

Status and distribution of Cheer pheasant in Dhorpatan Hunting Reserve, Nepal

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A survey of Cheer pheasant (*Catreus wallichii*) was carried out in Dhorpatan valley of Dhorpatan Hunting Reserve through reconnaissance surveys, key informant interviews, and dawn call counts. Seventy-two calling birds were recorded from 17 calling stations which were translated into a minimum breeding population of 35 pairs. Abundance index (number of calling birds/calling station) ranged from 0 to 10, with a mean of 2.97/station (95%CL, 2.3 and 3.7 birds/station). The density of the species ranged between 8 and 13 birds/km² with the mean of 11 birds/km². The estimates were adjusted by applying the correction factor and it was 8 birds/km² (Range=6 to 10 birds/km²). Given the availability of habitat, we extrapolated the population size of the species in the valley to be 170-276 birds, and with correction factor, it was 127-212 birds. Comparing the present result with that of Lelliott in 1981, Cheer population showed a marginal decline, but was statistically insignificant suggesting that Cheer continue to survive in good status in this area. Cheer was found distributed widely in the surveyed valley, with maximum concentration on the south facing slopes and in the upper part of the valley. Other populations have also been identified outside the valley, but needs conformation and population estimation. We suggest regular monitoring of Cheer population would be an important management initiative along with conservation awareness program for local people around Dhorpatan Valley.

Key words: Cheer pheasant, distribution, population, Dhorpatan, Nepal.

Cheer pheasant (*Catreus wallichii*) is a relict and monotypic (represented by single) species in the genera *Catreus* (Del Hoyo *et al.* 1994). Cheer pheasant (here after referred as Cheer) is one of the protected birds of Nepal (HMGN 1973) and it has been listed among vulnerable species (Fuller and Garson 2000 and BirdLife International 2001). It is endemic to the foothills of western Himalaya and is distributed from northern Pakistan through India and Nepal (Garson *et al.* 1992). Globally, it occurs in northern Pakistan, three states of India namely: Jammu and Kashmir, Himachal Pradesh and Uttaranchal. In Nepal, this species is known to occur from western border to the Kali Gandaki River in the east (Inskipp and Inskipp 1991). Researchers, travelers/trackers have recorded them in different time particularly from Jumla, Rara National Park, Lete, Kopechani, Ghasa, Khumai, Dana, Muri, Dhorpatan (quoted in BirdLife International 2001).

In recent years, due to the lack of proper information on the status and distribution of Cheer, particularly from west Nepal, international conservation bodies have expressed serious concern about this species (Fuller and Garson 2000). In 1980, Lelliott and Yonzon conducted pheasant survey in some portions of western Nepal, but failed to encounter it. Lelliott (1980) attempted to locate it in west Nepal but could not succeed. The study carried out in Dhorpatan Hunting Reserve (DHR) reported a population of 50-100 bird in the valley (Lelliott 1981). There was no follow up studies on Cheer in this area for the last 22 years.

Earlier authors have agreed that the species was very limited and locally distributed throughout its range within its specialized patchy habitat (Garson *et al.* 1992). It was observed in close proximity to human settlements/activities such as livestock grazing, fuel wood cutting, and arable farming. It is presumed that

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habitat loss and degradation, hunting and human disturbances are causing decline of this species (Garson *et al.* 1992). DHR is also facing these kinds of problems and both grass land and shrubby habitats remain under pressure from livestock and fuelwood collection. Therefore, the population of Cheer might have been also affected in this area both in terms of number and distribution. With this background, to know the present curiosity and provide information about on Cheer, a focused survey in Dhorpatan valley of DHR was carried out in the spring of 2003. The main objectives of this study were to assess the abundance and spatial distribution of Cheer pheasant in the valley. It would also help to explore the problems being faced by Cheer population and their habitats. These understanding are expected to provide a cornerstone for future designing management actions for the conservation of this endangered species.

