

A preliminary survey for Western Tragopan *Tragopan melanocephalus* in the Daranghati Wildlife Sanctuary, Himachal Pradesh

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Introduction

This is a report of a preliminary foot survey conducted for Western Tragopan *Tragopan melanocephalus* in the Daranghati Wildlife Sanctuary, Himachal Pradesh (India). It was conducted over the course of three separate visits in May 2006, December 2006 and April 2007.

During the first survey in May 2006 we covered c. 5.25 km² of the Rangcha forest. During the second and third surveys in December 2006 and April 2007 we surveyed an area of about 3 km² in the Dhandsa forest. Both these forests are located in the Kasha-Pat beat of the Daranghati Wildlife Sanctuary.

The survey was carried out by walking on trails and scrambling cross-country through steep, extremely challenging terrain, flushing Western Tragopan along the way. We had more success with this method during the winter survey when the birds were less widespread, despite the fact that they were more reluctant to flush in winters.

The survey of the Daranghati Wildlife Sanctuary revealed a promising population of Western Tragopan with 45 individual sightings over 15 field days, of which 41 were during five days from 8th to 13th December 2006 and 39 call records over 15 field days, of which 31 were during five days from 18th to 22nd April 2007.

This population of Western Tragopan is ideally suited for further study and protective measures because it is supported by a relatively healthy habitat located in an geographically isolated and protected area.

The data collected indicate that the Western Tragopan is relatively sedentary in the Dhandsa forest area of the Daranghati Wildlife Sanctuary. We found that the birds in the surveyed area remained at the same or higher altitude in winter than in spring.

In both the surveyed areas we encountered Himalayan Monal *Lophophorus impeyanus* at such a rate (on some days > 50 in a day) that we almost gave up trying to record the number of birds flushed. In addition we encountered a healthy number of Koklass *Pucrasia macrolopha*, including

one that landed on the roof of the Sharnal forest rest house. A covey of seven Kaleej Pheasant *Lophura leucomelanos* was also observed in the Mamelan Top Nala (2,400 m) on 8th December 2006.

During the April 2007 survey three samples of fresh droppings, as well as an old sample from an exposed ledge where Western Tragopan were observed in December 2006, were collected and handed over to the Himachal Pradesh Forest Department for further analysis.

Methods

The data for this study was collected over three visits. Visit 1 was to the Rangcha forest while Visits 2 and 3 were to the Dhandsa forest.

Foot surveys followed forest tracks where available. Otherwise the survey team walked cross-country. Most of the survey walks were cross-country and involved strenuous walking/scrambling over steep slopes and rocks. In areas, which looked promising, we fanned out and painstakingly combed the area 2-3 times.

While surveying narrow valleys the party sometimes split into two groups, each walking on either side of the valley, covering the area more efficiently. This strategy also allowed the group on one side to have a good look at birds flushed by the group on the opposite side, as quite often they would cross over and land near them.

GPS readings were recorded of important points in the survey and of the points where Western Tragopans were sighted/heard. When the birds were sighted/heard at a distance, a rough map of the area was made giving the relative position of the bird while our own position was fixed by the GPS.

The data thus collected was imported into Google Earth™ and was used to make the maps of this report. The grid references and the altitude measurements have been taken from Google Earth™. Due to this methodology the grid references and altitudes, especially of points where an actual GPS record was not taken, might have errors.

Study area

Daranghati Wildlife Sanctuary (31°22'–28'N 77°47'–51'E), is located in the Rampur Bushahr division of Shimla district (Himachal Pradesh, India). An erstwhile hunting reserve of the Rampur Bushahr royal family, it was notified as a sanctuary in March 1962 and then re-notified on 27th March 1974. The sanctuary is in two non-contiguous parts namely, Daranghati Wildlife Sanctuary I and II. These two units lie on either side of the Dhaula Dhar hills, an intervening range that forms part of the Middle Himalaya. The total notified area of both the parts is 168 km². The altitude varies between 2,100 m and c. 5,400 m (Hans Beshan peak) (Fig. 1).

The area covered by our surveys was located in the Kasha-Pat beat of the Daranghati Wildlife Sanctuary II.

Daranghati Wildlife Sanctuary I is north of the Dhaula Dhar range and forms the southern catchment area of the Manglad Gad which is itself a tributary of the Sutlej River.

Three main rivers, including Wajadi Gad and Gharat Gad, flow northwards into Manglad Gad.

Daranghati Wildlife Sanctuary II lies south of the Dhaula Dhar and encompasses the eastern and southern catchment areas of the Nogli Gad. The main rivers flowing through part II into the Nogli Gad include Bankdari Nala, Rigir Gad, Setlu Nala, Doabda Nala, Debring Nala and Dori Gad. Manglad and Nogli are southern tributaries of the Sutlej River, joining it on the left bank.

