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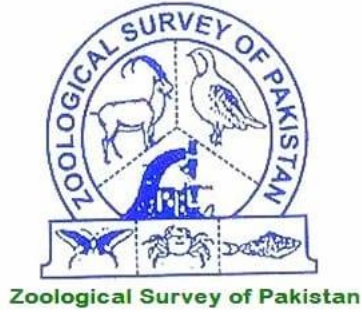
ZOOLOGICAL SURVEY
OF PAKISTAN



Volume XII



1994

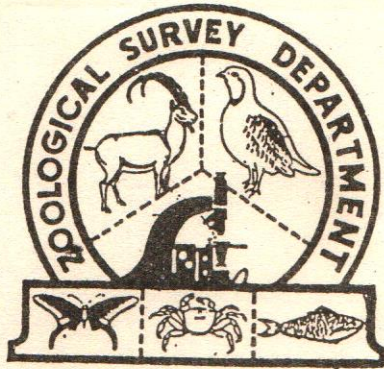


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A special thanks go to Zoologist (Altaf Hussain Narejo) for his keen interest in the Online Directory of Zoological Survey of Pakistan.

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RECORDS
ZOOLOGICAL SURVEY
OF
PAKISTAN



Volume XII

Edited and Published
By
The Director

Zoological Survey Department, Block 61, Pakistan Secretariat,
Shahrah-e-Iraq, Karachi-74200

1994

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THE WILDLIFE OF THE INDUS RIVER AND ALLIED AREAS

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The Indus is the largest and the most important river of the country. The classical name of the river was *Sindhu* (Sanskrit for an ocean). Its length is 2,880 Kilometers. The river arises from Indo-Tibetan border, passes from Kashmir Northern areas, N.W.F. P., Punjab and then Sindh province and falls into the sea about 100 Kilometers east of Karachi near Keti Bundar. Annually when the snow at its sources begins to melt with the Advent of spring, it rises and overflows its banks flooding the low land areas far and wide.

In addition to a number of supporting streams in mountainous areas, the Rivers Kabul, Kurrum and Chenab having inflow of other rivers in them are the major supporting rivers of the Indus. Main canals arising from its barrages are the Thal canal, Chashma right bank canal, Chashma Jhelum link canal, Taunsa Punjnad link canal, Muzaffargarh canal, D. G. Khan canal, Mahiwah, Pat Feeder, North Western canal, Nara canal, Rice canal, Dadu canal, Berun Kirthar canal, Mir wah Rehri canal, Fuleli canal and Kulri Bughar feeder.

Indus River and its resources provide a very good habitat for Freshwater Fishes, Turtles, Crocodile, Gavial, Waterfowl, Indus Dolphin and Otters. The riverine forests are also highly valuable as wildlife habitats. In the riverine forests, Hog Deer, Fishing Cat, Indian Monitor, Partridges, Finches etc. are found. Grassy beds provide very good feeding grounds for seed eating birds like Doves, Finches, Larks, and Weaver Birds.

Three endangered species of Mammals *i.e.* Indus Dolphin (*Platanista minor*), Common Otter (*Lutra lutra*) and Smoothcoated Otter (*Lutra perspicillata*) inhabit the water of the Indus and its supporting rivers and streams. Two endangered species of Mammals *i.e.* Hog Deer (*Axis porcinus*) and Fishing Cat (*Felis viverrina*) are found in riverine forests. Two endangered species of Reptiles *i.e.* Crocodile (*Crocodylus palustris*) and Gavial (*Gavialis gangeticus*) are inhabitants of Indus River and its canals. Another endangered reptilian species, the Indian Python (*Python molurus*) is found in marshy areas with dense reed vegetation. More than 1,000,000 waterfowl winter at the reservoirs of the river. A number of rare waterfowl species breed in summer. River bed with shallow water near Chashma & Taunsa barrage areas is an important staging area for Cranes.

The Indus delta where the river falls in the sea has both freshwater and marine species.

A number of workers have studied the fauna of the Indus River. Ahmad *et al.* (1976) described the Freshwater Fishes of Indus plain. Ahmad and Ghalib (1978) traced the distribution of the Mammals in Pakistan including Indus River. Pilleri (1975), Kasuya and Nishiwaki (1975), Pilleri and Bhatti (1978), Roberts (1977), Pilleri and Pilleri (1980) and Niazi and Azam (1988) studied the distribution, population and status of Indus Dolphin (*Platanista minor*), which is an endemic and endangered species. Roberts (1982) described the fauna of Outer Indus Delta. Data on Waterfowl has been gathered by Koning *et al.* during mid winter counts in the year 1970-76 & 1987-92. Some of this data has been published by the I.W.R.B. Derek Scott (1989) compiled and published an inventory of the wetlands of Pakistan, which contains a lot of information about the major wetlands of the country.

IMPORTANT WILDLIFE AREAS OF THE INDUS :

Although whole of the riverine area of the Indus is important for wildlife, yet some of its areas consisting of reservoirs at its barrages, canals and lakes fed by it are more important due to variety of wildlife, particularly reptiles, birds and mammals found over there

1. TARBELA DAM

Tarbela dam, which is one of the world's largest dams, has a large fresh water reservoir behind it. Area of the wetland is 25,090 ha. Wetland has no submerged, floating or reed vegetation.

The wetland is important for waterfowl concentrations. A good population of waterfowl is found in winter and the wetland serves as a staging place for waterfowl during their onward and backward migration. Species usually seen are Mallard (*Anas platyrhynchos*), Wigeon (*A. penelope*), Pintail (*A. acuta*), Shoveller (*A. clypeata*), Common Teal (*A. crecca*) and Common Pochard (*Aythya ferina*). Common Shelduck (*Tadorna tadorna*) which is a rare species, has also been recorded from the wetland.

Among aquatic mammals, Common Otter (*Lutra lutra*) is found in the areas of the wetland. Indian Hare (*Lepus nigricollis*) and Red Fox (*Vulpes vulpes*) are other important mammalian species, which are found in the surrounding hilly areas of the reservoir.

2. JINNAH BARRAGE AREA :

This is a nice site having an area of about 2500 ha. for waterfowl. In winter and spring a good population of ducks and shorebirds is found in the area. Ruddy Shelduck (*Tadorna ferruginea*) which is one of the rare species of ducks in Pakistan is found in this area. 139 birds were seen in April 1985. Painted Stork (*Mycteria leucocephala*) which is a rare and resident species of Storks, is often seen in this area. Important species of shorebirds recorded from the area are Curlew (*Numenius arquata*), Red Shank (*Tringa totanus*), Common Snipe (*Capella gallinago*), Avocet (*Recurvirostra avosetta*) and Small Indian Pratincole (*Glareola lactea*). Indus Dolphin (*Platanista minor*) is also seen about 8 Km. down of Jinnah Barrage.

3. CHASHMA BARRAGE

This is a large water reservoir situated about 25 Km south east of Mianwali city. The wetland is divided by flood bunds into five lakes. The reservoir has aquatic submerged, floating and reed vegetation. It is one of the most important wetlands of the country. It has the highest concentration of waterfowl of all the wetlands of the country in winter and supports upto 2,00,000 waterfowl. Due to its importance for wildlife conservation, 33109 hectare area of the barrage consisting of lakes and riverine forest has been declared as Wildlife Sanctuary since 1974.

Coot (*Fulica atra*), Common Pochard (*Aythya ferina*), Wigeon (*Anas Penelope*), Pintail (*Anas acuta*) and Common Teal (*Anas crecca*) are abundantly found. Red-crested Pochard (*Netta rufina*) and Barheaded Goose (*Anser indicus*) are found with considerable population. Greylag Goose (*Anser anser*) is also recorded from the wetland. Great Crested Grebe (*Podiceps cristatus*) and Blacknecked Grebe (*P. nigricollis*) which are not usually seen at the wetlands of southern areas of the country, are found with considerable population. Painted Stork (*M. leucocephalus*) is also usually seen in areas of the wetland.

Among mammals, Smooth coated Otter (*Lutra perspicillata*) and Hog Deer (*Axis porcinus*) are the important species recorded in the area of the wildlife sanctuary.

4. DERA ISMAIL KHAN BRIDGE AREA :

There are ponds and marshy areas on both sides of the bridge at the river Indus about 10 Km. south west of Dera Ismail Khan. These ponds, which have submerged and floating vegetation, support about 5,000 waterfowl in winter.

5. TAUNSA BARRAGE

Taunsa Barrage Wildlife Sanctuary has 6567 ha area and is an excellent site consisting of lakes, ponds, marshy areas and riverine forest. Areas of the wetland have extensive aquatic vegetation consisting of submerged and floating species of plants and dense reed vegetation. The wetland is an important wintering and staging area of waterfowl including Cranes (*Anthropoides virgo*) and (*Grus grus*). As the wetland consists of both deep and shallow water areas, it has an ideal habitat for all kinds of waterfowl. It is one of the wetlands which sustain the highest number of species. Ruddy Shelduck (*Tadorna ferruginea*) and Barheaded Goose (*Anser indicus*) which are the most rare species, are seen in good number at this wetland. A number of species breed in the areas of the wetland. Breeding species include Lesser Whistling Teal (*Dendrocygna javanica*), Jacana (*Hydrophasianus chirurgus*), Purple Moorhen (*Porphyrio porphyrio*), Indian Moorhen (*Gallinula chloropus*), Little Egret (*Egretta garzetta*), and little Cormorant (*Haliastur niger*), Pallas Fishing Eagle (*Haliaeetus leucoryphus*), which is threatened species of prey birds, is found in the area of the wetland. Other raptor species usually seen are Brahminy Kite (*Haliastur indus*), Osprey (*Pandion haliaetus*) and Marsh Harrier (*Circus aeruginosus*).

The water reservoir and riverine forest of the wildlife sanctuary is also very important due to rare and endangered mammalian species found in it. Indus Dolphin (*Platanista minor*) and Smooth Coated Indian Otter (*Lutra perspicillata*) are found in good number. Hog deer (*Axis porcinus*), Fishing Cat (*Felis viverrina*), Jungle Cat (*Felis chaus*) and Indian Fox (*Vulpes bengalensis*) are also recorded from the areas of the sanctuary.

Among reptiles, Indian Monitor (*Varanus bengalensis*) is common at flood bunds.

6. INDUS DOLPHIN SANCTUARY

Indus dolphin sanctuary consists of riverine stretch of the Indus river between Sukkur barrage and Guddu barrage near Kashmore. This stretch of the river having an area of 44200 ha is now stronghold of endangered Indus Dolphin (*Platanista minor*). Population of the animal is increasing in this area. 150 dolphins were counted in 1974-75, but now about 450 individuals are estimated in the sanctuary area.

The areas of the sanctuary are also important for a variety of waterfowl. Gaviial (*Gavialis gangeticus*) was also found in this area but now there is no evidence of its presence.

7. NARA CANAL

Nara canal, which arises from the river at Sukkur barrage, has seasonal and permanent freshwater comprising of saline lakes, ponds and marshes extending between Sorah and Sanghar in an area of about 150 Km. in length and 30 Km. in width. These marshy areas have extensive reed beds and other aquatic vegetation.

Lakes and ponds along the canal are very important wintering areas for the waterfowl. Coot (*Fulica atra*), Common pochard (*Aythya ferina*), Pintail (*Anas acuta*) and Common Teal (*A. crecca*) are the commonly found species. Hog Deer (*Axis porcinus*) and Smooth coated Otter (*Lutra perspicillata*), which are rare and endangered mammalian species, are also found in the areas along the canal.

8. KINJHAR LAKE

Kinjhar lake situated 19 Km. Northeast of Thatta is one of the largest freshwater lakes of Pakistan. It has an area of 13468 ha. It is fed by KB feeder canal arising from the Indus. The lake has extensive reed beds and floating and submerged vegetation.

The lake is one of the most important wetlands of the country due to its importance for wintering, staging and breeding waterfowl. It supports upto 200,000 waterfowl in winter. In winter, most common migratory species include Coot (*Fulica atra*), Common Pochard (*Aythya ferina*), Wigeon (*Anas penelope*), Gadwal (*A. strepera*) and Tufted Duck (*A. fuligula*). Breeding species include Cotton Teal (*Nettapus comandelianus*), Pheasant-tailed Jacana (*Hydrophasianus chirurgus*), Purple Moorhen (*Porphyrio porphyrio*), Large Cormorant (*Phalacrocorax carbo*) Little Cormorant (*Haliastur niger*), Night Heron (*Nycticorax nycticorax*) and Egrets (*Egretta sp.*).

Among the birds of prey, Marsh Harrier (*Circus aeruginosus*) and Brahminy Kite (*Haliastur indus*) are commonly seen. Mammalian species recorded from the wetland include Smooth-coated Indian Otter (*Lutra persipicillata*), Fishing Cat (*Felis viverrina*) Indian Fox (*Vulpes bengalensis*) and Jackal (*Canis aureus*).

The area of the wetland is protected as wildlife sanctuary.

9. HALEJI LAKE

Haleji lake is one of the most important wetlands of the country. This is a freshwater lake associated with marshes and seepage lagoons. The lake is situated 15 Km. northwest of Thatta. It has an area of 1704 ha. Water is supplied from Kinjhar lake by Jam branch. The lake is rich in aquatic vegetation having floating and submerged aquatic plants and extensive reed beds.

96 species of waterfowl and large variety of terrestrial birds have been recorded from the lake. The lake supports upto 100,000 waterfowl. The common species are Coot (*Fulica atra*), Common Pochard (*Aythya ferina*), Pintail (*Anas acuta*), Gadwal (*A. strepera*), Tufted Duck (*A. fuligula*) and Common Teal (*A. crecca*). A number of species of waterfowl breed at the wetland including Purple Moorhen (*Porphyrio porphyrio*), Indian Moorhen (*Gallinula chloropus*), Pheasant-tailed Jacana (*Hydrophasianus chirurgus*), Large Cormorant (*Phalacrocorax carbo*), Little Cormorant (*Haliastur niger*) and Egrets (*Egretta spp.*) A good population of Raptors is also found at the wetland. A small population of Crocodile (*Crocodylus palustris*) is present in the wetland.

The wetland is protected and has been declared as Wildlife Sanctuary.

10. BEROON KIRTHAR CANAL

There is a series of freshwater lakes, ponds and marshes along Beroon Kirthar canal, near the western bank of Indus river. These lakes and marshes have extensive reed beds and other aquatic plants.

Area of the wetland is very important for wintering waterfowl. A large variety of waterfowl has been recorded from the wetland. Mallard (*Anas platyrhynchos*), Pintail (*A. acuta*) and Common Teal (*A. crecca*) are the commonly found species of ducks. The wetland is particularly important for Shore birds, Herons and Cormorants.

11. MANCHAR LAKE

Manchar lake is the largest lake of the country having freshwater and associated marshy areas. It is situated in Dadu district, 35, Km. southwest of Dadu city on the right bank of Indus river. Climate is dry, hot in summer and cool in winter. Aquatic vegetation consists of *Potamogeton sp* and *Hydrilla sp.* etc. There are also reed beds having *Typha angustata*, *Phragmites sp.* and *Tamarix sp.*

The wetland is important for its birds, especially waterfowl and birds of prey.

12. INDUS DELTA

The Indus delta lies south east of Karachi. It is an extensive brackish backwater area extending from Karachi in the southeast towards Mirpur Sakro. The backwater area is over 85,000 hectares. Due to irrigation schemes, the flow of water has decreased. Thus water salinity has increased which restricts the diversity of wildlife, but still a large variety of fauna and flora is found in the areas of the delta.

Important wildlife recorded in the area includes Finless Porpoise (*Neomeris phocaenoides*), two species of marine dolphins, three species of marine snakes and a large variety of shorebirds, gulls and terns.

IMPORTANT WILDLIFE OF THE INDUS

1. MAMMALS :

The endangered species of Mammals such as Indus Dolphin, Common Otter and Smooth coated Indian Otter inhabit the water of Indus river. Two endangered species of mammals viz Hog Deer and Fishing Cat are found in riverine forest. Eleven other species of mammals are usually found in riverine forests and two species of marine dolphins and one of the porpoises are found in The Outer Indus delta.

(i) Indus Dolphin :

Indus dolphin (*Platanista minor*) is an endemic species of the Indus river system in the Indus plain, which at present is at the verge of extinction. It has been exterminated from the tributaries of the Indus (Pilleri and Pilleri, 1978) and many parts of the Indus. Even the existing population in the remaining parts is rapidly decreasing (except the Indus dolphin reserve in Sindh). Now, about 450 dolphins are present in Dolphin reserve between Guddu and Sukkur barrages. The situation in the Punjab is critical where about 100 dolphins survive above Guddu barrage.

Population split by dams, habitat destruction, severe killing, lack of public awareness and absence of effective conservation programme, are the well known factors for the decline of the population.

(ii) Otters :

Two species of Otters are found in the Indus River. Common Otter (*Lutra lutra*) is found in the river and its major supporting streams from Tarbela in the high altitude upto 3500 m in Karakoram. The other species, Smooth-coated Otter (*Lutra perspicillata*) is spread from the Tarbela Dam down to the coast. Population of both the species is on decline. Major factors are habitat destruction and killing by fishermen and skin traders.

(iii) Hog Deer :

Hog deer (*Axis porcinus*) is an inhabitant of riverine forest. It has been recorded at Taunsa Barrage and Ghazi Ghat areas in Punjab and in Sukkur and Hyderabad districts in Sindh. Its population has decreased rapidly and now it is endangered having very small population. Causes of decline are illegal hunting and habitat destruction by increasing agricultural activities, reed cutting and burning.

(iv) Fishing Cat :

Fishing Cat (*Felis viverrina*) is found in riverine areas with permanent water and dense reed vegetation. It has been recorded at Taunsa Barrage in Punjab and at Kinjhar and Haleji lakes in Sindh. Its population has also decreased rapidly in past and now the species is endangered. Threats to this species are due to its killing for skin and habitat destruction.

(v) Finless Porpoise :

Finless porpoise (*Neomeris phocaenoides*) is a rare species of dolphins often seen in Outer Indus delta. It is rapidly decreasing in number throughout its range but the condition is more drastic in coastal waters of Pakistan.

2. BIRDS :

River banks and wetlands associated with the Indus River are very important as birds habitats which provide excellent ecological conditions for Waterfowl, Raptors and seed eating birds.

(i) Waterfowl :

A large variety of resident and migratory waterfowl including Ducks, Geese, Waders, Egrets, Herons, Storks and Moorhen is found at wetlands of Indus river and its associated system.

(a) Migratory Waterfowl :

Indus river and its reservoir are most important wintering areas for migratory waterfowl in Pakistan. The birds following flyway No. 4 i.e. Kazakistan-Pakistan India enter Pakistan through Karakoram pass, Kojak pass, Mustalbar pass and Khyber pass and follow the Indus valley especially the river. Indus and its associated wetlands support more than 10,00,000 waterfowl in winter. Species found abundantly are coot (*Fulica atra*), Common Teal (*Anas crecca*), Pintail (*A. acuta*), Wigeon (*A. penelope*), Mallard (*A. platyrhynchos*), Shoveller (*A. clypeata*) and Common Pochard (*Aythya ferina*). Barheaded Goose (*Anser indicus*) and Ruddy

Shelduck (*Tadorna ferruginea*) which are rare species, are usually found along the river in shallow water. Greylag Goose (*Anser anser*) also has been recorded at Chashma Barrage and its adjacent areas. Great crested Grebe (*Podiceps cristatus*) and Black-necked Grebe (*P. nigricollis*), which are rare winter visitors and are not usually found in the southern areas of Punjab are found with considerable population at Chashma Barrage. White Pelican (*Pelecanus onocrotalus*) is not found in the upper areas of the Indus and is localised in the southern areas including Haleji and Kinjhar lake. The riverbed areas with shallow water are also important staging sites for Common Crane (*Grus grus*) and Demoiselle Crane (*Anthropoides virgo*).

(b) Resident and breeding Waterfowl :

A number of species of resident waterfowl breed in the areas of Indus river and its associated wetlands. Lesser Whistling Teal (*Dendrocygna javanica*) is a breeding summer visitor to Taunsa barrage. Painted Stork (*Mycteria leucocephalus*), a rare species of Storks, is resident in the areas between Chashma barrage and Jinnah barrage. Other breeding species at different wetlands of the Indus system include Indian Moorhen (*Gallinula chloropus*), Purple Moorhen (*Porphyrio porphyrio*), Little Grebe (*Tachybaptus ruficollis*), Darter (*Anhinga rufa*), Little Cormorant (*Halietor niger*), Indian Pond Heron (*Ardeola grayii*), Cattle Egret (*Bubulcus ibis*), Little Egret (*Egretta garzetta*), Night Heron (*Nycticorax nycticorax*), Pheasant-tailed Jacana (*Hydrophasianus chirurgus*), Red-wattled Lapwing (*Vanellus indicus*), Painted Snipe (*Rostratula benghalensis*) and Blackwinged Stilt (*Himantopus himantopus*).

(ii) Raptors :

A number of species of prey birds which are predator of fishes and waterfowl, are commonly found around the water reservoirs. One of the most important species of Falcons, the Shaheen Falcon (*Falco peregrinus*), is often seen near water of the river in southern Punjab and Sindh. Palla's Fishing Eagle (*Haliaeetus leucoryphus*) is another raptor usually seen near water, the population of which is now threatened. Other raptors which are common near water are Brahminy Kite (*Haliastur indus*), Osprey (*Pandion haliaetus*) and Marsh Harrier (*Circus aeruginosus*).

(iii) Other birds :

Red Munia, Weaver birds, Doves and Mynas are important due to their export value and are commonly found in reed vegetation and grassy lands. Red Munia and Weaver bird make nests in reeds while Myna in holes of the River banks. Doves are abundant in the grassy beds when grasses have seeds on them. Black Partridge (*Francolinus francolinus*) which is an important Game bird breeds in

riverine forest. Kingfishers, Swallows, Wagtails and Martins are common near water. Wood-peckers and Babblers are commonly seen on the trees on flood bunds along the river banks.

3. REPTILES :

Indus river is also important as Reptilian habitat. In the past, Snub-nosed Crocodile (*Crocodylus palustris*) and Gavial (*Gavialis gangeticus*) were widely distributed in the Indus river system. But their population decreased rapidly and now there is no evidence of the presence of Gavial, while Crocodile is present only in Sindh Province with very small population.

Indian Python (*Python molurus*), a rare species of the snakes, inhabits the marshy areas of the river and is now endangered.

Seven species of Turtles are found in the river. One of them Spotted Pond Turtle (*Geoclemys hamiltonii*) is comparatively rare.

Indian Monitor (*Varanus bengalensis*), which is another important species of reptiles, has its major concentration near the reservoirs at flood control embankments.

In Outer Indus delta, three species of Marine Snakes viz. Beaked Sea Snake (*Enhydrina schistosa*), Annulated Sea Snake (*Hydrophis cyanocinctus*) and Small-headed Snake (*Microcephalophis gracilis*) are commonly found.

**SYSTEMATIC LIST OF MAMMALS, BIRDS AND REPTILES FOUND IN
THE INDUS RIVER AND ALLIED AREAS**

MAMMALS	STATUS
ORDER: CARNIVORA	
FAMILY: FELIDAE	
<i>Felis viverrina</i> Fishing Cat	Endangered
<i>Felis chaus prateri</i> Jungle Cat	Rare
FAMILY: HERPESTIDAE	
<i>Herpestes edwardsi ferruginosus</i> Common Mongoose	Common
<i>Herpestes auropunctatus pallipes</i> Small Mongoose	Rare
FAMILY: CANIDAE	
<i>Canis aureus</i> Jackal	Common
<i>Vulpus bengalensis</i> Indian Fox	Common
FAMILY: MUSTELIDAE	
<i>Lutra lutra kutab</i> Common Otter	Vulnerable
<i>Lutra perspicillata sindica</i> Smooth Indian Otter	Vulnerable
ORDER: INSECTIVORA	
FAMILY: ERINACEIDAE	
<i>Hemiechinus auritus collaris</i> Long-eared Hedgehog	Common

ORDER: RODENTIA
FAMILY: HYSTRICIDAE

Hystrix indica Common
Indian Crested Porcupine

ORDER: LAGOMORPHA
FAMILY: LEPORDIAE

Lepus nigricollis dayanus Common
Indian Hare

ORDER: ARTIODACTYLA
FAMILY: CERVIDAE

Axis porcinus porcinus Endangered
Hog Deer

FAMILY: SUIDAE

Sus scrofa cristatus Common
Indian Wild Boar

ORDER: CETACEA
FAMILY: PLATANISTIDAE

Platanista minor Endangered
Indus Dolphin

FAMILY: DELPHINIDAE

Sotalia plumbea Common
Plumbeous Dolphin

Tursiops aduncus Rare
Bottlenosed Dolphin

FAMILY: PHOCAENIDAE

Neomeris phocaenoides Rare
Finless Porpoise

BIRDS
ORDER: PODICIPITIFORMES
FAMILY: PODICIPITIDAE

Podiceps cristatus cristatus Winter visitor
Great Crested Grebe

	<i>P. nigricollis nigricollis</i> Blacknecked Grebe	Winter visitor
	<i>Tachybaptus ruficollis capensis</i> Little Grebe	Resident
ORDER:	PELECANIFORMES	
FAMILY:	PELECANIDAE	
	<i>Pelecanus onocrotalus</i> White or Rosy Pelican	Winter visitor
	<i>P. philippensis crispus</i> Dalmatian Pelican	Resident
FAMILY:	PHALACROCORACIDAE	
	<i>Phalacrocorax carbo sinensis</i> Large Cormorant	Resident
	<i>P. aristotelis</i> Indian Shag	Resident
	<i>Haliastur niger</i> Little Cormorant	Resident
FAMILY:	ANHINGIDAE	
	<i>Anhinga melanogaster</i> Darter	Winter visitor
ORDER:	CICONIIFORMES	
FAMILY:	ARDEIDAE	
	<i>Ardea cinerea cinerea</i> European Grey Heron	Winter visitor
	<i>A. c. rectirostris</i> Eastern Grey Heron	Resident
	<i>A. purpurea manilensis</i> Eastern Purple Heron	Resident
	<i>Butorides striatus</i> Little Green Heron	Resident

<i>Ardeola grayii grayii</i> Indian Pond Heron	Resident
<i>Bubulcus ibis coromandus</i> Cattle Egret	Resident
<i>Egretta alba alba</i> European Large Egret	Winter visitor
<i>E. a. modesta</i> Eastern Large Egret	Resident
<i>E. intermedia intermedia</i> Smaller or Median Egret	Resident
<i>E. garzetta garzetta</i> Little Egret	Resident
<i>Nycticorax nycticorax nycticorax</i> Night Heron	Resident
<i>Dupetor flavicollis flavicollis</i> Black Bittern	Resident
<i>Botaurus stellaris stellaris</i> Bittern	Winter visitor
<i>Ixobrychus minutus minutus</i> Little Bittern	Resident
<i>I. cinnamomeus</i> Cinnamon Bittern	Resident
<i>I. sinensis</i> Chinese Little Bittern	Resident
FAMILY: CICONIIDAE	
<i>Mycteria leucocephalus</i> Painted Stork	Resident
<i>Anastomus oscitans</i> Openbilled Stork	Straggler
<i>Ciconia ciconia ciconia</i> White Stork	Straggler

Ciconia nigra
Black Stork Straggler

Ephippiorhynchus asiaticus
Blacknecked Stork Straggler

FAMILY: THRESKIORNITHIDAE

Pseudibis papillosa papillosa
Indian Black Ibis Straggler

Plegadis falcinellus falcinellus
Glossy Ibis Straggler

Platalea leucorodia major
Spoonbill Resident

FAMILY: PHOENICOPTERIDAE

Phoenicopterus roseus
Flamingo Resident

Phoeniconaias minor
Lesser Flamingo Uncertain

ORDER: ANSERIFORMES

FAMILY: ANATIDAE

SUB-

FAMILY: Anserinae

Anser anser rubrirostris
Eastern Greylag Goose Winter visitor

A. indicus
Barheaded Goose Winter visitor

SUB-

FAMILY: Anatinae

Dendrocygna javanica
Lesser Whistling Teal Winter visitor

Tadorna ferruginea
Ruddy Shelduck Winter visitor

<i>T. tadorna</i> Common Shelduck	Winter visitor
<i>Marmaronetta angustirostris</i> Marbled Teal	Resident
<i>Anas Acuta</i> Pintail	Winter visitor
<i>A. crecca crecca</i> Common Teal	Winter visitor
<i>A. poecilorhyncha poecilorhyncha</i> Spotbill Duck	Resident
<i>A. platyrhynchos platyrhynchos</i> Mallard	Winter visitor
<i>A. strepera strepera</i> Gadwall	Winter visitor
<i>A. penelope</i> Wigeon	Winter visitor
<i>A. querquedula</i> Garganey	Passage migrant
<i>A. clypeata</i> Shoveller	Winter visitor
<i>Netta rufina</i> Redcrested Pochard	Winter visitor
<i>Aythya ferina</i> Common Pochard	Winter visitor
<i>A. nyroca</i> White-eyed Pochard	Winter visitor
<i>A. fuligula</i> Tufted Duck	Winter visitor
<i>Nettapus coromandelianus coromandelianus</i> Cotton Teal	Resident

ORDER FALCONIFORMES
FAMILY: ACCIPITRIDAE

<i>Elanus caeruleus vociferus</i> Blackwinged Kite	Resident
<i>Milvus migrans migrans</i> Black Kite	Resident/Migratory
<i>M. m. govinda</i> Pariah Kite	Resident
<i>Haliastur indus indus</i> Brahminy Kite	Resident
<i>Accipiter badius</i> Shikra	Resident
<i>A. nisus</i> Sparrow Hawk	Resident
<i>Buteo rufinus</i> Longlegged Buzzard	Resident
<i>Hieraaetus fasciatus</i> Bonelli's Eagle	Resident
<i>H. pennatus</i> Booted Eagle	Resident/Migratory
<i>Aquila heliaca</i> Imperial Eagle	Winter visitor
<i>A. rapax</i> Tawny Eagle	Resident
<i>A. clanga</i> Greater Spotted Eagle	Resident
<i>Haliaeetus albicilla</i> White-tailed Sea Eagle	Winter visitor
<i>H. leucoryphus</i> Pallas or Ringtailed Fishing Eagle	Resident

Aegypius monachus Resident/Winter visitor
Cinereous Vulture

Gyps fulvus Resident
Indian Griffon Vulture

G. bengalensis Resident
Indian Whitebacked Vulture

Circus macrourus Winter visitor
Pale Harrier

C. aeruginosus Winter visitor
Marsh Harrier

FAMILY: PANDIONIDAE

Pandion haliaetus Winter visitor
Osprey

FAMILY: FALCONIDAE

Falco jugger Resident
Lagger Falcon

F. peregrinus peregrinus Resident
Peregrine Falcon

F. chicquera Resident
Redheaded Merlin

F. tinnunculus Resident/Winter
European Kestrel Visitor

ORDER: GALLIFORMES

FAMILY: PHASIANIDAE

Francolinus francolinus Resident
Black Partridge

F. pondicerianus Resident
Grey Partridge

ORDER: GRUIFORMES
FAMILY: GRUIDAE

<i>Grus grus lilfordi</i> Common Crane	Passage migrant
<i>Anthropoides virgo</i> Demoiselle Crane	Passage migrant

FAMILY: RALLIDAE

<i>Gallicrex cinerea</i> Watercock	Summer Visitor
<i>Porzana parva</i> Little Crane	Winter Visitor
<i>P. porzana</i> Spotted Crane	Winter Visitor
<i>Amauornis fuscus</i> Northern Ruddy Crane	Resident
<i>A. phoenicurus</i> Whitebreasted Waterhen	Resident
<i>Gallinula chloropus</i> Indian Moorhen	Resident
<i>Porphyrio porphyrio</i> Purple Moorhen	Resident
<i>Fulica atra</i> Coot	Winter visitor

ORDER: CHARADRIIFORMES
FAMILY: JACANIDAE

<i>Hydrophasianus chirurgus</i> Pheasant-tailed Jacana	Resident
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FAMILY: CHARADRIIDAE

<i>Vanellus leucurus</i> Whitetailed Lapwing	Winter visitor
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<i>Vanellus vanellus</i> Lapwing	Winter Visitor
<i>V. indicus</i> Redwattled Lapwing	Resident
<i>Pluvialis squatarola</i> Grey Plover	Winter visitor
<i>P. apricaria apricaria</i> Golden Plover	Winter visitor
<i>P. dominica fulva</i> Eastern Golden Plover	Winter visitor
<i>Charadrius leschenaultii</i> Large Sand Plover	Winter visitor
<i>C. hiaticula tundrae</i> Eastern Ringed Plover	Winter visitor
<i>C. dubius</i> Little Ringed Plover	Resident
<i>C. alexandrinus alexandrinus</i> Kentish Plover	Resident

FAMILY: SCOLOPACIDAE

SUB-FAMILY Tringinae

<i>Numenius phaeopus phaeopus</i> Whimbrel	Winter visitor
<i>N. arquata arquata</i> Curlew	Winter visitor
<i>Limosa limosa limosa</i> Blacktailed Godwit	Winter visitor
<i>L. lapponica lapponica</i> Bartailed Godwit	Winter visitor
<i>Tringa erythropus</i> Spotted or Dusky Redshank	Winter visitor

