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Habitat study of Chukar partridge (*Alectoris chukar*) in district Malakand: A case study of town Thana, Pakistan

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Abstract

The present study described the status, habitat, ecology and causes of decreasing population of Chukar partridge (*Alectoris Chukar*) in town Thana of district Malakand. Primary data was collected through a questionnaire survey and visits to the study areas in the morning and late afternoon along with the three helpers to study its habitat and their different activities in the study areas. Secondary data was collected from the literature. The areas such as Dabber Tangy (Chrhath), Obukhwarh and Top dara were selected as a sampling points for data collection. Many flocks were observed during the study in which the average numbers in each flock were about 10-12. The majority of the respondents 22(55%) replied that Chukar is present in abundance at Top dara, especially in rocky and shrubby vegetation 24(60%). Similarly, 28(70%) respondent agreed its population decline due to habitat destruction and 20(60%) answered that Jackal is its main ecological predator. Majority of the respondents 23(57.5%) replied that there is illegal hunting of Chukar and 34(85%) were in favor of controlling illegal hunting and trapping of Chukar while 40(100%) replied that hunting can be legalized through legal license and permits. Chukar mostly feeds on wild seed and grain. There is an urgent need to conserve Chukar by improving their habitat in the study area, avoid illegal hunting and facilitate the wildlife department for monitoring of the area, give incentives to the community of the area and regulate hunting.

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Introduction

Chukar partridge (*Alectoris Chukar*) is a medium sized partridge belong to the Family Phasianidae. Chukar partridge is a grayish-brown bird with above buff belly and having black dark line across the forehead and eyes while down the neck contrasts the white throat. Male weight varies from 510 gm to 800 gm and is slightly larger than female which ranges from 450 gm to 680 gm. Males are monogynous (Christensen 1970).

Chukar partridge prefers arid rocky and hilly country ascending to the higher mountain of Himalayan uphill ranges. This bird is found associated with degraded foothill scrub, comprising *Dodonea viscosa*. *Alectoris Chukar* is very adaptable to all kinds of the arid, rocky, hilly, stony, sparsely scrub-covered hillsides. its native range is in Eurasia, Turkey, Israel, India, Afghanistan, and Pakistan along the inner ranges of the Western Himalayas to Nepal. This bird is mainly found at an elevation of 2000 m to 4000 m except in Pakistan where it is found around 600 m elevation.

They are rarely found in highly humid or rainfall areas. (Whistler & Hugh 1949; Roberts 1991; Rasmussen & Anderton 2005). In Pakistan it is commonly found in Baluchistan, Sind, Malakand, Swat, Dir, Chitral, Gilgit, Margala Hills, Kurram valley, Safedkoh, Kirther range, Indus Kohistan, AJK and Baldistan. Mostly this bird is residential in nature. Flight is generally restricted to short distances downhill, usually when flushed (Baker 1922).

Chukar partridge is relatively unaffected by hunting or loss of habitat due to its remote and physically demanded terrain preferences. Its numbers from year to year are largely affected by weather pattern during its breeding season (Duarte & Vargas 2004). Apart from the above description, the human population has increased many folds in the recent years which caused the illicit shooting, killing and poaching of wild animals and great destruction to their natural habitat. Therefore, it is desired to protect such natural resources from extinction.

This bird is sometimes preyed by Golden Eagles (Ticehurst 1927). Birds in captivity can die from Mycoplasma infection and outbreaks of other diseases such as Erysipelas (Lateef 2006). Common ecological predators are Jackal, Snakes, Fox and wild dogs.

The breeding season of Chukar partridge is summer. They mature at the age of 9 to 10 months. The breeding season starts from April to May, clutch size is 8 to 24 eggs and the incubation period is 22 to 24 days. The male may also perform a high step stiff walk while making a special call. The female may then crouch in acceptance and the male mounts to copulate while grasping the nape of the female (Finn & Frank 1915; Baker & Stuart 1922; Whistler & Hugh 1949; Ali & Ripley 2001).

Chukar partridge is diurnal in nature and feeds on the ground in the morning and afternoon (Christensen 1954). Chukar partridge eats a wide variety of seeds and insects as food. Males perform tidbitting displays, which make a courtship feeding where the male picks its food and the female may chase to pick in response with head lowered, wing lowered and neck fluffed (Oates 1898; Johnsgard 1973).

In District Malakand, various natural habitats are found which are suitable for different wildlife species growth and reproduction. The common wildlife found in the area includes Jackal, Monkey and Wolf. Among birds, Chukar, See-see, Black partridge, Gray partridge, Sparrows, Bulbuls, Doves, etc. are common (Government Khyber Pakhtunkhwa, 2008). The present study was conducted in town Thana of District Malakand to collect data on the status of Chukar partridge, which comes under the category of the sub-tropical broad-leaved forest with main annual rainfall lies between 250 mm to 750 mm and temperature ranges from 10° C to 38°C. The protection and conservation of Chukar partridge is essential in the study area for which basic data on the population and habitat is required.

