

Long-Term Monitoring of Pheasants in
the Great Himalayan National Park,
Western Himalaya

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1.0 INTRODUCTION

Monitoring in itself implies a careful and periodical evaluation of any prolonged parameter / phenomenon, that is to detect the spatio-temporal changes. This subject of science has come to occupy a vital place in the field of wildlife management as the managers find it important to formulate impeccable conservation action plan in order to restore the endangered and endemic wildlife species. It is apparent that avifauna of any region form popular group for carrying out effective monitoring as they are found in considerable densities and are readily detectable due to their display behaviour. The changes in the bird population can also be viewed as the changes in the habitat conditions or the park as a whole (Recher & Serventy, 1991). Undoubtedly, monitoring all the bird species in a large area is time consuming, it requires more man power and becomes less effective. Hence, it is advisable to select a representative or indicator group for monitoring. In the case of Great Himalayan National Park (GHNP), pheasants stand as an ideal option for representing Aves for monitoring, because they are large, conspicuous, vocal and live mainly on the ground in diverse habitat types (McGowan & Garson, 1995). In addition, this Park is well known for supporting viable populations of many western Himalayan pheasants especially the endangered Western tragopan (Collar & Andrew, 1988). This has resulted in inclusion of this park in the area that is been identified as one of the globally important 'Endemic Bird Areas' by the International Council for Bird Preservation (ICBP, 1992).

The pheasants, throughout the western Himalaya have long been under severe pressure by the hunting and poaching activities that are aimed at their meat and plumage (Gaston *et. al.*, 1983). This, along with the other factors such as unregulated collection of edible mushroom and extensive livestock browsing in forests especially during their breeding season have presumably contributed considerable threat on these species. Besides, with the effect of selective hunting, a practice which was common in the Himachal Pradesh before 1982, one can postulate a skewed sex ratio in the pheasant population which can eventually wipe out certain local populations. Thus, it becomes obvious that the pheasants form the most appropriate group of birds for long-term monitoring within the GHNP as they can be seen and identified by the field staff easily and the health of their population indicate the better conservation status.

The ongoing intensive study on the ecology of pheasants in GHNP has focused on developing monitoring protocol for these species (Ramesh, 1997). The first phase of this work has so far been conducted in Tirthan valley and may take more than a year to arrive at proper understanding of these species from other areas. Nevertheless, the obtained field knowledge from the Tirthan valley and the empirical data collected during reconnaissance survey and the occasional visits to other part of this National Park are of adequate support to develop monitoring strategy for the pheasants of GHNP. The following are the species, areas, seasons and methods suggested for long-term monitoring.



2.0 SPECIES TO BE MONITORED

The Great Himalayan National Park is represented by five species of pheasants. They are Western tragopan *Tragopan melanocephalus*, Koklass pheasant *Pucrasia macrolopha*, Himalayan monal *Lophophorus impejanus*, Cheer Pheasant *Catreus wallichii* and Kalij Pheasants *Lophura leucomelana*. They are distributed in various habitats representing different altitudinal zones and associating with many other wildlife fauna. Emphatically, all the five species deserve to be kept under monitoring as it is clear from their placement in the Schedule I of the Indian Wildlife (Protection) Act 1972 (IWPA, 1972) and the Mace Land Threat Category (McGowan & Garson, 1995) that are in recognition of their threat perspective by the local and global community. However, based on the deliberations we had during the recent workshop, we have decided to propose only the following three species in order to make the monitoring process feasible and effective.

2.1. HIMALAYAN MONAL

The Himalayan monal prefers extensive range of habitat and altitudinal distribution. In this park, they occur from 2,000m asl to 4,100m asl, but during winter most of them descend to lower elevation and form their altitudinal range between 2,000m asl and 3,000m asl. This is the period they are expected to face inter and intraspecific competition for resources as they need to share the habitats with Koklass and Western tragopan. The bird species such as Nutcracker *Nucifraga caryocatactes*, Whitecollared blackbird *Turdus unicolor*, Black and Yellow grosbeak *Coccothraustes iceterioides*, Tree creeper *Certhia familiaris*, Himalayan tree creeper *Certhia himalayana*, Orangeflanked bushrobin *Erithacus cyanurus*, and Crested black tit *Parus melanolophus*, are found in association with this species. The associated mammals are Himalayan giant flying squirrel and Himalayan palm civet.

