

Status survey of the Blyth's tragopan in Blue Mountain National Park, Mizoram, India using call-count technique

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The Blyth's tragopan *Tragopan blythii* is a vulnerable species and its status was investigated at the Blue Mountain National Park, Mizoram. Blyth's tragopans occur in steep slopes and cliff areas in the National Park. Call count of male tragopans was adopted to get an index of abundance of these birds. Estimates suggest a total of 38 birds in the study area.

THE Blyth's tragopan *Tragopan blythii* is categorized as 'vulnerable' by the IUCN and the World Pheasant Association¹. It is also regarded as a Schedule I species under the Wildlife Protection Act of India, 1972. Out of the two subspecies of Blyth's tragopan, the nominate subspecies *T. b. blythii* (Figure 1) is distributed in India, Myanmar and parts of China^{1,2}. In India, this species is restricted to the forested hill tracts (1500–2500 m) of the states south of Brahmaputra river, i.e. Assam, Arunachal Pradesh, Nagaland, Manipur and Mizoram. McGowan and Garson³ opined that the distribution range of this species is seriously restricted and fragmented in India, the main threats being destruction of its habitat through local land use. Though some short-term survey^{4–7} reports provide information on the distribution of the Blyth's tragopans in India, no detailed study about the status of this bird in any part of its range has been conducted till date. Therefore, the present study was designed to assess the present status of the Blyth's tragopan in Blue Mountain National Park (BMNP).

The BMNP (22°39'N and 93°02'E) is located in south-eastern Mizoram, close to the Myanmar border and the Chin Hills. The general vegetation type of this 50 km² park is Khasi subtropical wet hill forest⁸. At some places, the primary forest is replaced by secondary vegetation of bamboo brakes interspersed with *Quercus* spp. We further differentiated the vegetation of the study area into five categories, i.e. primary forest, secondary forest, grassy patches, steep slope vegetation and cliff vegetation in order to enumerate the habitat preference of the Blyth's tragopan in each of these vegetation zones.

Tragopans show elaborate courtship displays during their breeding period and male birds emit distinctive

advertisement calls to attract females as well as to defend their territory from other males⁹. It is also established that the most simple and efficient method for recording and monitoring pheasant numbers in a particular area is the call-count method¹⁰. Absolute count of a species in a given area may not be possible by this method; however, an index of abundance can be obtained^{10,11}. In the present study area where field problems were compounded by steep slope and dense vegetation, the call-count technique is the only feasible and non-invasive method for counting the pheasants¹². This technique has been used widely to provide abundance estimates of pheasants across the Himalaya^{13–20}.

We selected seven vantage points on the ridge tops, and dawn calls of the Blyth's tragopan were counted. In some cases, pre-recorded tragopan calls were played back in an effort to elicit a response from wild birds. This technique also helped to check the presence or absence of the Blyth's tragopan in that particular area.

Information like date, location of vantage point and weather conditions which are likely to affect the call, time of call counts, the time of commencement and termination of call given by a single bird, duration of a single call and total number of call notes uttered during that period were recorded. A circular chart was used to record the position of the vantage point as well as the tentative position of the calling tragopan. The distance from the vantage point to a calling tragopan was estimated depending on the intensity and loudness of the call emitted. At times, the calling bird was visible and thus a more accurate distance was plotted on the chart. All tragopan calls emitted from an arbitrary radius of 500 m taking the vantage point as centre were recorded, as birds beyond 500 m were not always audible.

The relative population estimate was calculated following Duke¹². The number of vantage points (n) had a mean audible range of 500 m, and therefore a mean area (a) of 0.79 km². The total area surveyed was calculated by multiplying the area of each sampling plot a by n . Using a



Figure 1. Male Blyth's tragopan in captivity (aviary of Keith Howman, UK). Photograph by R. Kaul.

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correction factor for the estimated mean overlap (25%) between vantage points, the corrected survey area ($b = an - 0.25 an$) was obtained. The total available area of breeding habitat (c) was estimated by field observations and use of habitat maps. The proportion of the available breeding habitat surveyed was calculated ($d = b/c$), and the relative population estimate (f) was obtained, i.e. $f = (e/d)$ where e is the number of calling male tragopans.

Dawn calls were monitored for 41 days between February and May 1997. However, calling was heard on only 15 mornings (36.59%). Though major part of the calling occurred during March (after which there was a progressive decline in the calling till it stopped in May), the percentage of calling tragopans heard during each month, compared with the days on which call count was done in that month, shows that a maximum percentage of call was heard in the month of April, followed by March and May (Figure 2). A decline in the calling occurred during mid-March and end-April, possibly because of heavy rains during these periods. Apparently, wet weather has some effect on the calling birds as most of the calls were recorded on drier days. Altogether four different male tragopans were heard from the survey area during the call-count exercise. No chorusing (two or different male birds calling simultaneously) was recorded in BMNP, except on one occasion near the Phawngpui peak.

Pre-recorded call of tragopan was played back throughout the study area and male Blyth's tragopan, wherever present always responded to the playback during early or late hours of the day. Thus, presence or absence of the Blyth's tragopan in different habitat types in BMNP was noted with this technique. The playback exercise was stopped once the tragopans started calling on their own, without any provocation.

The calling of the Blyth's tragopan in BMNP was quite sparse. A possible cause was the low availability of breeding habitat for the tragopans in BMNP²¹. Despite being regarded as birds of primary forests², no evidence of Blyth's tragopan was obtained from the primary forest in BMNP during the present study period²². The Blyth's tragopan not only called from the steep slope and cliff

areas, but they were also recorded to nest in such areas²³. The steep slope vegetation and cliff vegetation accounted for about 40% of habitats (25 and 15% respectively) in BMNP, and constituted the breeding habitat for this species. Thus the available breeding habitat (c) was approximately 20 km².

$$b = an - 0.25 an = (0.79 \times 7) - (0.25 \times 0.79 \times 7) = 4.15 \text{ km}^2;$$

$$d = b/c = 4.15/20 = 0.208;$$

$$\text{Given that } e = 4, f = e/d = 19.23.$$

Therefore, it can be deduced that the available breeding habitat of the Blyth's tragopan in BMNP could support c. 19 male birds, i.e. 38 birds assuming that all calling males were paired during the breeding season.

The present study indicates that the Blyth's tragopan confined itself to the steep slopes and cliff areas in BMNP. This species did not occur in the primary forest or grassy patches, while only one evidence was recorded from the secondary forest. The BMNP is surrounded by habitations on all four sides, and the trails connecting the villages pass through the National Park cutting across primary and secondary forests and grassy patches. Human movement is quite high along these trails.

An up-to-date knowledge on the status of a species is important from the conservation point of view. Thus, systematic and regular monitoring of the existing population of a particular species in a particular area is essential. Subspecies *blythii* of the Blyth's tragopan was thought to be severely threatened and its population was estimated anywhere between 500 and 5000 with a possible decline. It was declared as 'endangered' in the 1995–2000 Pheasant Action Plan³. However, the present survey and some of the other concurrent surveys in different parts of northeast India and Myanmar revealed more populations of Blyth's tragopan in its known distribution range. Hence, the status of the Blyth's tragopan has been updated to 'vulnerable' in the recent 2000–2004 Pheasant Action Plan¹. Nevertheless, the situation is no better for its conservation as the population is still thought to be small and possibly declining in some parts. Widespread hunting and excessive amount of habitat destruction within its distribution range further jeopardize the population status of this magnificent bird. Therefore, continuous monitoring of population status for Blyth's tragopan is essential for better conservation management.

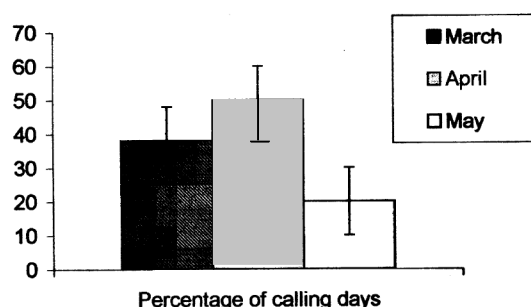


Figure 2. Percentage of days on which tragopan calls were heard during each month with respect to the days of call count.

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