T. totanus totanus Winter visitor
Common Redshank

T. t. eurhinus Winter visitor
Eastern Redshank

T. stagnatilis Winter visitor
Marsh Sandpiper

T. nebularia Winter visitor
Greenshank

T. ochropus Winter visitor
Green Sandpiper

T. glareola Winter visitor
Wood or Spotted Sandpiper

Xenus cinereus Winter visitor
Terek Sandpiper

Actitis hypoleucos Winter visitor
Common Sandpiper

SUB-
FAMILY: Arenariinae

Arenaria interpres Winter visitor
Turnstone

SUB-
FAMILY: Gallinagoninae

Gallinago stenura Winter visitor
Pintail Snipe

G. gallinago Winter visitor
Common Snipe

Lymnocyptus minima Winter visitor
Jack Snipe

SUB-
FAMILY: Calidridinae

Calidris tenuirostris Winter visitor
Eastern Knot

- C. albus* Winter visitor
Sanderling
- C. minutus* Winter visitor
Little Stint
- C. temminckii* Winter visitor
Temminck's Stint.
- C. alpinus* Winter visitor
Dunlin
- C. ferruginea* Winter visitor
Curlew Sandpiper
- SUB:
FAMILY: Phalaropinae
- Phalaropus lobatus* Winter visitor
Rednecked Phalarope
- FAMILY: ROSTRATULIDAE
- Rostratula benghalensis benghalensis*
benghalensis Resident
Painted Snipe
- FAMILY: RECURVIROSTRIDAE
- Himantopus himantopus himantopus*
Indian Blackwinged Stilt Resident
- Recurvirostra avosetta* Winter visitor
Avocet
- FAMILY: IBADORHYNCHIDAE
- ibadorhyncha struthersii* Resident
Ibisbill
- FAMILY: DROMADIDAE
- Dromas ardeola* Winter visitor
Crab Plover
- FAMILY: BURHINIDAE
- Burhinus oediconemus indicus* Resident
Indian Stone Curlew

FAMILY: GLAREOLIDAE

Cursorius coromandelicus Resident/Migratory
Indian Courser

Glareola pratincola Resident
Collard Pratincole

G. lactea Resident
Small Indian Pratincole

FAMILY: LARIDAE

SUB

FAMILY: Larinae

Larus hemprichii Winter visitor
Sooty Gull

L. argentatus heuglini Winter visitor
Yellow-legged Herring Gull

L. a. mongolicus Winter visitor
Pinklegged Herring Gull

L. ichthyaetus Winter visitor
Great Blackheaded Gull

L. brunnecephalus Winter visitor
Brownheaded Gull

L. ridibundus Winter visitor
Blackheaded Gull

SUB

FAMILY: Sterninae

Chlidonias hybrida Winter visitor/Passage migrant
Indian Whiskered Tern

Gelochelidon nilotica Resident
Gull-billed Tern

Hydroprogne caspia Resident
Caspian Tern

Sterna aurantia Resident
Indian River Tern

S. hirundo Winter visitor
European Common Tern

S. repressa Winter visitor
Whitecheeked Tern

S. acuticauda Resident
Blackbellied Tern

S. albifrons albifrons Resident
Little Tern

ORDER: COLUMBIFORMES
FAMILY: COLUMBIDAE

Treron phoenicoptera Resident
Bengal Green Pigeon

Columba livia Resident
Blue Rock Pigeon

Streptopelia decaocto Resident
Indian Ring Dove

S. tranquebarica Resident
Indian Red Turtle Dove

S. senegalensis Resident
Little Brown Dove

ORDER: PSITTACIFORMES
FAMILY: PSITTACIDAE

Psittacula eupatria Resident
Large Indian Parakeet

P. krameri Resident
Roseringed Parakeet

ORDER: CUCULIFORMES
FAMILY: CUCULIDAE

SUB

FAMILY: Cuculinae

Clamator jacobinus Resident
Pied Crested Cuckoo

Eudynamys scolopacea Resident
Indian Koel

SUB

FAMILY: Centropodinae

Centropus sinensis Resident
Crow Pheasant

ORDER: STRIGIFORMES

FAMILY: STRIGIDAE

Otus bakkamoena Resident
Punjab Collared Scops Owl

Bubo bubo turcomanus Resident
Turkestan Horned Owl

Athene brama Resident
Spotted Owlet

ORDER: CAPRIMULGIFORMES

FAMILY: CAPRIMULGIDAE

Caprimulgus europaeus Passage migrant
Hume's European Nightjar

C. asiaticus Resident
Indian Little Nightjar

ORDER: CORACIIFORMES

FAMILY: ALCEDINIDAE

Ceryle rudis leucomelanura Resident
Indian Pied Kingfisher

Alcedo atthis Resident
Small Blue Kingfisher

Halcyon smyrnensis Resident
Whitebreasted Kingfisher

FAMILY: MEROPIDAE

Merops apiaster Resident
European Bee-eater

M. superciliosus Summer breeding visitor
Bluecheeked Bee-eater

M. orientalis Resident
Sind Small Green Bee-eater

FAMILY: CORACIIDAE

Coracias benghalensis Resident
Indian Roller

FAMILY: UPUPIDAE

Upupa epops Resident
European Hoopoe

ORDER: PICIFORMES

FAMILY: PICIDAE

SUB-

FAMILY: Picinae

Dinopium benghalense Resident
Goldenbacked Woodpecker

Picoides assimilis Resident
Sind Pied Woodpecker

P. mahrattensis Resident
Maharatta Woodpecker

ORDER: PASSERIFORMES

FAMILY: ALAUDIDAE

Mirafra erythroptera Resident
Sind Redwinged Bush Lark

Eremopterix grisea Resident
Ashy-crowned Finch Lark

Calandrella cinerea longipennis Winter visitor
Yarkand Short-toed Lark

C. raytal adamsi Resident
Indus Sand Lark

Galerida cristata chendoola Resident
Indian Crested Lark

FAMILY: HIRUNDINIDAE

SUB-

FAMILY: Hirudininae

Riparia riparia diluta Resident
Siberian Collard Sand Martin

Hirundo rupestris Resident
Crag Martin

H. rustica rustica Resident
Western Swallow

H. smithii filifera Summer visitor
Indian Wiretailed Swallow

H. daurica rufula Resident
Redrumped Swallow

FAMILY: LANIIDAE

Lanius excubitor Resident
Indian Grey Shrike

L. vittatus vittatus Resident
Indian Baybacked Shrike

L. schach erythronotus Resident
Rufousbacked Shrike

FAMILY: DICRURIDAE

Dicrurus macrocerus albirictus Resident
Indian Black Drongo

FAMILY: STURNIDAE

Sturnus pagodarum Resident
Blackheaded Myna

S. roseus Passage migrant
Rosy Starling

S. vulgaris Winter visitor
Common Starling

Acridotheres tristis Resident
Indian Myna

A. ginginianus Resident
Bank Myna

FAMILY: CORVIDAE

Dendrocitta vagabunda Resident
Northwestern Tree Pie

Corvus splendens zugmayeri Resident
Sind House Crow

FAMILY: CAMPEPHAGIDAE

Tephrodornis pondicerianus pallidus
Sind Wood Shrike Resident

FAMILY: PYCNONOTIDAE

Pycnonotus leucogenys leucogenys
Whitecheeked Bulbul Resident

P. cafer Resident
Redvented Bulbul

FAMILY: MUSCICAPIDAE

A. novaeseelandiae Resident
Northwestern Paddyfield Pipit

A. campestris Winter visitor
Tawny Pipit

Motacilla flava Winter visitor
Yellow Wagtail

M. citreola Winter visitor
Yellowheaded Wagtail

SUB-

FAMILY: Timaliinae

<i>Turdoides caudatus caudatus</i> Common Babbler	Resident
<i>T. earlei sonivius</i> Western Striated Babbler	Resident
<i>T. striatus sindianus</i>	Resident

FAMILY: VARANIDAE

<i>Varanus bengalensis</i> Indian Monitor	Common
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FAMILY: BOIDAE

<i>Python molurus</i> Indian Python	Endangered
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FAMILY: COLUBRIDAE

<i>Ptyas mucosus</i> Dhaman	Common
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<i>Natrix piscator</i> Checkered Keelback	Common
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<i>Xenochrophis cerasogaster</i> Dark-bellied Marsh Snake	Common
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<i>Enhydryis pakistanica</i> Sind River Snake	Rare
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FAMILY: ELAPIDAE

<i>Naja naja naja</i> Indian Cobra	Common
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FAMILY: HYDROPHIDAE

<i>Enhydrina schistosa</i> Beaked Sea Snake	Common
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<i>Hydrophis cyanocinctus</i> Annulated Sea Snake	Common
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<i>Microcephalophis gracilis</i> Small-headed Sea Snake	Common
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FUTURE PROSPECTS :

In the future, following studies are needed :

1. Status of Endangered species :

Detailed studies are needed on the distribution ranges and population of endangered and threatened species of Mammals, Birds and Reptiles so that their current status and threats to their population may be determined and a plan for their conservation may be prepared.

2. Waterfowl :

Continuous studies on the population and migration of waterfowl are needed for determination of their population trends. Breeding evidences of resident species of waterfowl are to be collected so that breeding sites could be known.

Indus River is important for staging of Cranes but areas of the river which are more important in this regard are not yet clearly known. Studies for this purpose will be conducted and results will be used for conservation of Cranes.

3. Exportable species :

Studies should also be conducted to determine the areas having higher concentration, breeding sites and areas of major concentration of exportable species of birds, especially Finches & Buntings. Results will be valuable for preparation of export policy for wildlife.

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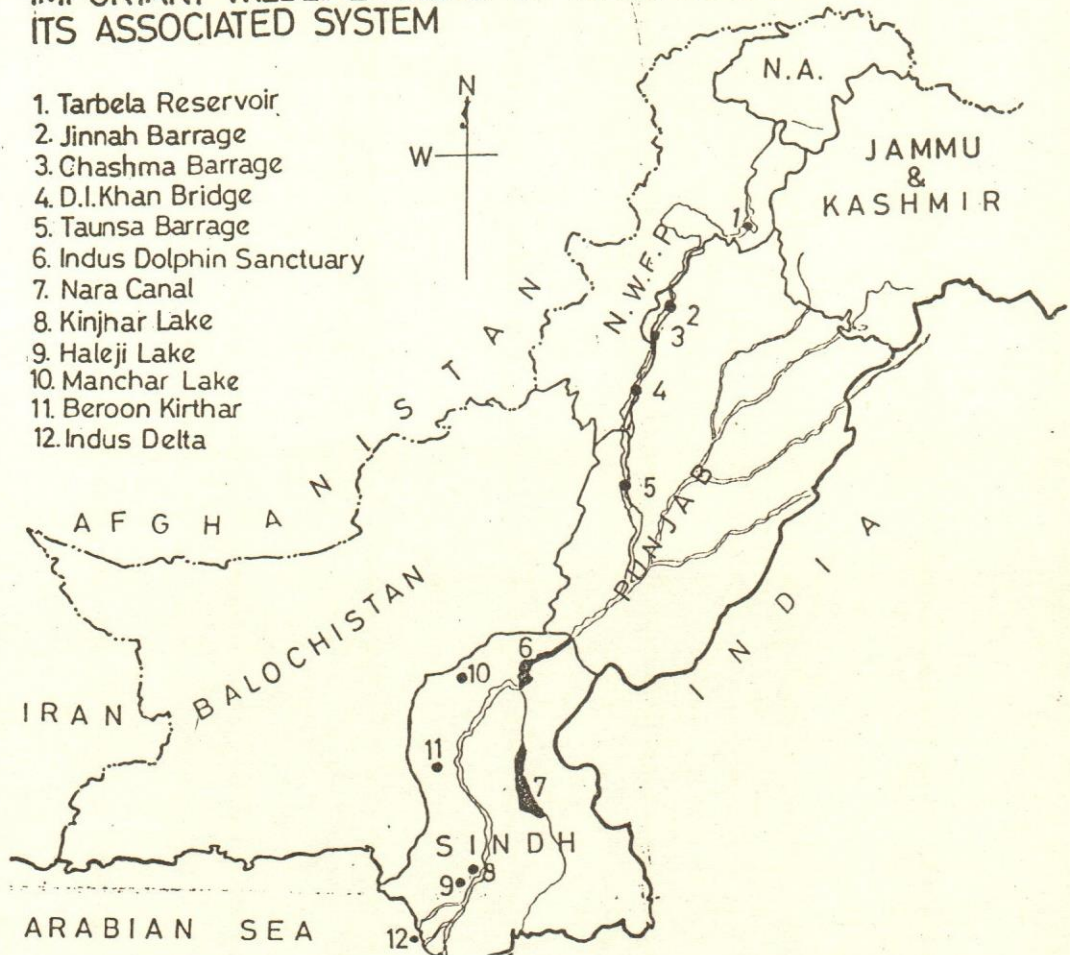
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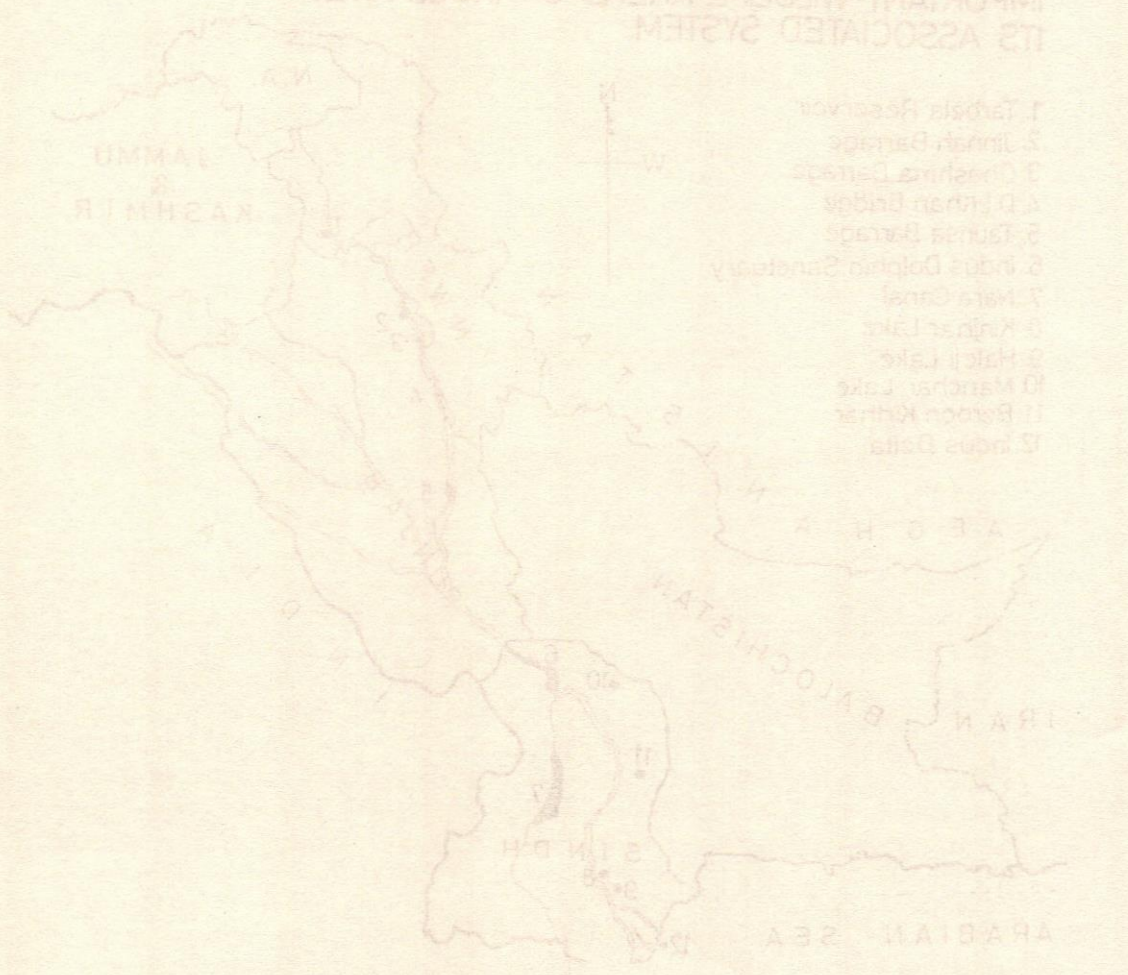
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IMPORTANT WILDLIFE AREAS OF INDUS RIVER & ITS ASSOCIATED SYSTEM



IMPORTANT WILDLIFE AREAS OF INDUS RIVER & ITS ASSOCIATED SYSTEM



THE WATERFOWL OF THE KARACHI COAST

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and

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No detailed work has been done on the waterfowl of the Karachi coast in the recent past. Ticehurst (1923, 1924) has given a brief account of the coastal birds of Sindh based on his work during 1917-20. Ali & Ripley (1968, 1969) have also given the distribution and status of these birds but this knowledge needs to be revised. Roberts *et al* (1986) have given a list of birds on the Sindh coast but they have not worked out the seasonal abundance and details of occurrence of the birds on Karachi coast. Khanum and Ahmed (1988) have worked out the resident and migratory birds of the Karachi coast based on their four months studies along the coast. Khan *et al* (1989) carried out waterfowl surveys in winter on major wetlands of Pakistan but the data is unpublished and the coastal areas have not been surveyed in detail. Hirschfeld *et al* (1988) have given a brief account of the avifauna of the Karachi coast. Ahmad *et al* (1988) have worked on the Vertebrate Fauna of the mangrove swamps of the Sindh coast and have recorded the waterfowl particularly of the mangrove areas. Scott (1989) has described more than 52 important major wetlands of Pakistan including those of the Karachi coast and has listed the waterfowl recorded from there during some of the International Waterfowl Censuses organized by the I.W.R.B. Recently, Roberts (1991) has given valuable information about the waterfowl of Pakistan. The present paper is mainly based on the studies carried out by the authors along the Karachi coast during the period from January 1987 to June, 1992.

The coastal areas of Karachi lie between 24° 52'N and 24° 42'N Latitude and between 66° 40" and 67° 09'E Longitude and stretch from Cape Monze in the north-west to Khuddi creek. They have a special significance as a distinct natural environment in the tropical region of southern part of Pakistan. Hence, most of the palaeartic migratory aquatic birds visit the area during the winter. These are good representative examples of the following specific types of wetland habitats. The creeks have considerable socio-economic importance while the Clifton beach holds a considerable number of waterbirds indicative of wetland values.

1. Sandy Beach—Sandspit, Hawkesbay, Clifton.
2. Rocky Beach—Buleji, Paradise Point, Cape Monze.

3. Mangrove forests—Backwaters of Hawkesbay, Sandspit, PNS Himalaya, Clifton Boat Basin, Gizri Creek and other creeks.
4. Tidal lagoons—Hawkesbay.
5. Estuaries—Cape Monze.
6. Muddy Beach—Baba Bhit Island.
7. Creeks—Korangi, Rehri, Jhari, Isaro, Bhatanro and Phitti creeks etc.
8. Saline marsh—Mauripur.

Regular surveys were made on different stations, particularly Cape Monze, Hawkesbay, Sandspit, Clifton, Buleji, Keamari, Gizri, Rehri, Phitti and Korangi Creeks to record the distribtuion and abundance of Waterfowl.

As many as 93 species of Waterfowl belonging to 7 orders, 18 families and 45 genera have so far been recorded from the Karachi coast.

The waterfowl found on Karachi coast show a varied seasonal composition. They can be grouped as :

1. Winter visitors (52 species).
2. Residents (17 species).
3. Partly winter visitors, partly residents (6 species).
4. Passage migrants (9 species).
5. Summer or year round visitors (5 species).
6. Oversummering birds (13 species).
7. Stragglers (4 species).

The observations made so far indicate that the migratory waterfowl start arriving on Karachi coast from late August but the population influx of waterbirds at Karachi coast starts in October, while December-January is the peak season for migratory waterfowl, when more than 20,000 birds have usually been observed at Clifton Beach alone. The migratory waterfowl leave the Karachi coast in March and almost all, except the oversummering birds, go back by the end of May. In June and July the minimum number of waterfowl is seen. The following species oversummer on the Karachi coast in very small numbers.

Oystercatcher, grey plover, golden plover, lesser sandplover, greater sand plover, curlew, bar-tailed godwit, greenshank, sanderling, little stint, dunlin, curlew sandpiper, broad billed sandpiper.

The Clifton Beach and Gizri Creek are the most important and favourable wintering sites for the birds on this part of the coast, as vast intertidal zone at Clifton is available to serve as a potential feeding/resting ground while Gizri Creek is an ideal place for feeding/resting and roosting of these birds.

On the basis of the criteria as adopted by the Conference of the Parties to the Convention in Regina, Canada, in 1987, some of the main wetland sites on the Karachi coast have been identified as the Wetlands of International Importance.

The Clifton Beach has been identified for inclusion in the list of wetlands of International Importance on the basis of the following criteria :

- (1) It is a particularly good representative example of a wetland characteristic of the region.
- (2) It regularly supports 20,000 waterfowl.

Hawkesbay/Sandspit area has been considered worthy of being listed because:

- (1) It is a particularly good representative example of a wetland characteristic of the region.
- (2) It supports an appreciable assemblage of rare, vulnerable or endangered species or sub-species of plant or animal or an appreciable number of individuals of any one or more of these species.
- (3) It is of special value as the habitat of plants or animals at a critical stage of their biological cycle.
- (4) It regularly supports 20,000 waterfowl.

The Korangi Creek area has been considered for the following reasons :

- (1) It is particularly good representative example of a wetland characteristic of the region.
- (2) In developing countries, it is a wetland which, because of its outstanding hydrological, biological or ecological role, is of substantial socioeconomic and cultural value within the framework of sustainable use and habitat conservation.

- (3) It is of special value as the habitat of plants or animals at a critical stage of their biological cycle.
- (4) It regularly supports substantial numbers of individuals from particular groups of waterfowl indicative of wetland values, productivity or diversity.

The study of the fauna of the coastal areas has always been a matter of priority in the Survey and Research Plan of the Zoological Survey Department. Some of the important projects in this regard are :

A project entitled "Study of the Vertebrate Fauna of the Mangrove Swamps of Sindh Coast" was undertaken during 1984-89 with the financial assistance of the Pakistan Agriculture Research Council.

On the basis of regular collections and observations on 6 mangrove stations on the Karachi coast viz. (1) Sandspit (2) P.N.S. Himalaya (3) Clifton Boat Basin (4) Korangi Creek (5) Phitti Creek and (6) Rehri Creek, it has been possible to record 46 species of waterfowl from the mangrove areas and to record their seasonal population and their status. This work has now been extended to the Indus Delta.

The studies on the Birds of the Mangroves of Korangi-Phitti Creek have also been undertaken in collaboration with the I.U.C.N. from September to November, 1991

Moreover, detailed study of the Waders or shorebirds on Karachi coast has also been undertaken since January 1987 to determine their distribution, population and trends and the work is continued.

Similarly, studies on the distribution and migration pattern of Gulls and Terns (Charadriiformes : Laridae) of Karachi coast are in progress since July, 1990.

The Zoological Survey Department in collaboration with the Provincial governments has been undertaking mid-winter waterfowl census in January every year on the major wetlands of N.W.F.P., Balochistan and the coastal areas of Sindh. The data for the last 5 years i.e. from 1987 to 1991 gives an indication of the distribution and status/trends of waterfowl on the Karachi coast and highlights the importance of the wetlands as a wintering site for a variety of waterfowl. On the basis of this data, the following conclusions have been drawn.

55 species of waterfowl have been recorded from the coastal areas during the International Water-fowl Censuses 1987-91.

The total population of waterfowl on the Karachi coast was found to be as under:

1987-16,529
1988-29,096

1989—29,525

1990—33,713

1991—15,405

On Karachi coast, the maximum population of waterfowl was recorded at Clifton beach during the period as under :

1987—13,495 birds

1988—20,843 birds

1989—20,192 birds

1990—17,107 birds

1991—6,144 birds

The species found to be present in the coastal area during all the 5 census are; Grey heron, reef heron, little egret, little ringed plover, curlew, redshank, common sandpiper, sanderling, little stint, dunlin, herring gull and the blackheaded gull.

The population of sanderling, dunlin and little stint was found to be decreasing while that of ringed plover, kentish plover, black-winged stilt and avocet was on the increase.

There is a need to monitor the populations of flamingo, spoonbill, golden plover, lesser sandplover, marsh sandpiper, green sandpiper, terek sandpiper, knot, curlew sandpiper and ruff.

The January censuses show the importance of the wetlands of the coastal areas as major wintering sites for the migratory waterfowl.

There are a few threats to the coastal area such a pollution, over exploitation of natural resources, reclamation for urban development, general disturbance from human encroachment, tourism/recreation and hunting pressure.

There is a considerable amount of pollution from industries situated near the creek. The Malir river and the Lyari river also bring industrial effluents into the Arabian Sea. Excessive grazing pressure and cutting of mangroves for fodder have already denuded much of the mangrove vegetation. Some of the beaches are being converted into recreational areas which would disturb the fauna. Parts of the mudflats at the Clifton beach will be lost after a few years, as the area is being developed for residential purposes.

As all the bird sites on the Karachi coast are unprotected, hence there is a lot of disturbance to the migratory birds on most parts of the coast particularly at Clifton and Hawkesbay, but it is satisfying to note that some groups of waterbirds such as all members of the family Ardeidae, Pelecanidae, Ciconiidae, Threskiornithidae and Phoenicopteridae are totally protected against hunting under "The Sindh Wildlife Protection Ordinance, 1972".

It is felt that it would be advisable to extend this protection to the following species which are less common or rare on the coastal areas : Red-breasted Merganser, White-tailed Plover, Yellow-wattled Lapwing, Eastern Golden Plover, Whimbrel, Curlew and Painted Snipe.

Scott & Poole (1989) consider the following wetlands as the most threatened wetlands in Pakistan.

1. Khabeki Lake.
2. Siranda Lake.
3. Hawkesbay/Sandspit Beaches and adjacent creeks.
4. Clifton Beach.
5. Korangi and Gharo creeks.
6. The outer Indus Delta (The area from near Korangi creek to Sir creek).

Further, they have given the following list of the Priority sites' (including most of the Karachi coast). These are considered to be specially worthy of attention at the present time for being the priorities for conservation.

1. Kurram River Valley.
2. Uchchali Lake.
3. Patisar Lake.
4. Drigh Lake.
5. Pugri Lake.
6. Nara Canal Area.
7. Badin and Kadhan Lagoons.
8. Zangi Nawar Lake.
9. The outer Indus Delta.
10. Hawkesbay & Sandspit Beach and adjacent creeks.
11. Clifton Beach.
12. Korangi and Gharo creeks.

- (1) For these sites they have indicated that the sites are under moderate to serious threats as large areas of wetland habitats are likely to be lost or major ecological changes are likely to occur unless immediate remedial action is taken.
- (2) In Hawkesbay and Sandspit area, some form of management is required to maintain or enhance the nature conservation values of the site. The area has an exceptional potential for conservation education and/or nature-oriented outdoor recreation; this should be developed to improve the awareness of the local people to the need for wetland conservation.
- (3) The Clifton area is unprotected and is specially worthy of some legal protection.
- (4) The present protection measures are inadequate in the Korangi and Gharo creeks; existing reserves should be upgraded or expanded, and existing conservation legislation strengthened.

The area has high economic and social values consistent with the maintenance of its ecological character. However, there is a need to develop a management strategy for the area which promotes sustainable utilization and hence wise use of the wetland resources.

Moreover, they have outlined the following priorities *i.e.* main fields in which action is required, which relate to the overall wetland situation in Pakistan :

- (1) Further survey work in the Indus Delta and coastal Balochistan.
- (2) The compilation and publication of a comprehensive national wetlands inventory.
- (3) The establishment, upgrading and improved enforcement of protected areas, particularly the key mangrove areas and shorebird areas thus increasing the number of sites under the Ramsar Convention.
- (4) Assessment of the environmental impact of all development projects affecting wetlands in the Indus Valley such as the introduction of exotic fish species.
- (5) The incorporation into government legislation of policy specifically relating to wetland conservation in Pakistan.
- (6) Launching of campaigns to increase the awareness of the general public to need for wetland conservation.

Action on most of the 'Priorities' has already been initiated by the Zoological Survey Department in collaboration with the National Council for Conservation of Wildlife, the Provincial governments, Pakistan Forest Institute, Pakistan Agriculture Research Council, University of Karachi, International Union for Conservation of Nature and Natural resources and the World Wide Fund for Nature Pakistan.

List of the orders, families, number of genera and species of the waterfowl recorded from the Karachi coast.

Order/Family	Genera	Species
1. Podicipitiformes		
1. Podicipitidae	2	3
2. Pelecaniformes		
2. Phalacrocoracidae	1	3
3. Anhingidae	1	1
3. Ciconiiformes		
4. Ardeidae	4	8
5. Ciconiidae	2	2
6. Threskiornithidae	1	1
4. Phoenicopteriformes		
7. Phoenicopteridae	1	1
5. Anseriformes		
8. Anatidae	5	11
6. Gruiformes		
9. Rallidae	1	1
7. Charadriiformes		
10. Rostratulidae	1	1
11. Haematopodidae	1	1
12. Recurvirostridae	2	2
13. Dromadidae	1	1
14. Burhinidae	1	1
15. Charadriidae	4	13
16. Scolopacidae	10	22
17. Stercorariidae	1	2
18. Laridae	6	19
Total :	45	93

Systematic List of Waterfowl showing their distribution and status on the Karachi coast.

Order : Podicipitiformes

Family: Podicipitidae

1. Great Crested Grebe, *Podiceps cristatus cristatus* (Linn.).

Straggler on the coast. Khanum and Ahmed (1988) recorded one specimen on Karachi coast in September, 1985.

2. Black-necked Grebe, *Podiceps nigricollis nigricollis* Brehm.

It is a rare winter visitor, recorded from the Gizri Creek.

3. Little Grebe or Dabchick, *Tachybaptus ruficollis* (Pallas).

It is a rare winter visitor to the creek areas and has been observed in Gizri Creek.

Order: Pelecaniformes

Family: Phalacrocoracidae

4. Great Cormorant, *Phalacrocorax carbo sinensis* (Shaw).

It is mainly winter visitor to the Coast. Common on the coast particularly in the creeks. Recorded from Clifton, Paradise Point, Hawkesbay and Cape Monze.

5. Indian Shag, *Phalacrocorax fuscicollis* Stephens

It is a common winter visitor to the creeks.

6. Little Cormorant, *Phalacrocorax niger* (Vieillot).

It is not common on the coast and occasionally observed in the creeks as a resident bird. It has been observed in the Gizri Creek area.

Family: Anhingidae

7. Darter, *Anhinga melanogaster* Pennant

Very rare winter visitor along coast, sighted in Korangi Creek and on Bandal Island on 06-03-1984.

Order: Ciconiiformes

Family: Ardeidae

8. Pond Heron or Paddy Bird, *Ardeola grayii grayii* (Sykes).

Resident and widespread in the mangroves along Karachi coast. Observed in numbers ranging from 25 to 300.

9. Reef Heron, *Egretta gularis schistacea* (Hemprich & Ehrenberg)

Resident, common and widespread throughout the coastal area of Karachi but its total number on entire Karachi coast, doesn't exceed 500 birds altogether. Recorded from Clifton, Sandspit, Paradise Point and the creeks.

10. Little Egret, *Egretta garzetta garzetta* (Linn.)

Common resident and local migrant. Observed in Clifton Beach, Gizri creek, Korangi-Phitti creek systems, Cape Monze, Keamari, Manora and behind Pak. Refinery.

11. Median Egret, *Egretta intermedia intermedia* (Wagler)

Resident and local migrant but uncommon along the coast. Observed in creeks and mangroves.

12. Large Egret, *Egretta alba alba* Linn.

Rare resident along the coast. Observed in creeks and mangroves. Recorded from Sandspit area and Gizri creek.

13. Grey Heron, *Ardea cinerea cinerea* Linn.

Winter visitor to the coast in moderate numbers, recorded from Clifton beach mainly in February-March. Very common and widely distributed in the mangrove along creeks and coasts. Also sighted in August 1990 at P.N.S. Himalaya and Manora.

14. Purple Heron, *Ardea purpurea*.

Rare resident on the coast. A single specimen was observed at Cape Monze on 2-12-1991.

15. Green Backed Heron, *Butoroides striatus* (Linn.)

Rare resident along the coast. Khanum and Ahmed (1988) observed 2 specimens on Sandspit and Hawkesbay in September, 1985.

Family : Ciconiidae

16. Painted Stork, *Mycteria leucocephala* (Pennant)

Rare winter visitor on Karachi coast. Sighted only in creeks in October, 1986.

17. Black Stork, *Ciconia nigra* (Linn.)

Very rare winter visitor, recorded from Hawkesbay on 17-02-1988 (Hirschfeld, 1988).

