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First Breeding and Nidification Record of Cheer Pheasant (*Catreus wallichii*) in Jhelum Valley, Muzaffarabad, Azad Kashmir, Pakistan

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Abstract: Surveys were conducted from June 2002 to June 2003 in three main zones (Pir Chinasi, Lowasi-Ghari Dopatta and Chinari-Qazinag) of Jhelum valley Muzaffarabad to collect data on the breeding and nidification of Cheer Pheasant (*Catreus wallichii*). Three main zones were divided into 8 main localities, each main locality was further divided into sub-localities or calling sites of Cheer Pheasant. Two nests were found during survey i.e. one at sub-locality Nar Ka Daman at an attitude of 2500 m and other at Batal Ka Daman of Sangar Bari at 2600 m on July 11, 2002 and June 8, 2003, respectively. A female, hatching eggs (n=8) was flushed from first nest at sub-locality, Nar Ka Daman. The second nest was an old and inactive. The composition and measurements of both the nests were almost same. Both nests were constructed on ground under the bushes of *Plactranthus rugosus* and made up of 65-70% dry grasses i.e. *saccharum rufipilum*, *Eriophorum sp.* *Poa angustifolia*, with 10-12% twigs of *Plactranthus rugosus*, *Indigofera heterantha* and 20-26% needles of *Pinus wallichiana*. The average size of eggs was 53x40 mm. In present study 2 pairs of adults with 13 juveniles were observed at cheetah location at elevation of 1900 m in July 10, 2002. Similarly in Kavashan (2500 m) a pair with 10 newly hatched chicks were observed in July 9, 2002.

Key words: Nidification, breeding, cheer pheasant, Muzaffarabad, Azad Kashmir, Pakistan

INTRODUCTION

The Cheer Pheasant is distributed through the southern foothills of the Himalayas from Pakistan to Nepal, occurring in northern Pakistan, Azad Jammu and Kashmir, two states of India (Himachal Pradesh and Uttar Pradesh) and Nepal^[1].

Nest scrape of Cheer Pheasant is made on the ground by the female and this is usually concealed under overhanging vegetation in the shelter of a rock or bush, normally on very "broken" or precipitous ground^[2,3]. The description of a typical nesting location given by Hume and Marshall^[1] is apparently accurate across the range of this species. It generally places its nest at the foot of almost vertical cliffs, "broken into ledges and steps and studded with down-trailing bushes, tufts of grass and growing here and there out of some larger cleft or wider ledge, a few stunted trees"^[2]. Murray^[4] added that the nest is usually placed in "grass or grass tufts". It is apparently "merely a collection of leaves and rubbish in some hollow,

either natural, or scratched out by the birds themselves^[2] sometimes carelessly lined with a few scraps of grass^[5].

The normal clutch is 8-14 eggs, most usually 10-11^[2,3,6] of which not more than one or two per pair generally survive to the age of six months in the wild^[7]. Only the female is known to incubate, taking about 26 days^[3]. Hatching appears to coincide with peak invertebrate abundance, a strategy that presumably maximizes the availability of protein for young chicks^[7]. The pair-bond lasts throughout the breeding season, the male helping to brood and protect newly hatched chicks^[3,8,9].

Nidification seems to be the prerequisite and initial stage in breeding of bird, which in turn determines the survival rate of chicks. As the habitat is changing due to human related activities that can cause the change in nest composition and construction pattern. It is very difficult to study this bird in wild. In Azad Jammu and Kashmir, the one of the cheer pheasant habitats in world and in Pakistan, so for no work on nidification and breeding has been done. The present work is first step in this direction

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and is aimed at studying the nidification and breeding of this dwindling species in wild.

MATERIALS AND METHODS

During study period a network of information was established in order to find out potential cheer pheasant habitat and nesting sites. In this connection, locals, hunters and shepherds were interviewed. These sites were thoroughly surveyed and their calls, fresh droppings fresh ground clutching and other provided information confirmed their presence.

The bird is shy and difficult to locate, especially during breeding season, when it becomes secretive. The nest sites were difficult to approach because they were camouflaged and constructed under the thick cover of shrubs, sometimes located in inaccessible steep rocks.

