



RESEARCH PAPER

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Exploring the wild avian fauna of totalai game reserve district Buner, Khyber Pakhtunkhwa

Khaliq Dad*, Shahroz Khan, Naveed Akhtar, Kausar Saeed

Department of Zoology, Abdul Wali Khan University Mardan (Buner Campus), Pakistan

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Abstract

Totalai Game Reserve is one of the most famous Game Reserve of Pakistan and especially of Khyber Pukhtunkhwa, Buner. It spread over an area of 17000, hacters. Totalai Game Reserve has a peculiar combination of avian fauna. A surveyy of avian fauna at Totalai Game Reserve was conducted during November to April (2012-2013). In this survey 4 avian species were identified, all these 4 species belong to order Galliformes and family phasianidae. These 4 species are, Grey partridge (*Francolinus pondicerianus*), Black partridge (*Francolinus francolinus*), Chukar partridge (*Alectoris chukar*), Common Quail (*Coturnix coturnix*). Among these 4 species Grey partridge (*Francolinus pondicerianus*) is the richest species of the Game Reserve, and Common Quail (*Coturnix coturnix*) found in low number. The elevation of Totalai Game Reserve ranges from 2500ft -6000ft and *Alectoris chukar* is found mostly at elevation of 2500 ft or higher than 2500 ft, but other three species are mostly found in plain areas of Totalai Game Reserve.

*Corresponding Author: Khaliq Dad ✉ nghazal01@gmail.com

Introduction

Birds are one of the most popular life forms on the planet, and its diversity leads to a richness of life and beauty. Apart from this, birds have always fascinated mankind with their intrinsically beautiful plumage, melodious songs and artistic behavior. There are around 9000 species of birds living in the world today, with a tremendous diversity of life style. Besides this, birds are valuable for many aspects *i.e.* sensitive indicator of pollution and also play great role in pest control.

Birds are of great economic importance to the human society. They play an important role in controlling population of different insects and pests. They play the role of scavengers and pollinating agents and also help's in dispersal of seeds of different vegetations. They are helpful and help to provide rich food for mankind and are known to man since ages (Chittampalli and Bhatkhande, 1993).

As regards birds, the total number of birds species in the world today is 9040 and the total number of taxa of birds of Indo-Pakistan sub-continent is 2060 (Ali and Ripley, 1983). The variety of avian species in ecosystems reflects the well being of its habitat. Birds are the indicators of environment and are being used for conservation and environmental impact assessment (Gregory *et al.*, 2003). The bird is normally found foraging in open cultivated tracks and grasslands intermixed with scrub forests and is rarely observed above an elevation of 1200 m in Pakistan (Roberts, 1991). Biodiversity is not evenly distributed across the earth. It may be influenced by biogeography (Karr *et al.*, 1976).

Some landscape exhibit high richness in biological diversity whereas others show an impoverished flora and fauna. Mountain ecosystems are usually recognized as biodiversity hotspots harboring rich biota often with high number of endemic species. In these mountains decrease in species richness with increasing elevation is a widely recognized pattern (Begon *et al.*, 1990). While, others suggest a unimodal

relationship with a peak in species richness at low to mid elevations (Kattan *et al.*, 2004).

Generally, organisms do not respond directly to the elevational gradient as such, but to variables correlated with the gradient such as climate or productivity. In addition factors operating at multiple spatial and temporal scales may also influence species diversity. For example the availability of resources for birds diminishes reflecting differences in forest stand structure, site productivity, vegetation composition, distribution pattern, secondary biotic interactions and available land area (Waterhouse *et al.*, 2002).

Many researchers tried to explain factors responsible for the species distribution along the elevations (Bhatt and Joshi, 2011). However, almost nothing is known about the influence of factors, which vary with elevation (for example, forest structure) on bird species distribution. Some studies had established a close relationship between bird species diversity and vegetation (Hawkins, 1999).

Habitat is a place where animal's life found or exists. All animals except the human can live in an area where the basic resources of life such as food water and shelter are present. Because human can modify environment to suit their needs or desires, because human potentially have access to resources such as food and other life requirements from all over the world (Ahmad, 2011).

It is common observation that wild animals can better flourish and survive in their natural and ecological habitat. Every animal species use habitat where all facilities of life are met in the same way birds species also found in area where all requirements of life are present, we know that every animals species have their own requirements such as food and shelter and therefore different animals species are found in different areas where its requirements are present. And distribution of animal's species all over the world is a result of using different habitat by different species of animals (Ahmad, 2011).

Avian fauna are also distributed in different area of world on the basis of using different habitat by different avian species its mean that different avian species are found in different area and not all avian species are exist in same area because every avian species use a different habitat from other species (Ahmad, 2011).

The world is divided into millions of small and large territories inhabited by various species of animals. Such a division enables the animal's better utilization of the whole environment and prevents competition of same species with other species. Birds also exist in specific habitat in all over the world. We know that world is divided into different geographical regions on the basis of animal's distribution which is called zoogeographical regions. Its mean that some animals are found in one region while the other are found in other region in the same way birds are also distributed in different region differently depend on the use of habitat (Ahmad, 2011).

In Pakistan there is diverse type of habitat found, where the wild life species are naturally adopted. Pakistan mammalian found in palearctic and oriental geographical regions. The palearctic fauna of Pakistan largely live in Himalayan and Baluchistan up land regions. Pakistan comprises of a variety of habitat with its wild animals (Roberts, 1977).

In Khyber Pakhtunkhwa the wild fauna is rich and its wildlife flourishing in forests is a precious heritage of the country but due to motorized and ground hunting these wildlife species were run a point of extinction. For this purpose it is necessary to provide best protection to wildlife in Khyber pakhtunkhwa, therefore several areas were declared as protected areas (Khyber Pakhtunkhwa Wildlife Department, 2008).

The current study was conducted with the following objectives:

1. To explore the wild avian fauna of Totalai Game reserve.

2. To study the habitat of avian fauna in Totalai Game Reserve.
3. To find out the population status of different avian species in Totalai Game Reserve District Buner, Khyber Pakhtunkhwa Pakistan.

Materials and methods

Study area

Six months study surveys were conducted from November 2012 to April 2013 to determine the distribution, population status and habitat utilization of avian fauna of Totalai Game Reserve District Buner. Totalai Game Reserve is stretched out between 34° 25' 29.14" and 34° 39' 56.83" N-Latitude and 72° 25' 37.42" and 72° 39' 56.83" E-Longitude covering a Total area of 17000 Hectares (Saeed *et al.*, 2012). Totalai Game Reserve is divided into the following seven units.

Unit 1: Totalai, Dagai, QasimKhel and khail.

Unit 2: Dandar Truk, Khisar baba, and Karhorhae.

Unit 3: Dakarha, Charkoat, Mangal tana, Dumnir, Dejwala, and Dargalae.

Unit 4: Changlae, Kalan, Kangalae, Jumruh, and Sro.

Unit 5: Swawai, Bagh, and Darun.

Unit 6: Butkanae and Tawasdara.

Unit 7: Tegarhae, Mughdara, and Nogram (Totalai wildlife division, 2009).

During the survey, direct and indirect methods were used to gather information about presence, distribution and population status and habitat utilization of avian fauna. For direct data collection, visits were made once or twice a month early in the morning till sunset to each unit of game reserve. The bird fauna was observed using Binocular (Awan *et al.*, 2004).

Binocular was used in the present survey to see birds from large distance easily and it is mostly used in wild life survey. I used a note book to write the observe data. I used camera to capture the image of birds. For direct data collection surveys were usually scheduled early in the morning from 6 to 9 AM and at evening from 3 to 6 PM. The callings, feathers, fecal droppings

and information collected from local residents, shepherds, hunters and game watchers of the area provided best indirect evidences for determining its status (Awan *et al.*, 2004).

However, the 60% increase documented seems to be due to double counting of individual birds, especially when a single caller calls from two or more calling sites. Such inaccuracies may occur when the time spent on call counts is more than 15-20 minutes (Gaston *et al.*, 1980). Very often birds will move towards the direction of other callers after this time thereby giving the impression that more birds are present. *Francolinus francolinus*: Calls of this species were heard near Gachok at approximately 1200 m. For indirect data collection also hunters, wildlife staff, local residents, farmers and other knowledgeable persons were interviewed (Awan *et al.*, 2004).

GPS was used to measure the altitudes of the places, where birds were physically sighted or its indirect evidences were collected (Awan *et al.*, 2004).

Results

In the present survey all the seven units of Totalai game reserve was studied in the month of November, December, January, February, March, and April 2012-2013. The following 4 species (Table 1) were identified. All these four species belong to order Galliformes and family phasianidae. Commonly referred to as the 'gallinaceous birds', Galliformes is a large and varied group of birds in the world comprising of 70 genera and 284 species.

Table 1. Species identified during study.

S. No	Species	Zoological Name	Local Name
1	Grey partridge	<i>Francolinus pondicerianus</i>	Tanzari
2	Black partridge	<i>Francolinus francolinus</i>	Taro
3	Chukar partridge	<i>Alectores chukar</i>	Zark
4	Common Quail	<i>Coturnix coturnix</i>	Maraz

The area in which the present survey is carried out divided into seven units and each unit having a suitable habitat for the above four species of birds.

In Totalai Game Reserves there are two artificial breeding centre established by wild life department of Buner. The first centre was established in 2003 in Panjtar a village of unit 1. At the time of establishment there was brought a few pairs of each species such as Gray partridge, Black partridge, and Chukar partridge but during the present survey 160 species were observed. Each species have approximately the following numbers shown in table 2.

Table 2. Number of species in the study area.

S.No	Species	Local name	Quantity
1	<i>Francolinus pondicerianus</i>	Tanzari	71
2	<i>Francolinus francolinus</i>	Taro	49
3	<i>Alectores chukar</i>	Zark	40

The Grey Francolins living in open ground or in place where small shrubs are present. Gray Francolin rest in thorny bushes at night time and all these conditions are present in Totalai game reserve.

The Black Francolins live in thicker vegetative cover, but come to cultivated crops and grassland for feed, mostly in the morning and the late afternoon. Rests and roosts on ground in the thick cover of tall grasses, though often mount up on the branches of trees for calling. Also rest in open sun on sandy ridges with one or both wings expended in winter. In Totalai all the conditions are present which use as habitat by black francolin.

Alectoris chukar is very adaptable to all kind of arid, rocky, hilly, stony, and sparsely scrub-covered hillside but in Totalai Game Reserve it is found in degraded foothill scurb, comprising Dodonea viscosa (Gharaskay). In Totalai Game Reserve this bird is mostly found at the elevation above than 1200 ft.

Common quail is mostly terrestrial and tropical bird. Grassland is general habitat and found in dense and

tall vegetation and also found in cultivated fields of cereal crops. These all condition was present in

Totalai Game Reserve which provides a suitable environment for common quail in this area.

Table 3. Statistical analysis of bird fauna in Totalai Game Reserve in different Months.

Month	Grey Partridge	Black Partridge	Alectoris chukar	Common quail
November	955	730	760	109
Decemeber	865	658	684	75
January	755	570	558	65
February	640	493	485	70
March	640	472	413	65
April	536	410	389	50

Discussion

The present survey of “Avian fauna of Totalai Game Reserve District Buner” was carried out from November (2012) to April (2013). During the survey data of 4 species were recorded from the Totalai Game Reserve. These species are *Francolinus pondicerianus*, *Francolinus francolinus*, *Alectores chukar* and *Coturnix coturnix*.

Birds are normally found foraging in open cultivated tracks and grasslands intermixed with scrub forests and are rarely observed above an elevation of 1200 m in Pakistan (Grimmett *et al.*, 1998).

According to the present survey, the elevation of Totalai Game Reserve ranges from 2500ft -6000ft and *Alectoris chukar* is found mostly at elevation of 2500ft or higher than 2500ft, but other three species are mostly found in plain areas of Totalai Game Reserve.

Although the birds are intensively hunted and captured in its native range in Pakistan, owing to which local populations could be declining, but the overall status of the species are regarded as stable (Del Hoyo *et al.*, 1994; Islam, 1999; Richard *et al.*, 2002).

In the present survey, it was found that in Totalai Game Reserve, the shooting season mostly started from 15th November to 15th February, this is non-breeding period, in which shooting is only allowed with special permit issued by Wildlife Department of the District. The permit is valid only for one day from sunrise to sunset and also the number of shooting

birds is specified, according to my observations, if only 1/3rd of the population of birds remains after shooting season, they have the capability of restoring its original number by the forthcoming breeding season. So, it means that legal hunting does not affect the population status of these species.

The bird's species are friend of farmers who believe that bird consumes large numbers of harmful insects, as well as their eggs and larvae which serves as a biological control agent of insect pests in Pakistan (Beg and Qureshi, 1972; Mian, 1995).

During field trips, farmers were interrogated about the role of these species in pest control, and they acknowledged the role of these species in eating out pests and insects from their crops.

Up to 2008, some other species of partridge including See See were also present in Totalai Game Reserve (Wildlife Department Buner, 2008).

