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MORPHOMETRICAL COMPARISONS BETWEEN THE SEXES OF COMMON QUAIL (COTURNIX COTURNIX) IN DISTRICT ABBOTTABAD, KHYBER PAKHTUNKHWA, PAKISTAN

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ABSTRACT:

District Abbottabad has a nice location, scenic beauty, pleasant weather, and diversity of flora and fauna. There is no morphometrics study available on common quail (Coturnix coturnix) and other avian fauna of the Family Phasianidae in this District. Aim of this study was to provide understandings the morphometrics between the sexes of common quail in this district Abbottabad. Seventy one birds (Coturnix coturnix) were collected in these six months (Februry 2020 to July 2020) from four Tehsils (Tehsil Abbottabad, Tehsil Havelian, Tehsil Lora and Tehsil lower Tanawal) of Abbottabad District. The results revealed, 31 individuals were males and 40 individuals were females. Hunters were contracted for bird collection. Morphometrical comparisons between the sexes showed that the body weight and the body lengths vary significantly. Different parameters value did not differ like bill length, tarsus length, and wing length.

Keywords: Quail, Morphometric, Tarsus, Vernier caliper , Coturnix coturnix , Abbottabad.

INTRODUCTION:

The Quail (Coturnix coturnis), in Urdu terminology called 'Batair' is a partially migrant bird species, lie in Galliformes Order and belong to Family Phasianidae (Qureshi et al., 2016). Median sized, beautiful ground nesting game birds that has short-legged and cannot able to fly (Said et al., 2019). The American quail (Coturnix coturnix) and the other Japanese quail (Coturnixcoturnix japonica) are generally known as common Quail, greatly studied as migratory birds because they travel between Europe and Asia (Zahid & Hamid, 2017). They are rounded body, small necked with short tail. Head pattern of male has different pattern, has 3

black crown along with white throat, black chin, rufous buff and upper breast is pale shaft strip. Black and white throat pattern is lack by Female bird and having upper breast heavy black streaking (Qureshi et al., 2016). Common quail (Coturnix coturnix) natural habitat consist of semi-hilly agricultural lands and plains (Cramp & Simmons, 1980). All the important process of Quail including feeding and nest making behaviour done in the herbaceious strata in the grassland habitat (Huisman, 2006). Maximum population of Quail migrates between the four provinces, while a low number of birds remain in the local habitat. Climate conditions has influenced on seasonal migrations. Autumn migration are done in irrigated croplands in the area of Punjab. Many birds nesting have been observed on back to northern areas during breed in spring to stay in other provinces of Pakistan (Roberts, 1991). Their diets has varieties and more or less include nectar, fruit, plants, seeds, fallen cereal grains instubbles and grass. Without teeth, the digestive system of birds is adapted to process undigested food material that are not swallow correctly. In the report of (Mukherjee, 1963), Common quail feeding behaviour showed that by weight 90% food was weed seeds having grasses and legumes, cultivated grains 18% and only 8% insects and Arachnid. In this advanvce century, in some villages of Pakistan, quails has impact on economy. As human population grows it increases the demand of animal protien in the developing countries. To fulfill the demand of meat and protien, the industry and poultry product development is very necessary. Quails provide meat and eggs along with source of income (Zahid et al., 2018). Female can lay 250 to 300 eggs in one year and start laying egg on normal at 6 weeks (Zahid & Hamid, 2017). Hunting of birds is old recreational activity except in those area which is undeveloped; Pheasants are widely hunted birds, doves, wild turkeys, quail , partridge, grouse, snipe and woodcocks etc. Many factors has impact on this current decline, one f the important factor is habitat destruction, along with agricultural intensification, pesticides uses in field which limit the amount of chicks feeding material and more hunting of birds (Huisman, 2006). The quail is an extremely disease - resistant species. Although it is susceptible to the majority of diseases found in gallinaceous birds, quail appear to have a much greater resistance to these pathogens than do domestic fowl (Cheng et al., 2010). (Huisman, 2006) estimate the importance of threats to Quail populations, some categories are used: Critical; a factor to do more rapid declines (Over 10 years >30%), Medium; impact relatively slow, but has significant declines (over 10 years, 10–20%), High; caused rapid declines (over 10 years, 20-30%),and Low; impact on fluctuations. Alloparentle care is common in quail (Coturnix coturnix). Animal rather than the genetic parent, when cares for other's young is called alloparent and this behavior is called alloparenting (Zahid & Hamid, 2017).

MORPHOLOGICAL MEASUREMENT:

Difference or variety between individuals, closely related species, cohort's population, or differences among the same species of birds are described by morphological measurements of birds. Sex of individuals reliably and accurately identify with plumage by using Morphological Measurement. For some avian species, morphological portrayals of populaces are restricted, similar to an evaluation of the utilization of morphometrics to recognize the sex of feathered creatures in the field (Barrowclough, 1992).