Materials and methods

Study area

The study was conducted in Thana area which is situated in district Malakand, Khyber Pakhtoonkhwa, Pakistan, at 34° 38' 26" North, 72° 4' 29" East, having an elevation range between 1800 - 2100 feet. It is bounded by a range of mountains on the north-east separating it from District Swat and another range of mountains to the West separating it from District Batkhela. Thana is bounded on the north by District lower Dir and on the south-east by Palai area of District Malakand.

Materials

In order to study Chukar partridge, different activities, behavior and its habitat binocular and the camera was used. While for indirect study a questionnaire was developed, which was designed according to the objectives of the study. The study survey was carried out with the help of three helpers.

Methodology

A field survey was conducted from the summer from the month June to august. Both direct and indirect methods were used to gather information about Chukar partridge Habitat.

The information collected from wildlife department, local residents, shepherds, hunters and watchers of

the area which provided best indirect evidence for determining its habitat description. For direct observation, the potential areas were thoroughly studied and divided into three sample points i.e. Obukhwarh, Dabber tangy (Chrhath), and Topdara areas.

The study was usually scheduled early in the morning from 5 to 8 AM and at evening from 5 to 7 PM. Day hours were utilized in gathering indirect information i.e. by questionnaire and through an interview from 40 respondents. In this questionnaire, the first initial five questions are about the respondent and then nineteen questions are about the objectives of the study.

Results and discussion

Population

In the field survey, the population of Chukar partridge was studied with two parameters (Table 1). The data collected from the three areas showed that most of the respondent replied that Chukar population is abundant in Topdara, while some of the respondent replied that Chukar population remains constant. This might be because of Talibanization where the Chukar population becomes decreases, but when Pakistan military take hold over them and the Chukar habitat area become preserved, then again Chukar population comes to its original status.

Table 1. Chukar abundance and population trend.

Respondents		Area of Chukar Abundance			Trend of population		
		A*	B*	C*	A#	B#	C#
Total	40	10	8	22	20	9	11
%	100	25	20	55	50	22.5	27.5

A*= Dabber tangy (Chrhath), B*= Obukhwarh, C*= Topdara, A# = Remain constant, B# = Decreasing, C# Increases.

Threats

Threats to Chukar partridge were studied under the following parameters which are given in the table 2. Different respondents have different opinions but the major response of respondents about these parameters was that the reason of Chukar population decreasing is due to habitat destruction and their

major ecological predator was Jackal, while Williams (1950) reported that the common ecological predator of Chukar partridge was eagles in Gilgit, Pakistan. Local and common disease of Chukar partridge was bird flu (it is mostly due to poultry form located near Chukar habitat), while it was reported that Chukar partridge was susceptible to several diseases such as

Newcastle, Mycoplasmosis and Coccidiosis etc. by Petrak (1982), Calnek *et al.* (1991), Cole *et al.* (1995) and Roskopf & Woerpel (1996). There is illegal hunting of Chukar partridge and destruction of Chukar population due to a rapid increase in human population and their encroachments to Chukar habitat. During field surveys, Chukar partridges were observed associated with foothill scrub, comprising

Dodonea viscosa as reported by Roberts (1991), and moving along with their chicks in flocks in the study area. Many flocks of Chukar partridge were observed in the field where their number varied from 7 to 15. Turan (1990) reported in a study various flocks in which the number of individuals varies from 30 to 50. Egg shells of Chukar partridge were also seen at different places.

Table 2. Factors responsible for population reduction.

Response	Reasons of population decline			Major Predators			Local and common diseases			Illegal hunting of Chukar		Causes of habitat destruction	
	A*		B*	A#	B#	C#	A+	B+	C+	A-	B-	A^	B^
Total	40	12	28	24	9	7	21	11	8	23	17	27	13
%	100	30	70	60	22.5	17.5	52.5	27.5	20.5	57.5	42.5	67.5	32.5

A*= Illegal hunting & trapping, B*=Habitat destruction, A#= Jackal, B#= Fox, C#= Eagle, A+= Bird flu, B+= Newcastle disease, C+= Do not know, A- = Yes, B- = No, A^= Human population increase, B^= Environmental changes.

Table 3. Habitat quality, local community and government involvement.

Respondents		Suitable Habitat for Chukar			Availability of basic needs		involvement of local people in habitat improvement		Efforts made by wildlife department		Food and Forage	
		A*	B*	C*	A#	B#	A+	B+	A-	B-	A^	B^
Total	40	9	24	7	33	07	40	0	34	6	31	9
%	100	22.5	60	17.5	82.5	17.5	100	0	85	15	77.5	22.5

A*= Rocky and herbaceous, B*= Rocky and shrubby vegetation, C*= Barren hills, A#= Yes, B#= No, A+= By giving incentives, B+= Any other, A- =Control illegal hunting and trapping, B- =Awareness raising program, A^= Wild seeds, Grains, B^= Herbs and insects.