2.2. KOKLASS PHEASANT

The Koklass pheasant primarily occupy the upper temperate broad-leaved forests and conifer forests, although they extend their use till the tree line around 3700m asl. Their associated species are Nutcracker, Crested black tit, Orange gorgetted flycatcher *Muscicapa strophitata*, Orangeflanked bush robin, Spotted scops owl *Otus spilocephalus*, Himalayan tree creeper, etc.

2.3. WESTERN TRAGOPAN

The Western tragopan is restricted to the conifer and subalpine oak forest having well developed understorey (Islam & Crawford, 1987). The altitudinal range for this species in GHNP is between 2,000m asl and 3,500m asl. Other bird species found in this habitat are Whitecollared blackbird,

Black and Yellow grosbeak, Tree creeper, Himalayan tree creeper, and Crested black tit, and the mammals are Himalayan giant flying squirrel and Himalayan palm civet. Raptors such as Bearded vulture or Lammergjier *Gypateus barbatus*, Himalayan griffon *Gyps himalayensis* and Golden Eagle *Aquila chrysaetos* have also been observed above 3,000m frequently.

3.0 METHODS TO BE ADOPTED

There are number of techniques available to estimate relative abundance of birds (Bibby *et.al.* 1992 and Manuwal & Carey 1991) which can subsequently be used for the purpose of monitoring. However, the pheasants need specialised techniques due to their elusive and skulking behaviour. Gaston (1980) has given detailed account on the census techniques for pheasants of the Himalaya. Since the long-term monitoring is to be done by the park staff, we suggest the following simpler methods.

3.1. ENCOUNTER RATE

This is the easiest parameter that can be recorded by the forest staff and is applicable to all the proposed species. This method involves walking on any predetermined trail and counting all the pheasants on both side of the trail. Encounter rate is expressed as $ER = n / L$ (Caughley, 1975), where n = Number of groups or individuals seen and L = Distance covered. The changes in the population can be understood by comparing the estimated value over years, but the same estimate becomes biased when comparing the population changes between habitats due to the role of visibility factor that determine the detectability (Ramesh 1997). The usage of this technique for estimating and monitoring population of galliformes has started in the recent past and has been used by Islam (1982), Kaul and Ahmed (1993) and Sathyakumar *et.al.* (1993). However, the observer is expected to be efficient in identifying the pheasants and should maintain equal pace till the end of the trail. It would be desirable if the same person can carry out the census in the same trail over the years. This technique can be mainly used for Himalayan monal as it is evident from the Figure 1, in which the low standard error bars indicate the precise estimate for monal, and for Koklass the low mean with long error bars imply higher variations in the data set.

3.2. CALL COUNTS

Western tragopan and Koklass are elusive in nature and are often found in thick under growth forest that makes direct sighting difficult. The males, however, give loud chorus during dawn hours during their breeding season. Counting the calls will give useful index of the population in a given area. The general and widely used method of call count is that the calls of pheasants are recorded from a fixed radius plot laid all along the trail or from selected vantage points. 200 - 300m radius plot would suffice to count the calls of both Western tragopan and Koklass.



More than one person can be used to record the calls depending on the length of the trail and topography. Centre of the plots should be permanently marked in the field, so that this will enable any one to carry out the call count from the same plot over the years. It is also necessary to record the calling birds by facing one direction as it will help to find out double counting by both observers placed in successive calling stations. This technique has long been in the use for studying Koklass, Western tragopan and other pheasants such as Peacock pheasant (Severinghaus 1979, Gaston 1980, Duke 1990 and McGowan 1990). However, in GHNP we could obtain precise estimate only for Koklass (Fig. 2) as the tragopan was found in very low numbers and the calls were recorded for limited period (only in May). For Tragopan, we suggest to use both the above methods for obtaining abundance index.