Kasha Pat Forest Range lies north-east of the Daranghati Wildlife Sanctuary II. The range office is located in the Sharnal Village.

Rangcha Forest—Survey 1: 9th–12th May 2006: A part of the Kasha Pat range, the Rangcha forest extends to the east of Kasha village on the right bank of the Nogli Gad. The forest starts about one kilometer east from Kasha village and extends up to the snowline. There are no villages east of Kasha in the Nogli catchment. The Nogli Gad forms the

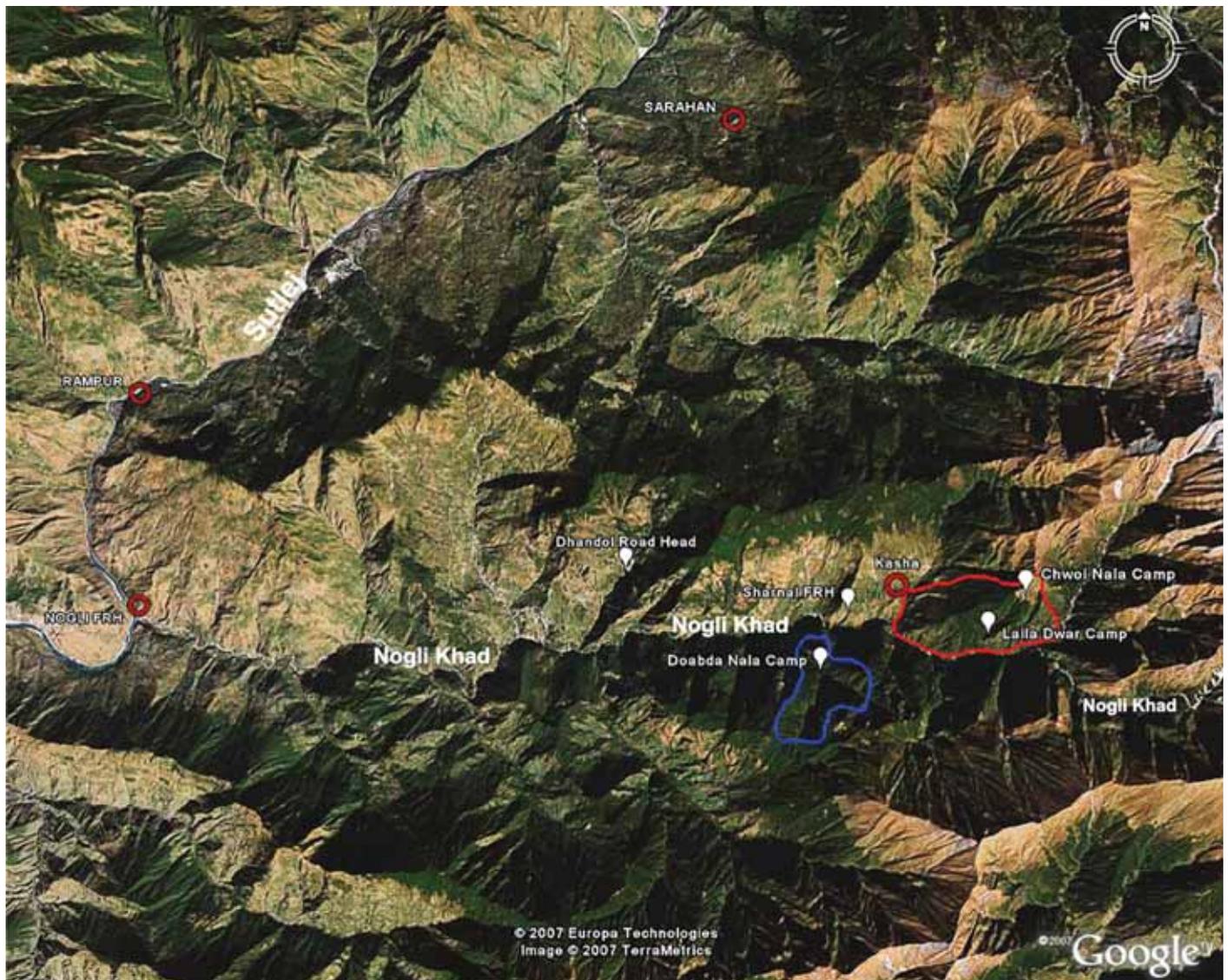


Fig. 1. Satellite image of the general area

- Area covered during Survey 1 in May 2006: Rangcha forest—perimeter c. 9.5km; area c. 5.25km².
- Area covered during Surveys 2 and 3 in December 2006 and April 2007: Dhandsa forest—perimeter c.8.5km; area 3.0km².