But currently the species were not found in Totalai Game Reserve, and according to my observation, the reason of their extinction was detected to be the improper use of some insecticides and herbicides. These insecticides and herbicides were used by the farmers against insects. The birds which fed upon these herbs and insects are killed shortly.

Till 2011, in Totalai Game Reserve some other species of birds were also found such as Kalij pheasant and koklass pheasant (Saeed *et al.*, 2012).

Contrastingly, during the field work, these pheasant species were not found. According to the survey, the extinction of these species was caused by over-hunting, illegal shooting and capturing. Deforestation is also a reason for the decline of the species which is the ultimate way of their habitat destruction.

The Grey Francolin (*Francolinus pondicerianus*) is widely associated with the drier regions of the Indus plains and has penetrated the Thar Desert in Sindh, as well as the Thal and Chohlistan deserts in Punjab.

The species also occurs in the lower hills of the Makran and Lasbela districts in Balochistan, the Cherat and Kohat districts of Khyber Pakhtunkhwa Province, the salt range and agro-forestry tracks of the Pothwar Plateau in the Punjab and in the Margalla hills of Islamabad (Mahmood *et al.*, 1997; Mann and Chaudhry, 2000).

In the survey it was observed that Totalai Game Reserve lied at lower elevation, which thus proved to be the richest in population size of family phaseanidae. It is because some species of this family best survive at low elevations e.g, black partridge, grey partridge etc.

The general remarks on the habitat of the Black Francolin in the Indian Subcontinent suggest that the species is more frequently distributed in scrub vegetation having a denser cover, contributed by shrubs or tall grasses. Basically the Black Francolin has been regarded as a cursorial bird species living under the cover of denser vegetation, yet sometimes these species exploit branches of small bushes, especially for calling (Ali and Ripley, 1983; Khan, 1989; Roberts, 1991).

In Totalai Game Reserve Black Francolin found in dense and thick vegetation, this thick vegetation is mainly of grasses and some other small shrubs.

Partridge or the South Persian Black Francolin (*Francolinus francolinus henrici*) and the Northern

Grey Partridge or the Northern Grey Francolin (*F. pondicerianus interpositus*), are widely distributed in the Indus Plains and associated hills in Pakistan (Ali and Ripley, 1987; Roberts, 1991).

The species is though reported to be present up to an altitude of 2,500 m above sea level (asl), yet it is more frequent at altitudes below 1550 m asl (Del Hoyo *et al.*, 1994; Grimmett *et al.*, 1998).

In Totalai Game reserve the black and Grey Francolins are mostly found in the plain areas near hills, and that is why the two artificial breeding centers were also established in small hilly areas because the environment is suitable for the partridge species.

In Pakistan, *Alectoris chukar* is very adaptable to all kinds of the arid, rocky and hilly country ascending to the higher mountain valleys of the inner Himalayas ranges and bare, arid hillside of the Punjab and western Himalayas (Roberts, 1991).

In Totalai Game Reserve *Alectoris chukar* was mostly found in Small Mountains covered by *Dodonaea viscosa* (Ghawarskay), and sometimes seen in plain areas. In Totalai Game Reserve it is mostly found at elevation of 2500 ft or more than 2500 ft.

The Common Quail systematically chooses open land, usually without hedges, either in lowlands or in mountains, large alluvial grasslands or large cereal plateaux, even terraces of cultivated farmland such as in the Moroccan High Atlas.

When the countryside is less open (the mesh-like bocages of Brittany or Aveyron, France), it settles away from trees in open spaces or where the region is dominated by gentle slopes. The topography and land unevenness therefore play a large part in the distribution of mating (displaying) centres (Aubrais *et al.*, 1986).

The Quail carries out all its vital functions (feeding, nest-building) in the herbaceous strata of natural coastal grasslands (abundant grasses), high altitude prairies (e.g. uncultivated land in the Aveyron and Capcir, France) or as for the Grey Partridge *Perdix perdix*, the grassy areas of open agro-systems (with the notable exception of ryegrass). The Quail prefers cover which, although dense enough to provide protection, allows fluid movements, hence the choice of alfalfa, winter barley, and winter wheat when still green and showing abundant basal leaves or early shoots (Aubrais *et al.*, 1986).

In the present survey it was observed mostly in same habitats in which Grey Francolin was found. And sometimes, it was also seen in open areas. Common quail is mostly terrestrial and tropical bird. Grassland is general habitat for common quail and found in dense and tall vegetation and also found in cultivated fields of cereal crops. All these conditions were present in Totalai Game Reserve which provided a suitable environment for common quail in the area.

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