4.0 AREAS TO BE MONITORED

In Tirthan valley, the trails presently under study have been marked and have been designated with numbers. We recommend four of the eight trails under study and few more from other areas for monitoring these species. They are Rolla-Dulunga, Dulunga - Grahani, Rolla-Basu and Chalocha-Nara in Tirthan valley, Sakti-Homkani, Sakti-Jognidhar and Majhan-Shugard (Kalikannda forest) in Sainj valley and Gathipat-Majan in Jiwa valley.

5.0 SEASON OF THE YEAR

Encounter rate technique should be executed during winter when the pheasants descend to lower elevation and the visibility is high which leaves little chance for these species to evade the observer. February month is been suggested for monitoring Himalayan monal and Western tragopan. Later part of April and first week of May are the ideal months for doing call counts for Koklass and Western tragopan respectively.

6.0 SUPPORTIVE EVIDENCES

During the intensive study that is been carried out in the Tirthan valley, selected trails and the calling stations have been monitored twice a month. The following results obtained for these species can be considered as baseline data for initiating long-term monitoring in Tithan valley.

Table 1: Encounter rate estimate for Himalayan monal, Western tragopan (No. of birds seen/Km walk) and Koklass (No. of calling birds / Calling station) during winter and spring 1998 respectively

S. No.	Trail Name	Distance	Species		
			Himalayan Monal (Mean \pm SE; N = 6)	Western tragopan (Mean \pm SE; N = 6)	Koklass (Mean \pm SE; N = 8)
1	Rolla - Basu	1 Km	6.5 \pm 1.34	0.2 \pm 0.17	2.1 \pm 0.52
2	Rolla - Dulunga	1 Km	1.8 \pm 1.28	0.8 \pm 0.31	2.8 \pm 0.45
3	Dulunga - Grahani	1 Km	6.3 \pm 0.49	0	3.3 \pm 0.31
4	Shilt - Chordhuar	1 Km	5.4 \pm 1.13	0.3 \pm 0.28	3.1 \pm 0.48
6	Basu - Koilipoi	1 Km	Not recorded	Not recorded	1.4 \pm 0.38

7.0 OTHER BIRDS

Apart from the pheasants, there are few other common birds that can be considered for monitoring. They are Himalayan griffon, Bearded vulture or Lammergier, Golden Eagle, Night jar, Himalayan spotted scops owl and Himalayn wood owl. The diurnal raptors can be monitored from vantage points, that are used for monitoring Goral and Himalayan tahr, by counting the number of birds encountered. At each regular camping sites, the monitoring team can record the calls of Owls and Night jars during Spring when they go for Pheasant and insect monitoring.



8.0 SUMMARY TABLE OF MONITORING PROGRAMME

Species	Applicable Techniques	Seasons (Months)	Name of trails			No. of Samples
			Tirthan	Sainj	Jiwa	
Himalayan monal	Encounter rate	Winter (February)	Rolla - Dulunga Dulunga - Grahani Rolla - Basu Chalocha - Nara	Sakti - Homkani Sakti - Jognidhar Majharn - Shugard	Gathipat - Majaun	2 walks
Western Tragopan	Encounter rate and Call count	Winter and Spring (February and May)	Rolla - Dulunga Dulunga - Grahani Rolla - Basu Chalocha - Nara	Sakti - Homkani Sakti - Jognidhar Majharn - Shugard	Gathipat - Majaun	2 walks and Two call counts
Koklass	Call count	Spring (April)	Rolla-Dulunga Dulunga - Grahani Rolla - Basu Basu - Koilipoi	Sakti - Homkani Sakti - Jognidhar Majharn - Shugard	Gathipat - Majaun	Twice in each calling station