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MATERIAL AND METHOD:

Study area:

District Abbottabad is located in Hazara division of Khyber Pakhtunkhwa, Pakistan with a total area of 1,967 square kilometers (Raza, 2015). At the base of Himalaya's lands, situated between 33º 50' and 34º 23' North, 73º 35' and 73º 31' East in the North (Shujahi & Hussain, 2016). The total area of Abbottabad is about 3730 Sq. km. Cultivated area of this area is 1198 Sq. Km. Abbottabad has rugged topography comprising mainly of steep slopes and gullies, where rocks are classified as metamorphic (Qureshi, Khan, & Ahmad, 2008). The city attributes include nice location, scenic beauty, pleasant weather, and diversity of flora and fauna (Shujahi & Hussain, 2016). This district has four tehsils, Tehsil Abbottabad, Tehsil Havelian, Tehsil Lora and Tehsil lower Tanawal. The climate of the district is temperate. These Tehsils exist within the active monsoon region. It receives 1366.18 mm of rainfall annually with an average relative humidity of 56% (IUCN, 2004).

Common Quail (Coturnix coturnix) distribution range in Pakistan:

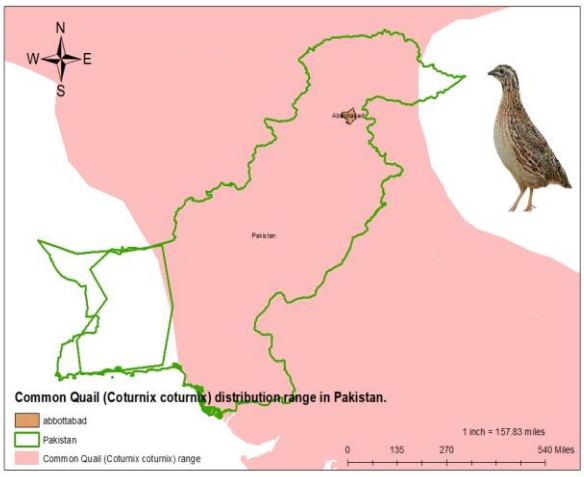
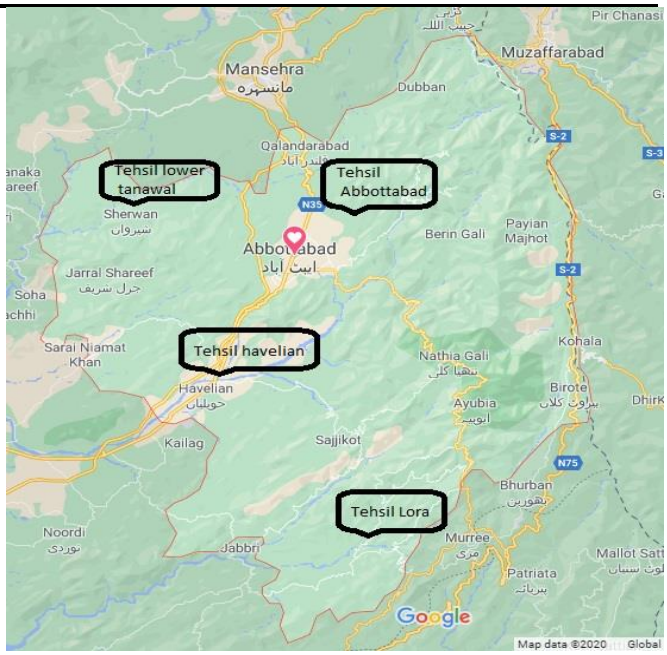


Diagram 1: Showing 4 Tehsils of District Abbottabad, KP, Pakistan (Google. Earth)



Sampling:

Quail (Coturnix coturnix) was collected from four different Tehsils of District Abbottabad (Tehsil Abbottabad, Tehsil Havelain, Tehsil Lora and Tehsil Lower Tanawal). 71 birds including 31 males, 40 females were collected during 6 months (February – July) of 2020. The hunter was contracted for bird collection. Many birds were alive and very few were killed during capturing. Birds were dissected for crop contents (feed analysis) and morphometrical study. No surveys were made during the rainy season, surveys were conducted only during the normal sunny days.

