b>
<b>TOTAL NUMBER OF SPECIES</b>	<b>93</b>	<b>37</b>	<b>82</b>	<b>30</b>	<b>47</b>	<b>121</b>
<b>SURFACE AREA HECTARES</b>	<b>220</b>	<b>283</b>	<b>943</b>	<b>100</b>	<b>486</b>	<b>2032</b>
<b>CENSUS INDEX</b>	<b>167.1</b>	<b>1.51</b>	<b>4.51</b>	<b>2.92</b>	<b>4.68</b>	<b>20.99</b>
<b>SHANNAON WEINER DIVERSITY INDEX</b>	<b>2.929</b>	<b>2.827</b>	<b>3.089</b>	<b>0.805</b>	<b>1.549</b>	<b>1.497</b>

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