The food of Chukar partridge consists of wild seeds and grains while they also eat herbs and insects as reported by Roberts (1991), that the food of Chukar partridge consists of vegetable matter including seeds, leaves, berries, grains bulbous. The main causes of Chukar partridge population decline in the study area were an increase in human population, illegal hunting habitat destruction and their ecological predators, including Jackals and Snakes which eat and destroy the eggs of Chukar partridge. Biddulph (1881) conduct a research study in New Zealand in which he found the major enemies of Chukar partridge were cats, stoats, rats, hedgehogs and harriers, mostly damages to Chukar in their immature stages when they are unable to fly during nesting season. While Williams (1950) reported that

the eagle is the major predator in Gilgit, Pakistan. Alcorn and Richardson (1951) reported that snakes destroyed the eggs of Chukar partridge in the nests.

Further study was taken with the help of a questionnaire, forty respondents are interviewed and questionnaire was filled which are discussed below in detail.

Habitat

For Chukar habitat, the following parameters were selected which are given in the table 3. Major response of the respondents about these parameters were, i.e. suitable habitat for Chukar partridge is Rocky and shrubby vegetation, as reported by Roberts (1991) that Chukar partridge is adaptable to all kind

of the arid, rocky, hilly, stony, and sparsely scrub-covered hillsides habitat, while Lindbloom (1998) reported that Chukar partridge found in rock and shrub cover types while in spring and summer they were found in grass and forbs covers. Basic needs of Chukar partridge are available in their habitat, local people should be involved in Chukar habitat improvement and up to great extent efforts made by wildlife department for the improvement of Chukar habitat by Control illegal hunting and trapping and the majority of respondents replied that Chukar prefers mostly wild seeds and grains as a food.

Christensen (1996) reported the food habits of Chukar partridge in North America that in winter Chukar partridge diet is green grass leaves, in spring their diet is seeds of cheat grass and red-stem filaree along with insect and a variety of young plants germination in addition with forbs and green grasses which appear in spring. While in during summer and early fall, the primary source for food are seeds along with cheat grass. It was also reported that Chukar partridge feeds mainly on seeds, weeds, grasses, and to a lesser extent, insects by Woodard *et al.* (1993), Robbins (1998), and Cetin & Kırkıcı (2000).

Table 4. Breeding season, clutch size and nestling preferences.

Respondents		Breeding season		Clutch size of Chukar			in which places Chukar make their nests	
		A*	B*	A#	B#	C#	A+	B+
Total	40	24	16	11	20	9	31	9
%	100	60	40	27.5	50	27.5	77.5	77.5

A*= April-May, B*= April-June, A#= 1- 10, B#=10-20, C#= 20-30, A+=Rocks cover with grass, B+= Bushy areas.

Breeding

For breeding of Chukar partridge following parameters were studied, which is given in the table 4. Major response about these parameters were, i.e. the breeding season of Chukar partridge is from April to May as described by Roberts (1991) that its breeding season is April to July, Clutch size of Chukar

partridge is mostly between 10-20 while Roberts (1991) reported it is from 6 to 9 eggs and Chukar partridge mostly likes to make their nest in rocks cover with grass while Lindbloom *et al.* (2003) reported that Chukar partridge used cover type for their nest which includes grass/forbs, rock and shrubs.

Table 5. Community perception about Chukar.

Respondents		How the hunting of Chukar is legalized		Movement of Chukar		Rate /Chukar		People purchase Chukar for rearing		Cultural value of Chukar domesticated by local people	
		A*	B*	A#	B#	A+	B+	A-	B-	A^	B^
Total	40	40	0	30	10	25	15	40	0	22	18
%	100	100	0	75	25	62.5	37.5	100	0	55	45

A*= Legal license and permits, B*= Any other, A#= Evening and Morning, B# = Evening, morning and also in noon, A+= 500-5000, B+= Above 5000, A- =Yes, B No, A^= Hobby, B^=Trapping.

Other information

Some of the information related to Chukar partridge is listed below in table 5, in which the major responses of respondents were, i.e. hunting of Chukar partridge can be legalized by issuing proper and legal license and permits, daily movement of Chukar partridge was mostly in evening and morning as

reported by Roberts (1991) that Chukar partridge is very active in early morning and evening, local purchasing rate of Chukar was 500-5000 PKRs, and Chukar was purchased mostly for rearing. While the cultural value of Chukar partridge domesticated by local people for their hobby and for trapping.

Conclusions

Study findings showed that Chukar partridge population is still in abundance in the study area despite heavy deforestation, use of insecticide, illegal hunting and poaching, increase in human population, explosions and shelling. It was concluded that Chukar partridge was found in barren hills and prefer rocky, stony habitat mostly with muddy slopes associated with grasses and also with degraded foothill scrub forest.

The main reason of their habitat destruction is an increase in human population. Jackal, foxes and eagles were their main predators while snakes predate on their eggs, and bird flu and Newcastle disease have been found as their local and common diseases. The breeding season of Chukar partridge lasts from April to May. They form pairs for breeding towards mid of February and their clutch size varies from 15 to 20 eggs. The young chicks are protected by both parents i.e. male and female and also feed them. Chicks move with their parents in the home range up to eight months. Chukar partridge builds their nests in rocks covered with grasses, mostly by *Cymbopogon javarancusa*.

Recommendations

To conserve the population of Chukar partridge in the area, awareness, habitat conservation, issuing of hunting licenses, establishing Wildlife Park, breeding center and the active role from the government and NGOs are needed.

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