Family : Threskiornithidae

18. Spoonbill, *Platalea leucorodia major* Temminck & Schelgal

Rare winter visitor to Karachi coast. Three birds were sighted near mouth of Hub River at Cape Monze in December, 1988 and 5 birds were sighted at Hawkesbay back waters on 7-11-1990. Few birds were also observed in the mangoves in Chara creek.

Order : Phoenicopteriformes

Family : Phoenicopteridae

19. Flamingo, *Phoenicopterus ruber* (Linn.)

Common, resident and locally migrant. Frequents the coastline and has been observed in summer months at Cape Monze, Hawkesbay, and Clifton Beach. Maximum number observed alongwith juveniles at Hawkesbay backwater in July and August.

Order : Anseriformes :

Family : Anatidae

20. Common Shelduck, *Tadorna tadorna* (Linn.)

Rare winter visitor to the Karachi coast. Recorded from Hawkesbay area and Cape Monze.

21. Gadwall, *Anas strepera* (Linn.)

It is rare winter visitor to the Karachi coast. Recorded from the Gizri creek.

22. Pintail, *Anas acuta* Linn.

Less common winter visitor to Karachi coast. Has been observed on Hawkesbay backwater, Mauripur and Cape Monze.

23. Wigeon, *Anas penelope* (Linn.)

Less common winter visitor to the Karachi coast. Recorded from Mauripur area and Cape Monze.

24. Garganey, *Anas querquedula* Linn.

Rare winter visitor or passage migrant to the Karachi coast. Has been recorded from Mauripur.

25. Common Teal, *Anas crecca crecca* Linn.

Less common visitor to the Karachi coast. Recorded from Mauripur and Cape Monze.

26. Shoveller, *Anas clypeata* Linn.

Less common winter visitor to the Karachi coast. Recorded from Hawkesbay and Mauripur.

27. Mallard, *Anas platyrhynchos* Linn.

Less common winter visitor to the Karachi coast. Recorded from Cape Monze.

28. Red-breasted Merganser, *Mergus serrator* (Linn.)

Very rare winter visitor to Karachi coast. It has been observed on Buleji and Cape Monze by T. J. Roberts and Rolf Passburg.

30. Velvet Scoter, *Melanitta fusca* (Linn.)

Very rare straggler to the Karachi coast. A single male was recorded from the Clifton beach on 16-2-1988. This is the first record for the sub-continent (Hirchfeld, 1988).

30. Common Pochard, *Aythya ferina* (Linn.)

It is a less common winter visitor to the sea coast. It has been observed at Clifton Beach, Cape Monze and Mauripur.

Order : Gruiformes

Family : Rallidae

31. Coot, *Fulica atra atra* (Linn.)

Rare winter visitor to the coast. 30 birds were recorded once from Mauripur area on 26th January 1989.

Order : Charadriiformes

Family: Rostratulidae

32. Painted Snipe, *Rostratula bengalensis* (Linn.).

Rare resident on the coastal area. Recorded from the Gizri Creek.

Family: Haematopodidae

33. Oystercatcher, *Haematopus ostralegus ostralegus* (Linn.)

Common winter visitor, found on most part of the year on Karachi Coast particularly at Clifton Beach, Gizri Creek and Cape Monze, but breeding evidence has not been recorded. Maximum number of birds observed is 1250 in Gizri and Clifton Beach on 27-12-1990.

Family : Recurvirostridae

34. Avocet, *Recurvirostra avosetta* (Linn.)

It is mainly winter visitor. It occurs on Gizri Creek, Clifton Beach, Sandspit and in the back-waters of Hawkesbay in summer as well as in winter. Population fluctuates from several hundred to thousands. Breeding evidence has not yet been recorded along the coast. Maximum number of birds observed is 1350 on 06-01-1990.

35. Black winged Stilt, *Himantopus himantopus himantopus* (Linn.)

Resident, common in winter in the back waters of Hawkesbay when several thousand birds can be seen, less common in the area in summer. Also observed at Mauripur, Sandspit, Cape Monze, Gizri creek and Korangi creek.

Family: Dromadidae

36. Crab Plover, *Dromas ardeloa* Paykall

Rare winter visitor or passage migrant. Recorded from Mauripur area (Roberts 1991), 2 birds were observed at Cape Monze on 22-09-1988. Khanum and Ahmed (1988) observed 20 birds in September 85 at the Karachi coast. Meynell (Pers. comm.) observed 4 birds in mangrove area in Korangi - Phitti creek system.

Family: Burhinidae

37. Great Stone Plover, *Esacus magnirostris recurvirostris* (Cuvier)

Very rare resident on Karachi coast. One specimen was sighted by the authors and Rolf Passburg at the edge of the backwaters of Hawkesbay on 23-11-1990. Previously a single bird was recorded by the authors from Cape Monze. Meynell (Pers. comm.) observed it in mangrove areas in Korangi Phitti creek system.

Family : Charadriidae

38. Little Ringed Plover, *Charadrius dubius* Scopoli

(a) Indian Little Ringed Plover. C. d. *jerdoni* Legge

(b) Eastern Little Ringed Plover C. d. *curonicus* (Lowe)

It is one of the commonest waders along Karachi coast. It is mainly winter visitor but the sub-species, C. d. *jerdoni* is resident. Recorded from Clifton, Hawkesbay, Buleji, Cape Monze and creeks. Some birds also oversummer but do not breed.

39. Ringed Plover, *Charadrius hiaticula* (Linn.)

It is a winter visitor in small numbers. Recorded from Cape Monze, Clifton beach, Buleji, Hawkesbay and creeks. Some birds oversummer but do not breed.

40. Kentish Plover, *Charadrius alexandrinus alexandrinus* Linn.

It is one of commonest waders along Karachi coast. It is resident and locally migratory. Its population has been increasing considerably along the coast in recent years. Recorded from Clifton beach, Hawkesbay, Cape Monze, Buleji and in creeks. Some birds were found to be oversummering at Clifton Beach, Gizri creek and Hawkesbay.

41. Mongolian Plover, *Charadrius mongolus Pallas*

It is one of the commonest winter visitors to Karachi Coast. A few birds have also been observed in summer months and these may be oversummering birds, Recorded from Clifton Beach, Gizri creek and Hawkesbay, Cape Monze and other creeks.

42. Greater Sand Plover, *Charadrius leschenaultii* Lesson

Less common winter visitor on Karachi coast. Its population has declined in the recent years. Recorded from the Clifton beach. Some birds in summer plumage observed in June 1992 at Gizri nullah and Hawkesbay.

43. Lesser Golden Plover, *Pluvialis dominica* (P.L.S. Muller)

It is a rare winter visitor recorded in small numbers at Gizri creek and mangroves at Sandspit.

44. Great Golden Plover, *Pluvialis apricaria* (Linn.)

Vagrant, recorded once on Karachi coast on 07-01-1919 by Ticehurst. Khanum and Ahmad (1988) recorded single specimen on the Karachi coast in September, 1985.

45. Grey Plover, *Pluvialis squatarola* (Linn.)

Common winter visitor to Gizri, Clifton & mangrove creeks. The main population is seen in the Gizri Creek in winter where a few birds also over-summer.

46. Dotterel, *Eudromias morinellus* (Linn.)

Straggler to the Karachi coast. A single bird in winter plumage was seen by Rolf Passburg, on 24-11-1989 at Hawkesbay, Karachi. (Pers. Comm.)

47. Yellow-wattled Lapwing, *Vanellus malabaricus* (Boddaert)

It is a rare summer breeding visitor, recorded from Mauripur and Sandspit.

48. Red-wattled Lapwing, *Vanellus indicus* (Boddaert)

Abundant resident but rare on the coast. Observed at Cape Monze and in Gizri creek.

49. White-tailed Lapwing, *Vanellus leucura* (Lichtenstein)

Winter visitor in small numbers. Observed at Mauripur and in a seepage nullah along Gizri creek.

50. Lapwing, *Vanellus vanellus* (Linn.)

Winter visitor in small numbers, not observed on the main coast but 2-3 birds were observed in a nullah along Gizri creek.

Family : Scolopacidae

Sub-family: Calidridinae

51. Eastern Knot, *Calidris tenuirostris* (Horsfield)

Rare winter visitor, only recorded from Clifton Beach. 600 birds were observed on 16-02-1988 (Hirschfeld, 1988) 20 birds were observed on 05-02-1989 (Khan 1988). More recently 15 birds were observed on 20-11-1990.

52. Sanderling, *Calidris alba* (Pallas)

Common winter visitor to Karachi coast. Its population has declined in the recent years but still it is commonly found along the sandy sea beach. Recorded from Clifton beach, Hawkesbay and Buleji area. Also observed at Clifton beach and Hawkesbay in summer.

53. Little Stint, *Calidris minuta* (Leisler)

The smallest, commonest and widespread wader along Karachi coast in winter. Thousands of birds can be seen in a single flock. Some birds oversummer on the Karachi coast in small numbers.

54. Temminck's Stint, *Calidris temminckii* (Leisler)

Rare winter visitor. Recorded from Clifton beach and Mauripur.

55. Curlew Sandpiper, *Calidris ferruginea* (Pontoppidan)

Less common winter visitor, Observed in small numbers at Clifton Beach, Buleji, Hawkesbay, Gizri creek. Some oversummer on the Karachi coast in small numbers.

56. Dunlin, *Calidris alpina* (Linn.)

It is one of the commonest and exceedingly abundant and widespread wader after little Stint along Karachi coast in winter. Few birds have also been observed over summering in other months. Fair sized flocks can easily be seen in winter all along the coast and creeks.

57. Broad-billed Sandpiper, *Limicola falcinellus* (Pontoppidan)

Rare winter visitor but 13, 6, 2 and 2 birds were observed on 05-03-1987, 06-04-1987, 14-03-1988 and 06-05-1990 respectively at Clifton Beach. F.J. Koning (pers. comm.) mentions of one observation of 4 birds at Sandspit on 05-02-1989. 8 birds were sighted at the backwater of Hawkesbay on 09-06-1992.

58. Ruff, *Philomachus pugnax* (Linn.)

Rare passage migrant and winter visitor. Six birds were seen at Sandspit on 17-02-1988 (Hirschfeld, 1988) ; 2 birds were observed in a nullah along Gizri creek on 13-01-1990.

Sub-Family: Gallinaginae

59. Common or Fantail Snipe, *Gallinago gallinago* (Linn.)

Rare winter visitor on the coast, 187 birds were observed along a sewage nullah near Gizri creek on 10-01-92.

Sub-family: Tringinae

60. Black-tailed Godwit, *Limosa limosa* (Linn.)

Rare winter visitor to the sea coast. Recorded once from Clifton and once from Karachi harbour. 600 birds were recorded from Sandspit on 17-02-1988 (Hirschfeld, 1988).

61. Bartailed Godwit, *Limosa lapponica* (Linn.)

It is winter visitor and common on the muddy and sandy shores and creeks. However, a few birds in summer plumage have been sometimes observed to be overwintering at Clifton and Hawkesbay. Maximum number of birds observed in a single locality is 2140 at Mauripur on 6th January, 1990.

62. Whimbrel, *Numenius phaeopus* (Linn.)

Common passage migrant and winter visitor on Karachi coast mainly in mangrove areas in creeks.

63. Curlew, *Numenius arquata* (Linn.)

Winter visitor in small numbers and passage migrant on the coast at Clifton beach and Cape Monze, frequently seen in creeks mainly during October. A very small population overwinter on the Karachi coast.

64. Spotted Redshank, *Tringa erythropus* (Pallas)

Winter visitor in small numbers on the coast. Observed in the mangroves areas of Hawkesbay & PNS Himalaya.

65. Redshank, *Tringa totanus* (Linn.)

Common and widespread winter visitor. More common in creeks and mangroves. Recorded from Clifton Beach, Hawkesbay, Sandspit and creeks.

66. Marsh Sandpiper, *Tringa stagnatilis* (Bechstein)

Winter visitor or passage migrant on Karachi coast, sighted now and then in very small numbers, particularly at Clifton, Gizri Creek, Ratto Fort, Hawkesbay, Sandspit and Mauripur.

67. Greenshank, *Tringa nebularia* (Gunnerus)

Less Common visitor along the coast. Main concentration is found in creeks. A small population overwinters at Mauripur. (Roberts, 1991).

68. Wood Sandpiper, *Tringa glareola* (Linn.)

Rare winter visitor. Observed in Gizri Creek on 20-11-1990 and 27-12-1990.

69. Terek Sandpiper, *Tringa cinereus* (Guldenstadt)

Common and widespread winter migrant on Karachi coast. Its population along this coast has been found to be increasing in the recent years. Recorded from Clifton beach, Cape Monze and Creeks.

70. Common Sandpiper, *Actitis hypoleucos* (Linn.)

Winter visitor, found in small numbers all along the coast and creeks usually found solitary.

Sub-family : Arenariinae

71. Turnstone, *Arenaria interpres* (Linn.)

Rare winter visitor on Clifton Beach, Buleji, Cape Monze, Hawkesbay, Mauripur and Gizri Creek. Observed during the months of October and November.

Sub-family: Phalaropodinae

72. Red-necked Phalarope, *Phalaropus lobatus* (Linn.)

Rare winter visitor to the sea coast. Recorded from the Gizri Creek.

Family : Stercorariidae

73. Pomarine Skua or Jaeger, *Stercorarius pomarinus* (Temminck)

Rare winter visitor. Recorded from Cape Monze area.

74. Artic Skua, *Stercorarius parasiticus* (Linn.)

Rare winter visitor. Recorded from Clifton Beach, Manora, Paradise Point, Hawkesbay, Cape Monze and Korangi Creek. Recently, 2 birds were observed on Korangi Creek on 07-02-1989 (Khan, 1989).

Family : Laridae

75. Sooty Gull, *Larus hemprichii* (Bruch).

Resident and local migrant, less common. Observed in Creeks and on Clifton Beach from March to October, mainly in June and July, Largest single flock of 235 birds was observed in February 1991 at Clifton Beach.

76. Great Black-headed Gull, *Larus ichthyaetus* Pallas.

Common visitor to the coast. Observed in small numbers on Clifton beach, Cape Monze and in creeks. 2 birds were observed in summer plumage at Cape Monze in May 1989.

77. Black-headed Gull, *Larus ridibundus ridibundus* (Linn.)

Commonest and widespread wintering gull on the Karachi coast. No breeding evidence has been recorded, yet the birds have been observed in summer plumage.

78. Brown-headed Gull, *Larus brunnicephalus* Jerdon

Less common winter visitor. Observed in creeks, Cape Monze and Clifton Beach usually in November and December. More common around the fishing villages and creeks (Roberts, 1991).

79. Slenderbilled Gull, *Larus genei* Breme
 Common winter visitor along Karachi coast. It is observed in thousands along the coast from November to March. It is believed to be resident and breeding along the Mekran coast.
80. Herring Gull, *Larus argentatus heuglini* (Bree)
 Common winter visitor to Karachi coast. Recorded from Clifton Beach, Hawkesbay and Cape Monze and in creeks.
81. Lesser Black-backed Gull, *Larus fuscus fuscus* Linn.
 Less common winter visitor and probably passage migrant too on Karachi coast. It has usually been observed at Cape Monze, where the maximum population of 400 birds was recorded on 28-09-1990. Also observed at Hawkesbay and Clifton Beach and in creeks.
82. Gull-billed Tern, *Gelochelidon nilotica nilotica* (Gmelin)
 It is a common winter visitor to the Karachi coast particularly in the creeks and the intertidal mudflats. Recorded from the Clifton beach; occasional breeding has been reported on inland brackish lakes near the coast.
83. Caspian Tern, *Hydroprogne caspia* (Pallas)
 Year round visitor most frequently seen on the Clifton Beach, Cape Monze and in creeks throughout winter in low concentrations.
84. Swift or Large Crested Tern, *Thalassens bergii velox* Cretzchmar
 Rare winter visitor to Karachi coast; observed on Clifton beach.
85. Lesser Crested Tern, *Thalassens bengalensis bengalensis* Lesson
 Less common winter visitor to Karachi coast. Observed at Clifton Beach and the creeks.
86. Sandwich Tern, *Thalassens sandvicensis sandvicensis* Latham
 Common winter visitor to the Karachi coast. More frequently observed on Clifton Beach, Buleji and Cape Monze. Also observed in June 92 at Clifton Beach.
87. Common Tern, *Sterna hirundo hirundo* (Linn.)
 Common along the coast in the months of September to June when several hundred of this species have been observed on the coast, particularly at Clifton Beach, Gizri Creek and Cape Monze and in creeks.

88. White-cheeked Tern, *Sterna repressa* Hartert

it has been recorded as a common non-breeding summer visitor to the Karachi Coast, Clifton Beach, Gizri Creek, Buleji and Cape Monze particularly throughout May and June.

89. Bridled Tern, *Sterna anaethetus fuligula* Lichtenstein

It is a rare summer visitor to the Karachi coast, recorded from Clifton beach and Cape Monze. (Roberts, 1991).

90. Little Tern, *Sterna albifrons albifrons* Pallas

Common resident but winter visitor to the Karachi coast. Observed on Clifton Beach and in creeks.

91. Black-shafted Tern or Saunder's Little Tern, *Sterna saundersi* Hume

Resident & local migrant, occurring on Karachi coast in fairly large numbers from April onwards till September.

92. Whiskered Tern, *Chlidonias hybridica indica* (Pallas)

Less common, year round visitor to the Karachi coast, observed at Clifton beach, Gizri creek and Karachi harbour. 37 birds were observed on 9 June 92 on a marshy area near Sandspit.

93. White-winged Black Tern, *Chlidonias leucoptera* (Temminck)

It is rare spring passage migrant. 2 birds were recorded in Gizri Creek in May (Roberts, 1991).

OTHER FAUNA

A : MAMMALS:

The following Cetacea have been recorded from the coastal area.

1. Indo-Pacific Humpback Dolphin, *Sousa chinensis*
2. Longbeaked Bottlenosed Dolphin, *Tursiops truncatus aduncus*
3. Common Dolphin, *Delphinus delphis tropicalis*
4. Spinner Dolphin, *Stenella longirostris*
5. Indian Ocean Finless Porpoise, *Neophocaena phocaenoides*

The species listed at S. Nos. 1-3 are regularly seen during the winter months while the species at S. Nos. 4-5 are very rarely seen.

B : BIRDS : (Other than the Waterfowl)

1. Black Kite, *Milvus migrans*
2. Brahminy Kite, *Haliastur indus*
3. Indian Shikra, *Accipiter badius*
4. Buzzard, *Buteo buteo*
5. Crested Honey Buzzard, *Pernis ptilorhynchus*
6. Sparrow-Hawk, *Accipiter nisus*
7. Longlegged Buzzard, *Buteo rufinus rufinus*
8. Imperial Eagle, *Aquila heliaca heliaca*
9. Steppe Eagle, *Aquila nipalensis*
10. Tawny Eagle, *Aquila rapax vindhiana*
11. Greater Spotted Eagle, *Aquila clanga*
12. Indian Griffon Vulture, *Gyps fulvus*
13. Egyptian Vulture, *Neophron percnopterus*
14. Marsh Harrier, *Circus aeruginosus*
15. Short-toed Eagle, *Circaetus gallicus*
16. Osprey, *Pandion haliaetus haliaetus*
17. Eastern Peregrine Falcon, *Falco peregrinus japonensis*
18. Indian Pied King-fisher, *Ceryle rudis*
19. White breasted kingfisher, *Halcyon smyrnensis*
20. Wryneck, *Jynx torquilla*
21. Sand Lark, *Calandrella raytal*
22. Pale Crag Martin, *Hirundo obsoleta*
23. Sindh Starling, *Sturnus vulgaris*
24. Bank Myna, *Acridotheres ginginianus*

25. House Crow, *Corvus splendens*
26. Common Babbler, *Turdoides caudatus caudatus*
27. Jungle Babbler, *Turdoides striatus*
28. Swallow, *Hirundo rustica*
29. House Martin, *Delichon urbica*
30. Black Drongo, *Dicrurus adsimilis*
31. Rufousfronted Wren-Warbler, *Prinia buchanani*
32. Asian Reed Warbler, *Acrocephalus scirpaceus*
33. Desert Warbler, *Sylvia nana*
34. Lesser Whitethroat, *Sylvia curruca*
35. Desert Wheatear, *Oenanthe deserti*
36. Tawny Pipit, *Anthus campestris*
37. Yellow Wagtail, *Motacilla flava*
38. Yellowheaded Wagtail, *Motacilla citreola*
39. Meadow Pipit, *Anthus pratensis*
40. Indian House Sparrow, *Passer domesticus*
41. Streaked Weaver Bird, *Ploceus manyar flaviceps*
42. Trumpeter Bullfinch, *Rhodopechys githaginea crassirostris*

C : REPTILES :

1. Indian Ocean Green Turtle, *Chelonia mydas japonica*
2. Pacific Ridley Turtle, *Lepidochelys olivacea olivacea*
3. Blunt-tail spider Gecko, *Agamura persica*
4. Blotched Gecko, *Hemidactylus triedrus*
5. Orange-tailed Skink, *Eumeces schneideri blythianus*
6. Indian Sand Swimmer, *Ophiomorus tridactylus*
7. Indian Fringe-toad Sand Swimmer, *Acanthodactylus cantoris*

Acknowledgements :

Sincere thanks are due to Mr. Mohammad Farooq Ahmed, Director, Zoological Survey Department for his supervision and for provision of necessary facilities for survey work.

The authors wish to thank (Late) Dr. Manzoor Ahmad, Mr. W. A. Kermani, Mr. Rolf Passburg and Mr. F. J. Koning for their immense help and guidance.

The assistance from the I.W.R.B., England and Asian Wetland Bureau, Malaysia is also acknowledged with thanks in respect of supply of necessary literature.

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THE BIRDS OF THE SALT RANGE

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Salt range is semi-mountainous area comprising of parts of Jhelum, Chakwal, Khushab and Mianwali districts of Punjab. The range extends from the southern bank of river Indus near Kalabagh town of district Mianwali in the west, to junction of the Bunha torrent and river Jhelum near Jalal pur, district Jhelum. The southern edge of the range rises from the plain of the Jhelum River which is about 700 ft. above sea level and its elevation generally ranges upto 3000 ft. except Sakesar peak which has an altitude of 4992 ft. Average rainfall ranges from 450 mm to 750 mm. Vegetation is dry-subtropical semi-ever-green having *Olea-Acacia modesta* forest and *Dodonaea* scrub. Important plant species are *Acacia modesta*, *A. nilotica*, *Olea ferruginea*, *Adhatoda vasia*, *Prosopis cineraria*, *Reptonia buxifolia*, *Zizipus nummularia*, *Dodonaea viscosa*, *Salvadora oleoides* and *Tamarix* spp.

The Salt range is very important area for birds due to its location, altitudinal range and ecological conditions. A large variety of resident and migratory birds are found in different ecological zones of the range. The range is of much ornithological importance as a number of local altitudinal migrants are found in this area in different seasons. Species found in southern lower areas of the country visit in summer as breeding visitors and those of northern high altitudinal area are found here in winter.

A number of workers have contributed to the studies on birds of the Salt range. Whistler (1916) described the birds of Jhelum district including those areas of the district present by in the Salt range. Waite (1951) studied the birds of the Salt range and described 248 spp. of birds from the range. Ali and Ripley (1968-74) described the birds of the Indian subcontinent including those of this area. Van (1987-89), Scott and Rose (1989) and Perennou, et al (1990-1992) compiled the midwinter counts of Asia including wetlands of the Salt range. Scott (1989) compiled a directory of Asian wetlands including those of the Salt lakes. Roberts (1991-92) referred to the avifauna of the area.

The present paper is based on latest observations and new records by the author during regular surveys of the birds of the range from 1982 to 1990. The contribution of the earlier workers has also been taken into account. A complete list of the bird fauna of the area comprising of 267 species, 153 genera, 53 families and 18 orders, has been given alongwith their status, frequency of occurrence and habitat preferences.

HABITAT TYPES :

The Salt range has the following important habitat types :

1. WETLANDS :

There are five important lakes in the range which are called Salt lakes. These are Nammal lake, Uchali lake, Khabbaki lake, Jhalar lake and Kalar Kahar lake. These lakes are with light aquatic vegetations having plant species *Potamogeton crispus*, *Hydrilla verticillata*, *Carex fedia*, *Vallisneria spiralis*, *Zannichellia palustris*, *Saccharum spontaneum*, *Typha angustata* and *Phragmites spp.* etc.

These lakes are very much important due to their waterfowl population.

2. GARDENS :

There are gardens of mix fruits in the Salt range at Kalar Kahar, Choha Sainen Shah and Kunhutti. These gardens consist of plants of Guava, Pomegranate, Pear, Loquat, Apricot, Mango and Malbury etc. These gardens have large concentrations of Parakeets and Bulbuls. Peafowl is also present at Gardens of Kalar Kahar.

3. HILLS :

Semi-mountainous area of the range have a series of hills ranging upto 5000 feet above sea level. These hills are with dry sub-tropical semi-evergreen forest having *Olea-Acacia modesta*, forest and *Dodonaea* scrub. Important plants are *Olea ferruginea*, *Acacia modesta*, *A. nilotica*, *Adhatoda vasica*, *Prosopis cineraria*, *Dodonaea viscosa*, *Salvadora oleoides*, *Ziziphus nummularia*, *Reptonia buxifolia* and *Tamarix spp.*

These hills offer an ideal habitat for Urial (*Ovis orientalis*), Chukor (*Alectoris chukar*), Sees-see Partridge (*Ammoperdix griseogularis*) and Grey Partridge (*Francolinus pondicerianus*).

4. FIELDS :

Valleys of the Salt range consist of agriculture fields having cereal crops and cabbage etc. These fields are much attractive for seed eater birds like doves and finches etc. Around the agriculture fields trees of *Acacia* and *Dalbergia* are commonly found.

5. TOWN AND VILLAGES :

Some of the birds are found more commonly in towns and villages than other habitat types. Trees of *Ziziphus jujuba*, *Acacia nilotica* and *Melia azedarack* are common in the human habitation area.

6. SANDY AREAS :

On the southern base of the range there is sandy area. Associated vegetation consist of *Ziziphus nummularia*, *Prosopis juliflora*, *Salvadra oleoides*, *Dodonaea viscosa* and *Tamarix spp.* etc.

IMPORTANT BIRDS OF THE AREA :

Salt range has different ecological zones and altitudinal range suitable for different kinds of birds. The range is situated between high altitudinal northern areas and low altitudinal southern areas of the country. A large variety of waterfowl, raptors, galliformes and other birds are found in the range. Following are the important groups of birds of the range.

1. WATERFOWL

The Salt range is one of the most important areas for waterfowl. There are five lakes called Salt lakes in the range which have a large variety of waterfowl including rare and endangered species.

89 taxa of waterfowl belonging to 86 species, 51 genera, 17 families and 7 orders have been recorded from the wetlands of the range. Of these 22 taxa are resident, 37 taxa winter visitor, 13 taxa passage migrant and 5 taxa are summer visitors.

Salt lakes when full of water support upto 1,50,000 waterfowl. The lakes are important due to rare and endangered species of waterfowl found on them. White-headed Stiff-tailed Duck (*Oxyura leucocephala*), which is one of the globally threatened species of waterfowl is winter visitor to Pakistan and is found only on the wetlands of the Salt range except occasional visits to other wetlands. Its population is on decline and it has also disappeared from a number of sites where it was present in the past. Its five percent population is found in winter in Pakistan.

Midwinter counts of *Oxyura leucocephala* on the Salt lakes have been undertaken since 1965. Following table shows the total numbers counted year-wise.

Year	No.	Year	No.	Year	No.
1965	723	1973	188	1987	733
1967	373	1974	918	1988	286
1968	1039	1975	587	1989	187
1969	—	1983	734 (1 site)		
1970	15	1984	255		
1971	740	1985	120+ (1 site)		
1972	314	1986	325		

(Anstey, 1989)

The population in 1990, 91 and 92 was 76, 42 and 146.

The species is protected and two of the major wintering sites, Uchali and Khabbaki lakes are also protected. But illegal hunting of waterfowl is often reported. In addition to illegal hunting habitat loss by change of water level, introduction of alien fish species and disturbances caused by fishing and recreation are the major threats to the species.

A joint project of W. W. F. Pakistan and Punjab Wildlife Department for protection and development of habitat of the species is in operation.

Greylag Goose (*Anser anser*) is another, rare species which is also winter visitor and its major population is found on the Salt lakes, specially at Nammal lake.

Smew (*Mergus albellus*) was also regular winter visitor to Nammal lake but now it has not been recorded during the last twenty years.

Great Crested Grebe (*Podiceps cristatus cristatus*) and Blacknecked Grebe (*P. nigripinnis*) which are not commonly seen on the wetlands of southern areas of the country are also regularly found in winter on the Salt lakes.

A number of species of waterfowl which are occasionally seen on the wetlands of the country have been recorded from the wetlands of the Salt range. These species include Redbreasted Merganser (*Mergus serratus*), Whitenecked Stork (*Ciconia episcopus*) White Stork (*C. ciconia*), Black Stork (*C. nigra*), Blacknecked Stork (*Ephippiorhynchus asiaticus*) and Indian Black Ibis (*Pseudibis papillosa*).

Flamingo (*Phoenicopterus ruber*) is found resident at Uchali lake in past few years while Painted Stork (*Mycteria leucocephala*), and Spoonbill (*Platalea leucorodia*) are regular summer visitors at Nammal Lake.

Important winter visitor species of Ducks are Common Pochard (*Aythya ferina*), Tufted Duck (*A. fuligula*), Mallard (*Anas platyrhynchos*), Pintail (*A. acuta*), Wigeon (*A. penelope*), Shoveller (*A. clypeata*), Common Teal (*A. crecca*) and Gadwal (*A. strepera*). Common Shelduck (*Tadorna tadorna*), Ruddy Shelduck (*Tadorna ferruginea*) and Redcrested Pochard (*Netta rufina*) are also seen in small numbers.

2. GALLIFORMES

Salt range is also much important due to having good population of important species of Galliformes. The area of the range has excellent habitat for Chukor (*Alectoris chukar*) and See-see Partridge (*Ammoperdix griseogularis*). Another important Galliformes species is Peacock (*Pavo cristatus*) which is present only in few areas of the country with very small population. This species is also present at Kalar Kahar. Grey Partridge (*Francolinus pondicerianus*) is another bird of the range which is with very good population.

3. BIRDS OF PREY :

A number of species of birds of prey are found in the Salt range. Lagger Falcon (*Falco jugger*) and Peregrine Falcon (*Falco peregrinus*), which are of the most important species of Falcons are recorded in the areas of the range. Other important species include

White eyed Buzzard (*Butastur teesa*), Crested Honey Buzzard (*Pernis ptilorhynchus*), Ringtailed Fishing Eagle (*Haliaeetus leucoryphus*), Short-toed Eagle (*Circaetus gallicus*) and Tawny Eagle (*Aquila rapax*) etc.

4. OTHER SPECIES:

Roseringed Parakeet (*Psittacula eupatria*), Redvented Bulbul (*Pycnonotus cafer*) and Whitecheeked Bulbul (*P. leucogenys*) are abundant in gardens of the Salt range at Kunhatti, Choha Saidan Shah, Kalar Kahar and Sodi.

WILDLIFE SPECIAL AREAS IN THE SALT RANGE:

1. CHINJI NATIONAL PARK:

Chinji Reserved Forest located in Salt range, 30 Km. south of Talagang, district Chakwal, was declared a National Park w.e.f. 7th July, 1987. The park consists of hilly formation having an area of 6,095 hectares.

Vegetation in the park is typical of dry-tropical consisting of *Acacia modesta*, *Olea ferruginea*, *Zizyphus nummularia*, *Gymnosporia sp.* *Dodonaea viscosa*, *Ehretia spp.* and *Sageretia theezans* etc.

The area of the park has an ideal natural habitat of Punjab Urial (*Ovis orientalis punjabiensis*), Indian Gazelle (*Gazella gazella*), See-see Partridge (*Ammoperdix griseogularis*), Grey Partridge (*Francolinus pondicerianus*) and Chukor (*Alectoris chukar*).

2. CHUMBI SURLA :

Chumbi Surla situated in southeastern area of district Chakwal, is one of the largest wildlife sanctuaries of the Punjab province having an area of 55944.96 ha. It consists of hilly areas having *Olea-Acacia modesta* forest and *Dodonaea* scrub. The sanctuary is though important for conservation of Punjab Urial (*Ovis orientalis punjabiensis*), but is equally important for bird species found in it. In the areas of the wildlife sanctuary Chukor (*Alectoris chukar*), Seesee Partridge (*Ammoperdix griseogularis*) and Grey Partridge (*Francolinus pondicerianus*) are found with good population.

3. SODI :

Sodi wildlife sanctuary having an area of 5817.48 ha is situated in Soon vali, 6 Km. southeast of Nowshera Town. This is another important area for Game birds. Major area of the sanctuary consist of hills with typical vegetation of the Salt range. This Wildlife sanctuary is also important both for conservation of mammalian and birds species found in it.

The sanctuary is one of the areas having highest concentration of Grey Partridge (*Francolinus pondicerianus*). Seesee Partridge (*Ammoperdix griseogularis*) and Chukor (*Alectoris chukar*) are also present in areas of the sanctuary.