In breeding seasons, besides indirect information, collected from different sources, the direct evidences and information about nests and breeding activities were also taken, for which play-back call method and pilferage dogs were used to locate and flush the bird from nests especially during dawn and dusk. The study on nidification was carried out by measuring the nests size, types of constructing materials and its percent composition, location of nest. Similarly a brief study on breeding was carried out by observing clutch size, measurement of eggs, breeding pairs with chicks etc.

Study area: The study area comprises of three main zones lying on the left side of the River Jhelum i.e. Pir Chinasi, Low Gali Gari Dopatta and Qazinag Chinari Ranges in the foothills of Pir Panjal mountains of Lesser Himalayas.

Pir Chinasi (33°55' N 73°38' E) lies about 32 km from Muzaffarabad city at an elevation of 2700 m. Saran (2430-2480 m) is the main habitat of the Cheer Pheasant in Pir Chinasi, having Hari Wala Par, Batangi Wala Par as sub-localities. The area has extensive grassy steep slopes with scattered blue pine (*Pinus wallichiana*) trees. In Saran, shrub species are *Plactranthus rugosus* and *Indigofera heterantha*. The ground cover includes *Fragaria indica*, *Elsholtzia ciliata*, *Eriophorum sp.* and *Themeda anathera*.

Low Gali is main locality in Gari Dopatta Range where potential habitat of Cheer lies in Low Gali, at an altitude of 1930-2120 m. The study area is divided into two sub localities, i.e. Low Gali 1 and Belay Wala Par. Cheer habitat is characterized by the presence of *Pinus roxburgii*, *Pinus wallichiana* and long grasses at slopes and shrub cover including *Plactranthus rugosus*, *Debregessia salicifolia*, *Indigofera heterantha* and *Berberis lycium*. The ground cover includes *Eriophorum spp.*, *Oenothera rosea*, *Onychium japonicum* and *Themeda anathera*.

Qazinag (35°09' N 73°58' E) Chinari Range occupies foot hills of Pir Punjal Range. The study area is divided into six main localities. Among these Kavshan is main locality, having two sub-localities i.e. Sokar Behk and Larguchi Behk at the elevation range of 2450-2500 m. The potential habitat used by Cheer is found at the left of Larguchi Behk at 2500 m elevation. The habitat is steep grassy with patchy distribution of *Pinus wallichiana*. The shrub cover includes, *Plactranthus rugosus*, while herbs include *Cyanoglossum lanceolatum*, *Saccharum rufipilum*, *Fragaria indica*, *Themeda anathera* and *Polystichum yunannense*. Other potential sub-locality in Kavshan is Sokar Behk, located at 2600 m elevation, having relatively thick tree cover of *Pinus wallichiana*.

The second main locality Garang, is located at 2 km from Nardajian village. The potential habitat of Cheer in this locality are Garang 1 (Tatta Pam) and Garang 2 at 2220-2300 m elevation. Shingar is third main locality where cheer habitat is characterized by open steep grassy area and scattered distribution of *Abies pindrow*. The shrub cover includes *Indigofera heterantha*, *Plactranthus rugosus*, *Berberis lycium*, *Viburnum nervosum* and *Clematis grata*. The ground cover includes *Eriophorum sp.*, *Saccharum rufipilum* and *Polystichum yunannense*.

Cheetah is located at an altitude of 2000-2120 m. where fragmented population of Cheer is present in two sub-localities. i.e., Cheetah-1 and Cheetah-2 up to base of Sing Top. The area is characterized by open rocky, very steep similar to Garang.

The Sangar Bari is another potential habitat of Cheer Pheasant having sub-localities Batal Ka Daman and Nar Ka Daman. The height ranges approximately from 2650-2500 m. Batal Ka Daman is open grassy steep area with scattered *Pinus wallichiana*. *Plactranthus rugosus* and *Indigofera heterantha* are common shrubs while ground cover includes *Eriophorum sp.*, *Saccharum rufipilum*, *Themeda anathera*, *Poa angustifolia* and *Euphorbia cognata*. Nar Ka Daman is a relatively densely covered with *Pinus wallichiana*.

Khatir Nar is another potential habitat having two major sub-localities of Cheer i.e., Khatir Nar 1 (2300 m) and Khatir Nar-2 (2000 m). The Khatir Nar 1 (Thub) has open sloppy, precipitous, moist temperate forest with *Cedrus deodara*. Under story includes *Plactranthus rugosus* and *Indigofera heteranthas*.

RESULTS

In wild no study on breeding and nidification of cheer pheasant has been conducted in Azad Kashnir, Pakistan. This was the first study, probably in world, especially on percent composition of plant species used as constructing material for nest. During survey, two nests

Table 1: Nidification and breeding biology of Cheer Pheasant in Jhelum Valley, Muzaffarabad Azad Kashmir during the year 2002-03

Locality	Height (m)	Date	Nest measurements (mm)				Nest composition	Habitat of nest	Number of eggs in nest	Egg measurements (mm)		Adults found in nest	Breeding pairs Seen with chicks
			Outer diameter	Inner diameter	Height from ground	Depth of cup				Length	Width		
Sangar Bari (Nar Ka Daman)	2500	11/7/02	280	243	161	140	70% grasses 10% twigs of shrubs 20% needles of pinus	Precipitous mixed coniferous	8	53	40	1 female	-
Sangar Bari (Batal Ka Daman)	2600	08/6/03	341	305	173	153	65% grasses 12% twigs of shrubs 26% pinus needles	Open, sloppy grassy, patchy distribution of shrubs	Inactive nest	-	-	-	-
Saran Pir Chinasi (Batangi Wala Par)	2400	30/6/02	-	-	-	-	-	-	-	-	-	-	1 female with chicks
Saran Pir Chinasi (Hari Wala Par)	2450	10/9/02	-	-	-	-	-	-	-	-	-	-	2 Pairs with one chick
Kavshan	2500	09/7/02	-	-	-	-	-	-	-	-	-	-	A pair with 10 newly hatched chicks
Cheetah-1	1900	10/07/02	-	-	-	-	-	-	-	-	-	-	2 pairs with 13 chicks

were found, one on July 11, 2002 at sub-locality Nar Ka Daman of Sangar Bari at an altitude of 2500 m and other on June 8, 2002 at sub-locality Batal Ka Daman of the same main locality (Table 1). Sangar Bari (Qazinag Range 35°09N' 73°58E') is most potential habitat of Cheer Pheasant having two sub-localities Nar Ka Daman and Batal Ka Daman. First nest was found at 300 m north of Sangar Bari Behk. A female was incubating in a nest. The nest (eggs=8) was placed on ground, under *Plactranthus rugosus* bushes. The nest was wider, roughly cup shaped made of 70% of dry grasses i.e.

Saccharum rufipilum, *Eriophorum* sp., *Poa angustifolia*, with 10% twigs of *Plactranthus rufosus*, *Indigofera heterantha* and 20% *Pinus wallichiana* needles (Table 1). Outer diameter of nest was 280 mm while inner diameter was 243 mm, hence shaping the nest almost circular in appearance. Depth of the cup was 140 mm while height from ground was 161 mm (Table 1). The nest was fully surrounded by bushes of *Plactranthus rugosus*. Its habitat was moist temperate coniferous forest having relatively thick cover of *Pinus wallichiana*. Long grasses (*Poa angustifolia*, *Saccharum* sp.) were also present within 100 m of nest site. Upon disturbance, an incubating female was flushed from the nest. The average size of 8 eggs was 53×40 mm (2.1X1.6 inches).

The second nest was found at sub-locality Batal Ka Daman at 400 m above village Loon Ban at an altitude of

2600 m. It was an old and inactive nest and was also placed on ground under the rock, covered by *Plactranthus rugosus* and *Saccharum* sp. The nest was irregular, almost circular in shape, made largely with 65% of dry grass material i.e. *Poa angustifolia*, *Saccharum rufipilum* and *Eriophorum* sp., with 12% of twigs *Plactranthus rufosus*, *Indigofera heterantha* and 26% dry needles of *Pinus wallichiana* (Table 1). Outer diameter was 341 mm while the inner diameter was 305 mm giving the shape almost circular. The depth of the nest cup was 153 mm while height from the ground was 173 mm (Table 1). The habitat around nest was open, steep sloppy (81°), relatively thick cover of shrubs and patchy distribution of grasses.

DISCUSSION

Two nests were found during surveys i.e. one at sub locality Nar Ka Daman at an altitude of 2500 m and other at Batal Ka Daman of Sangar Bari at 2600 m on July 11, 2002 and June 8, 2003, respectively (Table 1). The first nest was placed on ground under the bushes of *Plactranthus rugosus*. The nest was made largely with 70% grasses of *Saccharum rufipilum*, *Eriophorum* sp. and *Poa angustifolia*, with 10% twigs of *Plactranthus rugosus* and 20% needles of *Pinus wallichiana*. The second nest was also placed on ground under the rock frontally covered with

Placranthus rugosus and *Poa angustifolia*. The composition and measurements were almost same in both the nests (Table 1).