Table 1: Number of Quails Collected from 4 Tehsils of District Abbottabad during Study Period of Six Months

Months 2020	TEHSIL	Sex		Total
		MALE	FEMALE	
February 2020	ABBOTTABAD	-	-	3
	HAVELIAN	-	2	
	LORA	-	1	
	LOWER TANAWAL	-	-	
March 2020	ABBOTTABAD	-	1	9
	HAVELIAN	1	4	

	LORA	1		
	LOWER TANAWAL	1	1	
April 2020	ABBOTTABAD	3	2	14
	HAVELIAN	1	-	
	LORA	4	-	
	LOWER TANAWAL	3	1	
May 2020	ABBOTTABAD	2	-	21
	HAVELIAN	-	2	
	LORA	1	2	
	LOWER TANAWAL	6	8	
June 2020	ABBOTTABAD	3	1	13
	HAVELIAN	-	1	
	LORA	-	2	
	LOWER TANAWAL	1	5	
July 2020	ABBOTTABAD	-	-	11
	HAVELIAN	2	4	
	LORA		1	
	LOWER TANAWAL	2	2	
Grand total		**31**	**40**	**71**

Morphometrics:

The quails (Coturnix coturnix) were captured by employing different techniques by a local hunter. Maximum was alive and very few were injured or killed during capturing. Following (Tsachalidis et al., 2007), each bird was number and labeled with information about the area, date, sex, and morphological characters. A laboratory digital scale was used to the measured weight in gram (g) of the individual. Tarsus, wing, bill length, and body length were measured in millimeter (mm) with the help of vernier caliper (0.01mm).

Bills;	A set of upper and lower mandibles, and
Tarsus;	Part of the leg of a bird below the thigh
Wing:	Appendage of aerial locomotion were mesaured.

RESULT AND DISCUSSION:

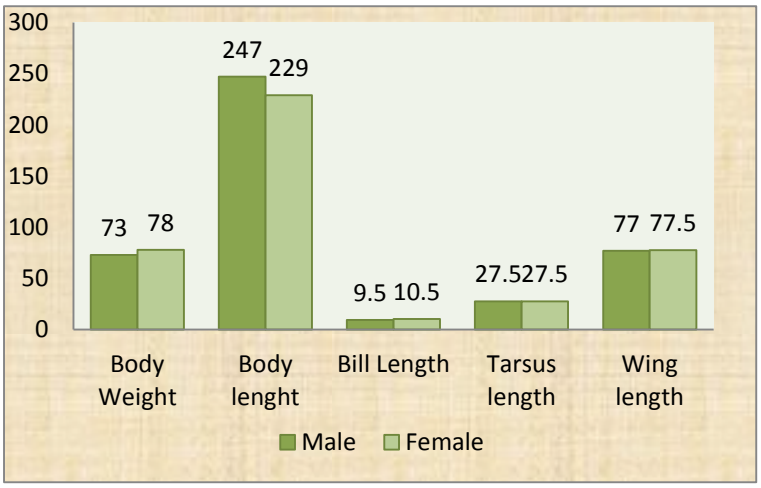
71 quails (Coturnix coturnix) captured from the District Abbottabad, (12 from Tehsil Abbottabad, 17 from Tehsil Havelian, 12 from Tehsil Lora, and 30 from Tanawal), Thirty-one were Males and Forty were Females as shown in Table 1.

From Table 2, the mean weight of male and female birds was ±72g and ±78g, male weight is lower than female body weight. Similar findings were reported in studies on European quail (Coturnix coturnix) where male body weight is lower than the female body weight (Cindy et al., 2001; Tsachalidis et al., 2007). By measuring the length of male and female quail, the mean body length of a male was ±247 and the female was ±229. Perhaps, in the report of Tsachalidis et al. (2007), female birds were longer than the male body length. Male bill lengths and female bill lengths difference were ±1 (male = ±9.5, female = ±10.5), these findings matched with the Tsachalidis et al. (2007) but different from the (Cindy et al., 2001) whereas, similar bill length of both sexes were reported. Male and female tarsus length were similar i.e ±27.5, this result matched with the result of Tsachalidis et al. (2007) and Cindy et al. (2001) conducted on similar quail (Coturnix coturnix). A very little difference between the wings of both sexes i.e male and female was observed ±0.5. This showed that the length of wings between males and females very little and this result is conflicted with the result of (Qureshi et al., 2016).

Table 2; Morphometry of Common quail (Coturnix, corturnix)

Morphmetric Parameter	Sex	Mean	Range (min-max)
Body Weight (g)	Male	±73	63-83
	Female	±78	73-83
Body Length (mm)	Male	±247	220-274
	Female	±229	220-238

Bill Length (mm)	Male	±9.5	7-12
	Female	±10.5	9-12
Tarsus Length (mm)	Male	±27.5	24-31
	Female	±27.5	25-30
Wing Length (mm)	Male	±77	73-81
	Female	±77.5	75-80



Daigram 2: Graph among morphometrical parameter of male and female of common quail

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