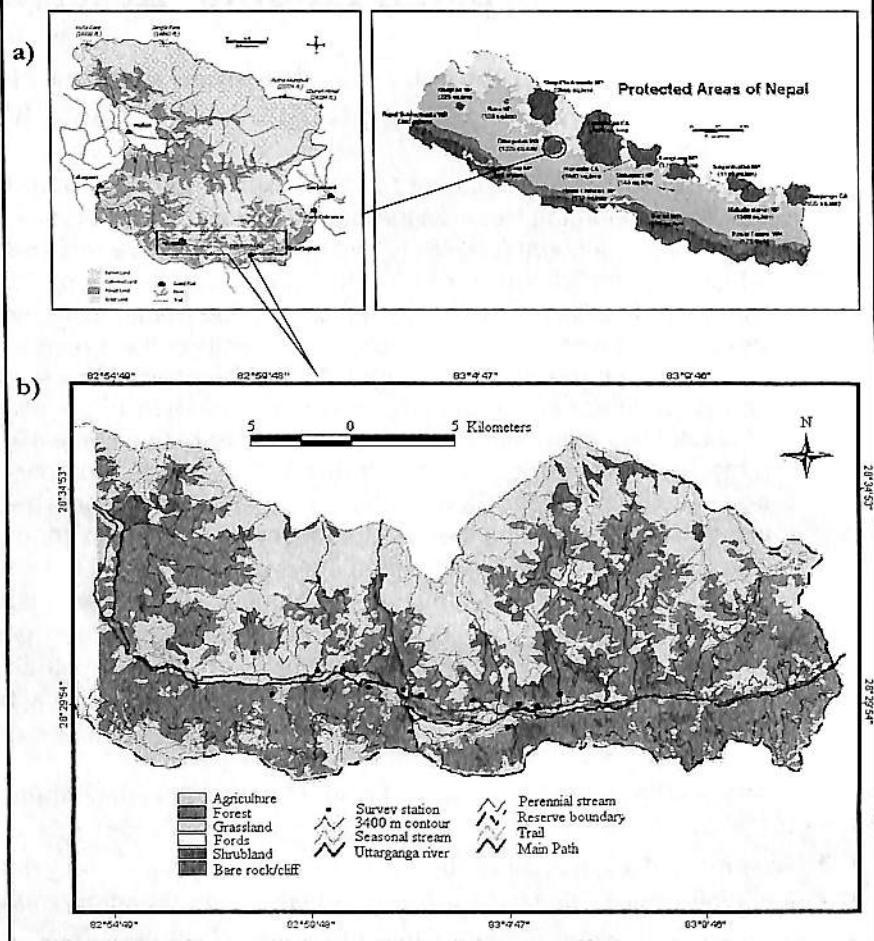
Materials and methods

Study area

Dhorpatan Hunting Reserve (82° 15'–83° 15' E and 28° 27'–28° 50' N) lies in the Rukum, Baglung and Myagdi districts of Nepal with an area of 132,500 ha in the south of Dhaulagiri Himalaya. Dhorpatan valley (approx 28° 30' N and 83° E), is situated at the upper end of Uttarganga river, an eastern tributary of Bheri river (Fig 1). The valley runs roughly east-west and the upper part of the valley was broad with flat floor along which ran the winding Uttarganga river. It has an altitudinal range varying from 2000 m to 7246 m. The climate is dry and cold in winter (Nov-Feb) and precipitates in the summer from mid May to August.

The Dhorpatan Valley represents temperate and sub-alpine vegetation which consists mainly pine-juniper forest with fir and rhododendron on the upper slopes.

Fig 1. Location of
a) Dhorpatan Hunting Reserve,
b) Intensive study area: Dhorpatan valley



Progressing westwards down the valley, other coniferous species such as *Abies pindrow*, *Picea smithiana* and *Cupressus torulosa* are evident; while on the lower slopes broadleaved species such as *Quercus* species, *Acer* spp and *rhododendron* species predominate (Lelliott 1981). The common tree species found in the reserve are *Betula utilis*, *Juniperus recurva*, *Pinus wallichiana*, *Tsuga dumosa*, different types of *Rhododendron* spp. and other alpine shrubs like *Arundianaria*, *Berberis Arisaema toruosum*, *Arundanaria* spp, *Viburnum erubescans*, *Prinsepia utilis*, *Piptanthus nepalensis*, *Clemantis montan* etc. There is no conspicuous rock in north-facing slope. While south-facing slope has the characteristics feature. The folded topography of this aspect with depression, gully/gorge, and ridge make the whole area diverse. The vegetation in this aspect consists of grassy area with sparse and patches of stunted tree of pine and juniper; patch of forest and dispersed trees of pine in grassy slopes and rocky grassy slopes. The arrangement of vegetation cover around each survey station in the valley, however, is quite unique, diverse

and noteworthy consisting of admixture of grasses, forest patches, shrubs and cultivated land. The vegetation cover in northern aspect is lightly dense than the southern aspect. The vegetation is slowly progressing towards the mature forest.