REFERENCES

- Bibby C.J., Burgess N.D. and Hill D.A., 1992. Bird census techniques. Academic Press Limited, London. Pp 267.
- Caughly G. 1975. Analysis of vertebrate population. John Wiley & Sons., Newyork. Pp 234.
- Collar N.J. and Andrew P., 1988. Birds to Watch: The ICBP world checklist of threatened birds. Technical Publication No.8. International Council for Bird Preservation, Cambridge, U.K.
- Duke G., 1991. Using call counts to compare western tragopan population in Pakistan's Himalaya. In. Hill D.A., Garson P.J. and Jenkins D. (Eds) 1990. Pheasants in Asia 1989. World Pheasant Association, Readings, U.K. Pp 116 - 122.
- Garson P.J., 1983. The cheer pheasant, *Catreus wallichii* in Himachal Pradesh, Western Himalaya: An update. Journal of World Pheasant Association 5: 40 - 53.
- Gaston A.J., 1980. Census techniques for Himalayan pheasants including notes on individual species. Journal of World Pheasant Association 5: 40 - 53.
- Gaston A.J., Garson P.J. and Hunter M.L. Jr., 1983. The status and conservation of forest wildlife in Himachal Pradesh, Western Himalaya. Biol. Conserv. 27: 291 - 314.
- *I.C.B.P., 1992. Putting biodiversity on the map: priority areas for global conservation. International Council for Bird Preservation, Cambridge, U.K.
- I.P.W.A., 1972. Indian Wildlife (Protection) Act, 1972. Ministry of Environment and Forest Govt. of India, New Delhi. Natraj Publishers, Dehradun. Pp 86.
- Islam K., 1982. Status and distribution of the Western tragopan in Northeastern Pakistan. In. Savage C.D.W. and Ridley M.W. (Eds), Pheasants in Asia 1982. World Pheasant Association, Readings, U.K. Pp 44 - 50.
- Islam K. and Crawford J.C., 1987. Habitat use by Western tragopan *Tragopan melanocephalus* (Gray) in Northeastern Pakistan. Biol. Conserv. 101 - 115.
- Kaul R. and Ahmed A. 1993. Pheasant surveys in Arunachal Pradesh, India in February - March 1991. In. Jenkins D. (Ed) 1993. Pheasants in Asia 1992. World Pheasant Association, Readings, U.K. Pp 44 - 50.



Manuwal D.A. and Carey A.B., 1991. Methods for measuring population of small, diurnal forest birds. In. Carey A.B. and Ruggiero L.F. Wildlife habitat relationships: sampling procedure for Pacific Northwest vertebrates. General Technical Report PMW-GTR 278.

*McGowan P.J.K., 1992. Social organization in the Malaysian Peacock Pheasant. Unpub. Ph.D. Thesis, Open University, U.K.

McGowan P.J.K. and Garson P.J., 1995. Status survey and conservation action plan 1995-1999. Pheasants. IUCN and World Pheasant Association, Switzerland and U.K. Pp 116.

Ramesh K., 1997. An ecological study on pheasants of the Great Himalayan National Park, Western Himalaya. A synopsis to Wildlife Institute of India. Pp14.

Recher H.F. and Serventy D.L., 1991. Long term changes in the relative abundance of birds in Kings Park, Perth, Western Australia. Conservation Biology 5 (1): 90-102.

Sathyakumar S., Prasad S.N., Rawat G.S. and Johnsingh A.J.T., 1993. Ecology of Kalij and Monal pheasant in Kedarnath Wildlife Sanctuary, Western Himalaya. In. Jenkins D. (Ed) 1993. Pheasants in Asia 1992. World Pheasant Association, Readings, U.K. Pp 83 - 90.

Severinghaus S.R., 1979. Observations on the ecology and behaviour of the Koklass pheasant in Pakistan, Journal of the World Pheasant Association 4: 52 - 71.

* - Original not referred



APPENDIX - II

Data Sheet for Call Count

Area (Valley):

Trail Name:

Starting Time :

Observer:

Finishing Time :

Weather:

