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**Shabana Pathan**Department of Zoology,  
University of Sindh Jamshoro,  
Sindh, Pakistan**Ayaz Hussain Qadri**Department of Zoology,  
University of Sindh Jamshoro,  
Sindh, Pakistan**Tahira Jabeen Ursani**Department of Zoology,  
University of Sindh Jamshoro,  
Sindh, Pakistan**Jawaid A Khokhar**Department of Zoology,  
University of Sindh Jamshoro,  
Sindh, Pakistan**Imran Ali Soomro**Department of Zoology  
University of Sindh Jamshoro,  
Sindh, Pakistan**Sahibzado Farmanullah**Department of Zoology  
University of Sindh Jamshoro,  
Sindh, Pakistan**Correspondence****Imran Ali Soomro**Department of Zoology,  
University of Sindh Jamshoro,  
Sindh, Pakistan

## Ecology and morphometrics of wading birds of district Larkana, Sindh, Pakistan

**Shabana Pathan, Ayaz Hussain Qadri, Tahira Jabeen Ursani, Jawaid A Khokhar, Imran Ali Soomro and Sahibzado Farmanullah**

### Abstract

Wading birds are very vital creature; they belong to order Charadriiformes and have 13 families worldwide. Most of the waders are migratory however some do not migrate but live in tropical countries including Pakistan. This study is reported for the first time which is based on eight species of waders (Aves: Charadrii) occurring in Larkana, Sindh, Pakistan (lies 24° 56' and longitude 67° 11'). Their Ecology and Morphometrics of diagnostic characteristics (body length, beak, fore limbs, hind limbs, body weight and tail length) were studied. They showed different shapes, sizes, colors along diverse anatomical and biological differences. Total 97 specimens of wading birds comprising 68 females and 29 males were captured from February to October 2017. They were sorted out into four families (Ardeidae, Recurvirostridae, charadriidae and Rallidae) and eight species Black winged stilt (*Himantopus himantopus*), Pond heron (*Ardeola grayii*), Intermediate egret (*Ardea intermedia*); Common moorhen (*Gallinula chloropus*); Grey heron (*Ardea cineria*); Cattle egret (*Bubulcus iris*), Night Heron (*Nycticorax nycticorax*), Red-wattled lapwing (*Vanellus indicus*). Collection was made from four sites ponds, river bank, canals and wetlands along with live analysis.

**Keywords:** wading birds, eology, morphometrics, ardeidae, recurvirostridae, charadriidae, rallidae and Larkana

### 1. Introduction

Wading birds are very vital creature; they belong to order Charadriiformes and consist of 13 families throughout the world. Most of the waders are migratory however some do not migrate but live in tropical countries including Pakistan. Several studies demonstrate that shorebirds like wading birds ecology, foraging habits and actively choose specific prey organisms but literature on morphometric of their body is inadequate. That's why this morphometric based research of various wading birds occurring in Larkana district undertaken which will help in other parameters like ecology, foraging and feeding habits affecting on prey. Because of various Selectivity studies on wading birds might be related to co factors such as specific prey behavior [1]. In addition, shorebirds often choose specific habitats for foraging. Shorebirds like wading birds are generally expected to be under pressure to feed efficiently and a body of theory – generally referred to as “optimal foraging theory” – has been developed to address this subject [2-4]. Showed that Redshank chose, at all times, the most profitable prey, but supplemented it in times of prey scarcity with less profitable prey items. Thus, birds might concentrate on that prey yielding the maximum return on average, and not merely on the largest prey. Some studies have also illustrated the impact of shorebird predation on their prey. The results depend very much on the particular situation at the study site, ranging from very strong impacts to no impacts at all [5-8]. This research work will provide the base line data about wading birds.

### 2. Materials and Methods

The Indus river banks and four small lakes of district Larkana like bodies were chosen as the study sites. 97 specimens were collected from 4 selected sites and Indus River banks by using the inboxes trapping, air gun and the last one is the nets. For all bird observations, binoculars (10 x 40 from Zeiss and 8 x 32 from Fujinon) and telescopes were used (Optolyth TBG 80 with 20x WW and 20-60 x 80/65 oculars). Only diurnal annotations of their habit and habitat were taken into contemplations. Beside day and weather condition such as temperature and the water coverage of the sites was also taken into account. All specimen were moved to vertebrate laboratory for the further identification.