Baker *et al.*^[10] putted the observations of three nests, which were observed by Hume and Oates^[5]. He writes personally "I have only taken three nests of this species altogether, so that I cannot generalized safely; but my impression, derived from my limited experience, is that they always nest near or at the foot of some very precipitous hill side, what the natives call "Danj" cliffs, not absolutely vertical, but still the next thing to it, broken into ledges and steps and studded with down trailing bushes, tufts of grass and growing here and there out of some larger cleft or wider ledge, a fewer stunted trees. The nest habitat under discussion matched 70% with as described by Hume and Oates^[5]. The habitat around nest is precipitous, sloppy, having relatively thick cover of *Pimus wallichiana*.

The present nest was found at the foot of absolutely vertical rock. A female sitting on eggs (n=8) was flushed from a nest. The average size of egg was 53×40 mm (2.1X1.6 inches). Cheer breeds throughout the lower ranges of Himalayas during April, May and June, making a nest in a grass or grass tufts^[11]. The eggs are of pale stone color, almost devoid of markings, but generally there are few specks of red at one end. Size from 2.05 (52 mm) to 2.22 inches (56 mm)^[11]. Baker^[12] reported, "in Garwal, it is seldom found in many numbers; its favorite haunts being steep grassy slopes from 5000-8000 ft (1524-2438 m) elevation". Next in long dry grass in open glade in deodar forest on a fairly steep slope. In its lower habitat, eggs may be taken from the end of April to May but in the higher ranges, few birds lay before the first week in May and some as laid as early June^[11].

The present nest found in study area at elevation of 2500 m in July 7, 2002 differs from the observation reported by Baker^[12]. The nest was hollow scratched in the ground by the female under the shelter of a rock, the bole of a tree or sum tufts of herbage and usually lined with dry leaves moss or similar debris^[13]. According to Whistler, the clutch varies from 2-6 eggs, but usually composed 4 to 5 eggs. Finn^[14] reported that Cheer Pheasant breeds from April to June, laying up to 14 eggs of pale stone color usually speckled with brown at the end and just over 2 inches (51 mm) long while, during present study the average length of the egg was measured to be 53 mm and color matched with that reported by Finn^[14]. The presence of 8 eggs in a nest revealed that the Cheer Pheasant breeds from June to July at the elevation range of 2300-2700 m.

Baker *et al.*^[10] reported this beautiful pheasant to breed throughout Nepal at the elevation between 5000-9000 ft (1524-2743 m), occasionally lower than the

former and equally occasionally, above the later. The breeding season commences in early April and last through out May and June".

In present study two pairs with 13 juveniles were observed at Cheetah locality at and elevation of 1900 m in July 10, 2002 (Table 1). Similarly in Kavashan (2500 m), a pair with 10 newly hatched chicks was observed in June 9, 2002 (Table 1). Baker *et al.*^[10] reported that in lower ranges, most eggs will be taken in the end of April and early May whilst in the higher altitude none are likely to be taken before the end of May and more in the early half of June. The last date for incubating bird as described by Baker *et al.*^[10] is July 3. In present study the eggs were observed in nest in July 11, 2002.

The Cheer Pheasant always breeds in wildest and most precipitous hill make their nest and eggs very hard to find and consequently full clutches of Cheer eggs are very rare in collection^[10]. He further reported that the nests are very rough affairs, merely a collection of leaves and rubbish in some hollow either a natural or scratched out by the birds themselves. He further says that nest is placed in amongst bushes, broken grass at the foot of, or on the side of some steep hill or cliff and almost invariably in very broken ground.

The present nest was also placed amongst the bushes of *Placranthus rugosus* mixed with long grass *Poa angustifolia*, on the foot of very steep hill. The female makes a nest scrap on the ground and this is usually concealed under over hanging vegetation in the shelter of a rock or bush, normally on very "broken" of precipitous ground^[2,3]. The present nest was also on precipitous ground under the shelter of bush. Murray^[4] adds that the nest was usually placed in grass or grass tufts.

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