4. NAMMAL LAKE:

Nammal lake is a shallow lake 20 Km. northeast of the Mianwali city near a village Rikhi. The lake has an area of 486 ha. It is with light submerged and reed vegetation.

The lake is one of the most important lakes for migratory as well as resident waterfowl.

Greylag Goose (*Anser anser*) is a regular winter visitor to the lake in a good number. Other important species of waterfowl found commonly include Mallard (*Anas platyrhynchos*), Wigeon (*A. penelope*), Pintail (*A. acuta*), Shoveller (*A. clypeata*), Common Teal (*A. crecca*), and Common Pochard (*Aythya ferina*). Smew (*Mergus albellus*) was once a regular visitor to the lake but now it has not been seen since the last many years.

Whitenecked Stork (*Ciconia episcopus*) has not been recorded since the last ten years on other wetlands of the country. A single bird was recorded by the author on this wetland on 28-7-1985 while a pair of birds was seen on 12-9-1987. White Stork was also recorded on 8-3-1987. Blacknecked Stork (*Ephippirhynchus asiaticus*), Black Stork (*Ciconia nigra*) and Black Ibis (*Pseudibis papillosa*) have also been recorded at the lake (Waite 1951).

Painted Stork (*Mycteria leucocephalus*) and Spoonbill (*Platalea leucorodia*) are regular summer visitors on the lake. Breeding of Painted Snipe (*Rostratula benghalensis*) is recorded on the lake. A female with three young was seen in July 1989. Other resident and summer visitors include Purple Moorhen, (*Porphyrio porphyrio*), Indian Moorhen (*Gallinula chloropus*) and Kentish Plover (*Charadrius alexandrinus*).

Population of midwinter waterfowl counts from 1985 to 1992 is following

Year :	1985	1986	1987	1988	1989	1990	1991	1992
POPULATION:	662	280	1509	205	395	1311	410	1883

5. UCCHALI LAKE :

Ucchali lake is the largest lake of the Salt range having an area of 943 ha, situated in Soon valley 13 Km. north-west of Nowshera town. Water is with high salinity. Most of the lake is without aquatic vegetation but is rich with planktons. The lake when full of water becomes one of the wetlands having highest concentration of waterfowl. The lake is most important wintering site of world wide threatened species of waterfowl. Whiteheaded Stiff-tailed Duck (*Oxyura leucocephala*), Greylag Goose (*Anser anser*), Common Shelduck (*Tadorna tadorna*) and Ruddy Shelduck (*Tadorna ferruginea*) are also recorded from the lake. Common winter visitor species with good population include Coot (*Fulica atra*), Common Pochard (*Aythya ferina*), Mallard (*Anas platyrhynchos*),

Pintail (*A. acuta*), Wigeon (*A. penelope*), Shoveller (*A. clypeata*), Common Teal (*A. crecca*), Gadwall (*A. strepera*), and Great Crested Grebe (*Podiceps cristatus*).

The lake is only wetland of the Punjab province at which Flamingo (*Phoenicopterus roseus*) is resident.

Following is the data of Midwinter waterfowl count :

Year :	1985	1986	1987	1988	1989	1990	1991	1992
Population :	29390	147497	8554	5890	18212	8288	2740	722

6. KHABBAKI LAKE :

Khabbaki lake is a saline lake in Soon valley, 13 Km. east of Nowshera Town. The lake is with light aquatic vegetation. Area of the lake is 283 ha.

The lake was declared wetland of International importance due to presence of Whiteheaded Stiffailed Duck (*Oxyura leucocephala*) and good population of other waterfowl, but now very small population of waterfowl is found on the lake. This is after introduction of fishes in the lake. Due to excessive disturbances caused by the fishermen and problem of food competition between fishes and waterfowl, population of waterfowl has decreased in the lake. The lake had been declared Wildlife Sanctuary since 1960.

Midwinter waterfowl count data is as follows :

YEAR	1985	1986	1987	1988	1989	1990	1991	1992
POPULATION:	144	162	1827	2316	2195	597	3629	3590

7. JHALAR LAKE:

This is a small saline lake having an area of about 17 ha situated 10 Km. southwest of Nowshera. This lake is also important due to wintering of Whiteheaded Stiffailed Duck (*Oxyura leucocephala*). A small population of other common winter visitor species is also found. The wetland has been declared wildlife sanctuary in February, 1993.

Data of Midwinter population from 1987 to 1992 is following :-

YEAR :	1987	1988	1988	1990	1991	1992
POPULATION :	537	429	200	650	43	54

8. KALAR KAHAR LAKE:

This is also a small lake near Kalar Kahar Town, 3 K. M. southwest of Chakwal. This lake used to support upto 5000 waterfowl in winter. In the past it was a breeding ground in summer for a good population of Purple Moorhen (*Porphyrio porphyrio*) and Indian Moorhen (*Gallinula chloropus*). But now it is facing the problem of draughtness and excessive disturbance by tourists.

Data of Midwinter waterfowl population is as following :—

YEAR :	1985	1986	1987	1988	1989	1990	1991	1992
POPULATION :	5061	82	291	0	3533	476	4949	4125

THREATS TO THE BIRDS OF THE SALT RANGE:

Birds specially waterfowl are facing a number of problems and threats which are affecting the population of the birds. Major threats to waterfowl population are following :—

1. HABITAT LOSS :

Fluctuation in water level is one of the most important factors affecting the waterfowl population. Kalar Kahar lake is facing the problem of shortage of water. Water level in Uchali lake has also decreased while Nammal lake has high fluctuation of water level in different seasons. Due to shortage of water, waterfowl population is seriously affected.

2. FISH CULTURE:

Introduction of alien fish species specially China Carp in the Salt lakes has seriously affected the waterfowl population. Khabbaki lake was the most important wintering area of Whiteheaded Stiff-tailed Duck and supported upto 8000 waterfowl including this species before introduction of fishes in the lake. But now very small population is found at the lake in winter.

3. DISTURBANCE :

Disturbance caused by fishing and recreation is another factor seriously affecting the waterfowl population. Kalar Kahar lake, when have water in it, a number of recreation boats of tourism department are found in it. Due to this excessive disturbance waterfowl population has decreased at the wetland. Boats used for fishing also become the cause of disturbance for waterfowl.

4. HUNTING :

Four of the five wetlands and number of species including Whiteheaded Stiff-tailed Duck are protected but illegal hunting is not unusual on the wetlands of the range.

Other than waterfowl, Chukor and Partridges are also under pressure of hunting. Parakeets and Bulbuls are considered to be the pest of fruits, so killing of these birds by garden owners is usual.

Mammals and Reptiles are also facing the problems of excessive hunting, disturbances caused by increasing human habitation and killing by skin traders.

ABBREVIATIONS USED

Status

R	=	Resident
M	=	Migratory
Wv	=	Winter visitor
Sv	=	Summer visitor
Pm	=	Passage migrant
O	=	Occasional

Relative Abundance

A	=	Abundant
C	=	Common
Unc	=	Uncommon
R	=	Rare

Habitat

W	=	Wetlands
G	=	Gardens
H	=	Hills
F	=	Fields
T	=	Towns and villages
S	=	Sandy area

SYSTEMATIC LIST OF BIRDS WITH STATUS, RELATIVE ABUNDANCE
AND HABITAT

Birds	Status	Relative Abundance	Habitat
ORDER: PODICIPITIFORMES			
FAMILY: PODICIPITIDAE			
<i>Podiceps cristatus cristatus</i> Great Crested Grebe	Wv	C	W
<i>P. nigricollis nigricollis</i> Blacknecked Grebe	Wv	Ra	W
<i>P. aurites</i> Salvonian Grebe	O	Ra	W
<i>Tachybaptus ruficollis ruficollis</i> Little Grebe	R	C	W
ORDER: PELECANIFORMES			
FAMILY: PHALACROCORACIDAE			
<i>Phalacrocorax carbo sinensis</i> Large Cormorant	R	Ra	W
<i>Halietor niger</i> Little Cormorant	R	Ra	W
FAMILY: ANHINGIDAE			
<i>Anhinga melanogaster</i> Darter	R	Ra	W
ORDER: CICONIIFORMES			
FAMILY: ARDEIDAE			
<i>Ardea cinerea cinerea</i> European Grey Heron	Wv	C	W
<i>A. c. rectirostris</i> Eastern Grey Heron	R	Ra	W

<i>A. purpurea</i> Purple Heron	R	Ra	W
<i>Bubulcus ibis</i> Cattle Egret	R	Ra	W
<i>Ardeola grayii grayii</i> Pond Heron	R	C	W
<i>Egretta alba alba</i> European Large Egret	Wv	C	W
<i>E. a. modesta</i> Eastern Large Egret	R	C	W
<i>E. garzetta garzetta</i> Little Egret	R	C	W
<i>Nycticorax nycticorax</i> Night Heron	Sv	Ra	W
<i>Ixobrychus minutus minutus</i> Little Bittern	O	Ra	W
<i>I. cinnamomeus</i> Chestnut Bittern	O	Ra	W

FAMILY: CICONIIDAE

<i>Mycteria leucocephalus</i> Painted Stork	Sv	Ra	W
<i>Ciconia ciconia ciconia</i> White Stork	O	Ra	W
<i>C. episcopus episcopus</i> Whitenecked Stork	O	Ra	W
<i>C. nigra</i> Black Stork	O	Ra	W
<i>Ephippiorhynchus asiaticus</i> Blacknecked Stork	O	Ra	W

ORDER: PHOENICOPTERIFORMES
 FAMILY: PHOENICOPTERIDAE

<i>Phoenicopterus ruber</i> Flamingo	R	Unc	W
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ORDER: ANSERIFORMES
 FAMILY: ANATIDAE

<i>Anser anser</i> Greylag Goose	Wv	Ra	W
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<i>A. indicus</i> Barheaded Goose	O	Ra	W
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<i>Tadorna tadorna</i> Common Shelduck	O	Ra	W
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<i>T. ferruginea</i> Ruddy Shelduck	Wv	Ra	W
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<i>Anas acuta</i> Pintail	Wv	A	W
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<i>A. crecca</i> Common Teal	Wv	C	W
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<i>A. platyrhynchos</i> Mallard	Wv	A	W
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<i>A. strepera</i> Gadwal	Wv	C	W
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<i>A. penelope</i> Wigeon	Wv	A	W
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<i>A. querquedula</i> Gargany	Pm	R	W
<i>A. clypeata</i> Shoveller	Wv	C	W
<i>Netta rufina</i> Redcrested Pochard	Wv	Ra	W
<i>Aythya ferina</i> Common Pochard	Wv	A	W
<i>A. nyroca</i> White eyed Pochard	O	Ra	W
<i>A. fuligula</i> Tufted Duck	Wv	Ra	W
<i>Mergus albellus</i> Smew	O	Ra	W
<i>M. merganser merganser</i> Common Merganser	O	Ra	W
<i>Oxyura leucocephala</i> Whiteheaded Stiff-tailed Duck	Wv	Ra	W

ORDER: FALCONIFORMES
FAMILY: ACCIPITRIDAE

<i>Pernis ptilorhynchus</i> Siberian Honey Buzzard	O	Ra	H,F.
<i>Accipiter badius dussumieri</i> Shikra	R	C	H,F
<i>A. nisus melaschistos</i> Sparrow Hawk	R	Ra	H,F
<i>Buteo rufinus</i> Longlegged Buzzard	R	C	H,F

<i>Butastur teesa</i> White-eyed Buzzard	R	Ra	H,F
<i>Hieraaetus fasciatus</i> Bonelli's Eagle	R	Ra	H,S,F,W
<i>Aquila rapax</i> Tawny Eagle	R	Ra	H,S,W,F
<i>A. clanga</i> Spotted Eagle	O	Ra	H,S,F
<i>Haliaeetus leucoryphus</i> Ringtailed Fishing Eagle	O	Ra	W
<i>Sarcogyps calvus</i> Black Vulture	O	Ra	H
<i>Gypaetus barbatus aureus</i> Himalayan Bearded Vulture	O	Ra	H
<i>Gyps indicus Jonesi</i> Longe billed Vulture	R	C	H,F,S.
<i>G. bengalensis</i> Indian Whitebacked Vulture	R	C	H,F,S
<i>Neophrone percnopterus</i> Large White Scavanger Vulture	R	Ra	F,S,H
<i>Circus cyaneus cyaneus</i> Hen Harrier	Pm	C	W,F
<i>C. melanoleucus</i> Pied Harrier	O	Ra	W
<i>C. macrourus</i> Pale Harrier	Wv	Ra	F,W,H
<i>C. pygargus</i> Montagu's Harrier	Pm	Ra	W,F,H
<i>C. aeruginosus aeruginosus</i> Marsh Harrier	Wv	C	W,F

	<i>Circaetus gallicus</i> Short-toed Eagle	O	Ra	H,F
	<i>Pandion haliaetus haliaetus</i> Osprey	Wv	Ra	W,F,H
FAMILY:	FALCONIDAE			
	<i>Falco jugger</i> Lagger Falcon	R	Ra	H,F
	<i>F. peregrinus peregrinator</i> Shaheen Falcon	R	Ra	W,F
	<i>F. subbuteo subbuteo</i> Hobby	O	Ra	H,F,W
	<i>F. chicquera</i> Redheaded Merlin	Wv	Ra	H,F
	<i>F. tinnunculus</i> European Kestrel	R/Wv	C	H,F
ORDER:	GALLIFORMES			
FAMILY:	PHASIANIDAE			
	<i>Ammoperdix griseogularis</i> Seesee Partridge	R	C	H
	<i>Alectoris chukar</i> Chukor	R	C	H
	<i>Francolinus pondicerianus</i> Grey Partridge	R	A	H,F
	<i>Coturnix coturnix</i> Grey Quail	Pm	Ra	F,H
ORDER:	GRUIFORMES			
FAMILY:	TURNICIDAE			
	<i>Turnix tanki tanki</i> Indian Button Quail	R	Ra	F,F

FAMILY: GRUIDAE

<i>Grus grus lilfordi</i>	Pm	Ra	SEEN FLYING
Eastern Common Crane			

<i>Anthropoides virgo</i>	Pm	C	SEEN FLYING
Demoiselle Crane			

FAMILY: RALLIDAE

<i>Rallus aquaticus</i>	O	Ra	W
Turkistan Water Rail			

<i>Porzana parva</i>	Wv	Ra	W
little crane			

<i>P. porzana</i>	Wv	Ra	W
Spotted Crane			

<i>P. pusilla</i>	O	Ra	W
Eastern Baillon's Crane			

<i>Amaurornis fuscus</i>	O	Ra	W
Northern Ruddy Crane			

<i>A. phoenicurus chinensis</i>	O	Ra	W
Chinese Whitebreasted Waterhen			

<i>Gallinula chloropus</i>	R	C	W
Indian Moorhen			

<i>Porphyrio porphyrio</i>	R	C	W
Purple Moorhen			

<i>Fulica atra</i>	Wv	A	W
Coot			

ORDER: CHARADRIIFORMES

FAMILY: JACANIDAE

<i>Hydrophasianus chirurgus</i>	Sv	Ra	W
Pheasant-tailed Jacana			

FAMILY: CHARADRIIDAE

SUB-

FAMILY: Charadriinae

	<i>Vanellus Leucurus</i> White-tailed Lapwing	Wv	Ra	W
	<i>V. vanellus</i> Lapwing	Wv	Ra	W
	<i>V. gregarius</i> Sociable Lapwing	O	Ra	W
	<i>V. indicus</i> Redwattled Lapwing	R	C	W
	<i>Charadrius dubius curonicus</i> European Little Ringed Plover	Pm	Unc	W
	<i>C. d. jerdoni</i> Indian Little Ringed Plover	R	Unc	W
	<i>C. alexandrinus alexandrinus</i> Kentish Plover	Sv	Ra	W
FAMILY:	SCOLOPACIDAE			
SUB-				
FAMILY:	Tringinae			
	<i>Numenius arquata</i> Curlew	Pm	Ra	W
	<i>Limosa limosa limosa</i> Blacktailed Godwit	Pm	Ra	W
	<i>L. lapponica lapponica</i> Bartailed Godwit	Pm	Ra	W
	<i>Tringa erythropus</i> Spotted Redshank	Wv	Ra	W
	<i>T. totanus</i> Common Redshank	Wv	C	W
	<i>T. nebularia</i> Green Shank	Wv	Ra	W

	<i>T. ochropus</i> Green Sandpiper	Wv	C	W
	<i>T. glareola</i> Wood Sandpiper	Wv	C	W
	<i>Actitis hypoleucos</i> Common Sandpiper	Wv	C	W
SUB-FAMILY:	Gallinagoninae			
	<i>Gallinago gallinago gallinago</i> Common Snipe	Wv	Ra	W
	<i>Lymnoryptes minima</i> Jack Snipe	O	Ra	W
SUB-FAMILY:	Calidridinae			
	<i>Calidris minutus</i> Little Stint	Pm	C	W
	<i>C. temminkii</i> Temminck's Stint	Pm	C	W
	<i>C. alpinus alpinus</i> Dunlin	Pm	Ra	W
	<i>C. ferruginea</i> Curlew Sandpiper	Pm	Ra	W
	<i>Philomachus pugnax</i> Ruff.	Pm	Ra	W
FAMILY:	ROSTRATULIDAE			
	<i>Rostratula benghalensis</i> Painted Snipe	R	Ra	W
	<i>Recurvirostra avocetta</i> Avocet	Wv	Ra	W
	<i>Himantopus himantopus</i> Blackwinged Stilt	R	C	W

FAMILY: GLAREOLIDAE

<i>Glareola lactea</i>	O	Ra	W
Small Indian Pratincole			

FAMILY: LARIDAE

SUB-

FAMILY: Larinae

<i>Larus ichthyaetus</i>	Wv	Ra	W
Great Blackheaded Gull			

<i>L. brunnicephalus</i>	Wv	C	W
Brown headed Gull			

<i>L. ridibundus ridibundus</i>	Wv	C	W
Blackheaded Gull			

SUB-

FAMILY: Sterninae

<i>Chilidonias hybrida indica</i>	Wv	Ra	W
Indian Whiskered Tern			

<i>Gelochelidon nilotica</i>	Wv	Ra	W
Gullbilled Tern			

<i>Sterna aurantia</i>	Wv	C	W
Indian River Tern			

<i>S. acuticauda</i>	R	C	W
Blackbellied Tern			

ORDER: COLUMBIFORMES

FAMILY: PTEROCLIDIDAE

<i>Pterocles exustus erlangeri</i>	R	Ra	S
Indian Sandgrouse			

<i>P. orientalis orientalis</i>	Wv	Ra	S
Blackbellied Imperial Sandgrouse			

<i>P. indicus indicus</i>	Wv	Ra	S
Painted Sandgrouse			

FAMILY: COLUMBIDAE

<i>Treron phoenicoptera phoenicoptera</i> Bengal Green Pigeon	R	Ra	H
<i>Columba livia neglecta</i> Blue Rock Pigeon	R	C	T,H,F.
<i>Columba palumbus casiotis</i> Eastern Wood Pigeon	R	Ra	H, F
<i>Streptopelia decaocta decaocta</i> Indian Ring Dove	R	A	F,T,H
<i>S. tranquebarica tranquebarica</i> Indian Red Turtle Dove	R	C	F,H,T
<i>S. chinensis suratensis</i> Indian Spotted Dove	O	Ra	F,H,T
<i>S. senegalensis cambayensis</i> Indian Little Brown Dove	R	C	F,H,T

ORDER: PSITTACIFORMES

FAMILY: PSITTACIDAE

<i>Psittacula eupatria nipalensis</i> Large Indian Parakeet	R	Ra	G,T,F
<i>P. krameri borealis</i> Northern Rose-ringed Parakeet	R	C	G,T,F
<i>P. cyanocephala bengalensis</i> Northern Bossom-headed Parakeet	O	Ra	G,H

ORDER: CUCULIFORMES

FAMILY: CUCULIDAE

SUB-FAMILY: Cuculinae

<i>Clamator jacobinus serratus</i> Pied Crested Cuckoo	Sv	Unc	G, H
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	<i>Eudynamys scolopacea scolopacea</i> Indian Koel	Sv	Unc	G,H,T
	<i>Cuculus canorus canorus</i> Cuckoo	Pm	Ra	H,G
SUB-FAMILY:	Centropodinae			
	<i>Centropus sinensis sinensis</i> Crow Pheasant	R	Ra	F,H
ORDER:	STRIGIFORMES			
FAMILY:	STRIGIDAE			
SUB-FAMILY:	Striginae			
	<i>Otus brucei</i> Striated Scops Owl	R	Ra	H
	<i>Bubo bubo bengalensis</i> Indian Great Horned Owl	R	Ra	H
	<i>B. coromandus coromandus</i> Duskly Horned Owl	R	Ra	S,F
	<i>Athene brama indica</i> Northern Spotted Owl	R	R	H,F
	<i>Asio flammeus</i> Shorteared Owl	O	R	H
ORDER:	CAPRIMULGIFORMES			
FAMILY:	CAPRIMULGIDAE			
	<i>Caprimulgus europaeus</i> Hume's European Nightjar	Sv	C	S
	<i>C. mahrattensis</i> Sykes's Nightjar	Sv	Ra	H,S
	<i>C. affinis monticola</i> Franklin's Nightjar	Sv	R	S,H

ORDER: APODIFORMES
FAMILY: APODIDAE

<i>Apus melba melba</i> Alpine Swift	Pm	Unc	H
<i>A. affinis</i> House Swift	Sv	C	T,F

ORDER: CORACIIFORMES
FAMILY: ALCEDINIDAE

<i>Ceryle rudis leucomelanura</i> Indian Pied Kingfisher	R	Ra	W
<i>Alcedo atthis</i> Small Blue Kingfisher	O	Ra	W
<i>Halcyon smyrnensis</i> Whitebreasted Kingfisher	R	C	W

FAMILY: MEROPIIDAE

<i>Merops apiaster</i> European Bee-eater	Pm	Ra	F,H
<i>M. superciliosus persicus</i> Bluecheeked Bee-eater	Sv	Ra	F,W,G,
<i>M. philippinus philippinus</i> Bluetailed Bee-eater	Sv	Ra	F,W,G
<i>M. orientalis beludschicus</i> Sind Small Green Bee-eater	Sv	C	F,G,W

FAMILY: CORACIIDAE

<i>Coracias garrulus semenowi</i> Kashmir Roller	Pm	Ra	F,S,H
<i>C. benghalensis benghalensis</i> Blue Jay	R	Ra	F,S,H

FAMILY: UPAPIDAE

Upapa epops R Ra F,H
European Hoopoe

ORDER: PICIFORMES
FAMILY: CAPITONIDAE

Megalaima virens marshallorum O Ra G
Himalayan Great Barbet

FAMILY: PICIDAE

SUB-FAMILY: Jynginae

Jynx torquilla torquilla Wv Ra F
European Wryneck

SUB-FAMILY: Picinae

Picus squamatus squamatus R Ra H
Himalayan Scalybellied
Green Woodpecker

Dinopium benghalense dilutum R Ra G,F,H
Sind Golden-backed Woodpecker

Picooides assimilis R Ra G,F,H.
Sind Pied Woodpecker

ORDER: PASSERIFORMES
FAMILY: ALAUDIDAE

Mirafra javanica cantillans O Ra F,S,H
Singing Bush Lark

M. erythroptera sindiana Wv Ra F,S,H
Sind Redwinged Bush Lark

Galerida cristata chendoola R C S,F,H
Indian Crested Lark

	<i>Eremopterix grisea</i>	R	Ra	F,S,M
	Ashycrowned Finch Lark			
	<i>Ammomanes deserti phoenicuroides</i>	R	Ra	H'S
	Indian Desert Finch Lark			
	<i>A. phoenicurus phoenicurus</i>	O	Ra	F'S
	Indian Rufous-tailed Finch Lark			
	<i>Alauda gulgula</i>	R	C	W,F,S
	Skylark			
FAMILY:	HIRUNDINIDAE			
	<i>Riparia riparia diluta</i>	O	Ra	W
	Siberian Collard Sand Martin			
	<i>Hirundo rupestris</i>	R	Ra	T,H,F
	Crag Martin			
	<i>H. rustica rustica</i>	R	C	W,F,H
	Common Swallow			
	<i>H. smithii filifera</i>	Sv	C	W,F,H
	Indian Wiretailed Swallow			
	<i>H. daurica</i>	Sv	Ra	W,F,H
	Striated Swallow			
FAMILY:	LANIIDAE			
	<i>Lanius excubitor lahtora</i>	R	C	S,F,H
	Indian Grey Shrike			
	<i>L. vittatus vittatus</i>	Sv	C	F,G,H
	Indian Baybacked Shrike			
	<i>L. schach erythronotus</i>	R	Ra	F,G,H
	Rufous-backed Shrike			

FAMILY: ORIOLIDAE

<i>Oriolus oriolus kundoo</i>	Sv	C	G,F
Indian Golden Oriole			

FAMILY: DICRURIDAE

<i>Dicrurus adsimilis albirictus</i>	R	C	F,G,H
North Indian Black Drongo			

FAMILY: STURNIDAE

<i>Sturnus pagodarum</i>	R	Ra	G,F,H
Blackheaded Myna			

<i>S. roseus</i>	Pm	C	G,H
Rosy Starling			

<i>S. vulgaris poltaratskyi</i>	Wv	C	F,W,G
Finsch's or Common Indian Starling			

<i>S. v. nobilior</i>	Wv	Ra	F,W,G
Humes or Afghan Starling			

<i>Acridotheres tristis</i>	R	A	F,G,H
Indian Myna			

<i>A. ginginianus</i>	R	Ra	F,G,H
Bank Myna			

<i>A. fuscus fuscus</i>	R	Ra	F,G
Northern Jungle Myna			

FAMILY: CORVIDAE

<i>Dendrocitta vagabunda</i>	R	Ra	G,F
Northwestern Tree Pie			

<i>Corvus splendens</i>	R	A	T,F,H
Sind House Crow			

	<i>C. corax subcorax</i>	R	Ra	F,H
	Punjab Raven			
	<i>C. macrorhynchos intermedius</i>	R	Ra	H,F
	Himalayan jungle Crow			
FAMILY:	CAMPEPHAGIDAE			
	<i>Tephrodornis pondicerianus</i>	O	Ra	H
	Sind Wood Shrike			
	<i>Pericrocotus brevirostris</i>	R	C	H,
	Indian Shortbilled Minivet			
	<i>P. cinnomomeus pallidus</i>	R	Ra	S,H
	Sind Small Minivet			
FAMILY:	PYCNONOTIDAE			
	<i>Pycnonotus leucogenys humii</i>	R	C	G,H,T
	Hume's White-eared Bulbul			
	<i>P. l. leucogenys</i>	R	C	G,H,T
	Whitecheeked Bulbul			
	<i>P. cafer</i>	R	C	G,H,T
	Redvented Bulbul			
FAMILY:	MUSCICAPIDAE			
SUB-FAMILY:	Timaliinae			
	<i>Turdoides caudatus caudatus</i>	R	A	G,F,H
	Common Babbler			
	<i>T. striatus sindianus</i>	R	C	G,H,F
	Sind Jungle Babber			
SUB-FAMILY:	Muscicapinae			

	<i>Muscicapa striata</i>	Sv	Ra	G,H
	Eastern Spotted Flycatcher			
	<i>M. parva parva</i>	Pm	Ra	G,H
	Western Redbreasted Flycatcher			
SUB-FAMILY:	Monarchinae			
	<i>Terpsiphone paradisi leucogaster</i>	Pm	Ra	G,H
	West Himalayan Paradise Flycatcher			
SUB-FAMILY:	Sylviinae			
	<i>Cisticola juncidis cursitans</i>	R	C	W,F,H
	Streaked Fantail Warbler			
	<i>Prinia buchanani</i>	R	Ra	S,H
	Rufousfronted Wren Warbler			
	<i>P. gracilis</i>	R	Ra	W,F,H.
	Indian Wren Warbler			
	<i>P. criniger striatula</i>	R	C	S,H
	Sind Brown Hill Warbler			
	<i>Orthotomus Sutorius guzuratus</i>	C	Ra	S,H,F
	Indian Tailor Bird			
	<i>Acrocephalus stentoreus</i>	Pm	Unc	W,F
	Indian Great Reed Warbler			
	<i>A. dumetorum</i>	Pm	C	W,F
	Blyth's Reed Warbler			
	<i>A. agricola agricola</i>	Pm	Ra	F,W
	Indian Paddyfield Warbler			
	<i>A. melanopogon</i>	Pm	Ra	W
	Moustached Sedge warbler.			

<i>Hippolais caligata</i> Booted Tree Warbler	Pm	Ra	H,F,W
<i>Sylvia hortensis jerdoni</i> Eastern Orphean Warbler	Pm	Ra	F,H,W
<i>S. communis icterops</i> Indian Whitethroat	Sv	Ra	H,W,S,F
<i>S. nana nana</i> Desert Warbler	Wv	Ra	S,H,F
<i>S. curucca</i> Lesser Whitethroat	Pm	C	H,F
<i>Phylloscopus collybita tristis</i> Brown Chiffchaff	Wv	Ra	W
<i>P. inornatus humei</i> Hume's Yellow browed leaf Warbler	Wv	C.	F
<i>P. griseolus</i> Olivaceous Leaf Warbler	Pm	Ra	H,W
<i>P. subviridis</i> Brook's Leaf Warbler	Wv	Ra	H,S
<i>P. trochiloides viridanus</i> Greenish Leaf Warbler	Pm	C	H,W,F
<i>P. occipitalis occipitalis</i> Large Crowned Leaf Warbler	Pm	Ra	H,F
SUB-FAMILY: Turdinae			
<i>Erithacus svecicus svecicus</i> Northern Bluethroat	Wv	Ra	F,W,H,S
<i>E. s. pallidogularis</i> Turkestan Bluethroat	Wv	Ra	F,W,H,G

<i>Copsychus saularis saularis</i> Indian Magpie Robin	R	Ra	G,H,S
<i>Phoenicurus erythronotus</i> Eversmann's Redstart	Wv	Ra	H,G,S
<i>P. ochruros phoenicuroides</i> Black Redstart	Wv	C	H,S
<i>Chaimarrornis leucocephalus</i> Whitecapped Redstart	Wv	Unc	W
<i>Saxicola torquata indica</i> Indian Collared Bush Chat	Wv	Ra	H,S
<i>S. carpata bicolor</i> Northern Pied Bush Chat	Sv	C	H,S,W.
<i>Oenanthe xanthopyrna</i> ¹ Redtailed Chat	Wv	Ra	H,S
<i>O. deserti deserti</i> Desert Chat	Wv	Ra	S,H
<i>O. picata capistrata</i> Pied Chat	Wv	C	S,F,H
<i>Saxicoloides fulicata cambaiensis</i> Brownbacked Indian Robin	R	C	H,F,S
<i>Erythropygia galactotes</i> Rufous Chat	Pm	Ra	H,S.

	<i>Monticola saxatilis</i> Rock Thrush	Pm	Ra	H
	<i>M. cinclorhynchus</i> Blueheaded Rock Thrush	O	Ra	H
	<i>M. solitarius</i> Blue Rock Thrush	Wv	C	H
	<i>Myiophonus caeruleus</i> Himalayan Whistling Thrush	Wv	Ra	H,G,W
	<i>Turdus viscivorus bonapartei</i> Missel Thrush	O	R	H,F
	<i>T. ruficollis atrogularis</i> Black-throated Thrush	Wv	C	F,H
FAMILY: PRUNELLIDAE				
	<i>Prunella strophiatea jerdoni</i> Western Rufous-breasted Accentor	O	Ra	H
FAMILY: PARIDAE				
SUB-FAMILY: Parinae				
	<i>Parus major caschmirensis</i> Kashmir Grey Tit	Wv	C	F,G,T
	<i>P. monticolus monticolus</i> Green-backed Tit	O	Ra	H,F,G
	<i>P. xanthogenys xanthogenys</i> Northern Yellow-cheeked Tit	O	Ra	G,H
SUB-FAMILY: Tichodromadinae				
	<i>Tichodroma muraria nepalensis</i> Wall Creeper	Wv	Ra	H,F,T
FAMILY: CERTHIIDAE				
	<i>Certhia himalayana limes</i> West Himalayan Tree Creeper	Wv	Ra	H,F

FAMILY: MOTACILLIDAE

<i>Anthus trivialis trivialis</i> Tree Pipit	Pm	Ra	F,G
<i>A. novaeseelandiae waitei</i> Northwestern Indian Pipit	R/m	C	F,H
<i>A. similis decaptus</i> Persian Rock Pipit	Sv	Ra	F,H
<i>A. campestris campestris</i> Tawny Pipit	Wv	C	F,H,S
<i>A. spinoletta</i> Water Pipit	Wv	C	W,G,F
<i>Motacilla flava thumbergi</i> Greyheaded Yellow Wagtail	Pm/Wv	Ra	W,G,F
<i>M. f. beema</i> Blueheaded Yellow Wagtail	Pm	Ra	W,G,F
<i>M. maderaspatensis</i> Large Pied Wagtail	R	C	W,G,F
<i>M. caspica caspica</i> Grey Wagtail	Wv	Ra	W,G,F
<i>M. alba dukhunensis</i> Indian White Wagtail	Wv/Pm	C	W,G,F
<i>M. a. personata</i> Masked Wagtail	O	Ra	
<i>M. citreola citreola</i> Hodgson's Yellowheaded Wagtail	Wv	C	W,G,F

FAMILY: NECTARINIIDAE

<i>Nectarinia asiatica brevirostris</i> Sind Purple Sunbird	Sv	C	H,S
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FAMILY: ZOSTEROPIDAE

<i>Zosterops palpebrosa</i>	R	C	H,G
White Eye			

FAMILY: PLOCEIDAE

SUB-

FAMILY: Passerinae

<i>Passer domesticus indicus</i>	R	A	T,F,H,S
Indian House Sparrow			

<i>P. d. parkini</i>	Pm	C	T,F,H,S
Kashmir House Sparrow			

<i>P. hispaniolensis transcaspicus</i>	Wv	Unc	F,S
Spanish Sparrow			

<i>Petronia xanthosterna</i>	Sv	Unc	S,H
Sind Yellow-throated Sparrow			

Sub-

Family :

Estrildinae

<i>Lonchura malabarica</i>	R	Ra	H,P
White-throated Munia			

FAMILY: FRINGILLIDAE

SUB-

FAMILY: Fringillinae

<i>Carpodacus erythrinus</i>	Pm	Ra	H,F
Common Rosefinch			

<i>C. rhodochlamys grandis</i>	O	Ra	H,F
Red-Mantled Rosefinch			

<i>Rhodopechys githaginea</i>	R	Ra	S,H
Eastern Desert Finch			

<i>Acanthis cannabina</i>	Wv	Ra	F,S
Eastern Linnet			

SUB-

FAMILY: Coccothraustinae

<i>Coccothraustes coccothraustes</i>	O	Ra	H,F
Hawfinch			

FAMILY: EMBERIZIDAE

<i>Emberiza stewarti</i>	Wv	Ra	H,G
Whitecapped Bunting			

<i>E. cia par</i>	Wv	C	H
Transcasian Rock Bunting			

<i>E. bruniceps</i>	Pm	Ra	F,H,W
Red-headed Bunting			

<i>E. melanocephala</i>	O	Ra	F,H,W
Blackheaded Bunting			

<i>E. striolata striolata</i>	R	Ra	H,R
Striolated Bunting			

<i>E. schoeniclus pallidior</i>	O	Ra	W
Central Asian Reed Bunting			

ACKNOWLEDGEMENT.

The Author is grateful to Mr. Mohammad Farooq Ahmad, Director, Zoological Survey, Department, for providing necessary facilities and guidance during this work.

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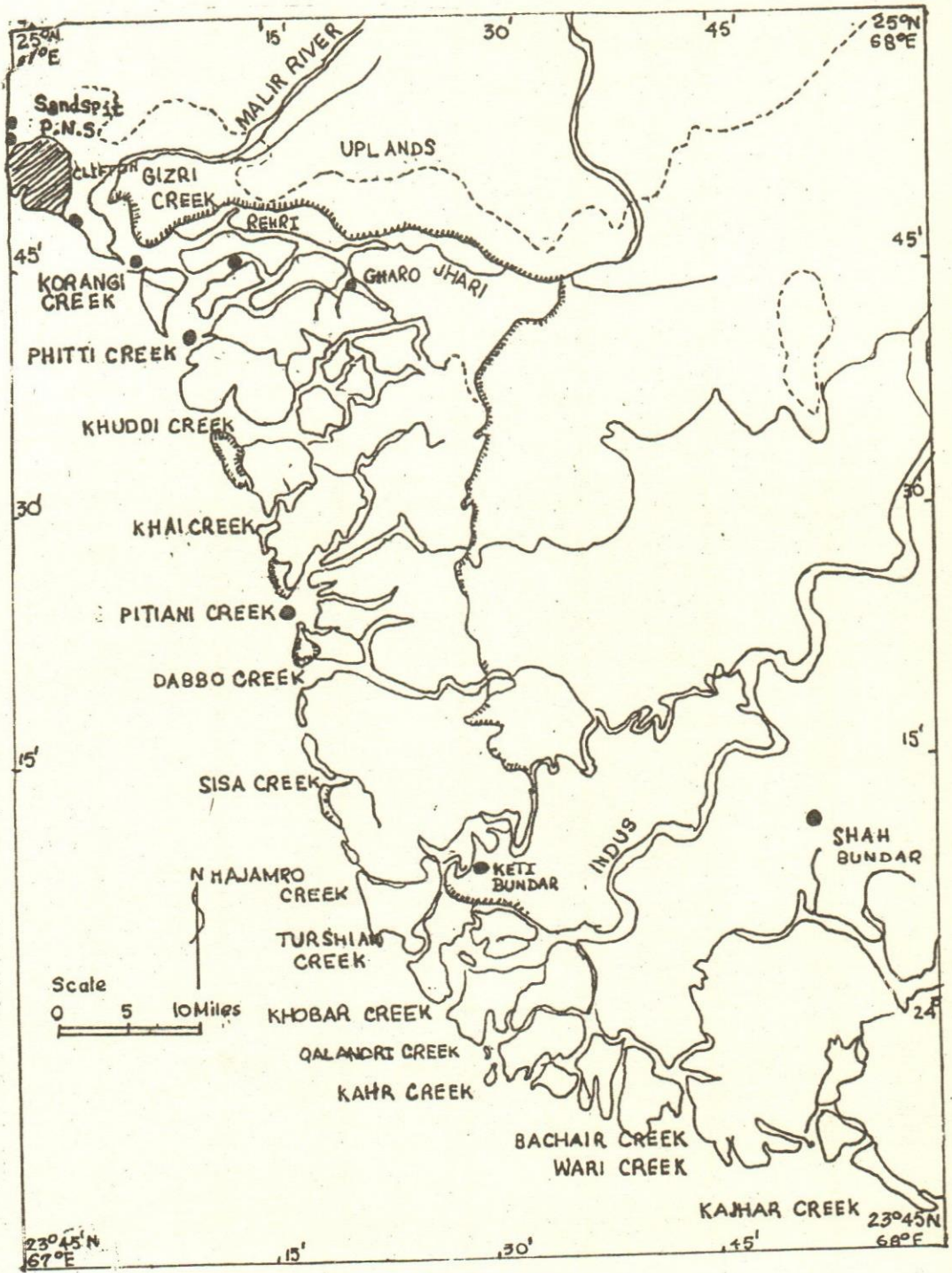
THE BIRDS OF SINDH MANGROVES

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Mangrove Swamps are the muddy shores with peculiar mangrove plantation on protected coast line and provide good feeding and sheltering grounds for marine as well as terrestrial animals. Alongwith other fauna, birds also utilize mangrove forests as feeding, breeding and resting grounds. Fish-eating birds such as Kingfishers, herons, egrets, pelicans and storks, find it a suitable feeding ground as the soft mud provide them a variety of food such as molluscs, crustaceans and small fish. Small waders like Little Ringed Plover, Kentish Plover, Lesser Sand Plover, Common Sandpiper and Little Stint have been seen deep in the mangrove forest at low tide. In the morning and evening these species search for insects among arial roots. Large waders like Curlew and Whimbrel feed along the water channels and rest during the day. Insect eating birds such as Bee-eaters perch among foliage and fly out to catch passing insects. Preliminary observations also show that a few species of birds breed in the mangroves. An immature Brahminy kite was caught from Korangi creek area in 1986. Immatures and eggs of Pariah kite were also collected several times during our research.

STUDY AREA

The first estimate of mangrove covered area was published by Khan (1966) who mentioned that 249,486 hectares in the Indus Delta and some 20 hectares along coast in Balochistan are occupied by mangroves. Mangroves of Sindh coast comprise of almost only one species viz. *Avicennia marina* and are situated in two big blocks. The first block in the Indus Delta is bounded in the north by Kohistan tract of the Thatta Taluka and on the east by Mirpur Sakro and on the south east by Gorabari Taluka. The second block is bounded on the north by Shah Bundar and on the east by Jati (Ahmad, 1983 and Kogo, 1985). The paper is based on the observations, at 10 mangrove stations namely (1) Sandspit (2) P.N.S. Himalaya (3) Clifton Boat Basin, (4) Korangi creek system, (5) Phitti creek, (6) Gharo creek, (7) Rehri creek including Lath Basti, (8) Pitiani creek, (9) Keti Bundar, (10) Shah Bundar (Map attached).



MAP OF THE INDUS DELTAIC REGION

● AREA SURVEYED.

RESULTS AND DISCUSSION

The observations show that 62 species of birds comprising of 7 orders and 19 families inhabit mangroves of Sindh coast (List of birds attached). Of these 62 species, Little Cormorant, Grey Heron, Paddy Bird, Little Egret, Indian Reef Heron, Flamingo, Pariah Kite, Brahminy Kite, Kentish Plover, Indian Ringed Plover, Indian Black-winged Stilt, Little Tern, Caspian Tern, Common King-fisher and Sindh House Crow are resident and common in mangrove swamps of Sindh coast. Birds such as Darter, Large Cormorant, Little Green Heron, Eastern Large Egret, Median Egret, Painted Stork, Openbill Stork, White Ibis, Ringtailed Fishing Eagle, Red-wattled Lapwing, Gullbilled Tern, Indian Pied Kingfisher, White-breasted Kingfisher, Small Green Bee-eater, are resident birds and are less common. The common winter visitors of the mangrove swamps include Oystercatcher, Grey Plover, Golden Plover, Lesser Sandplover, Curlew, Black-tailed Godwit, Terek Sandpiper, Common Sandpiper, Common Redshank, Sanderling, Dunlin, Little Stint, Indian Whiskered Tern, Common Tern, Sooty Gull, Blackheaded Gull and Lesser Black-backed Gull.

Most of the migratory birds that visit Sindh mangroves start arriving in the month of August and stay upto May. Kentish Plover, Little Ringed Plover, Little Stint, Sanderling, Dunlin and Lesser Sand Plover, Start arriving in the month of August While some birds like Golden Plover, Grey Plover, Oyster-catcher and Pelican arrive late upto November. Some of the witer visitor species like Oystercatcher, Lesser Sandplover and Sanderling stay on Sindh coast for most part of the year. The dominant and widerpread species in mangrove swamps of Sindh are Redshank, Little Ringed Plover, Little Stint, Kentish Plover, Lesser Sand Plover, Sanderling and Flamingo, Little Cormorant, Grey Heron, Pond Heron, Little Egret and Reef Heron. Some species like Spoonbill, Painted Stork, Openbill Stork and White Ibis are only found in mangrove areas of outer Indus Delta.

BIRD SPECIES RECORDED IN MANGROVE SWAMPS OF SINDH COAST

Order: Pelecaniformes

Family: Phalacrocoracidae

1. *Phalacrocorax carbo sinensis* Large Cormorant R
2. *Phalacrocorax niger* Little Cormorant R

Family: Anhingidae

3. *Anhinga melanogaster* Darter or Snake Bird R

Family: Pelecanidae

4. *Pelecanus roseus* White or Rosy Pelican WV

Order : Ciconiiformes

Family: Ardeidae

5. *Ardea cinerea* Grey-Heron R/WV
6. *Ardeola grayii grayii* Paddy Bird or Pond Heron R
7. *Butorides striatus* Little Green Heron R
8. *Egretta alba modesta* Eastern Large Egret R
9. *Egretta intermedia intermedia* Median Egret R
10. *Egretta garzetta garzetta* Little Egret R
11. *Egretta gularis schistacea* Indian Reef Heron R

Family : Ciconiidae

12. *Mycteria leucocephalus* Painted Stork R
13. *Anastomus oscitans* Openbill Stork R

Family: Threskiornithidae

14. *Platalea leucordia major* Spoonbill R/WV
15. *Threskiornis melanocephala* White Ibis R

Family: Phoenicopteridae

16. *Phoenicopterus ruber* Flamingo R

- Order : Anseriformes
- Family: Anatidae
17. *Anas platyrhynchos* Mallard WV
- Order : Falconiformes
- Family: Accipitridae
18. *Milvus migrans govinda* Pariah Kite R
19. *Haliastur indus indus* Brahminy Kite R
20. *Haliaeetus albicilla* Whitetailed Sea Eagle WV
21. *Haliaeetus leucoryphus* Ringtailed Fishing Eagle R/WV
- Family : Pandionidae
22. *Pandion haliaetus haliaetus* Osprey WV
- Order: Charadriiformes
- Family: Haematopodidae
23. *Haematopus ostralegus* Oystercatcher Or Sea Pie. WV
- Family : Charadriidae
24. *Vanellus indicus* Red Wattled Lapwing R
25. *Pluvialis squatarola* Grey Plover WV
26. *Pluvialis apricaria apricaria* Golden Plover WV
27. *Charadrius alexandrinus alexandrinus* Kentish Plover R
28. *Charadrius dubius jerdoni* Indian Little Ringed Plover R
29. *Charadrius leschenaultii* Large Sand Plover WV
30. *Charadrius mongolus atrifrons* Lesser Sand Plover WV
- Family: Scolopacidae
31. *Numenius arquata* Curlew WV
32. *Numenius phaeopus phaeopus* Whimbrel WV
33. *Limosa limosa limosa* Black-tailed Godwit WV
34. *Limosa lapponica lapponica* Bartailed Godwit WV
35. *Xenus cinereus* Terek Sandpiper WV
36. *Actitis hypoleucos* Common Sandpiper WV
37. *Tringa totanus totanus* Common Redshank WV
38. *Tringa stagnatilis* Marsh Sandpiper WV
39. *Calidris exrruginea* Gulliver-Sandpiper WV
40. *Calidris alba* Sanderling WV
41. *Calidris alpinus alpinus* Dunlin WV

42. *Calidris minuta* Little Stint WV
 43. *Phalaropus lobatus* Red necked Phalarope WV

Family : Recurvirostridae

44. *Himantopus himantopus himantopus* Indian Black winged Stilt. R
 45. *Recurvirostra avocetta* Avocet WV

Family : Laridae

46. *Chlidonisa hybrida indicus* Indian whiskered Tern WV
 47. *Hydroprogne caspia caspia* Caspian Tern R
 48. *Gelochelidon nilotica nilotica* Gullbilled Tern R
 49. *Sterna hirundo hirundo* Common Tern WV
 50. *Sterna albifrons albifrons* Little Tern, Ternlet R
 51. *Larus hemprichii* Sooty Gull WV
 52. *Larus brunnicapillus* Brownheaded Gull WV
 53. *Larus ridibundus ridibundus* Blackheaded Gull WV
 54. *Larus ichthyaetus* Great Blackheaded Gull WV
 55. *Larus argentatus* Herring Gull WV
 56. *Larus fuscus fuscus* Lesser Blackbacked Gull WV

Order : Coraciiformes

Family : Alcedinidae

57. *Ceryle rudis leucomelanura* Indian Pied Kingfisher R
 58. *Alcedo atthis pallasii* Common Kingfisher R
 59. *Halcyon smyrnensis smyrnensis* White-breasted Kingfisher R

Family : Meropidae

60. *Merops orientalis beludschicus* Sindh Small Green Bee-eater R

Order : Passeriformes

Family : Corvidae

61. *Corvus splendens zugmayeri* Sindh House Crow R

Family : Motacillidae

62. *Motacilla alba* White Wagtail WV

- R = Resident
 WV = Winter visitor
 R/WV = Partly Resident/Partly winter visitor
 S = Straggler

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SOME MORE SPECIES OF BIRDS OBSERVED IN KARACHI DURING 1987-88

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During the studies of birds of Karachi, Khanum and Ahmed (1986 a, b) listed 131 species of birds from various parts of the city, including the coastal areas, gardens, fresh-water reservoirs and grasslands. The species included both the migratory as well as the resident ones. The present survey was conducted during 1987-88, during which sixteen additional species were observed mostly from the coastal areas. The identification of species was made on the spot, with the help of the published accounts of Ali and Ripley (1968-74), Khanum et al (1980) and Khanum and Ahmed (1987).

RESULTS AND DISCUSSION

The following is the list of 16 species of birds not observed by Khanum (1986 a), but seen during the present study.

I. Order Ciconiiformes

Family Ardeidae

1. *Egretta intermedia intermedia*, Eastern grey heron, Malir river delta
2. *E. alba modesta*, Eastern large egret, Malir river delta

II. Order Gruiformes

Family Rallidae

3. *Fulica atra atra*, Coot, PECHS Jheel

III. Order Charadriiformes

Family Charadriidae

4. *Charadrius hiaticula tundrae*, Eastern ringed plover, Hawk's bay back waters.
5. *Vanellus leucurus*, White-tailed lapwing, Mauripur road back waters
6. *Calidris alpinus alpinus*, Dunlin, Malir river delta
7. *C. tenuirostris*, Eastern knot, Hawk's bay back waters
8. *Arenaria interpres interpres*, Turnstone, Mauripur road, back waters

Family Laridae

9. *Larus genei*, Slenderbilled gull, Mauripur road back waters
10. *Chlidonias leucoptera*, Whiterwinged black tern, Mauripur road back waters

IV. Order Falconiformes

Family Accipitridae

11. *Aquila rapax nipalensis*, Eastern Steppe eagle, Hawk's bay area

V. Order Passeriformes

Family Hirundinidae

12. *Riparia riparia diluta*, Siberian collared sand martin, Hawk's bay coastal area

Family Sturnidae

13. *Acridotheres ginginianus*, Bank myna, Hawk's bay coastal area

Family Motacillidae

14. *Motacilla citreola citreola*, Northern yellow-headed wagtail, Malir river delta
15. *M. flava taivana*, Green-headed yellow wagtail, Malir river delta
16. *M. alba baicalensis*, Swinhoe's pied wagtail, Malir river delta

Comments

Two species of plovers, *Vanellus leucurus* and *Charadrius hiaticula tundrae* observed during the present survey deserve some more comments. The White-tailed lapwing, *V. leucurus* was stated by Ali and Ripley (1969) to be a winter visitor to Pakistan, affecting marshy and grassy edges of large lakes in Sind. Roberts et al (1985) reported its occurrence in lacustrine areas and swamps and in irrigated flood plains. It was however observed twice during the present survey, first in November 1987 and again in January 1988 in Clifton back waters. Ali and Ripley (1969) stated that the Eastern ringed plover *Charadrius hiaticula tundrae* was a staggler or very rare winter visitor to Pakistan. Ticehurst (1923) recorded it from Gilligt and only one from Karachi harbour. Roberts et al (1985) stated that it occurred occasionally in estuaries on Karachi coast. During the present survey, a large number of specimens of the species were observed at Hawk's bay of Karachi coast.

Three other species i.e. Eastern grey heron, *Ardea cinerea rectirostris*, Kentish plover, *Charadrius alexandrinus alexandrinus*, and the Large sand plover, *Charadrius leschanaultii* all observed by Khanum and Ahmed (1986 a) on fresh water reservoirs of Karachi were recorded this time on the Karachi coast near Hawk's bay.

Acknowledgements

The research work presented in this paper was carried out with the help of financial grant from the University of Karachi, Karachi, Pakistan.

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THE RAPTORS OF LASBELLA DISTRICT

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INTRODUCTION:

Raptors need no introduction as everybody knows that those species of birds that kill or hunt other animals (mammals, birds reptiles, amphibians, fishes, insects, molluscs, etc.) for food are known as raptors.

Today like some other animals, raptors are also struggling for their survival, gradually declining in their population for various reasons such as habitat destruction, environmental pollution, trade, use in falconary, etc. Out of 300 species and sub-species, 15 have been included either in appendix-I or appendix-II of the CITES.

The main objective behind this study was to observe the distribution, diversity and population of raptors of Lasbela district. The area surveyed have shown by triangle in the map.

Raptors of Indo-Pakistan subcontinent have been studied by Karim and Iftikhar (1988), Robert, T. J. et al (1986), Karim (1985), Ripley (1982), Khanum et al (1980) Koning (1977), Brown (1976), Ali and Ripley (1968-72) Khanum and Qadri (1972), Baker (1922-35), Ticehurst (1923-27), Jones (1921), Donald (1818-21), Oates (1989-90), and Humes (1989-90).

MATERIAL AND METHODS :

The observations were made twice a month during November- December and January-February at Ormara, Sonmiani, Uthal, Bela, Hub Dam, and the waterbodies such as Siranda and Kund lakes were given special attention.

A frequently used variant of the transect or quadrat method namely the roadside census was employed to estimate the population.

Seventeen taxa were observed by the authors at different localities during the study period.

Table-1 shows the systematic list of raptors seen in lasbela district.

SYSTEMATIC LIST :

KITES :

1. Black-shouldered Kite
Elanus caeruleus caeruleus (Latham)
2. Pariah Kite
Milvus migrans govinda (Sykes)

BUZZARDS :

3. Longlegged Buzzard
Buteo rufinus rufinus (Cretzschmar)
4. White-eyed Buzzard
Butaster teesa (Franklin)

EAGLES :

5. Bonelli's Eagle
Hieraetus fasciatus (Vieillot)
6. Tawny Eagle
Aquila rapax vindhiana (Franklin)
7. Palla's Fishing Eagle
Haliaeetus leucoryphus (Pallas)

VULTURES:

8. European Black Vulture
Aegypius monachus (Linnaeus)
9. Griffon Vulture
Gyps fulvus fulvescens (Hume)
10. Indian White-backed Vulture
Gyps bengalensis (Gmelin)

HARRIERS :

11. Hen Harrier
Circus cyaneus cyaneus (Linnaeus)
12. Montagu's Harrier
Circus pygargus (Linnaeus)

13. Pallid Harrier
Circus macrourus (S. G. Gmelin)
14. Marsh Harrier
Circus aeruginosus aeruginosus (Linnaeus)

OSPREY

15. Osprey
Pandion haliaeuts haliaetus (Linnaeus)

FALCONS

16. Laggar Falcon
Falcon jugger (J.E. Gray)
17. Common Kestrel
Falco tinnunculus tinnunculus (Linnaeus)

DESCRIPTIONS :

KITES :

1. Black-shouldered Kite
Elanus caeruleus caeruleus

It is a very small bird of prey about the size of a house crow. It is a resident bird and has been observed at Sonmiani, Lasbela and Uthal sitting on the Electric pole. In the background mainly Acaccia and other xerophytic bushes were present. It is extremely thin in population being 0.01 bird per kilometer.

2. Pariak Kite
Milvus migrans govinda

It is a very common bird about the towns, villages and human hutments. It is about the size of a Buzzard. It can be seen circling over rubbish and garbage dumping area and also along poultry farms. It is one of the best scavenger among the raptors. It has been seen around Hub, Uthal, Bela and other human hutments. Its population starts thinning as one proceeds away from the human hutment.

BUZZARDS :

3. Long-legged Buzzard
Buteo rufinus rufinus

It is a common bird in winter in coastal area of Lasbela. It is mostly found in irrigated flood plains and stony scarpments. The bird was observed sitting on Electric Poles along the road near Uthal and Sonmiani. The population of the bird in the district appears a little higher than the Black-shouldered kite.

4. White-eyed Buzzard
Butastur teesa teesa

White-eyed Buzzard is a small bird about the size of a crow. It is found throughout Balochistan. I have seen this bird near Sonmiani Cantt. sitting on an Electric pole while driving towards Uthal. In the background was barren rocks frequently populated by Acaccia bushes & other xerophytic plant the number estimated per kilometer was 0.01 bird/km.

EAGLES :

5. Bonelli's Eagle
Hieraetus fasciatus fasciatus

Bonelli's or Slender Hawk Eagle as its name implies is a slender bodied true eagle. It has a wide but un-common distribution throughout Pakistan along the hills & lakes. I saw this bird near Siranda lake, and Ormara. Siranda lake is

a very small lake occasionally drying up on sea side is a small elevation of hill covered with xerophytic bushes. Its population estimated as was 0.005 bird/km.

6. Tawny Eagle
Aquila rapax vindhiana

Tawny Eagle is a heavy bird of extreme colour variation. It is a resident bird. It is generally found intermixed with Pariah Kite hovering & circling over household refuse. However, their common site is hill & irrigated flood plains. It has been seen at Sonmiani, Hub Valley, Ormara etc. Although Tawny Eagle is not an uncommon sight yet its population is less being 0.005 bird/km.

7. Pallas' Fishing Eagle
Haliaeetus leucoryphus

Pallas's Fishing Eagle is a partly migratory & partly resident bird. It is always seen near lakes or jheels. During the whole survey I came across it only once near Hub Dam. The bird was seen in December sitting on the ground. In the background was Hub Dam and hill range of Lussar of Kirthar National Park. Its population, therefore, is extremely thin being 0.005 bird/km.

VULTURES:

8. European Black Vulture
Aegyptius monachus

It is generally known as Kalagidh. It is a breeding bird in the high mountain of Balochistan, but said to wander upto the Mekran Coast. It has been seen near Hub Dam area in the month of November and December respectively. It was the biggest number of European Black Vultures seen by me.

9. Griffon Vulture
Gyps fulvus fulvescens

Griffon Vulture is a very big bird of dark brown colour and scrawing neck. Two of them were seen flying over Hub Dam area in December. Its population is thin.

10. Indian White-backed Vulture
Gyps bengalensis

Indian White-backed Vulture is a medium sized bird. It is a wanderer to Lasbela district. It has been observed once at Hub valley in November. Its population is less.

HARRIERS :

11. Hen Harrier
Circus cyaneus cyaneus

It is a grey coloured bird and an uncommon winter visitor and also passage migrant. It has been observed near Hub Chowki area in January. Its population is also extremely thin.

12. Montagu's Harrier
Circus pygargus

It is a very small greyish blue Harrier. It is a winter visitor. A female was observed near Hub Chowki during February. Its population is also thin.

13. Marsh Harrier
Circus aeruginosus aeruginosus

Marsh Harrier is a big bird about the size of a Kite with brown overall plumage and rufous head. It is a winter visitor. Marsh Harrier was seen flying near Kund lake. The overall population of the bird calculated to be very low being 0.005 bird/km.

14. Pallid Harrier
Circus macrourus

It is a common winter visitor to Pakistan. Three individuals were observed at about midday sitting on Electric Pole for high tension electric current between Sonmiani and Uthal in February. The overall population was calculated to be 0.005 bird/km.

OSPREY

15. Osprey
Pandion haliaetus haliaetus

Osprey is a common winter visitor to Pakistan. It can be seen either sitting or flying around wheels/rivers; in search of food. Only one Osprey was seen in January near Kund lake. The population was calculated to be 0.005 bird/km.

FALCONS

16. Lagger Falcon
Falco jugger

Lagger Falcon is a small bird. It is a resident and has been observed in December, flying over Siranda lake. The population calculated was estimated to be 0.005 bird/km.

17. Common Kestrel

Falco tinnunculus tinnunculus

Common Kestrel is a very small Falcon. It is a winter visitor in the southern part of Balochistan. It has been observed at thirty kilometers from Hub Chowki near Uthal in February. Its population is extremely thin.

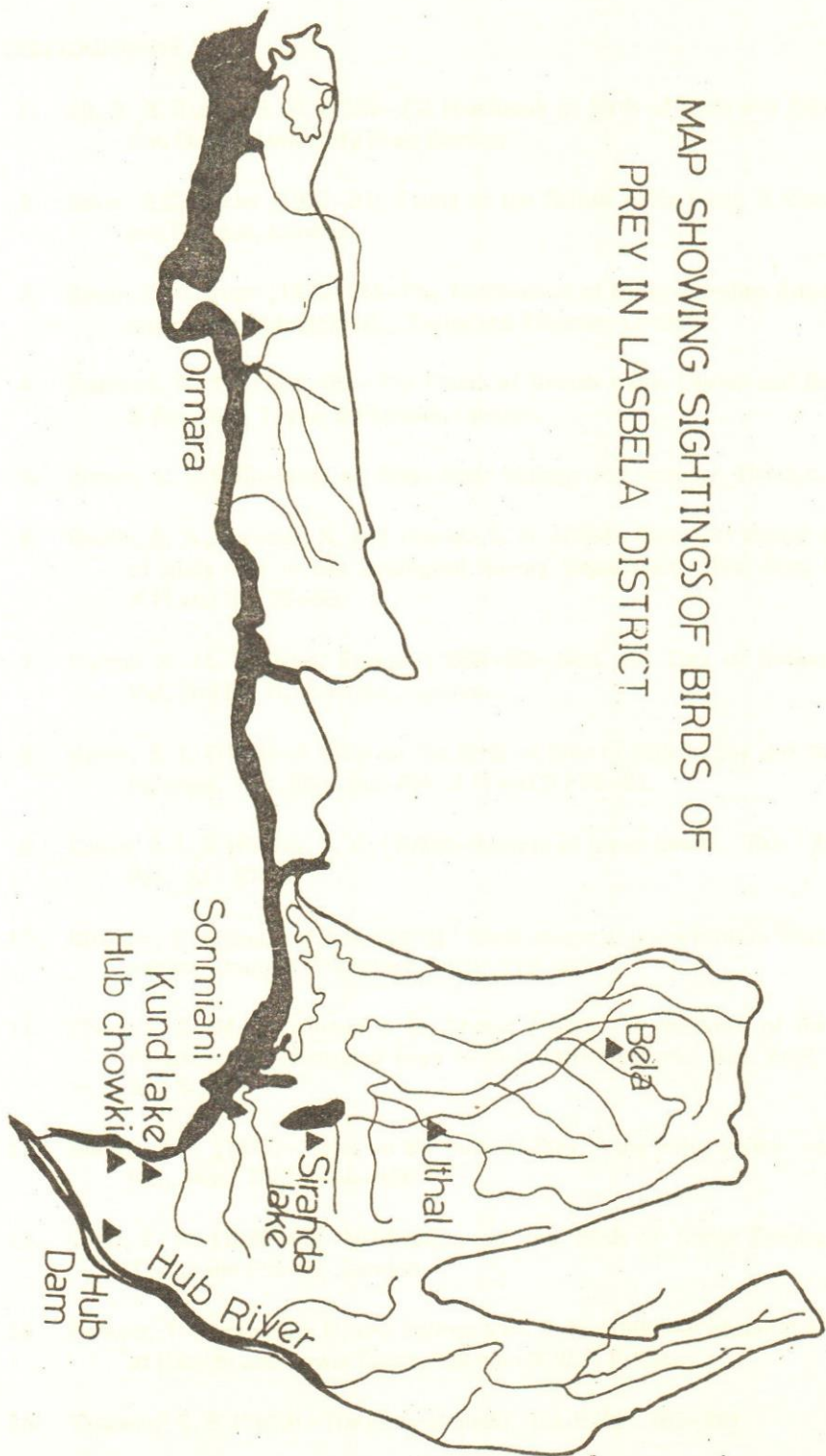
CONCLUSION

Pakistan is a member of the convention on International Trade in endangered species of wild fauna & flora (CITES) and therefore bears legal obligation to protect wildlife. To comply with the law of CITES all raptors (members of the family Accipitridae and Pandionidae i.e. all Hawks, Vultures, Kites, Buzzards, Hawk-eagles, Eagles, Harriers & Ospreys and all members of the family Falconidae i.e. all Falcons, Kestrels, Hobbies have been given protection in Pakistan.

Pakistan has also put restriction on the export of Falcons. An animal quota of 250 Falcons (180 NWFP & 70 from Punjab) except the Peregrine Falcon which is placed in appendix-I has been approved. Trapping of Falcon is totally banned in Balochistan and so is the case with Sindh.

However, to improve further, the conservation of raptors, more suitable areas such as coastal Mekran, Lasbela and parts of Northern Balochistan where different ecological habitat exists the natural environment may be given protection to help conserve various animals which is the need of hour.

MAP SHOWING SIGHTINGS OF BIRDS OF
PREY IN LASBELA DISTRICT



It is widely distributed in the plains of Punjab, Sindh, Balochistan and N.W.F.P. (Hazara).

Distribution recorded : Sukkur; Hyderabad; Thatta; Dadu; Mirpur sakro; Jacobabad; Lahore; Islamabad; Peshawar.

Rana cyanophlyctes Schneider
Skittering Frog

Head broader than long, snout rounded; nostril equal distance from the eye and tip of snout; tympanum about half of diameter of eye; fingers less pointed, 1st finger longer than 2nd finger; toes webbed to tip, of the toes swollen or dilated into very small discs, inner metatarsal tubercle like rudimentary 6th toe; skin with tubercles and warts above, Adult dark green, olive or black above, young dark brown or olive with blackish blotches, ventral surface white and smooth, males with grey external vocal sac on each side. It has been collected throughout all the provinces of Pakistan.

Distribution recorded : Dadu; Sakrand; Karachi; Hyderabad; Shahdad kot; Jacobabad; Lahore; Sargodha; Mian wali; Gujranwala; Multan; Rawalpindi; Jheum; Pishin; Nushki; Makran (Turbat); Sonmiani; Bannu; Hazara; Peshawar.

Rana syhadrensis Annandale
Indian Cricket Frog

Head as long as broad; nostril equidistant from eye and tip of the snout; Fingers and toes obtusely pointed, 1st finger extending beyond 2nd, toes about half webbed, adult body length 30 mm—30 mm, color similar to that of *R. tigerina* but dark dorsal spot usually less distinct; light mid dorsal stripe present; posterior surface of thigh granular smooth below. It occurs in Sindh, Punjab, Balochistan and N.W.F.P.

Distribution recorded : Sukkur; Multan; Islamabad; Peshawar.

Rana sternosignata Murray
Baluch Mountain Frog

Head very broad and rather flat; nostril dorsal, a little nearer the eye than the end of snout; tympanum smaller than eye; fingers not webbed; hind-limb rather short, head not reaching anterior to eye, web slightly indented; skin of the back smooth or with small warts; adult dark green, olive or black above, ventral surface white with dark brown or black mottling, young dark brown live with blackish blotches; males with internal vocal sacs, arms much thickened, breast with black horny spines, similar spines, but more crowded on the inner metacarpel tubercle and on the upper surface of two inner fingers. The distribution is only in Balochistan.

Distribution recorded : Quetta ; Pishin; Peshawar; Thatta.

ACKNOWLEDGEMENT

The authoress is thankful to Dr. Walter Auffenberg, distinguished Curater, Florida State Museum, U.S.A. for his valuable guidance during the work.

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GRASSLAND LEAFHOPPERS (CICADELLIDAE : HOMOPTERA) OF KARACHI, PAKISTAN

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INTRODUCTION:

In view of the involvement of the cicadellids in transmission of various diseases like viral, bacterial as well as mycoplasmic in origin, in addition to their damaging the plants in several other ways, their importance as pests is now widely realised. The family Cicadellidae consists of about 25 sub-families and a large number of tribes regrouped recently by Hamilton (1975) and Knight and Nielson (1986). Of such a tremendously diversified group, the studies in Pakistan were conducted to a reasonable extent on the leafhoppers of the sub-family Typhlocybinae. Rest of the subfamilies, in which are also included most of the disease transmitting species, are much less known in the country.

In order to fill up this particular gap in our knowledge a series of studies were initiated at the University of Karachi a few years back. Since the grasses provide the main shelter to a large number of species that otherwise are pests of crops and other plants, and due to some logistic reasons main emphasis had been on surveying the grassland for studying leafhoppers. The present account is of a brief study of collections made from within Karachi area, during which about 1465 specimens were obtained in 94 samples from 9 different parts of Karachi.

Material and methods

The entire study was based on making fresh collections from different areas of Karachi. The grasslands being not uniformly spread in the city, it was decided to collect leafhoppers from nine areas i.e. Karachi University campus, NIPA cross-road, Safari Park of KMC, Aziz Bhatti Park, Nazimabad, S.I.T.E. area, Malir, Gulshan-e-Iqbal and PECHS lawns. Of the 94 samples each sample consisted of 25 sweeps of a standard hand operated insect net. An approximate distance of nearly 60 ft. was covered while collecting insects for one sample. Except the leafhoppers, all other insects collected in the net were ignored for the purpose of this study. Each of the adult specimens was assigned after preliminary sorting to a series, and studied later in detail. The results have been reported in Table-1 as well as in the form of description of two new species.

Results :

As is evident from the Table 1 below, ten species of leafhoppers were recorded during this study in addition to the new species described on grass from Karachi. More than .5% of specimens of leafhoppers were of the species.. *Exitianus major*, which as reported earlier is very common on grass all over Pakistan. At least one species of the genus *Recilia*, different from the present one, is known to transmit viral disease of rice in the Philippines. Nothing is however known to about the biology of any of the species in Pakistan.

TABLE 1
RELATIVE FREQUENCY OF LEAFHOPPERS ON GRASS DURING
APRIL-JUNE, 1987 IN KARACHI

S. No.	Species	Total Specimens	Mean/ Sample
1.	<i>Exitianus major</i>	822	8.22
2.	<i>Chiasums lobata</i>	205	2.19
3.	<i>Exitianus minor</i>	144	1.53
4.	<i>Recilia setosa</i>	139	1.4
5.	<i>Balclutha karachiensis</i>	68	.7
6.	<i>Paternus viridula</i>	29	.3
7.	<i>Exitianus taeniaticeps</i>	62	.65
8.	<i>Exitianus karachiensis</i>	17	.18
9.	<i>Cofana unimaculata</i>	6	.06
10.	<i>Cassianeura cassiae</i>	1	.01

Genus *Cestius* Distant

Distant (108) described the genus *Cestius* from India on the basis of a single species. Singh (1971) redescribed *C. versicolor* Distant, the only known species of the genus till that time. He (1971) also synonymised the genera *Hishimonus* Ishihara and *Hishnimonoides* Ishihara as well as transferred all the species of the two genera to the genus *Cestius*. The genus was not known to occur in Pakistan. During a brief collection trip to Mirpur Sakro and some parts of Karachi, two new species of the genus *Cestius* were studied which are described below.

Cestius sakroensis, n. sp. (Figs. 1 A-J)

External features

Length of male 3.5 mm, of female 3.1 mm; Head strongly convex in front, forming an angle anteromedianly; median length of crown much less than interocular width of crown; transverse width of pronotum slightly less than transocular width of head; ocelli present on anterolateral margin of crown, nearer to mesal margin of eyes, than to anteromedian tip of crown; coronal suture present upto midlength of crown; frontoclypeus with a number of obliquely transverse stripes of brownish colour laterally; frontoclypeal suture extending upto ocelli; lora broad; anteclypeus with lateral margins almost parallel; colour of crown, face, pronotum, and scutellum light yellow to waxy-white; eyes brownish-black; legs whitish with anterior margin of tibia brownish-black; forewings whitish with a zig-zag pattern of dark-brown to blackish colour of spots along veins and elsewhere; abdomen partly yellowish colour both dorsally and ventrally; dorsolateral margin of abdomen yellowish.

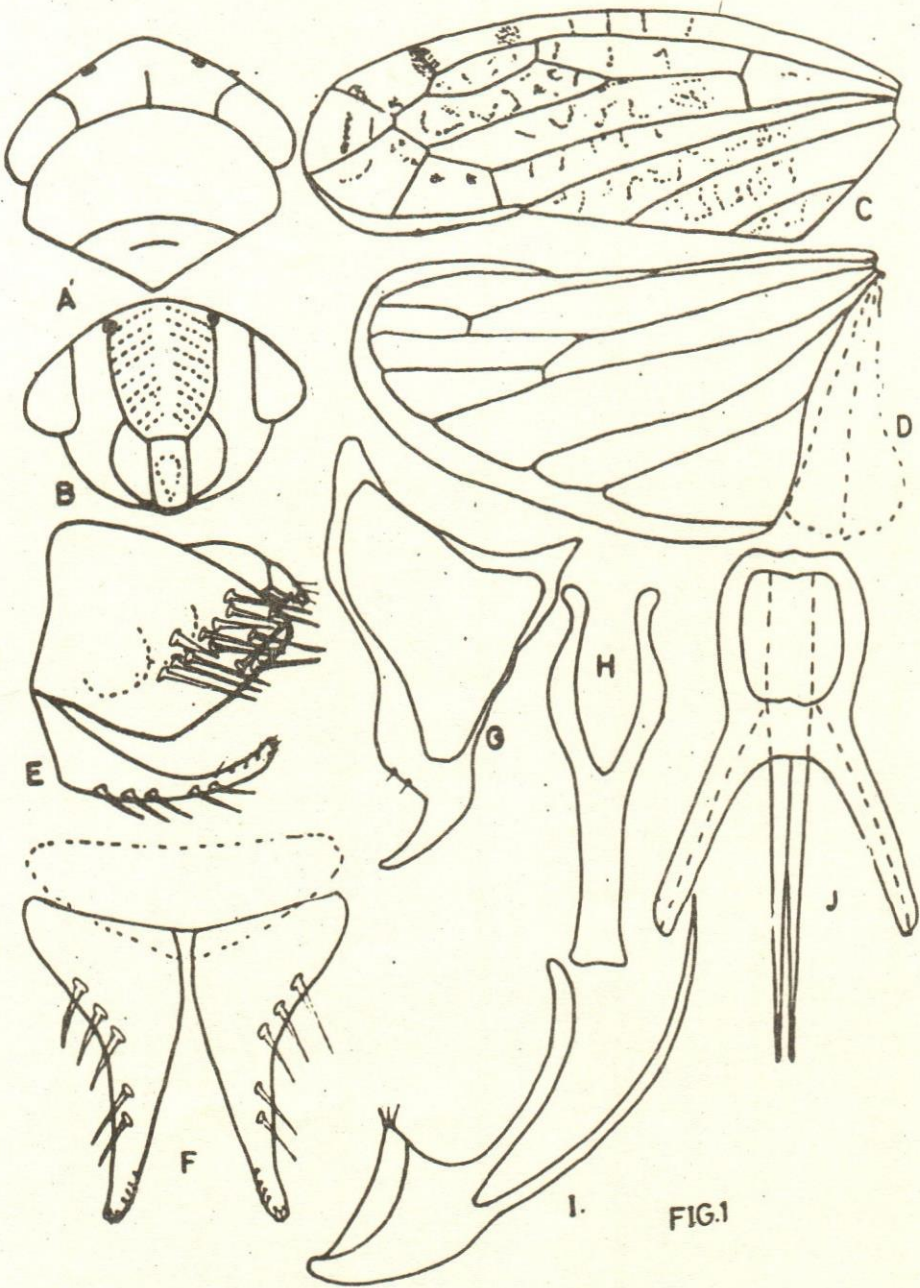


FIG. 1

Wings

Fore wing with apex narrowed and smoothly rounded; appendix narrow and reaching apex of second apical cell; apical cells 4; anteapical cells 3 discal cell one, touching all the three anteapical cells; hind wing with 4 apical cells.

Figs. 1 A—J *Cestius sakroensis* n. sp.

- A. Head and thorax dorsal view B. head, ventral view.
- C. Fore wing D. Hind wing E. Genital capsule, Lateral view.
- F. Male plates, ventral view G. Style, dorsal view.
- H. Connective, dorsal view I. Aedeagus, lateral view.
- J. Aedeagus, dorsal view.

Male genitalia

Male plate, in ventral view, much broad at base than at apex, plates diverging towards apex, possessing 5 prominent macrosetae along lateral margins, with a few microsetae at apex, as well as subapically on mesal margin; pygofer, in lateral view narrowed posteriorly to an angular margin, disc with 13 long macrosetae in posterior half, some on angular margin; style in dorsal view, massive basally narrowed apically, with preapical lobe flattened and less prominent, possessing a few microsetae, apical extension with tip setaceous, curved latered; Connective Y-shaped, with anterior part of arms slightly incurved, arms nearly equal to the stem in length; aedeagus, in lateral view, with preatrium lacking, dorsal apodeme present, atrium broad, with a pair of narrow dorsal processes, diverging soon after origin, blunt at their apices, shaft longer than the atrial processes, narrow both in lateral and ventral views, bifurcating slightly prior to midlength; gonopore at the point of bifurcation.

Female with sternum with posterior margin with a single median, and a pair of lateral mildly developed projections.

Cestius triradiatus, n. sp. appears close to *C. versicolor* Distant in its general characters of venation, shape of pygofer, male plate and connective, but differs in the pattern of aedeagus, which lacks a median thin shaft.

Type material

Holotype male, Karachi, Pakistan, grass, 15 VI 1987, Zahida Sultana, and several paratypes with the same data as the holotype in the Zoological Museum, University of Karachi, Karachi, Pakistan.

Figs. 2 A-K *Cestius triradiatus*, n. sp.

- A. Head and thorax, dorsal view B. Head, Ventral view.
- C. Fore wing D. Hind wing E. Genital capsule, lateral view F. Male plates, ventral view G. Style, dorsal view.
- H. Connective, dorsal view I. Aedeagus, lateral view.
- J. Aedeagus, ventral view K. Female VII the sternum

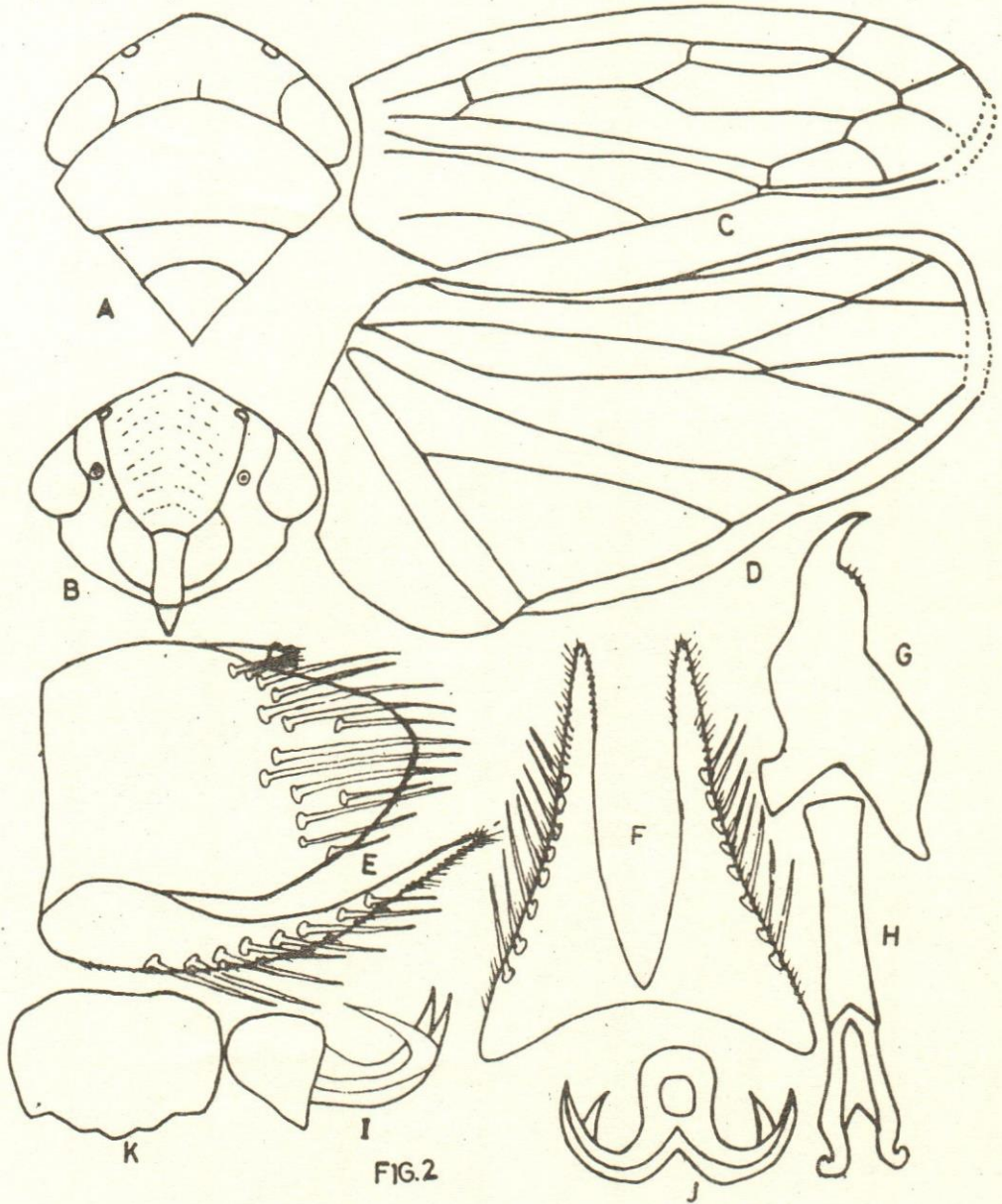


FIG.2

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A REVIEW OF THE GENUS *CAMALLANUS* RAILLIET AND HENRY 1915 (NEMATODA, CAMALLANIDAE) IN FISHES

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INTRODUCTION

This review focuses only the fish representatives of the genus *Camallanus* Railliet and Henry, 1915 (Nematoda; Camallanidae). The dominant host groups are ophiocephalid, cyprinid, mastacembelid and anabantid fishes of freshwater and carangids and trichiurids of marine waters.

The genus *Camallanus* shows richest fauna, greatest diversity and wide range of distribution in the tropical Asia, occurring throughout Indochina, reaching Malaya and the Phillipines. The genus dominates the fauna of entire old world temperate region and the only bialved camallanid to occur in new world and to any extent in temperate climates.

HISTORICAL REVIEW

Railliet and Henry (1915) separated nine species from the genus *Cucullanus* autt. nec. Mueller, 1977, using the character of the lateral valves of the buccal capsule and placed them in *Camallanus*, new genus.

Baylis (1923, c) transferred *Camallanus laeviconchus* (Wedl, 1962) to *Procamallanus*, new genus, because the buccal capsule not separated into paired lateral valves and Yorke and Maplestone (1926) removed *Camallanus cyathopharynx* Baylis, 1923 to *Paracamallanus*, new genus, owing to the presence of a large chitinous buccal cavity in addition to the buccal valves.

Since then Yeh (1960 c) revised the genus *Camallanus* and added three new genera, *Zeylanema* with internal longitudinal thickenings modified into 'teeth'. *Piscilania* with 'longitudinal thickenings short in anterior and spine-like in posterior part', and *Serpinema* with smooth buccal thickenings separated into ventral and dorsal groups'.

Ali (1957) erected the genus *Neocamallanus* nec Chakravarty et al., 1961 and diagnosed chiefly by the absence of tridents or rods, in addition to the presence of a well developed chitinous ring. Yeh (1960, c) synonymised this with *Camallanus* owing to great variations in the size of the tridents while Campana-Rouget (1961) with *Paracamallanus*, taking into account the large size of the chitinous ring in the type species.

Sinha and Sahay (1966, b) created the genus *Neozeylanema*, characterised by the possession of the quadridents instead of the tridents but Bilquees and Akram (1982) synonymised the genus with *Zeylanema* as the only distinguishing feature, the quadridents, are present only in one sex, the female, of the species.

Agrawal (1967) synonymised *Zeylanema* with *Camallanus* without any comments; Banudin-Laurencin (1971) synonymised *Piscilania* with the genus *Oncophora* Diesing, 1851 showing that *Trichocephalus gibbosus* Rudolphi, 1819 is a camallanoid in which the female becomes deformed by parasitism; and Kalyanker (1971) synonymised *Piscilania* and *Serpinema* with *Camallanus*, giving no significance to the nature and pattern of distribution of the buccal ridges.

Petter (1978) placed all the species' with length of posterior part of buccal cavity measuring more than a third of the valves length in *Paracamallanus*.

And, Bilqees and Akram (1982) established *Neoparacamallanus* defined by the size of the chitinous ring, larger than two thirds of the valves length with *N. sweeti* (Moorthy, 1937) as its type species; supported Yeh (1960, c) for the synonymy of *Neocamallanus*; Agrawal (1967) for *Zeylanema* and Baudin-Laurencin (1971) for *Piscilania* and Chabaud (1975) for the retention of *Serpinema*:

MATERIAL AND METHOD

The present study is based on the literature as an access to the type material is practically impossible. The original description of *Neozeylanema behli* Sinha and Sahay, 1966 could not be traced out. If, the text of a species differed from its drawings then the information contained by the latter relied upon and marked with an asterisk. Measurements are in millimeters unless otherwise indicated.

DISCUSSION

The present study of the species in the genus *Camallanus*, Railliet and Hénery, 1915 (= *Neocamallanus* sensu Ali, 1957 (in part) nec Chakarvarty *et al.*, 1961; *Zeylanema* Yeh, 1960 (in part); *Neozeylanema* Sinha and Sahay, 1966) excludes the following 11 species :

- i. The species, *Zeylanema yehia* Sinha and Sahay, 1966; *Z. bidigitalis* Bashirullah, 1970 and *Z. tridensis* Bashirullah, 1970 are species nomina nuda.
- ii. The species known only by the abstract are *Neocamallanus apapillata* Gosh and Majumdar, 1972; *Camallanus chauhatni* Gupta and Srivastava, 1975 and *C. cabelleri* Arya, 1980 and *Zeylanema striatus* Shendge and Deshmukh, 1977.
- iii. The original description of *Camallanus papillifer* (Molin, 1958) is very brief and its redescription is not known; the text of *C. salmonae* Chakarvarty, 1942, based on female alone, is not supported by its illustration; the description of *C. hypophthalmichthys* Achmerov, 1954 in Skijabin *et al.*, 1954 is wanting though later on added by Dogel and Akhmerov, 1959 but inadequate while full diagnosis of *C. incognitus* Campana-Rouget *et al.*, 1974 is not given.

In addition, the specimens designated as *Camallanus chauhatni* and *Zeylanema striatus* in the 'abstracts' seems to be the same but under different names respectively of *C. chauhani* Srivastava and Gupta, 1975 and *Z. ophiocephali* Shendge and Deshmukh, 1977 while described.

The species, *Camallanus ophiocephali* (Rehana and Bilquees, 1972); *C. varanasiensis* (Agrawal, 1976) and *C. bareilliensis* (Sharama and Sharma, 1980) are made new combinations.

Yorke and Maplestone (1926) synonymised *Camallanus turncatus* (Rud., 1819) with *C. lacustris* (Zoega, 1776); Moravec (1973) synonymised *C. wolgensis* Lewaschoff, 1929 with *C. lacustris* and *C. zacconis* Li, 1941 with *C. cotti* Fujita, 1927 and Sinha and Sahay (1971) synonymised *C. mastacembeli* Agrawal, 1967 with *C. patni* Sood, 1968 (= *Z. mastacembeli* Sahay and Sinha, 1966).

Fujita (1927) described *C. cotti*, a new species from freshwater fish, without specifying the type host; the female specimens obtained from *Parasilurus asotus*, *Zacco platypus* and *Opsarichthys uncirostris* and the male from *Cottus pollux*, from Japan. Yamaguti (1935) gave a detailed account, especially of the female reproductive system and later (1941) of both the sexes, confronting with Fujita's description, the middle prong of the trident nearly as long as the laterals, spicules subequal and two costiform adanals just inside caudal alae. Therefore, a re-examination of Fujita's material seems to be desirable.

Further, *C. fotedari* Raina and Dhar, 1972 from a freshwater fish, *Nemachilus kashmirensis* from India, not compared, although bears a close similarity with *C. cotti* but with a relatively larger female tail, upto 1.45 rather than 1.0, which is insufficient for the separation of the two species, hence, *C. fotedari* becomes a synonym of *C. cotti*.

C. bahli (= *Neozeylanema bhali* Sinha and Sahay, 1966) from *Anabas testudineus*, India, differs from *C. anabantis* Pearse, 1933, from the same host and geographical region, by the possession of the quadrident, only by the female, with a bifid tail too. None of these characters support the establishment of the species, *C. bahli*, which therefore falls as a synonym of *C. anabantis*.

Again, *C. testudineusi* Gupta and Verma, 1978, from the same host and locality, stated to differ from *C. anabantis*, by the tridents, spicule ratio on male tail and position of the vulva on female; firstly, all these are variable characters and secondly, the tridents are not absent and the vulva not pre-equatorial in *C. anabantis*.

The caudal papillae, six pairs preanal and eight pairs postanal, of which two pairs sessile and six pairs pedunculate in *C. testudineusi* could not be verified by the figures of the male tail in the lateral and latero-ventral views; while six pairs precloacal and five pairs postcloacal, with one pair of each group lies immediately in front and behind the cloaca in *C. anabantis*. And the smaller female, 2.71–3.28 with smaller tail, 0.08–0.09 are not much important features. In the view of the fact that both species occur in the

same host and geographical region with differences in morphological features of variable nature, the name *C. testudineusi* is considered a synonym of *C. anabantis*.

C. patni (Sahay and Sinha, 1966) Sood, 1968 very closely resembles with *C. unispiculus* Khera, 1956, with the host and locality in common. It lacks spine at each node on the longitudinal ridges of the buccal valves and bears half as many pairs of the preanal caudal papillae on male tail. Hence, until the verification, especially of the first character, quite unusual within the genus *Camallanus*, both species are considered to be independent.

C. magnavaginus and *C. cinereus*, both described by Bilqees *et al.* 1971, based on single female specimens, are stated to differ mainly by the structure of the buccal capsule and position of the vulva on female.

The statement that the lateral valves of the buccal capsule are constricted into three pieces' does not coincide with its figure while the position of the vulva, 'almost in the middle of the body' means dividing the body in ratio approximately of 1 : 2 in the former species, is nearly the same, 1 : 2.6 in the latter.

C. magnavaginus has larger body size, 42.45 with larger tail, 0.42 but *C. cinereus* has smaller body, 29.2 with smaller tail, 0.21, apart, the two species show remarkable similarity of the size of the buccal capsule, tridents and tines, of the shape of tail, of the number and nature of buccal ridges, and of the nature of oesophagus and vagina, in addition, with common host, *Muraenesox cinerius* and locality, Karachi coast. *C. cinereus* is therefore, regarded as a synonym of *C. magnavaginus*.

Moreover, the undivided oesophagus into anterior and posterior portions is very unusual in the genus *Camallanus* and the chitinized vagina' is very much questionable in these species.

Further, *C. magnavaginus* mainly differs from *C. surmai* Rasheed, 1970 by the unusual nature of the oesophagus, hence, a re-examination of the female seems to be desirable for better distinction of these species.

Bashirullah and Khan (1973) described two new species, *C. atropusi* and *C. dollfusi*, based on males alone, obtained from marine fishes of Bangladesh and differentiated them by the number of the buccal ridges, twenty six and thirty to thirty one and by the arrangement of the caudal papillae on male tails, seven pairs of preanals in each, but six pairs of postanals against two pairs of adanals and four pairs of postanals respectively in the two species, contrary to the figures of male tails in the ventral views which show similar distribution of the caudal papillae. Hence, *C. dollfusi* falls as a synonym of *C. atropusi*.

Again, *C. atropusi* is almost identical, both morphologically and metrically with *C. marinus* Schmidt and Kuntz, 1969. In the view of the close relationship of the hosts and occurrence of these species in the same geographical region, the name *C. atropusi* is treated as a synonym of *C. marinus*.

Srivastava and Gupta (1975) added three new species *C. chauhani*, *C. puriensis* and *C. therapsi*, recovered from the body cavity of marine fishes of Bay of Bengal. *C. chauhani* has been characterised by forty two ridges on the buccal valves, sub-equal prongs of the tridents and thirteen pairs of the caudal papillae on male tail; *C. puriensis* by thirty four to thirty eight buccal ridges, equal prongs and sixteen pairs of the caudal papillae and *C. therapsi* by twenty five ridges, unequal prongs and twelve pairs of caudal papillae.

The difference in the number of the ridges on the valves in *C. puriensis* and *C. chauhani* is very small whereas the distribution pattern is strikingly similar in the three species. The size of the medical tine, a variable character, is the same in these species and in relation to laterals, larger only in *C. therapsi*. And the number of the caudal papillae in *C. therapsi* is very close to *C. chauhani* while the arrangement of the postanals, four to five or seven pairs close together and one or two pairs near tail tip, is similar in all these species. It, thus, becomes evident that the distinguishing characters are overlapping in these species and because *C. puriensis* has been described from both the sexes with several specimens against the remaining two species, based on single males, therefore, *C. chauhani* and *C. therapsi* are made synonym of *C. puriensis*.

Later, Srivastava and Gupta (1976) described two more new species, *C. trichiurusi* and *C. pentkotai*, both parasitising the body cavity of marine fishes of Bay of Bengal and separated them again by the size of the tridents; equal instead of sub-equal and number of the caudal papillae, fifteen pairs against twelve to thirteen pairs on male tail. These characters, firstly variable and secondly the trident tines are sub-equal by the figure of the anterior region of the male in the lateral view and the arrangement of the caudal papillae are the same according to the figure of the male tail, prove *C. pentkotai* a synonym of *C. trichiurusi*.

Further, *C. trichiurusi* shows marked identity with *C. puriensis* in all essential details of the morphology and measurement but the 'non alate' spicule. Therefore, this character of the spicule must be checked to establish the conspecificity.

Lastly *C. cancelai* Gupta and Verma, 1978 offers no difference of the structure or size from *C. xenentodoni* Khan and Yaseen, 1969 based on two females, excepting slightly anterior position of the nerve ring, at 0.36 rather than at 0.45 from the anterior end of the body. In addition, these species are described from the closely related hosts of freshwater fishes in the same geographical region. *C. cancelai* is, therefore, considered to be conspecific with *C. xenentodoni* and the description of the male of the former becomes that of the male of the latter species.

ACKNOWLEDGEMENT

I express my gratitude to Mr. M. Farooq Ahmed, Director, Zoological Survey Department for providing necessary facilities to carry out this research work.

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A REVISED CHECKLIST OF BIRDS OF PAKISTAN

By

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Introduction :

Khanum et al (1980) published for the first time a complete checklist of birds of Pakistan, in which they reported from the country 638 subspecies, 612 species included in 267 genera, under 65 families and 17 orders. Since then considerable new information has been gathered on the basis of studies of Clements (1981) and Moore (1984) included in their checklists of the birds of the world and several other studies like Roberts et al (1986), Roberts (1990), Khanum and Ahmed (1986a, b, 1987, 1988a, b, c, d, e). At the same time drastic revision has been made in the common names and scientific names of the species and at higher taxonomic categories. Consequently it has become absolutely necessary to present a revised checklist of birds of Pakistan. In the present checklist are included birds under 17 orders, 75 families, 274 genera and of 734 species/subspecies. The status of various species is indicated as R(Resident), M (Migratory), Wv(Winter visitor), Vr(Vagrant), r(Rare), U(Uncertain), A(Accidental), W/Sr (Rare winter straggler), M/s (Partial migrant), S(Straggler), S/bv(Summer breeding visitor), EW(Erratic winter visitor), PM(Passage migrant), WS(Winter straggler) and Sv Summer visitor).

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Results :

Below is the detailed checklist of birds of Pakistan arranged order wise, familywise and genera wise.