### 3. Result and Discussion

Larkana lies at latitude 24° 56' and longitude 67° 11' 00' (Map 1). It has elite climate and rainstorm meteorological part of Sindh. It is one of the few districts in Sindh, which is the home to thousands of different species of birds. Wading birds are more conspicuously sighted birds in the study area. Multiple miscellaneous species which are varying in several different ways from one species to another found in Larkana district. During study total 97 (68 ♀ and 29 ♂) (table 02) specimens of various genera of wading birds were captured in the months February 2017 to Oct 2017 from four talukas (table 02). After the analysis samples were sorted out in to four families (Ardeidae, Recurvirostridae, charadriidae and Rallidae) and Eight species which are *Ardea intermedia*, *Himantopus himantopus*, *Ardeola grayii*, *Gallinula chloropus*, *Bubulcus ibis*, *Nycticorax nycticorax*, *Vanellus indicus*, *Ardea cinerea*. The morphometric study of 3 ♂ and 3 ♀ mature individuals of each species of wading birds were examined after deep observations in the Vertebrate Laboratory, Zoology Department (table 01). Which shows a great deal in variations

in the diagnostic characters like beak, body length and weight, tail, fore and hind limbs. Besides colour, body shape, habitats and feeding habits.

This study first reported from Larkana district on wading birds which provide basic information about the habitats, variation in morphological characteristics, identification keys their distributions and ecological effects of wading birds from surveyed area. Wading birds having diverse group of species such as pond herons. They are long legged waders with long wingspan. This heron is stocky species, often found in ponds. It has a drab brown back feathers streaked with buff covering much of its upper wings. Another wader named Intermediate egret. Its body feathers are white or buff. It is distinguished from other white egrets by its yellow bill and black feet. Black winged stilt is another wader that is also found in marshes, shallow lakes, and ponds. They have very long legs and an extremely large beak.

The Red-wattled lapwing (*Vanellus indicus*) is commonly called as Teetehar (Sindhi). It is a large plover belongs to the family Charadriidae. The cheekily featured red-wattled lapwing is named for the bright red, fleshy, wrinkled skin, or wattle, lying in the front of each eye. This plover has grayish brown upperparts, apart from for the jet black head, neck and upper breast. The extensive white stripe lengthens from each eye down the sides of the neck, sketching a clear line in the middle of the black and brown feathers. During flight, the white hindquarters and tail can as well perceived, with a broad black band ranging across the tail. The grey heron is a large species of wading birds standing up to 100 cm (39 in) tall and measuring 84–102 cm (33–40 in) long with a 155–195 cm (61–77 in) wingspan. The body weight can range from 1.02–2.08 kg. Adults species have the head and neck white with a broad black super cilium that terminates in the slender, hanging crest, and bluish-black streaks on the front of the neck. The body comprises of grey wings above and the under parts are grayish-white, with some black on the flanks. It has long, sharply pointed, pinkish-yellow beak is, straight and powerful, and is brighter in color during breeding season in adults. The iris is yellow and the legs are brown (table 01). This work study will provide as well as increase basic knowledge about the wading birds.

**Table 1:** Showing Morphometrics of Beak (BE), Body (BO), Fore Limb (FL), Hind Limb (HL), Tail (TL) and Body Weight (BW) of Wading Birds of Larkana. Measurement in mm & grams.

S#	Name of species	BE	BO	FL	HL	TA	BW
01	Black-winged stilt	67	230	280	275	70	148 g
02	Cattle egret	65	280	880	160	95	280 g
03	Pond heron	63	300	130	120	92	300 g
04	Intermediate egret	65	350	420	160	95	400 g
05	Grey egret	67	850	1560	180	96	1024 g
06	Night heron	66	640	1160	165	98	800 g
07	Common moorhen	23	185	110	115	90	195 g
08	Red-winged stilt	15	140	117	91	84	140 g

**Table 2:** Status of collected wading birds at taluka level

Taluka	Number Of Male	Number Of Female	Number Of Specimen
Larkana	06	13	19
Dokri	07	21	28
Rato Dero	06	09	15
Bakrani	10	25	35

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