Since its establishment in 1983 and gazetted in 1987 the reserve is protecting habitats of 18 mammals species including rare and endangered such as *Panthera uncial*, *Moschus chrysogaster*, *Ailurus fulgens* and *Canis lupus* (Biodiversity Profile Project 1995). The reserve also refuge 137 species of birds (Inskipp 1989) including pheasants of five different species namely: Cheer pheasant (*Catreus wallichii*), Himalayan monal (*Lophophorus impejanus*), Blood pheasant (*Ithaginis cruentus*), Satyr tragopan (*Tragopan satyra*) and Koklass pheasant (*Pucrasia macrolopha*) (Lelliott 1987 and this study). Fifteen species of birds in the reserve are enlisted in National Red Data book (Biodiversity Profile Project 1995).

Prior to the actual field studies, a reconnaissance survey was conducted from April 5 to 16, 2003 in the Dhorpatan valley. During this exercise, reliable informants, *Gothalos* (sheep/cattle herders) were identified and interviewed to collect information about general distribution status of the species. An effort was made to find out same eight observation points/stations that were used in the earlier survey conducted by Lelliott in 1981 and nine new additional stations for field sampling. A total of 17 stations was identified in such a way that these points were well spread and most likely to represent independent spatial units. The minimum and maximum distances between the sampling points were 800m and 3100m respectively. This preliminary survey enables to identify potential Cheer locations/habitat in the reserve where Cheer calls were frequently heard.

Dawn call count method, previously used by Lelliott (1981) and other pheasant biologists over the years, was followed. This technique involved positioning the observers at predetermined sites (observation point or survey station or calling station) across the survey area and calling birds were recorded from center of the calling station at a radius of 300 m. The survey was conducted in breeding time of Cheer from May 15 to June 6, 2003 coinciding with Lelliott's work in 1981 in order to make the findings comparable. Before starting extensive survey, all crew members were familiarized with the Cheer calls taking them into one survey station by the researcher for

first two days of survey. Call count were conducted regularly over 23 mornings deploying 3 members in each station, and each station was replicated five consecutive mornings between 0430 and 0630 hrs. The station where no call was heard for 3 consecutive morning was discarded after visiting 3 times. Calling bouts was precisely timed and recorded on call count sheet and their direction and estimated distance from stations were also marked on the sheet so as to avoid double counts and also to estimate the abundance with more precision. Observers were rotated each morning between observation points to eliminate biases due to individuals.

Descriptive statistics and non-parametric analysis (i.e. Mann-Whitney U test) were done to represent the field data for appropriate interpretation. The habitat features i.e. altitude, aspect, slope, presence or absence of permanent water sources, cliff/rock, wooded areas, cultivation, percentage of grass/shrubs, major tree species and types of human impacts were also recorded. Geographical positions of the sampling locations were recorded using GPS (12XL personal Navigator, Garmin) with the hope that these would help future researchers to replicate the survey at exact locations.

Result and discussion

Relative abundance

During the call count from 17 calling stations, a maximum of 72 calling birds across the study area was heard. Using the factor derived by Young *et al.* (1987), the total number of breeding population in the surveyed area was estimated to be 35. Detection rate i.e. number of calling birds/calling station ranged from 0 to 10, with a pooled mean of 2.97/station (1.48 SD, n= 17 replicates and 5 repeated measures) and the detection rate for the entire population was estimated to range between 2.3 and 3.7 birds /station at 95% confidence limit. Based on the pooled mean and sampling radius of 300m, the mean population density of the species in the study area was 11 birds/km², and the population density at 95% confidence limit ranged between 8 and 13 birds/km². By applying the correction factor that supposedly account for non-calling proportion, the mean density was 8-birds/km² and ranged between 6 and 10 birds/km² at 95% confidence limit. Given the availability of approximately 21 km² of potential habitat, the extrapolated total population size of the species in the valley to be 170 – 276 birds, and with correction factor, it was 127-212 birds. Records of observed

Cheer were also maintained. During the survey, a total of 13 Cheers were seen in six different sites.

Population change

Comparing the present result with those of Lelliott's 1981, Lelliott reported a total of 32 Cheer callings whereas only 26 callings were heard during this survey. However, considering the time interval of 22 years long and lack of regular monitoring of this species, nothing can be explained clearly about the population trend. The difference in the abundance

estimate of the species between these two surveys though showed a marginal decline (Fig 2), is statistically insignificant (Mann-Whitney U test, $Z = -0.380$, $p < 0.70$, $n = 8$), suggesting that Cheer population continue to survive in good status in this area. However, the Cheer habitat in Dhorpatan particularly during the breeding time is being disturbed from some sorts of human pressure such as livestock grazing, fuel wood collection and hunting or trapping.