		Status
I.	Order : Podicipediformes (1 family, 2 genera, 4 species).	
1.	Family : Podicipedidae (2 genera, 4 species)	
1.	<i>Tachybaptus ruficollis capensis</i> Little Grebe	R
2.	<i>Podiceps cristatus cristatus</i> Great Crested Grebe	M/Wv
3.	<i>P. nigricollis nigricollis</i> Blacknecked Grebe	M/Wr
4.	<i>P. grisegena grisegena</i> Rednecked Grebe	M/Wr
II.	Order : Pelecaniformes (5 families, 6 genera 10 species)	
2.	Family : Phaethontidae (1 genus, 1 species)	
5.	<i>Phaethon aetheretus indicus</i> Redbilled Tropic Bird	M/Wv/r
3.	Family : Pelecanidae (1 genus, 3 species)	
6.	<i>Pelecanus onocrotalus</i> White Pelican	M/Wv
7.	<i>P. philippensis</i> Spottedbilled or Grey Pelican	R
8.	<i>P. crispus</i> Dalmatian Pelican	M/Wv
4.	Family : Sulidae (1 genus, 1 species)	
9.	<i>Sula dactylatra melanops</i> Bluefaced Booby	

5. Family : Phalacrocoracidae (2 genera , 4 species)

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| 10. | <i>Phalacrocorax carbo sinensis</i>
Large cormorant | R |
| 11. | <i>P. fuscicollis</i>
Indian Shag | R |
| 12. | <i>Haliastur niger</i>
Little Cormorant | R |
| 13. | <i>H. pygmeus</i>
Pigmy cormorant | Vr |

6. Family : Anhingidae (1 genus, 1 species)

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|-----|--|---|
| 14. | <i>Anhinga melanogaster</i>
Indian Darter | R |
|-----|--|---|

III. Order : Ciconiiformes (4 families, 4 subfamilies, 19 genera, 31 species)

7. Family : Ardeidae (2 subfamilies, 8 genera, 18 species)

Sub-Family : Ardeinae (6 genera, 13 species)

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|-----|--|------|
| 15. | <i>Ardea goliath</i>
Giant Heron | Vr |
| 16. | <i>A. cinerea cinerea</i>
European Grey Heron | M/Wv |
| 17. | <i>A. c. rectirostris</i>
Eastern Grey Heron | R |
| 18. | <i>A. purpurea manilensis</i>
Eastern Purple Heron | R |
| 19. | <i>Butorides striatus chloriceps</i>
Little Green Heron | R |
| 20. | <i>Ardeola grayii grayii</i>
Indian Pond Heron | R |
| 21. | <i>Bubulcus ibis coromandus</i>
Cattle Egret | R |

22. *Egretta alba alba*
Large Egret W/Sr.
23. *Egretta alba modestus*
Eastern Large Egret R.
24. *E. intermedia intermedia*
Intermediate Egret R
25. *E. garzetta garzetta*
Little Egret R
26. *E. gularis asha*
Indian Reef Heron R
27. *Nycticorax nycticorax*
Night Heron

Sub-family : Botaurinae (2 genera, 5 species)

28. *Botaurus stellaris stellaris*
Eurosian Bittern M/Wv.
29. *Ixobrychus minutus minutus*
Little Bittern R
30. *I. cinnamomeus*
Chestnut Bittern R
31. *I. sinensis*
Yellow Bittern R
32. *I. flavicollis flavicollis*
Black Bittern

8. Family : Ciconiidae (5 genera, 7 species)

33. *Mycteria leucocephala*
Painted Stork R
34. *Anastomus oscitans*
Asian Openbill Stork R
35. *Ciconia episcopus episcopus*
Whitenecked Stork R

36. *C. ciconia asiatica*
White Stork M/Wv
37. *C. nigra*
Black Stork M/Wv
38. *Ephippiorhynchus asiaticus asiaticus*
Blacknecked Stork R
39. *Leptoptilos dubius*
Adjutant Stork U
9. Family : Threskiornithidae (2 subfamilies, 4 genera, 4 species)
Sub-family : Threskiornithinae (3 genera, 3 species)
40. *Threskiornis melanocephalus*
White Ibis R
41. *Pseudibis papillosa*
Indian Black Ibis R
42. *Plegadis falcinellus falcinellus*
Glossy Ibis R/Wv
- Sub-family : Plataleinae (1 genus, 1 species)
43. *Platalea leucorodia major*
White Spoonbill R/Wv
10. Family : Phoenicopteridae (2 genera, 2 species)
44. *Phoenicopterus ruber roseus*
Greater Flamingo R
45. *Phoeniconaias minor*
Lesser Flamingo R
- IV. Order : Anseriformes (1 family, 2 subfamilies, 14 genera, 35 species)
11. Family : Anatidae (2 subfamilies, 14 genera, 35 species)
Sub-family : Anserinae (3 genera, 9 species)
46. *Anser albifrons albifrons*
Whitefronted Goose M/Wv

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| 47. | <i>A. erythropus</i>
Lesser Whitefronted Goose | M/Wv |
| 48. | <i>A. anser rubrirostris</i>
Eastern Greylag Goose | M/Wv |
| 49. | <i>A. indicus</i>
Barheaded Goose | M/Wv |
| 50. | <i>Cygnus cygnus cygnus</i>
Whooper Swan | W/Sr |
| 51. | <i>C. olor</i>
Mute Swan | W/Sr |
| 52. | <i>C. columbianus bewickii</i>
Western Whistling Swan | W/Sr |
| 53. | <i>Dendrocygna javanica</i>
Indian Whistling Teal | R |
| 54. | <i>D. bicolor bicolor</i>
Large Fulvous Whistling Teal | R |
| Sub-family : Anatinae (11 genera, 26 species) | | |
| 55. | <i>Tadorna ferruginea</i>
Ruddy Shelduck | M/Wv |
| 56. | <i>T. tadorna</i>
Common Shelduck | Wv/r |
| 57. | <i>Marmaronetta angustirostris</i>
Marbled Teal | R |
| 58. | <i>Anas acuta acuta</i>
Pintail | M/Wv |
| 59. | <i>A. crecca crecca</i>
Common Teal | M/Wv |
| 60. | <i>A. formosa</i>
Baikal Teal | Wv/r |
| 61. | <i>A. poecilorhyncha poecilorhyncha</i>
Spotbill Duck | R |

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| 62. | <i>A. platyrhynchos platyrhynchos</i>
Mallard | M/Wv |
| 63. | <i>A. strepera</i>
Gadwall | M/Wv |
| 64. | <i>A. falcata</i>
Falcated Teal | Sr |
| 65./ | <i>A. penelope</i>
European Wigeon | M/Wv |
| 66. | <i>A. querquedula</i>
Garganey or Blue-winged Teal | M/Wv |
| 67. | <i>A. clypeata</i>
Common Shoveller | M/Wv |
| 68. | <i>Netta rufina</i>
Red-crested Pochard | M/Wv |
| 69. | <i>Aythya ferina</i>
European Pochard | M/Wv |
| 70. | <i>A. nyroca</i>
White eyed Pochard or Ferruginous Duck | |
| 71. | <i>Aythya fuligula</i>
Tufted Duck | M/Wv |
| 72. | <i>A. marila marila</i>
Greater Scaup | Wv/r |
| 73. | <i>Nettapus coromandelianus coromandelianus</i>
Cotton Teal or Cotton Pygmy Goose | R |
| 74. | <i>Sarkidiornis melanotos melanotos</i>
Comb Duck | R |
| 75. | <i>Clangula hyemalis</i>
Longtailed Duck | W/Sr |
| 76. | <i>Bucephala clangula calangula</i>
Goldeneye | M/Wv |

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| 77. | <i>Mergus albellus</i>
Smew | M/Wv |
| 78. | <i>M. merganser merganser</i>
Goosander or Common Merganser | WV |
| 79. | <i>M. serrator serrator</i>
Red breasted Merganser | Wv/V |
| 80. | <i>Oxyura leucocephala</i>
Whiteheaded Duck | M/Wv |

V. Order : Falconiformes (3 families, 22 genera, 53 species)

Sub-Order : Accipitres

12. Family : Accipitridae (20 genera, 40 species)

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|-----|--|----|
| 81. | <i>Elanus caeruleus caeruleus</i>
Black shouldered Kite | R |
| 82. | <i>Pernis ptilorhynchus ruficollis</i>
Oriental Honey Buzzard | R |
| 83. | <i>Milvus migrans migrans</i>
Black Kite | R |
| 84. | <i>M. m. govinda</i>
Black Pariah Kite | R |
| 85. | <i>M. m. lineatus</i>
Blackeared Kite | R |
| 86. | <i>Haliastur indus indus</i>
Brahminy Kite | R |
| 87. | <i>Accipiter gentilis schvedowi</i>
North Eastern Goshawk | WV |
| 88. | <i>A. badius cenchroides</i>
Central Asian Shikra | R |
| 89. | <i>A. b. dussumieri</i>
Indian Shikra | R |

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| 90. | <i>A. nisus nisosimilis</i>
Asiatic Sparrow Hawk | M/Wv |
| 91. | <i>A. n. melaschistos</i>
Indian Sparrow Hawk | R |
| 92. | <i>Buteo rufinus rufinus</i>
Longlegged Buzzard | R |
| 93. | <i>Butastur teesa</i>
White-eyed Buzzard | R |
| 94. | <i>Spizaetus nipalensis nipalensis</i>
Mountain Hawk-Eagle | R |
| 95. | <i>Hieraaetus fasciatus fasciatus</i>
Bonelli's Eagle | R |
| 96. | <i>H. pennatus</i>
Booted Eagle | R/Wv |
| 97. | <i>Aquila chrysaetos dephanea</i>
Himalayan Golden Eagle | R |
| 98. | <i>A. heliaca heliaca</i>
Imperial Eagle | M/Wv |
| 99. | <i>A. rapax vindhiana</i>
Tawny Eagle | R |
| 100. | <i>A. r. nipalensis</i>
Eastern Steppe Eagle | M/Wv |
| 101. | <i>A. clanga</i>
Greater Spotted Eagle | R |
| 102. | <i>A. pomarina hastala</i>
Lesser Spotted Eagle | R |
| 103. | <i>Ictinaetus malayensis perniger</i>
Indian Black Eagle | R |
| 104. | <i>Haliaeetus albicilla albicilla</i>
Whitetailed Sea Eagle | M/Wv |

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| 105. | <i>H. leucoryphus</i>
Pallas's Sea Eagle | R/M |
| 106. | <i>Sarcogyps calvus</i>
Asiatic King Vulture | R |
| 107. | <i>Aegypius monachus</i>
European Black Vulture | R |
| 108 | <i>Gyps fulvus fulvescens</i>
Griffon Vulture | R |
| 109 | <i>G. himalayensis</i>
Himalayan Griffon | R |
| 110. | <i>G. indicus indicus</i>
Indian Griffon | R |
| 111. | <i>G. i. jonesi</i>
West Pakistan Griffon | R |
| 112. | <i>G. bengalensis</i>
Indian Whitebacked Vulture | R |
| 113. | <i>Neophron percnopterus percnopterus</i>
Egyptian Vulture | R |
| 114. | <i>Gypaetus barbatus aureus</i>
Himalayan Bearded Vulture or Lammergier | R |
| 115. | <i>Circus cyaneus cyaneus</i>
Hen Harrier | Wv/PM |
| 116. | <i>C. macrourus</i>
Pallid Harrier | M/Wv |
| 117. | <i>C. pygargus</i>
Montagu's Harrier | M/Wv |
| 118. | <i>C. aeruginosus aeruginosus</i>
Marsh Harrier | M/Wv |
| 119. | <i>Circaetus gallicus gallicus</i>
Short toed Eagle | R |
| 120. | <i>Spilornis cheela cheela</i>
Crested Serpent Eagle | R |

13. Family : Pandionidae (1 genus, 1 species)

121. *Pandion haliaetus haliaetus*
Osprey M/Wv

14. Family : Falconidae (1 genus, 12 species)

122. *Falco cherrug cherrug*
Saker Falcon M/Wv
123. *F. c. milvipes*
Shanghar Falcon M/Wv/r.
124. *F. jugger*
Laggar Falcon R
125. *F. peregrinus japonensis*
Eastern Peregrine Falcon M/Wv
126. *F. p. babylonicus*
Redcapped Peregrine Falcon R/Wv
127. *F. p. peregrinator*
Peregrine Shaheen Falcon R
128. *F. subbuteo subbuteo*
European Hobby M/Wv
129. *F. s. centralasiae*
Central Asian Hobby R/Wv
130. *F. columbarius insignis*
North Asiatic Merlin Wv
131. *F. c. christianiludovici*
Pallid Merlin Wv
132. *F. chicquera chicquera*
Redheaded Falcon R
133. *F. tinnunculus tinnunculus*
Common European Kestrel R

VI. Order : Galliformes (1 family, 1 subfamily, 14 genera, 19 species)

15. Family : Phasianidae (1 subfamily, 14 genera 19 species)

Sub-family : Phasianinae (14 genera, 19 species)

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|------|---|---|
| 134. | <i>Lerwa lerwa</i>
Snow Partridge | R |
| 135. | <i>Ammoperdix griseogularis griseogularis</i>
See see Partridge | R |
| 136. | <i>Tetraogallus himalayansis himalayansis</i>
Himalayan Snowcock | R |
| 137. | <i>Alectoris graeca koroviakovi</i>
Southern Rock Partridge | R |
| 138. | <i>A. g. pallescens</i>
Northern Rock Partridge | R |
| 139. | <i>Alectoris chukar chukar</i>
Chukōr Partridge | R |
| 140. | <i>Francolinus francolinus henrici</i>
Pakistan Black Partridge | R |
| 141. | <i>F. pondicerianus mecranensis</i>
Baluchistan Grey Partridge | R |
| 142. | <i>F. p. interpositus</i>
Indian Grey Partridge | R |
| 143. | <i>Coturnix coturnix coturnix</i>
Common Quail | R |
| 144. | <i>C. coromandelica</i>
Blackbreasted Quail | R |
| 145. | <i>Perdica asiatica</i>
Jungle Bush Quail | R |
| 146. | <i>Tragopan melanocephalus</i>
Western Tragopan | R |
| 147. | <i>Lophophorus impeyanus</i>
Himalayan Monal Pheasant | R |

148. *Gallus gallus murghi*
Indian Red Junglefowl R
149. *Lophura leucomelana hamiltonii*
Kalij Pheasant R
150. *Pucrasia macrolopha castanea*
Koklass Pheasant R
151. *Catreus wallichii*
Cheer Pheasant R
152. *Pavo cristatus*
Common Peafowl R

VII. Order : Gruiformes (4 families, 14 genera, 22 species)

16. Family : Turnicidae (1 genus, 3 species)

153. *Turnix sylvatica dussumier*
Little Button Quail R
154. *T. tanki tanki*
Indian Little Yellowlegged Button Quail U
155. *T. suscitator taigoor*
Indian Bustard Quail R

17. Family : Gruidae (2 genera, 4 species)

156. *Grus grus. lilfordi*
Eastern Common Crane M/Wv
157. *G. antigone antigone*
Indian Sarus Crane R
158. *G. leucogeranus*
Great White or Siberian Crane M/Wv
159. *Anthropoides virgo*
Demoiselle Crane APM

18. Family : Rallidae (7 genera, 10 species)

160. *Rallina eurizonoides amauroptera*
Indian or Slatylegged Banded Crake R

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|------|---|------|
| 161. | <i>Porzana parva</i>
Little Crane | M/Wv |
| 162. | <i>P. porzana</i>
Spotted Crane | M/Wv |
| 163. | <i>P. fusca fusca</i>
Northern Ruddy-breasted Crane | R |
| 164. | <i>Amauornis phoenicurus chinensis</i>
Chinese White breasted Waterhen | R |
| 165. | <i>Gallicrex cinerea</i>
Water Cock or Kora | R |
| 166. | <i>Gallinula chloropus indica</i>
Indian Moorhen | R |
| 167. | <i>Prophyro porphyrio seistanicus</i>
Purple Swampen | R/M |
| 168. | <i>P. p. poliocephalus</i>
Indian Purple Swampen | R/M |
| 169. | <i>Fulica atra atra</i>
Common Coot | R |
| 19. | Family : Otidae (4 genera, 5 species) | |
| 170. | <i>Otis tarda dybowskii</i>
Great Bustard | Wv/r |
| 171. | <i>O. tetrax orientalis</i>
Eastern Little Bustard | M/Wv |
| 172. | <i>Choriotis nigriceps</i>
Great Indian Bustard | Wv |
| 173. | <i>Chlamydotis undulata macqueenii</i>
Houbara Bustard | R/Wv |
| 174. | <i>Sypheotides indica</i>
Lesser Florican | R |

VIII. Order : Charadriiformes (12 families, 10 subfamilies, 36 genera, 86 species)

20. Family : Jacanidae (2 genera, 2 species)

175. *Hydrophasianus chirurgus*
Pheasant-tailed Jacana R
176. *Metopidius indicus*
Bronzewinged Jacana R
21. Family : Haematopodidae (1 genus, 1 species)
177. *Haematopus ostralegus ostralegus*
Oystercatcher or Sea-Pie Wv
22. Family : Rostratulidae (1 genus, 1 species)
178. *Rostratula benghalensis benghalensis*
Painted Snipe R
23. Family : Dromadidae (1 genus, 1 species)
179. *Dromas ardeola*
Crab Plover Wv
24. Family : Ibisrhynchidae (1 genus, 1 species)
180. *Ibisrhyncha struthersii*
Ibisbill R
25. Family : Recurvirostridae (2 genera, 2 species)
181. *Himantopus himantopus*
Blackwinged Stilt R
182. *Recurvirostra avosetta*
Avocet Wv
26. Family : Burhinidae (2 genera, 3 species)
183. *Burhinus oedichnemus oedichnemus astutus*
Persian Stone Curlew R
184. *B. o. indicus*
Indian Stone Curlew R
185. *Esacus recurvirostris*
Great Stone Plover R
27. Family : Glareolidae (2 subfamilies, 2 genera, 5 species)
- Sub-family : Cursoriinae (1 genus, 2 species)

186. *Cursorius cursor cursor*
Cream-coloured Courser Wv
187. *C. coromandelicus*
Indian Courser R

Sub-family : Glareolinae (1 genus, 3 species)

188. *Glareola pratincola pratincola*
Collared Pratincole R
189. *G. maldivarus*
Large Indian Pratincole R
190. *G. lactea*
Small Indian Pratincole R

28. Family : Charadriidae (3 genera, 15 species)

191. *Vanellus vanellus*
Lapwing or Green Plover Wv
192. *V. malabaricus*
Yellow-wattled Lapwing R
193. *V. gregarius*
Sociable Lapwing Wv
194. *V. leucurus*
Whitetailed Lapwing Wv
195. *V. indicus indicus*
Indian Redwattled Lapwing R
196. *V. i. aigneri*
Redwattled Lapwing R
197. *Pluvialis squatarola*
Grey Plover Wv
198. *P. apricaria apricaria*
Golden Plover Wv
199. *P. dominica fulva*
Eastern American Golden Plover Wv

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| 200. | <i>Charadrius hiaticula tundrae</i>
Eastern Ringed Plover | Wv/r |
| 201. | <i>C. dubius curonicus</i>
European little Ringed plover | R/Wv |
| 202. | <i>C. d. jerdoni</i>
Indian Little Ringed Plover | R |
| 203. | <i>C. alexandrinus alexandrinus</i>
Kentish Plover | R |
| 204. | <i>C. mongolus atrifrons</i>
Mongolian Plover | Wv |
| 205. | <i>C. leschenaultii</i>
Great Sand Plover | Wv |
| 29. | Family : Scolopacidae (6 subfamilies, 13 genera, 31 species) | |
| | Subfamily : Tringinae (5 genera, 14 species) | |
| 206. | <i>Limosa limosa limosa</i>
Blacktailed Godwit | Wv |
| 207. | <i>L. lapponica lapponica</i>
Bartailed Godwit | Wv |
| 208. | <i>Numenius phaeopus phaeopus</i>
Whimbrel | Wv |
| 209. | <i>N. arquata arquata</i>
Curlew | Wv |
| 210. | <i>N. a. orientalis</i>
Eastern Curlew | Wv |
| 211. | <i>Tringa erythropus</i>
Spotted Redshank | Wv |
| 212. | <i>T. totanus totanus</i>
Common Redshank | Wv |

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| 213. | <i>T. t. eurhinus</i>
Eastern Redshank | Wv |
| 214. | <i>Tringa stagnatilis</i>
Marsh Sandpiper | Wv |
| 215. | <i>T. nebularia</i>
Greenshank | Wv |
| 216. | <i>T. ochropus</i>
Green Sandpiper | Wv |
| 217. | <i>T. glareola</i>
Wood Sandpiper or Spotted Sandpiper | Wv |
| 218. | <i>Xenus cinereus</i>
Terek Sandpiper | Wv |
| 219. | <i>Actitis hypoleucos</i>
Common Sandpiper | Wv |

Subfamily : Arenariinae (1 genus, 1 species)

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| 220. | <i>Arenaria interpres interpres</i>
Turnstone | Wv |
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Subfamily : Gallinagoninae (2 genera, 5 species)

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| 221. | <i>Gallinago solitaria solitaria</i>
Eastern Solitary Snipe | Wv/r |
| 222. | <i>G. nemoricola</i>
Wood snipe | R/r |
| 223. | <i>G. stenura</i>
Pintail Snipe | Wv |
| 224. | <i>G. gallinago gallinago</i>
Common Fantail Snipe | Wv |
| 225. | <i>Lymonocryptes minima</i>
Jack snipe | Wv |

Subfamily : Phalaropodinae (1 genus, 1 species)

226. *Phalaropus lobatus*
Rednecked Phalarope Wv

Subfamily : Scolopacinae (1 genus, 1 species)

227. *Scolopax rusticola*
Woodcock Wv

Subfamily : Calidridinae (3 genera, 9 species)

228. *Calidris tenuirostris*
Great Knot Wv

229. *C. alba*
Sanderling Wv

230. *C. canutus canutus*
Eastern Knot Wv/r

231. *C. minuta*
Little Stint Wv

232. *C. temminckii*
Temminck's Stint Wv

233. *C. alpina alpina*
Dunlin Wv

234. *C. ferruginea*
Curlew Sandpiper Wv

235. *Limicola falcinellus falcinellus*
Broadbilled Sandpiper Wv

236. *Philomachus pugnax*
Ruff Wv

30. Family : Laridae (2 subfamilies, 7 genera, 23 species)

Ssubfamily : Larinae (1 genus, 8 species)

237. *Larus hemprichii*
Sooty Gull Wv

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| 238. | <i>L. argentatus heuglini</i>
Yellowlegged Herring Gull | Wv |
| 239. | <i>L. a. cachinnans</i>
Pinklegged Herring Gull | Wv |
| 240. | <i>L. fuscus fuscus</i>
Lesser Blackbacked Gull | Wv |
| 241. | <i>L. ichthyaetus</i>
Great Blackheaded Gull | Wv |
| 242. | <i>L. brunnicephalus</i>
Indian Brown headed Gull | Wv |
| 243. | <i>L. ridibundus</i>
Blackheaded Gull | Wv |
| 244. | <i>L. genei</i>
Slender-billed Gull | R/Wv |
| Subfamily : Sterninae (6 genera, 15 species) | | |
| 245. | <i>Chlidonais hybrida indica</i>
Indian Whiskered Tern | Wv/PM |
| 246. | <i>C. leucoptera</i>
Whitewinged Black Tern | Wv/r |
| 247. | <i>Gelochelidon nilotica nilotica</i>
Gulbilled Tern | R |
| 248. | <i>Hydroprogne caspia caspia</i>
Caspian Tern | R |
| 249. | <i>Sterna aurantia</i>
Indian River Tern | R |
| 250. | <i>S. hirundo hirundo</i>
European Common Tern | Wv |
| 251. | <i>S. repressa</i>
Whitecheeked Tern | Wv |
| 252. | <i>S. melanogaster</i>
Blackbellied Tern | R |

253. *S. anaethetus fuligula*
Bridled Tern U
254. *S. albifrons albifrons*
Little Tern R
255. *S. saundersii*
Blackshafted Tern R
256. *Thalasseus bergii velox*
Red sea large crested Tern R
257. *T. bengalensis bengalensis*
Indian lesser crested Tern R
258. *T. sandvicensis sandvicensis*
Sandwich Tern Wv
259. *Anous stolidus pileatus*
Common Noddy S
31. Family : Rynchopidae (1 genus, 1 species)
260. *Rynchops albicollis*
Indian Skimmer or Scissorbill R
- IX. Order : Columbiformes (2 families, 4 genera, 20 species)
32. Family : Pteroclididae (1 genus, 7 species)
261. *Pterocles alchata caudacutus*
Large Pintailed Sandgrouse Wv/PM
262. *P. exustus hindustan*
Indian Chestnut-bellied Sandgrouse R
263. *P. senegallus*
Spotted Sandgrouse Wv
264. *P. orientalis orientalis*
Imperial Blackbellied Sandgrouse R/Wv
265. *P. coronatus atratus*
Crowned Sandgrouse R
266. *P. indicus*
Painted Sandgrouse R

267. *P. lichtensteinii arabicus*
Lichtenstein's Sandgrouse R
33. Family : Columbidae (3 genera, 13 species)
268. *Columba livia neglecta*
Blue Rock Pigeon R
269. *C. rupestris turkestanica*
Turkestan Rock Pigeon R
270. *C. leuconota leuconota*
West Himalayan Snow Pigeon R
271. *C. eversmanni*
Yellow-eyed Stock Pigeon Wv/PM
272. *C. palumbus casiotis*
Eastern Wood Pigeon EW
273. *C. hodgsonii*
Speckled Wood Pigeon R
274. *Streptopelia turtur arenicola*
Persian Turtle-Dove Wv
275. *S. orientalis meena*
Western Turtle Dove R
276. *S. decaocto decaocto*
Indian Collared Dove R
277. *Streptopelia tranquebarica tranquebarica*
Indian Redcollared Dove R
278. *S. chinensis suratensis*
Indian Spotted Dove R
279. *S. senegalensis cambayensis*
Indian Laughing Dove R
280. *Treron phoenicoptera phoenicoptera*
Bengal yellow legged Green Pigeon R

X. Order : Psittaciformes (1 family, 1 subfamily, 1 genus, 4 species)

34. Family : Psittacidae (1 subfamily, 1 genus, 4 species)

Subfamily : Psittacinae (1 genus, 4 species)

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| 281. | <i>Psittacula eupatria nipalensis</i>
Large Indian Alexandrine Parakeet | R |
| 282. | <i>P. himalayana himalayana</i>
Himalayan Slatyheaded Parakeet | R |
| 283. | <i>P. cyanocephala</i>
Plum-headed Parakeet | R |
| 284. | <i>P. krameri borealis</i>
Northern Rose-ringed Parakeet | R |

XI. Order : Cuculiformes (1 family, 3 subfamilies 6 genera, 12 species)

35. Family : Cuculidae (3 subfamilies, 6 genera 12 species)

Subfamily : Cuculinae (4 genera, 10 species)

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| 285. | <i>Clamator jacobinus serratus</i>
Indian Black and White Cuckoo | S/bv |
| 286. | <i>Cuculus sparverioides sparverioides</i>
Indian Large Hawk Cuckoo | R |
| 287. | <i>C. varius varius</i>
Indian Common Hawk Cuckoo | R |
| 288. | <i>C. micropterus micropterus</i>
Asiatic Shortwinged Cuckoo | R |
| 289. | <i>Cuculus canorus canorus</i>
Euroasian Cuckoo | R |
| 290. | <i>C. c. subtelephonus</i>
Asiatic Cuckoo | R |
| 291. | <i>C. saturatus saturatus</i>
Himalayan Oriental Cuckoo | R |

292. *C. poliocephalus poliocephalus*
Asian Little Cuckoo R
293. *Cacomantis merulinus passerinus*
Indian Plaintive Cuckoo —
294. *Eudynamys scolopacea scolopacea*
Indian Koel R
- Subfamily : Phaenicophaeinae (1 genus, 1 species)
295. *Taccocua leschenaultii sirkee*
Northwestern Sirkeer Cuckoo R
- Subfamily : Centropodinae (1 genus, 1 species)
296. *Centropus sinensis sinensis*
Indochinese Common Crow Pheasant R

XII. Order : Strigiformes (2 families, 3 subfamilies, 10 genera, 25 species)

36. Family : Tytonidae (1 subfamily, 1 genus, 1 species)

Subfamily : Tytoninae (1 genus, 1 species)

297. *Tyto alba stertens*
Indian Barn Owl R

37. Family : Strigidae (2 subfamilies, 9 genera, 24 species)

Subfamily : Buboninae (7 genera, 18 species)

298. *Otus spilocephalus huttoni*
Western Spotted Scops Owl R
299. *O. brucei*
Striated Scops Owl R
300. *Otus scops pulchellus*
Eastern Scops Owl WS/Sv
301. *O. s. sunia*
North Indian Scops Owl R
302. *O. bakkamoena plumipes*
Punjab Collared Scops Owl R

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| 303. | <i>O. b. deserticolor</i>
Pakistan Collared Scops Owl | R |
| 304. | <i>Bubo bubo turcomanus</i>
Turkestan Eagle Owl | R |
| 305. | <i>B. b. hemachalana</i>
Himalayan Eagle Owl | R |
| 306. | <i>B. b. bengalensis</i>
Indian Eagle Owl | R |
| 307. | <i>B. coromandus coromandus</i>
Indian Dusky Eagle Owl | R |
| 308. | <i>Ketupa zeylonensis leschenault</i>
Southasian Brown Fish Owl | R |
| 309. | <i>K. z. semonowi</i>
Pakistan Brown Fish Owl | R |
| 310. | <i>Nyctea scandiaca</i>
Snowy Owl | R |
| 311. | <i>Glaucidium brodiei brodiei</i>
Southasian Pygmy Owl | R |
| 312. | <i>G. cuculoides cuculoides</i>
West Himalayan Cuckoo Owl | R |
| 313. | <i>Ninox scutulala lugubris</i>
Indian Brown Hawk Owl | R |
| 314. | <i>Athene noctua bactriana</i>
Southasian Little Owl | R |
| 315. | <i>A. brama indica</i>
Indian Spotted Little Owl | R |
| Subfamily : Striginae (2 genera, 6 species) | | |
| 316. | <i>Strix butleri</i>
Hume's Tawny Owl | R |
| 317. | <i>S. leptogrammica newarensis</i>
Southasian Brown wood Owl | R |

318. *Strix aluco biddulphi*
Indopakistan Tawny Owl R
319. *S. a. nivicola*
Indochinese Tawny Owl R
320. *Asio otus otus*
Afroasian Longeared Owl R
321. *A. flammeus flammeus*
Short-eared Owl PM

XIII : Order : Caprimulgiformes (1 family, 1 subfamily, 1 genus, 6 species)

Family : Caprimulgidae (1 sub-family, 1 genus, 6 species)

Subfamily : Caprimulginae (1 genus, 6 species)

322. *Caprimulgus indicus hazarae*
Himalayan Jungle Nightjar R
323. *C. europaeus unwini*
Hume's European Nightjar Sv/PM
324. *C. mahrattensis*
Sykes' Nightjar R
325. *C. asiaticus asiaticus*
Indian Nightjar R
326. *C. monticolus monticolus*
Franklin's Indian Nightjar R
327. *C. aegyptius aegyptius*
Egyptian Nightjar U

XIV : Order : Apodiformes (1 family, 1 subfamily, 2 genera, 5 species)

39. Family : Apodidae (1 subfamily, 2 genera, 5 species)

Subfamily : Apodinae (2 genera 5 species)

328. *Hirunatapus caudacuta nudipes*
Himalayan White throated Spinetailed Swift R

329. *Apus melba melba*
Eurasian Alpine Swift Wv/PM
330. *A. apus pekinensis*
Eastern Swift bv
331. *A. pallidus pallidus*
Pakistan Pallid Swift Wv
332. *A. affinis galilejensis*
Southern House Swift R

XV : Order : Coraciiformes (5 families, 3 subfamilies, 7 genera, 12 species)

40. Family : Alcedinidae (3 subfamilies, 3 genera 4 species)

Subfamily : Cerylinae (1 genus, 1 species)

333. *Ceryle rudis leucomelanura*
Indian Lesser Pied Kingfisher R

Subfamily Alcedininae (1 genera, 2 species)

334. *Alcedo attis bengalensis*
Indian Common Blue Kingfisher R
335. *A. a. pallasii*
Central Asian Common Blue Kingfisher R/M

Subfamily : Daceloninae (1 genus, 1 species)

336. *Halcyon smyrnensis smyrnensis*
Southern Whitebreasted Kingfisher R

41. Family : Meropidae (1 genus, 4 species)

337. *Merops apiaster*
European Bee-eater R
338. *M. Superciliosus persicus*
Afroasian Blue-cheeked Bee eater R/bv
339. *M. orientalis beludschicus*
Sind Little Green Bee-eater R

340. *M. philippinus philippinus*
Indochinese Blue-tailed Bee-eater R
42. Family : Coraciidae (1 genus, 2 species)
341. *Coracias garrulus semenowi*
Kashmir Common Roller R
342. *C. benghalensis benghalensis*
Indo-Arabian Roller R
43. Family : Upupidae (1 genus, 1 species)
343. *Upupa epops epops*
Hoopoe R/Sbv
44. Family : Bucerotidae (1 genus, 1 species)
344. *Tockus birostris*
Indian Grey Hornbill R
- XVI : Order : Piciformes (3 families, 3 subfamilies, 7 genera, 18 species)
45. Family : Capitonidae (1 genus, 3 species)
345. *Megalaima virens marshallorum*
Himalayan Great Barbet R
346. *M. asiatica asiatica*
Asian Blue-throated barbet R
347. *M. haemacephala indica*
Southasian Crimson-breasted Barbet R
46. Family : Indicatoridae (1 genus 1 species)
348. *Indicator xanthonotus xanthonotus*
Indian Honeyguide R
47. Family Picidae (3 subfamilies, 5 genera, 14 species)
- Subfamily : Jynginae (1 genus, 2 species)
349. *Jynx torquilla torquilla*
European Wryneck Wv

350. *J. t. himalayana*
Kashmir Wryneck R

Subfamily : Picumninae (1 genus, 1 species)

351. *Picumnus innominatus simlaensis*
Himalayan Speckled Piculet R

Subfamily Picinae (3 genera, 11 species)

352. *Picooides assimilis*
Sind Pied Woodpecker R

353. *P. himalayensis albescens*
Western Himalayan Pied Woodpecker R

354. *P. auriceps*
Brownfronted Pied Woodpecker R

355. *Picooides macei westermanni*
Himalayan Fulvousbreasted Woodpecker R

356. *P. maharattensis pallescens*
Northern Yellow-crowned Woodpecker R

357. *P. moluccensis nanus*
Northern Brown-capped Pied Woodpecker R

358. *P. hyperythrus marshalli*
Himalayan Rufous-bellied Pied Woodpecker R

359. *Picus squamatus flavirostris*
Transcasplan Scaly-bellied Green Woodpecker R

360. *P. s. squamatus*
Himalayan Scaly-bellied Green Woodpecker R

361. *P. canus sanguiniceps*
Himalayan Grey-headed Green Woodpecker R

362. *Dinopium benghalense dilutum*
Balochistan Lesser Goldenbacked Woodpecker R

XVII. Order : Passeriformes (28 families, 20 subfamilies, 111 genera, 372 species).

48. Family : Alaudidae (9 genera, 23 species)

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| 363. | <i>Mirafra javanica cantillans</i>
Indian Singing Bush Lark | R |
| 364. | <i>M. erythroptera sindiana</i>
Sind Redwinged Bush Lark | R |
| 365. | <i>Eremopterix grisea</i>
Ashy - crowned Finch Lark | R |
| 366. | <i>E. nigriceps affinis</i>
Pakistan Black-crowned Finch Lark | R |
| 367. | <i>Ammomanes cincturus zarudnyi</i>
Southasian Bar-tailed Desert Lark | R |
| 368. | <i>A. deserti phoenicuroides</i>
Indian Desert Lark | R |
| 369. | <i>A. phoenicurus phoenicurus</i>
Indian Rufous-tailed Desert Lark | R |
| 370. | <i>Alaemon alaudipes doriae</i>
Southasian Hoopoe Lark | R |
| 371. | <i>Melanocorypha bimaculata torquata</i>
Southasian Bimaculated Lark | Wv |
| 372. | <i>Calandrella cinerea longipennis</i>
Southasian Short-toed Lark | Wv |
| 373. | <i>C. acutirostris acutirostris</i>
Southasian Hume's Short-toed Lark | R/Wv |
| 374. | <i>C. a. tibetana</i>
Tibetan Hume's Short toed Lark | R/Wv |
| 375. | <i>C. rufescens persica</i>
Iranian Lesser Short-toed Lark | Wv |
| 376. | <i>C. raytal adamsi</i>
North-Indian Sand Lark | R |
| 377. | <i>Galeria cristata magna</i>
Balochistan Crested Lark | R |

