

Morphometrics of Common Quail (*Coturnix coturnix*) in Pothohar, Pakistan

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Abstract: Pothohar area has a specific geographic location and specific set of biotic and abiotic factors, hence is expected to have a specific combination of biodiversity like a number of birds, mammals and other organisms. No comprehensive study is available on morphometrics of common quail (*Coturnix coturnix*) or other birds of family Phasianidae. The present study aimed in understandings about the morphometrics of common quail in Pothohar area. In total 28 birds were collected throughout the year from different districts of Pothohar area. The results revealed 12 male and 16 female birds. Morphometrical comparisons between the sexes showed that body weight and body lengths vary significantly at $p < 0.05$. The other parameters like bill length, tarsus length and wing lengths did not vary significantly.

Keywords: Common quail, morphometrics, Pothohar, Pakistan

INTRODUCTION

The common quail (*Coturnix coturnix*) belongs to order Galliformes and lies under family Phasianidae. It is a compact short necked little game bird with rounded body and short tail. The male has a distinctive head pattern with three black crown stripes separated by mesial and superciliary creamy stripes. It has white throat with black chin and the upper breast is rufous buff with pale shaft strip. Female bird lack the black and white throat pattern and have heavy black streaking on the upper breast. In both sexes the bill is horny brown colored and the legs yellow to fleshy brown with no spurs on the tarsi. It has short wings which are heavily chambered to fly through rapid whirring of wing beat (Roberts, 1991).

The natural habitat of common quail (*Coturnix coturnix*) comprises of plains and semi-hilly agricultural lands (Cramp & Simmons, 1980). The majority of the population migrates among the provinces while a low percentage remains in a local area. The seasonal migrations are dependent on the weather conditions. During the autumn migration they are found in irrigated croplands throughout the Punjab. Some birds on return to northern areas during spring stay to breed in Punjab, Sindh and Baluchistan where bird nesting have been observed (Roberts, 1991).

The food of common quail predominantly consists of

seeds including fallen cereal grains in stubbles, grass and chicory (Roberts, 1991). A report on the feeding habits of common quail showed that 90% food by weight was weed seeds including grasses and legumes, 18% cultivated grains mostly millet and only 8% insects and Arachnida in Rajasthan, India (Mukherjee, 1963).

Morphological measurements of birds are a valuable means of describing differences among individuals, cohort's populations and closely related species. They can also be used accurately and reliably to identify the sex of individuals with plumage. However, for some avian species, morphological descriptions of populations are limited, as is an assessment of the use of morphometrics to identify the sex of birds in the field (Barrowclough, 1992).

Nesting in common quail is inclined to be sporadic with rather scattered authentic records. Nests are mostly found in Lucerne crops (*Medicago falcata*), thick grasses on the fringes in a small irrigated tree plantation and in small bushes (William and Williams, 1929). The calling of males occurs throughout spring passage and is not evidence of actual breeding. Males can utter call throughout the year but frequent call shows the breeding season (Roberts, 1991). Calling male utter relatively low pitched whistling tone with the first syllable very short and the last syllable emphasized and slightly more sustained. Disturbed birds in flight emit a short squeaky alarm call or

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whistle as well.

There is scarcity of information on morphometry of common quail in Pakistan and the only existing data referred to the general biology, distribution and migration. The present study is aimed to investigate the morphometrical information of the common quail in the Pothohar region of Pakistan.

MATERIALS AND METHODS

Study Area

Pothohar plateau is situated between 3233 N latitudes and 7189 E longitudes respectively. Pothohar plateau is spread over an area of 1.82 million hectares, out of which 0.61 million hectares is cultivated (Punjab Barani Commission Report, 1976). Pothohar plateau lies between monsoon belt and experiences two rainy seasons. The winter rains last from January till March and the summer rains from July to September. The average rainfall during the years 2008 and 2009 was 0.4 and 7.1 mm respectively. Temperature ranged during summer and winter was 16.9-41°C and 1.6-24.7°C respectively.

Due to the geographic location the quantity and type of organic and inorganic contents, the soil of Pothohar plateau is very fertile. Pothohar plateau has distinct type of vegetation temperate, semi-ever green forest dominated by *Acacia modesta* (Phulai), and *Olia ferrugenia* (Kao) associated with *Denonaea viscosa* (Sanatha), *Granda (Craissa spinarum)* and *Zizyphus jujuba* (Beri). There are some weeds that grow among the wheat, ground nut and mustard fields.

Sampling

Common quail (*Coturnix coturnix*) was collected from four districts of Pothohar i.e. Rawalpindi, Chakwal, Jhelum and Attock. A total of 28 birds were collected during August 2008 to July 2009 in different months of year. The hunters were contracted for birds collection. Birds were dissected immediately for crop contents, brought to the laboratory for feed analysis and morphometrical study.

Table 1 : Number of birds collected from Pothohar area during study period

Seasons	Years		Total
AUTUMN	2008	2009	
September	6	6	6
October	3	3	3
November	3	3	3
SPRING	2008	2009	
March	-	4	4
April	-	5	5
May	-	7	7
Grand Total	12	16	28

Morphometrics

Each individual was numbered and labeled with information about the area, date, sex, and morphological characters. Body weight was measured in grams by using a laboratory digital scale and total body length, bill length, tarsus and wing lengths were measured in millimeter (mm) by using vernier caliper (0.01mm) (Tsachalidis *et al.*, 2007).

RESULTS AND DISCUSSION

Out of 28 individuals of common quails (*Coturnix coturnix*), captured from Pothohar region, Pakistan (8 from Rawalpindi, 8 from Chakwal, 6 from Jhelum and 6 from Attock), twelve were male and sixteen were female.

The morphometrical measurements are given in table 2. The values regarding body weight, body length, bill length, tarsus length and wing length of the male and female common quail suggest that mean body weight of male birds was significantly ($t=-3.4$, $P < 0.05$) lower ($73.1 \pm 1.22g$) than females ($78.33 \pm 0.75g$). Similar results are reported in studies on marbled murrelets and European quail where body weight of male and female differ significantly i.e. higher in females (Cindy *et al.*, 2001; Tsachalidis *et al.*, 2007). In our study, mean body length of male ($233.75 \pm 0.88mm$) was significantly ($t=-2.7$, $P < 0.05$) longer than female body ($227.81 \pm 0.58mm$). However, Tsachalidis *et al.* (2007) reported that female birds are longer than male birds. The mean bill lengths in male and female birds did not differ significantly ($t=0.204$, $P > 0.05$). These findings are in line with the previous study on marbled murrelets in which similar bill lengths between both sexes were

observed (Cindy *et al.*, 2001). However, Tsachalidis *et al.* (2007) reported that bill lengths of bobwhite quail vary significantly. The mean tarsus length in male and female were also similar ($t=0.206$, $P> 0.05$), which is in accordance with the studies conducted by Tsachalidis *et al.* (2007) and Cindy *et al.* (2001) on

similar birds. Similarly the mean wing length in male and female did not differ ($t=0.304$, $P> 0.05$) significantly. In contrary, Tsachalidis *et al.* (2007) and Cindy *et al.* (2001) studies on bobwhite quail and marbled murrelets showed that wing lengths vary significantly between sexes.

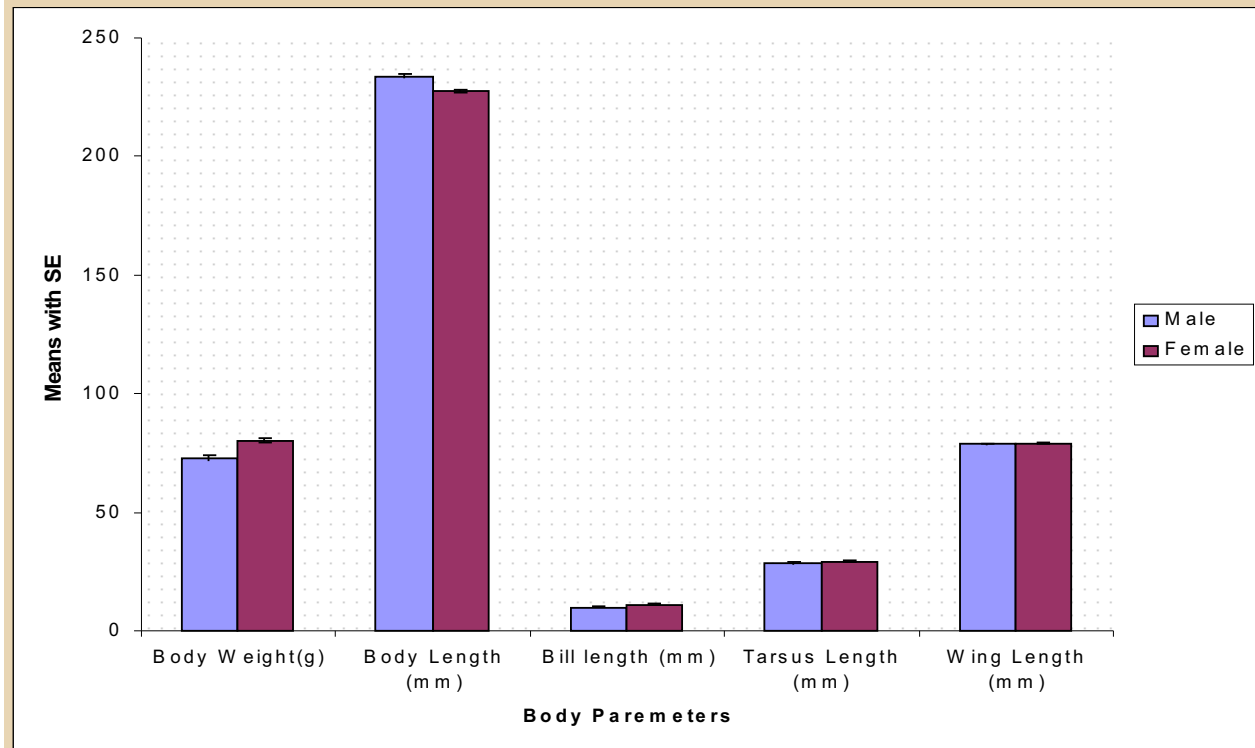
Table 2: Morphometry, mean and S.E of common quail (*Coturnix coturnix*)

Morphmetric parameters	Sex	Mean	S.E	Range(Max-Min)
Body weight (g)	Male	73.10	1.23	80-68
	Female	80.33 *	0.75	82-72
Body length (mm)	Male	233.75 *	0.88	27-219
	Female	227.81	0.58	230-224
Bill length (mm)	Male	9.79	0.38	12-08
	Female	11.11	0.31	12-09
Tarsus length (mm)	Male	28.50	0.38	30-26
	Female	29.31	0.22	30-28
Wing length (mm)	Male	78.75	0.21	80-78
	Female	78.93	0.27	80-77

* Significant differences ($t=-3.4$, $p< 0.05$) between body weight of male and female

* Significant differences ($t=-2.7$, $p< 0.05$) between body lengths of male and female

Figure 1: Comparison among morphometrical parameters of male and female of common quail, *Coturnix coturnix*



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