Habitat use and distribution

In Dhorpatan, Lelliott reported that the Cheer occurred in burnt, felled and cut areas with secondary in forest containing pine, juniper and rhododendron. In this study, the Cheer was found on slightly progressing forest mainly in pine/juniper/fir/rhododendron forest on grassy slope in the valley. The vegetation of the valley in northern aspect is relatively dense than the sunny southern aspect. The Cheer was found in the lightly dense mixed forest dominated by *Pinus wallichiana* near the inhabited areas in north as well as east facing slope, while they were noted on patchy mixed forest i.e. mixed with grassland and stunted trees, grassland and sparse trees, forest patches with depression intermixed with broken rock in southern sunny slope. It was not recorded on purely

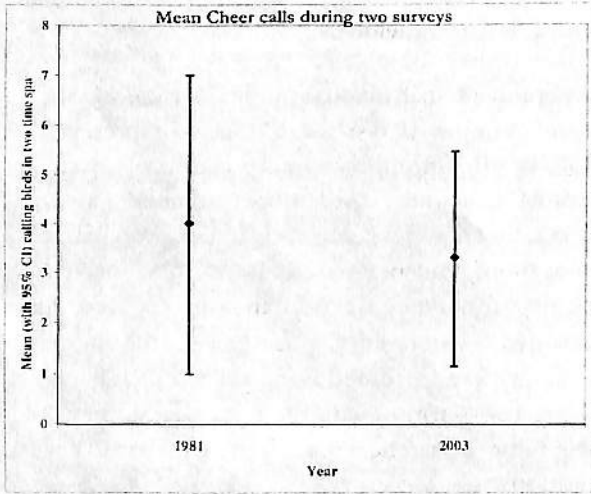


Fig 2. Comparison of mean Cheer calls during two-survey

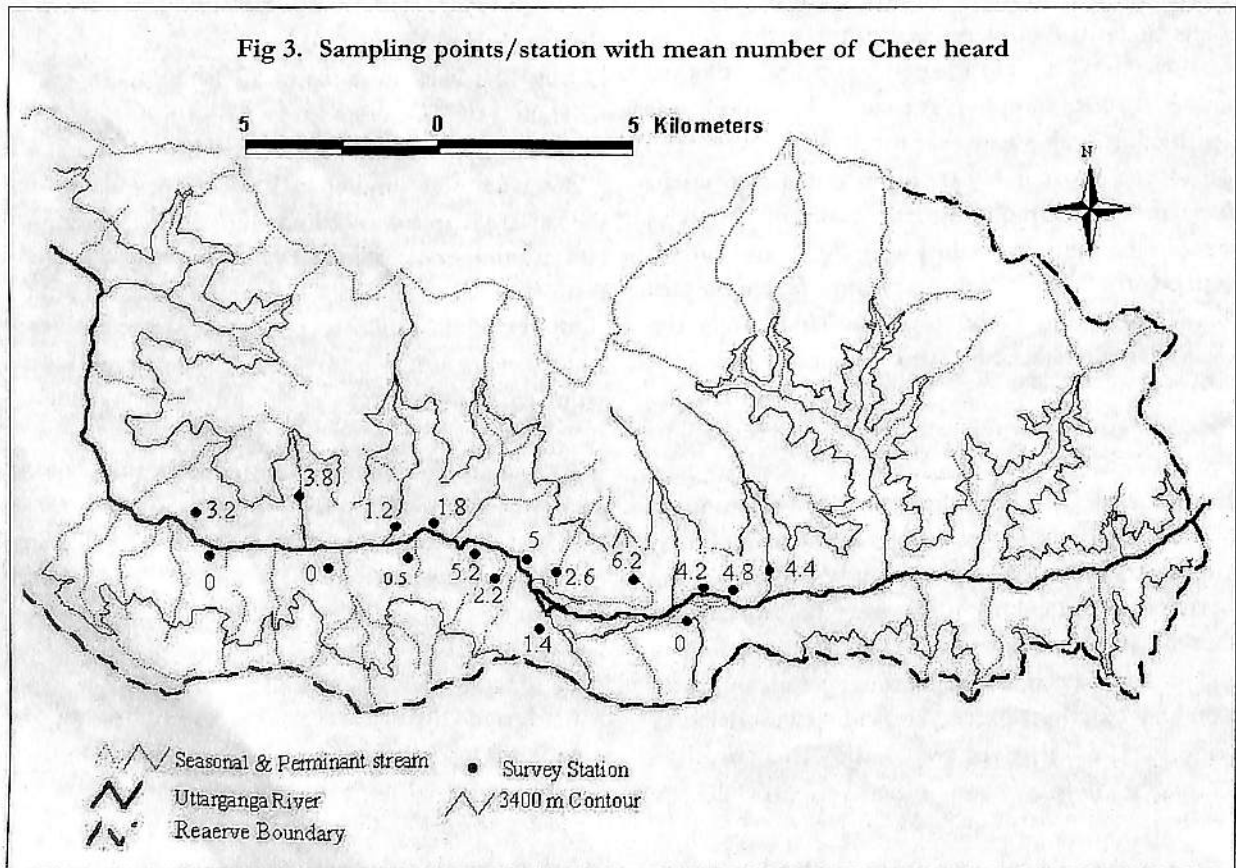


Fig 3. Sampling points/station with mean number of Cheer heard

open grassland in both aspects. Shrubs are coming up in burnt areas. Outside Dhorpatan, the Cheer was found on boulder-strewn slopes intermingled with grassy patches, in ravines containing scrub, bamboo and grass (Quoted in BirdLife International 2001), on steep, craggy hillsides supporting scrub and stunted trees (Inskipp and Inskipp 1991). The habitat preference of Cheer in Dhorpatan is different than that of previously visited other sites of Nepal.

Characteristically, the Cheer was distributed in patches (Lelliott, 1987; Gaston and Singh 1980, Garson *et al.* 1992). The Cheer were exclusively heard on both south and north facing slopes approximately between 0 to 40° from 2844m to 3005m throughout the Dhorpatan Valley. Unexpectedly, a call was also heard an elevation of 3350 m above the Lamakhoriya station at 0730 hrs. Out of 72 calling birds, 11 and 61 birds were heard on north and south facing slope, respectively. The Cheer was found on slightly progressing lightly dense forest mainly in pine/juniper/fir/rhododendron forest on grassy slope near the inhabited areas in north, south and east-facing slope with maximum concentration in upper part of the valley (Fig 3). Therefore, it can be said that larger proportion of Cheer in Dhorpatan valley occupy south facing sunny slopes mixed with grassland, shrubs and sparse trees; scattered tree and grassland and sometimes broken rock. Other populations have also been identified in outside the valley, but need to be surveyed for confirmation and population estimation.

Calling behavior

Generally, Cheer callings were frequently heard in the early morning between 0440 to 0530 hrs. Rest time of the days i.e. late morning, afternoon and evening, the callings was not regular. Duration of calling of birds was highly variable and lasting less than 15 seconds. While the other calls continued for more than 15 minutes. In this case, it was very difficult to separate whether a single or more birds were calling simultaneously for the same spot. Calling generally started with single bouts *cock-cock* followed by *cock-cock-cherwa-cherveewa* and intermixed with *chut*. Cheer was generally found to move uphill after giving its first call. The Cheer is very shy in nature and it was very difficult to detect within a meter of distance due to its amazing ability to conceal within small

bushes and grasses. The Cheer was seen from varying distances ranged from 1.5 meter to 20 m from observers. Most of the time we found them solitary or in pair. During encountered, they were flushed and flew down without beating their wings.

Human disturbances

In Dhorpatan valley, scattered or grouped summer settlements/villages are located on the either sides of Uttarganga river. Local people inside the reserve heavily depend on reserve's resources to meet their daily needs. Human activities usually commence from traditional potato cultivating time (beginning of March) and slow down in September each year. The traditional herding is still practiced in the reserve. Two contradictory behavior of Cheer are found in literatures. Extreme shyness and amazing ability to conceal, make Cheer difficult for *shikaris* (poachers) to find and shoot with guns and it's communal roosting in winter near the human inhabited areas (Garson 1983, Garson *et al.* 1992), easily detectable calls, sedentary behavior and preference for open habitat (Fuller and Garson 2000) make *Shikaris* to locate and trap this bird with much ease. Hidden traps were reportedly practiced by *shikaris*, *gothals* and medicinal plant collectors for capturing Cheer. Stealing of Cheer eggs was reportedly common in this area. The Cheer is mostly killed for meat in Dhorpatan. It would worthwhile here to mention that the patchy and specialized habitat of Cheer population was found to be affected from human disturbances such as over collection of forest resources, over grazing, hide trapping and invasion of preferred Cheer habitat. All these activities contribute to the loss of Cheer habitat in the DHR. In summary, human disturbance is maximum in summer and minimum in winter. However, magnitude of the disturbances to this species has to be studied carefully.

Recommendations

The Dhorpatan valley is a prime Cheer habitat and probably holds one of the highest world densities and populations of Cheer in the wild. Survey of Cheer in other potential sites in and around Dhorpatan valley, research on various aspects of Cheer ecology and regular monitoring of Cheer population would be an important management initiative, and along with conservation awareness program for local people around Dhorpatan valley are recommended for long-run survival of this vulnerable species.

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