378. *G. c. chendoola*
Indian Crested Lark R
379. *G. c. lynesii*
Kashmir Crested Lark
380. *Alauda arvensis canterella*
Indian Sky Lark Wv
381. *A. a. dubcivox*
Siberian Sky Lark Wv
382. *A. gulgula inconspicua*
Afghan Oriental Sky Lark R
383. *A. g. lhamarum*
Kashmir Oriental Sky Lark R
384. *Eremophila alpestris albigula*
Pamir Shore (Horned) Lark R
385. *E. a. longirostris*
Balochistan Shore (Horned) Lark R
49. Family : Hirundinidae (1 subfamily, 4 genera, 10 species)
- Subfamily : Hirundininae (4 genera, 10 species)
386. *Riparia paludicola chinensis*
African Sand Martin R
387. *R. riparia diluta*
Indian Sand Martin R/M
388. *Hirundo rupestris rupestris*
Eurasian Crag Martin R
389. *H. obsoleta pallida*
Southasian Pale Crag Martin R
390. *H. rustica rustica*
Eurasian Barn Swallow R
391. *H. smithii filifera*
Southasian Wire-tailed Swallow S/bv

392. *H. daurica rufula*
European Red-rumped Swallow R/Sbv
393. *Petrochelidon fluvicola*
Indian Cliff Swallow S/bv
394. *Delichon urbica urbica*
European House Martin U/Wv
395. *D. dasypus cashmiriensis*
Northasian House Martin R
50. Family : Motacillidae (2 genera, 26 species)
396. *Motacilla flava beema*
Blue-headed Yellow Wagtail Wv
397. *M. f. taivana*
Greenheaded Yellow Wagtail Wv
398. *M. f. leucocephala*
Whiteheaded Yellow Wagtail PM/Wv
399. *M. f. melanogrisea*
Black-headed Yellow Wagtail Wv
400. *M. f. thunbergi*
Grey-headed Yellow Wagtail Wv
401. *M. citreola citreola*
Northern Citrine Wagtail Wv
402. *M. c. werae*
Western Citrine Wagtail Wv
403. *M. c. calcarata*
Black-backed Citrine Wagtail W/bv
404. *M. cinerea cinerea*
Eurasian Grey Wagtail S/bv
405. *M. alba dukhunensis*
Indian Pied Wagtail Wv
406. *M. a. personata*
Masked Pied Wagtail S/bv

407. *M. a. baicalensis*
Swinkoe's Pied Wagtail Wv
408. *M. maderaspatensis*
Large Pied Wagtail R
409. *Anthus novaeseelandiae richardi*
Pakistan Richard's Pipit Ewv
410. *A. n. waitei*
Northwestern Richard's Pipit R
411. *A. campestris campestris*
Eurasian Tawny Pipit Wv
412. *A. roseatus*
Hodgson's Pipit S/bv
413. *A. cervinus*
Redthroated Pipit PM/r
414. *A. spinoletta coutellii*
Southasian Rock Pipit Wv
415. *A. s. japonicus*
Japanese Rock Pipit Wv
416. *A. sylvanus*
Upland Pipit R
417. *A. similis decaptus*
Southasian Long-billed Pipit S/bv
418. *A. s. jerdoni*
Himalayan Long-billed Pipit R/Sbv
419. *A. pratensis pratensis*
Asian Meadow Wv/r
420. *A. trivialis trivialis*
European Tree Pipit Wv
421. *A. t. haringtoni*
Himalayan Tree Pipit S/bv

51. Family : Campephagidae (3 genera, 9 species)
422. *Coracina novaehollandiae nipalensis*
Himalayan Large Cuckoo Shrike R
423. *C. melaschistos melaschistos*
Himalayan Dark-Grey Cuckoo Shrike M
424. *Coracina melanoptera melanoptera*
Northindian Blackheaded Cuckoo Shrike R
425. *Tephrodornis pondicerianus pallidus*
Sind Wood Shrike R
426. *Pericrocatus roseus roseus*
Indochinese Rosy Minivet M
427. *P. cinnamomeus pallidus*
Pakistan Small Minivet R
428. *P. erythropygus erythropygus*
Pakistan Jerdon's Minivet R
429. *P. ethologus favillaceus*
West Himalayan Flame Coloured Minivet R
430. *P. flammeus speciosus*
Northindian Scarlet Minivet R
52. Family : Pycnonotidae (2 genera, 6 species)
431. *Pycnonotus leucogenys leucotis*
Indo-Iranian White Cheeked Bulbul R
432. *P. l. humii*
Hume's White cheeked Bulbul R
433. *P. l. leucogenys*
Himalayan White-cheeked Bulbul R
434. *P. cafer intermedius*
Punjab Red vented Bulbul R
435. *P. c. humayuni*
Indo - Pakistani Redvented Bulbul R

436. *Hypipetes madagascariensis psaroides*
Himalayan Black Bulbul R
53. Family : Irenidae (1 genus, 2 species)
437. *Aegithina tiphia septentrionalis*
Pakistan Common Iora R
438. *A. nigrolutea*
Marshall's Iora R
54. Family : Laniidae (1 genus, 12 species)
- Subfamily : Laniinae (1 genus, 12 species)
439. *Lanius vittatus nargianus*
Pakistan Bay-backed Shrike R
440. *L. v. vittatus*
Indian Bay backed Shrike R
441. *L. schach erythronotus*
Indian Blackheaded Shrike R
442. *L. s. lahulensis*
Northwestern Blackheaded Shrike R
443. *L. minor turanicus*
Balochistan Lesser Grey Shrike U
444. *L. excubitor lahtora*
Indian Great Grey Shrike R
445. *L. e. pallidirostris*
Balochistan Great Grey Shrike S/bv
446. *L. e. aucheri*
Persian Great Grey Shrike Wv/r
447. *L. e. homeyeri*
Central Asia Great Grey Shrike Ww
448. *L. collurio collurio*
European Red-backed Shrike PM

449. *L. e. phoenicuroides*
Indian Red-backed Shrike R/PM
450. *L. c. isabellinus*
Afro - asian Red-backed Shrike Wv/PM
55. Family : Bombycillidae (2 subfamilies, 2 genera, 2 species)
Subfamily : Bombycillinae (1 genus, 1 species)
451. *Bombycilla garrulus garrulus*
European Bohemian Waxwing WEV
- Subfamily : Hypocoliinae (1 genus 1 species)
452. *Hypocolius ampelinus*
Grey Shrike Bulbul V/r
56. Family : Cinclidae (1 genus, 3 species)
453. *Cinclus cinclus cashmeriensis*
Kashmir Dipper R
454. *c. c. leucogaster*
Asian Dipper S
455. *C. pallasii tenuirostris*
Himalayan Brown Dipper R
57. Family : Troglodytidae (1 genus, 2 species)
456. *Troglodytes troglodytes neglectus*
Kashmir winter Wren R
457. *T. t. magrathi*
Magrath's Wren R
58. Family : Prunellidae (1 genus, 9 species)
458. *Prunella himalayana*
Himalayan Accentor Wv
459. *P. strophhiata jerdoni*
Western Rufous-breasted Accentor R

460. *P. fulvescens fulvescens*
Turkestan Brown Accentor R
461. *P. atrogularis huttoni*
Turkestan Black-throated Accentor Wv
462. *P. a. atrogularis*
Ural Black-throated Accentor Wv/r
463. *P. rubeculoides rubeculoides*
Pakistan Robin Accentor R
464. *P. ocularis ocularis*
Radde's Accentor A
465. *P. collaris rufilata*
Turkestan Alpine Accentor R
466. *P. c. whymeri*
Himalayan Alpine Accentor R
59. Family : Muscicapidae (7 subfamilies, 46 genera 147 species)
- Subfamily : Turdinae (14 genera, 59 species)
467. *Erythropygia galactotes familiaris*
Iranian Rufous Bush Chat R
468. *Erithacus megarhynchos hafizi*
Persian Nightingale Wv/r
469. *E. svecicus svecicus*
Northern Bluethroat Wv
470. *E. s. pallidogularis*
Turkestan Bluethroat Wv
471. *E. s. abbotti*
Ladakh Bluethroat S/bv
472. *E. s. pectoralis pectoralis*
West-Himalayan Rubythroat S/bv
473. *E. brunneus brunneus*
Northindian Blue Chat S/bv

474. *E. cyanurus pallidior*
Kashmir Red-flanked Bluetail Wv
475. *E. chrysaeus whistleri*
Western Golden Bush Robin Wv
476. *Copsychus saularis saularis*
Indian Magpie Robin R
477. *Phoenicurus erythronotus*
Eversmann's Redstart Wv
478. *P. caeruleocephalus*
Blue-headed Redstart Wv
479. *P. ochrurus phoenicuroides*
Kashmir Black Redstart S/bv
480. *P. phoenicurus phoenicurus*
Whitefronted Common Redstart PM
481. *P. frontalis*
Bluefronted Redstart Wv
482. *P. erythrogaster grandis*
Southasian Guldensladt's Redstart R
483. *P. fuliginosus fuliginosus*
Himalayan Plumbeous Water Redstart R
484. *P. leucocephalus*
White capped Redstart Wv
485. *Hodgsonius phoenicuroides phoenicuroides*
Hodgson's White-bellied Redstart S/bv
486. *Enicurus scouleri scouleri*
Asian Little Forktail R
487. *E. maculatus maculatus*
Western Spotted Forktail R
488. *Cercomela fusca*
Brown Rock Chat R

489. *Saxicola macrorhyncha*
Stoliezkas Bush Chat R
490. *S. torquata maura*
West Siberian Stone Chat R/Wv
491. *Saxicola t. indica*
Indian Stone Chat S/bv
492. *S. leucura*
White-tailed Stone Chat R
493. *S. caprata rossorum*
Iranian Pied Stone Chat R
494. *S. c. bicolor*
Northern Pied Stone Chat R
495. *S. ferrea*
Grey Bush Chat R
496. *Oenanthe isabellina*
Isabelline Wheatear R/Wv
497. *O. xanthopyrna kingi*
Pakistan Red-tailed Wheatear Wv
498. *O. oenanthe oenanthe*
Eurasian Common Wheatear S/PM
499. *O. deserti deserti*
Central Asian Desert Wheatear Wv
500. *O. d. oreophila*
Tibetan Desert Wheatear Sv/Wv
501. *O. finschii barnesi*
Pakistan Finsch's Wheatear R/Wv
502. *O. picata*
Eastern Pied Wheatear R/Wv
503. *O. monacha*
Hooded Wheatear R

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| 504. | <i>O. alboniger</i>
Hume's Wheatear | R |
| 505. | <i>O. pleschanka pleschanka</i>
Pleschanka's Pied Wheatear | S/bv |
| 506. | <i>Saxicoloides fulicata cambiensis</i>
Indo-Pakistan Black-backed Robin | R |
| 507. | <i>Monticola cinclorhynchus</i>
Blue-capped Rock Thrush | S/bv |
| 508. | <i>M. solitarius longirostris</i>
Iranian Blue Rock Thrush | Wv |
| 509. | <i>M. s. pandoo</i>
Indian Blue Rock Thrush | S/bv |
| 510. | <i>M. rufiventris</i>
Chestnut-bellied Rock Thrush | R |
| 511. | <i>M. saxatilis saxatilis</i>
Eurasian Rock Thrush | APM |
| 512. | <i>Myiophoneus caeruleus temminckii</i>
West Himalayan Whistling Thrush | R |
| 513. | <i>Zoothera citrina citrina</i>
Southasian Orange-headed Ground Thrush | M |
| 514. | <i>Z. mollissima whiteheadi</i>
Western Plain-backed Mountain Thrush | R |
| 515. | <i>Z. dauma dauma</i>
Himalayan White's Thrush | R |
| 516. | <i>Turdus unicolor</i>
Tickell's Thrush | R |
| 517. | <i>T. boulboul</i>
Grey-winged Blackbird | R |
| 518. | <i>T. merula intermedius</i>
Turkestan Blackbird | Wv/r |

519. *T. m. maximus*
Tibetan Blackbird R
520. *T. rubrocanus rubrocanus*
Western Grey-headed Thrush R
521. *T. naumanni eunomus*
Asian Dusky Thrush Wv/r
522. *T. ruficollis atrogularis*
Asian Black-throated Thrush Wv
523. *T. r. ruficollis*
Chinese Black-throated Thrush Wv
524. *T. iliacus iliacus*
Eurasian Redwing Wv
525. *T. viscivorus bonapartei*
Asian Mistle Thrush Wv

Subfamily : Timaliinae (8 genera, 19 species)

526. *Pomotorhinus erythrogenys erythrogenys*
West Himalayan Rusty-cheeked Scimitor Babbler R
527. *Stachyris pyrrhops*
Red-billed Tree Babbler R
528. *Chrysomma sinense hypoleucum*
Western Oriental Yellow-eyed Babbler R
529. *Moupinia altirostris scindica*
Sind Jerdon's Babbler R
530. *Turdoides caudatus huttoni*
Afghan Common Babbler R
531. *T. c. eclipes*
Pakistan Common Babbler R
532. *T. c. caudatus*
Indian Common Babbler R
533. *T. earlei sonivius*
Western striated Babbler R

534. *T. striatus somervillei*
Sind White-headed Jungle Babbler R
535. *Garrulax albogularis whistleri*
Western White throated laughing Thrush R
536. *G. variegatus sindianus*
Western Variegated Laughing Thrush R
537. *G. rufogularis occidentalis*
Western Rufous - chinned Laughing Thrush R
538. *G. lineatus bilkevitchi*
Western Himalayan Streaked Laughing Thrush R
539. *G. l. gilgit*
Northern Himalayan Streaked Laughing Thrush R
540. *G. l. lineatus*
Central Himalayan Streaked Laughing Thrush R
541. *G. erythrocephalus erythrocephalus*
Western Red-headed Laughing Thrush R
542. *Pteruthius flaviscapis validirostris*
Himalayan Red-winged Shrike Babbler R
543. *P. xanthochlorus occidentlis*
Western Green Shrike Babbler R
544. *Heterophasia capistrata capistrata*
Himalayan Black-capped Sibia R

Subfamily : Panurinae (1 genus, 1 species)

545. *Panurus biarmicus russicus*
Eurasian Bearded Reedling AWv

Subfamily : Sylvinae (16 genera, 56 species)

546. *Cettia fortipes pallida*
Pale Strong-footed Bush Warbler Wv
547. *C. cetti albiventris*
Pakistan Cetti's Warbler Wv

548. *Bradypterus major major*
Himalayan Large-billed-Bush Warbler R
549. *Locustella naevia straminea*
Eastern Grasshopper Warbler Wv
550. *Acrocephala agricola agricola*
Asian Paddyfield Warbler R
551. *A. a. brevipennis*
Turkestan Paddyfield Warbler Wv
552. *A. conoinens harringtoni*
Kashmir Blunt-winged Paddyfield Warbler S/bv
553. *A. melanopogon mimica*
Asian Moustached Warbler R/Wv
554. *A. scirpaceus fuscus*
Asian Reed Warbler R
555. *A. stentoreus brunnescens*
Asian Clamorous Reed Warbler R
556. *A. arundinaceus zarudnyi*
Eurasian Great Reed Warbler PM
557. *A. dumetorum*
Blyth's Reed Warbler Wv/PM
558. *Hippolais languida*
Upcher's Warbler S/bv
559. *H. caligata caligata*
Siberian Booted Warbler Wv/PM
560. *H. c. rama*
Pakistan Booted Warbler Wv
561. *Sylvia hortensis jerdoni*
Eastern Orphean Warbler S/bv
562. *S. communis icterops*
Indian Whitethroat S/bv

563. *S. curraca blythi*
Siberian Lesser Whitethroat Wv
564. *S. c. halimodendri*
Kirghiz Lesser Whitethroat Wv
565. *S. c. minula*
Mongolian Lesser Whitethroat Wv
566. *S. c. althaea*
Hume's Lesser Whitethroat R
567. *S. nana nana*
Iranian Desert Whitethroat Wv
568. *S. n. theresae*
Indian Desert Whitethroat Wv
569. *Phylloscopus collybitus tristis*
Brown chiff-chaff Wv
570. *P. c. sindianus*
Sind Chiiff-chaff R/wv
571. *P. neglectus*
Plain Willow Warbler R/Wv
572. *P. tytleri*
Tytler's Willow Warbler R
573. *P. affinis*
Tickell's willow Warbler R
574. *P. griseolus*
Jerdon's Willow Warbler R
575. *P. inornatus humei*
Hume's Yellow-browed Warbler S/bv
576. *P. subviridis*
Brooks's Willow Warbler R
577. *P. proregulus simlaensis*
Western Pallas's Leaf Warbler R

578. *P. magnirostris*
Large-billed Willow Warbler S/bv
579. *P. trochiloides viridanus*
Western Greenish Warbler S/bv
580. *P. t. ludlowi*
Baltistan Greenish Warbler S/bv
581. *P. nitidus*
Green Willow Warbler Wv/PM
582. *P. occipitalis*
Large Crowned Willow Warbler S/bv
583. *P. reguloides kashmirensis*
Kashmir Blyth's Crowned Willow Warbler R
584. *P. reguloides kashmirensis*
Western Grey-faced Willow Warbler Wv
585. *Seicercus xanthoschista albosuperciliaris*
Western Greyheaded Flycatcher Warbler R
586. *Regulus regulus himalayensis*
Himalayan Goldcrest R
587. *Leptopoecile sophiae sophiae*
Turkestan Severtzov's Tit Warbler R
588. *Cisticola juncidis cursitans*
Streaked Fan-tailed Warbler R
589. *Prinia subflava terricolor*
Northwestern Tawny-flanked Prinia R
590. *P. gracilis lepida*
Indian Graceful Prinia R
591. *P. socialis stewarti*
Pakistan Ashy Prinia R
592. *P. hodgsoni rufula*
Northern Franklin's Prinia R

593. *P. flaviventris sindiana*
Sind Yellow-bellied Prinia R
594. *P. criniger striatula*
Sind Hill Prinia R
595. *P. c. criniger*
Himalayan Hill Prinia R
596. *P. burnesi*
Long-tailed Grass Warbler R
597. *P. buchanani*
Rufous-fronted Prinia R
598. *Orthotomus sutorius guzuratus*
Indian Long-tailed Tailor Bird R
599. *Chaetornis striatus*
Bristled Grass Warbler R
600. *Scotocerca inquieta striata*
Pakistan Streaked Scrub Warbler R
601. *Megalurus palustris tokloo*
Striated Canegrass Warbler R
- Subfamily : Muscicapinae (5 genera, 9 species)
602. *Ficedula parva parva*
Western Red-breasted Flycatcher Wv
603. *F. superciliaris superciliaris*
Indian White-browed Blue Flycatcher R
604. *F. tricolor tricolor*
Western Slaty Blue Flycatcher R
605. *Niltava sundara whistleri*
Himalayan Rufous-bellied Niltava R
606. *Muscicapa striata sarudnyi*
Spotted Flycatcher S/bv
607. *M. sibirica gulmergi*
Kashmir Sooty Flycatcher R

608. *M. ruficauda*
Rufous-tailed Flycatcher S/bv
609. *Eumyias thalassina thalassina* S/bv
610. *Culicicapa ceylonensis calochrysea*
Northern Grey-headed Canary Flycatcher R
- Subfamily : Rhipidurinae (1 genus, 2 species)
611. *Rhipidura albicollis canescens*
Himalayan White-throat Fantail R
612. *R. aureola aureola*
Indian White browed Fantail R
- Subfamily : Monarchinae (1 genus, 1 species)
613. *Terpsiphone paradisi leucogaster*
Southasiatic Paradise Flycatcher R
60. Family : Aegitholidae (1 genus, 3 species)
614. *Aegithalos leucogenys*
White cheeked Tit R
615. *A. concinnus iredalei*
Western Red-breasted Tit R
616. *A. iouschistos niveogularis*
Pakistan Blyth's Long-tailed Tit R
61. Family : Remizidae (2 genera, 2 species)
617. *Remiz pendulinus coronatus*
Asian Penduline Tit Wv
618. *Cephalopyrus flammiceps flammiceps*
Western Fire -capped Tit Warbler S/bv
62. Family : Paridae (2 genera , 11 species)
619. *Parus rufonuchalis*
Rufous-naped Tit R
620. *P. melanolophus*
Vigors Crested Tit R

621. *P. dichrous kangrae*
Pakistan Brown Crested Tit R
622. *P. major cashmirensis*
Kashmir Great Tit R
623. *P. m. decolorans*
Afghan Great Tit R
624. *P. m. ziaratensis*
Balochistan Great Tit R
625. *P. monticolus monticolus*
Himalayan Green-backed Tit R
626. *P. xanthogenys xanthogenys*
Himalayan Black-spotted Yellow Tit R
627. *P. cyanus flavipectus*
Yellow-breasted Azure Tit S
628. *P. c. tianschanicus*
Tien Shan Azure Tit V
629. *Sylviparus modestus simlaensis*
Simla Yellow-browed Tit R
63. Family : Sittidae (2 sub-families, 2 genera, 4 species)
- Subfamily : Sittinae (1 genus, 3 species)
630. *Sitta castanea cashmirensis*
Pakistan Chestnut-billed Nuthatch R
631. *S. leucopsis leucopsis*
Western White-cheeked Nuthatch R
632. *S. tephronota tephronota*
Northeastern Rock Nuthatch R
- Subfamily : Tichodromadinae (1 genus, 1 species)
633. *Tichodroma muraria nepalensis*
Pakistan Wall creeper R

64. Family : Certhiidae (1 subfamily; 1 genus, 3 species)
- Subfamily : Certhiinae (1 genus, 3 species)
634. *Certhia familiaris hodgsoni*
Kashmir Tree creeper R
635. *C. himalayana limes*
West Himalayan Tree creeper R
636. *C. h. himalayana*
Himalayan Tree Creeper R
65. Family : Dicaeidae (1 genus, 1 species)
637. *Dicaeum agile agile*
Indian Thick-billed Flowerpecker R
66. Family : Nectariniidae (1 genus, 1 species)
638. *Nectarinia asiatica brevirostris*
Sind Purple Sunbird R
67. Family : Zosteropidae (1 genus, 1 species)
639. *Zosterops palpebrosa occidentis*
Western Oriental White-eye R
68. Family : Emberizidae (1 subfamily, 2 genera, 15 species)
640. *Melophus lathami*
Crested Bunting R
641. *Emberiza calandra*
Corn Bunting Wv
642. *E. leucocephala leucocephala*
Asian Pine Bunting Wv
643. *E. melanocephala*
Black-headed Bunting Wv
644. *E. bruniceps*
Red-headed Bunting R

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| 645. | <i>E. rutila</i>
Chestnut Bunting | Wv/r |
| 646. | <i>E. stewarti</i>
White-capped Bunting | R |
| 647. | <i>E. hortulana</i>
Ortolan Bunting | V |
| 648. | <i>E. buchanani buchanani</i>
Southasian Grey-necked Bunting | S/bv |
| 649. | <i>E. cia par</i>
Asian Rock Bunting | S/bv |
| 650. | <i>E. c. stracheyi</i>
Himalayan Rock Bunting | R |
| 651. | <i>E. striolata striolata</i>
Pakistan Striped Bunting | R |
| 652. | <i>E. fucata arcuata</i>
Indian Grey-hooded Bunting | R |
| 653. | <i>E. aureola aureola</i>
Indian Yellow-breasted Bunting | Wv/r |
| 654. | <i>E. schoeniculus pallidior</i>
Asian Reed Bunting | Wv |
| 69. | Family : Fringillidae (2 subfamilies, 10 genera, 33 species) | |
| | Subfamily : Fringillinae (1 genus, 2 species) | |
| 655. | <i>Fringillia coelebs coelebs</i>
Eurasian Chaffinch | Wv/r |
| 656. | <i>F. montifringilla</i>
Brambling | Wv/PM |
| | Subfamily : Carduelinae (9 genera, 31 species) | |
| 657. | <i>Carduelis carduelis major</i>
Siberian Goldfinch | Wv/r |

658. *C. c. subulata*
Central Asian Goldfinch Wv/r
659. *C. c. caniceps*
Grey-headed Goldfinch R
660. *C. spinoides spinoides*
Himalayan Black-headed Green finch S/bv
661. *Acanthis cannabina bella*
Eastern Linnet Wv
662. *A. flavirostris montanella*
Stoliczka's Twite R
663. *Leucosticte nemoricola altaica*
Pakistan Hodgson's Rosy Finch R
664. *L. brandti haematopygia*
Pakistan Brandt's Rosy Finch R
665. *L. b. brandti*
Mountain Brandt's Rosy Finch S
666. *L. b. pamirensis*
Pamirs Brandt's Rosy Finch Wv
667. *Rhodopechys githaginea crassirostris*
Asian Trumpeter Finch R
668. *R. mongolica*
Mongolian Trumpeter Finch Wv
669. *R. absoleta*
Lichenstein's Desert Finch R
670. *R. sanguinea sanguinea*
Asian Crimson-winged Finch U
671. *Callacanthis burtoni*
Red-browed Rose Finch R
672. *Serinus pusillus*
Red-fronted Serin R

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| 673. | <i>Carpodacus erythrinus ferghanensis</i>
Centralasian Common Rose finch | S/bv |
| 674. | <i>C. rhodochrous</i>
Pink-browed Rosefinch | R |
| 675. | <i>C. rhodochlamys grandis</i>
Pakistan Red-mantled Rosefinch | R |
| 676. | <i>C. thura blythi</i>
Kashmir White-browed Rosefinch | R |
| 677. | <i>C. rubicilla severtzovi</i>
Central caucasian Great Rosefinch | R |
| 678. | <i>C. rubicilloides lucifer</i>
Northeastern Great Rosefinch | R |
| 679. | <i>C. puniceus humii</i>
Western Rose-breasted Rosefinch | R |
| 680. | <i>Pyrrhula nipalensis nipalensis</i>
Pakistan Brown Bullfinch | R |
| 681. | <i>P. aurantiaca</i>
Orange Bullfinch | R |
| 682. | <i>Coccothraustes coccothraustes humii</i>
Indian Hawfinch | Wv |
| 683. | <i>C. icteroides</i>
Black and Yellow Grosbeak | R |
| 684. | <i>C. affinis</i>
Allied Grosbeak | R |
| 685. | <i>C. carnipes speculigerus</i>
Persian White-winged Grosbeak | R |
| 686. | <i>C. c. carnipes</i>
Himalayan White-winged Grosbeak | R |
| 687. | <i>C. melanozanthos</i>
Spotted-Wing Grosbeak | R |

70. Family ; Estrildidae (2 genera, 2 species)

688. *Amandava amandava amandava*
Pakistan Red Munia R

689. *Lonchura malabarica*
Indian Silverbill R

71. Family : Ploceidae (2 subfamilies, 3 genera, 13 species)

Subfamily : Passerinae (2 genera, 10 species)

690. *Passer domesticus indicus*
Indian House Sparrow R

691. *P. d. parkini*
Kashmir House Sparrow R/M

692. *P. d. bactrianus*
Turkistan House Sparrow. Wv

693. *P. hispaniolensis transcaspicus*
Caucasian Spanish Sparrow Wv

694. *P. pyrrhonotus*
Sind Jungle Sparrow R

695. *P. rutilans cinnamomeus*
Himalayan Cinnamon Sparrow R

696. *P. montanus dilutus*
Afghan Tree Sparrow R

697. *P. moabilicus yatii*
Afghan Scrub Sparrow Wv

698. *Petronia xanthosterna transfuga*
Sind Yellow spotted Petronia R

699. *P. petronia intermedia*
Pakistan Rock Sparrow Wv

Subfamily : Ploceinae (1 genus, 3 species)

700. *Ploceus philippinus philippinus*
Indian Baya Weaver R

701. *P. benghalensis*
Bengal Weaver R
702. *P. manyar flaviceps*
Indian Streaked Weaver R
72. Family : Sturnidae (1 subfamily, 2 genera, 11 species)
- Subfamily : Sturninae (2 genera, 11 species)
703. *Sturnus pogodarum*
Black-headed Starling R
704. *S. roseus*
Rose-coloured Starling Wv
705. *S. vulgaris nobilior*
Afghan Common Starling Wv
706. *S. v. poltaratskyi*
Iranian Common Starling Wv
707. *S. v. porphyronotus*
Asian Common Starling Wv
708. *S. v. minor*
Sind Common Starling R
709. *S. v. humii*
Kashmir Common Starling Wv
710. *S. struninus*
Daurian Starling S
711. *Acridotheres tristis tristis*
Indian Common Mynah R
712. *A. ginginianus*
Bank Mynah R
713. *A. fuscus fuscus*
North Indian Jungle Mynah R
73. Family Oriolidae (1 genus, 2 species)
714. *Oriolus oriolus oriolus*
European golden Oriole PV

715. *O. o. kundoo*
Indian Golden Oriole S/bv
74. Family : Dicruridae (1 genus, 2 species)
716. *Dicrurus macrocercus albirictus*
North-Indian Black Drongo R
717. *D. leucophaeus longicaudatus*
Indian Grey Drongo R
75. Family : Corvidae (7 genera, 17 species)
718. *Garrulus glandarius bispecularis*
West Himalayan Redcrowned Jay R
719. *G. lanceolatus*
Lanceolated Jay R
720. *Urocissa flavirostris cucullata*
Western Yellow-billed Blue Magpie R
721. *Dendrocitta vagabunda pallida*
North-Indian Tree Pie R
722. *D. formosae occidentalis*
West Himalayan Tree Pie R
723. *Pica pica bactriana*
Kashmir Magpie R
724. *Nucifraga caryocatactes multipunctata*
Spotted Nutcracker R
725. *Pyrrhocorax pyrrhocorax centralis*
Red-Billed Chough R
726. *P. graculus digitatus*
Yellow-billed Alpine Chough R
727. *Corvus monedula soemmerringii*
Eurasian Jackdaw Wv/PM
728. *C. splendens zugmayeri*
Sind House Crow R

729. *C. frugilegus frugilegus*
European Rook PM/Wv
730. *C. corone sharpii*
Hooded Carrion Crow Wv
731. *C. c. orientalis*
Eastern Carrion Crow R/Wv
732. *C. macrorhynchos intermedius*
Himalayan Jungle Crow R
733. *C. ruficollis ruficollis*
Pakistan Brown-necked Raven R
734. *C. corax subcorax*
Punjab Raven R

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OBITUARY

Professor Dr. Manzoor Ahmed
(1931-1992)

It is with profound sense of sorrow to report the sad demise of Prof. Dr. Manzoor Ahmad, Ex-Chairman, Department of Zoology, University of Karachi, who expired on 19-08-1992.

Dr. Ahmed was born on 11th September, 1931 at Sialkot. He got his early education at Sialkot and then graduated from Punjab University Lahore. He obtained his M. Sc. degree in Zoology in 1961 from Karachi University securing first position and Ph. D. from Karachi University in 1967, He also obtained Certificates in French and Italian Languages from Karachi University.

Dr. Ahmed joined as Lecturer in Zoology in Karachi University in 1961. From 1974 to 1976, he worked as Senior Lecturer and Associate Professor in Zoology at Makerere University, Kampala, Uganda. He returned to Pakistan in 1976 and again joined Karachi University as Associate Professor in Zoology and was promoted as professor in 1982. He was also the Chairman, Department of Zoology, University of Karachi during 1985, 1988 and 1989 to 1991. He retired on 9th September, 1991. He was also the Vice President of the Zoological Society of Pakistan. He was awarded twice merit cash prizes for prominent research. He was also awarded Best Research Award (Faculties of Science and Pharmacy) of the Karachi University.

Dr. Ahmed was a well known entomologist as well as a naturalist. In spite of being an entomologist, his contributions in the field of wildlife are noteworthy. He took keen interest in the conservation of wildlife in Pakistan and was actively engaged in researches on different groups of wildlife. Under his guidance, 30 students completed their Thesis for M. Sc. in Zoology from Karachi University during the period 1967 to 1991 and 2 students at Makerere University, Kampala - Uganda. Besides, 8 students including 4 officers of the Zoological Survey Department were doing Ph. D. and M. Phil. on different topics of Mammals, Birds, Reptiles and Entomology while 6 have completed their Ph. D. and M. Phil. under his guidance. He has also written many articles and books on wildlife and some were in the process of compilation at the time of his death. He has a total of 250 publications to his credit. He was also a member of the editorial board of the "RECORDS" of the Zoological Survey Department.

We have lost in him a good human being, a good teacher, educationist, naturalist and an excellent researcher. May Almighty give strength to his family, friends and students to bear his irreparable loss.