Fig. 2. Satellite image of the Rangcha forest area surveyed 9th–12th May 2006

southern boundary of the Rangcha forest while the ridgeline separating the Nogli catchment from the main Sutlej watershed forms the northern boundary. To the east the forest extends up to the snow line while on the west the agricultural lands of the Kasha village define the forest boundary (Fig. 2).

A part of this forest was surveyed over a period of four days from 9th to 12th May 2006 (see map below).

Dhandsa Forest—Survey 2: 8th–13th December 2006; Survey 3: 17th–22nd April 2007. A part of the Kasha Pat range, the Dhandsa forest lies to the south of the Sharnal village. The Nogli Gad forms the northern boundary of the forest. The Doabda Nulla flows through this forest and joins the Nogli Gad about one km west of Sharnal. This forest mainly consists of the catchment of the Doabda Nulla. To the east the forest extends up to Mamellan top and other alpine meadows while the Pateli ridge forms the western boundary. To the south the forest extends up to the farmlands of the Darkali village (Fig. 3).

Weather: Daranghati Wildlife Sanctuary has cool summers and severe winters. Annual precipitation is 625–900 mm, with heavy monsoonal rains from July to September and frequent snowfall from January to March. Temperatures range from -8°C in winter to 28°C in summer (Pandey 1990).

Vegetation: The Daranghati Sanctuary supports five main types of forests (Pandey 1990):

1. Moist cedar forest (1,900–3,000 m), which comprises *Cedrus deodara*, mixed with blue pine *Pinus wallichiana* on ridges and an understorey of oaks *Quercus* spp., rhododendrons *Rhododendron* spp., and holly *Ilex dipyrrena*. Common shrubs include *Indigofera* spp., honeysuckle *Lonicera* spp., *Prinsepia utilis* and *Berberis* spp.
2. Western mixed coniferous forest, which occurs on the northern and eastern slopes above 2,000 m. Main species are blue pine, silver fir *Abies spectabilis* and spruce *Picea smithiana*, with cedar on well-drained sites. Broadleaf spp., include Indian horse chestnut *Aesculus indica*, walnut *Juglans regia*, maples *Acer* spp., and rhododendrons. Shrubs include *Viburnum* spp., willow *Salix* spp., *Indigofera* spp., *Cotoneaster* spp., *Rubus* spp., and *Rosa moschata*.
3. Moist temperate deciduous forest, which extends up to 2,700 m along streams and moist hollows, with Indian horse chestnut, walnut, bird cherry *Prunus cornuta*, elm *Ulmus wallichiana* and maples predominating.
4. Oak *Quercus semecarpifolia* forest, which is also known as Kharsu oak, occurs in sheltered locations between 2,500 m and 3,500 m, and is replaced at higher altitudes by birch *Betula utilis*, *Juniperus* spp., and *Rhododendron campanulatum*. Common associates in

oak forest are maple, bird cherry *Prunus cornuta*, yew *Taxus bacata* and pear *Pyrus* spp.

5. West Himalayan sub-alpine forests contain silver fir and some Kharsu oak, and occur above 3,000 m.

All five types of forests were well represented in the area surveyed in Rangcha Forest in May 2006.

The area surveyed in Dhandsa Forest in December 2006 and April 2007, did not include West Himalayan sub-alpine forests.

Results

Analysis of altitudinal mobility with season

The data we collected supports Gaston *et al.* (1981) in that the Western Tragopan is relatively sedentary in Himachal Pradesh. We found that the birds remained at the same or higher altitude in winter than in spring.

There is a great deal of variation in the altitudinal distribution cited by various sources for different seasons. In some cases the lower limit, is stated as low as 1,350 m

(Johnsgard 1999; Ali & Ripley 2003). Other sources cite a lower limit of 1,750 m in winter (Nawaz 2001), although they also state that birds can be found up to 3,000 m if the weather allows. The usual altitudinal range cited for summer is 2,500–3,600 m (Whistler 1928; Baker 1932–1935; Liley *et al.* 1995; Whale 1997; Ramesh *et al.* 1999).

Our winter sightings (December 2006) took place as the first heavy snowfall of the season arrived with temperatures as low as minus 8°C. We found that the birds did not immediately descend to lower altitudes or move to new locations.

- The average altitude for the 41 sightings in December 2006 was 2,855 m (median 2,970 m).
- In comparison our four sightings and 31 call records from April 2007 indicate an average altitude of 2,686 m (median 2,690 m).
- The range of altitudinal records for December 2006 was 2,485–3,160 m, while the range for April 2007 was 2,563–3,020 m.

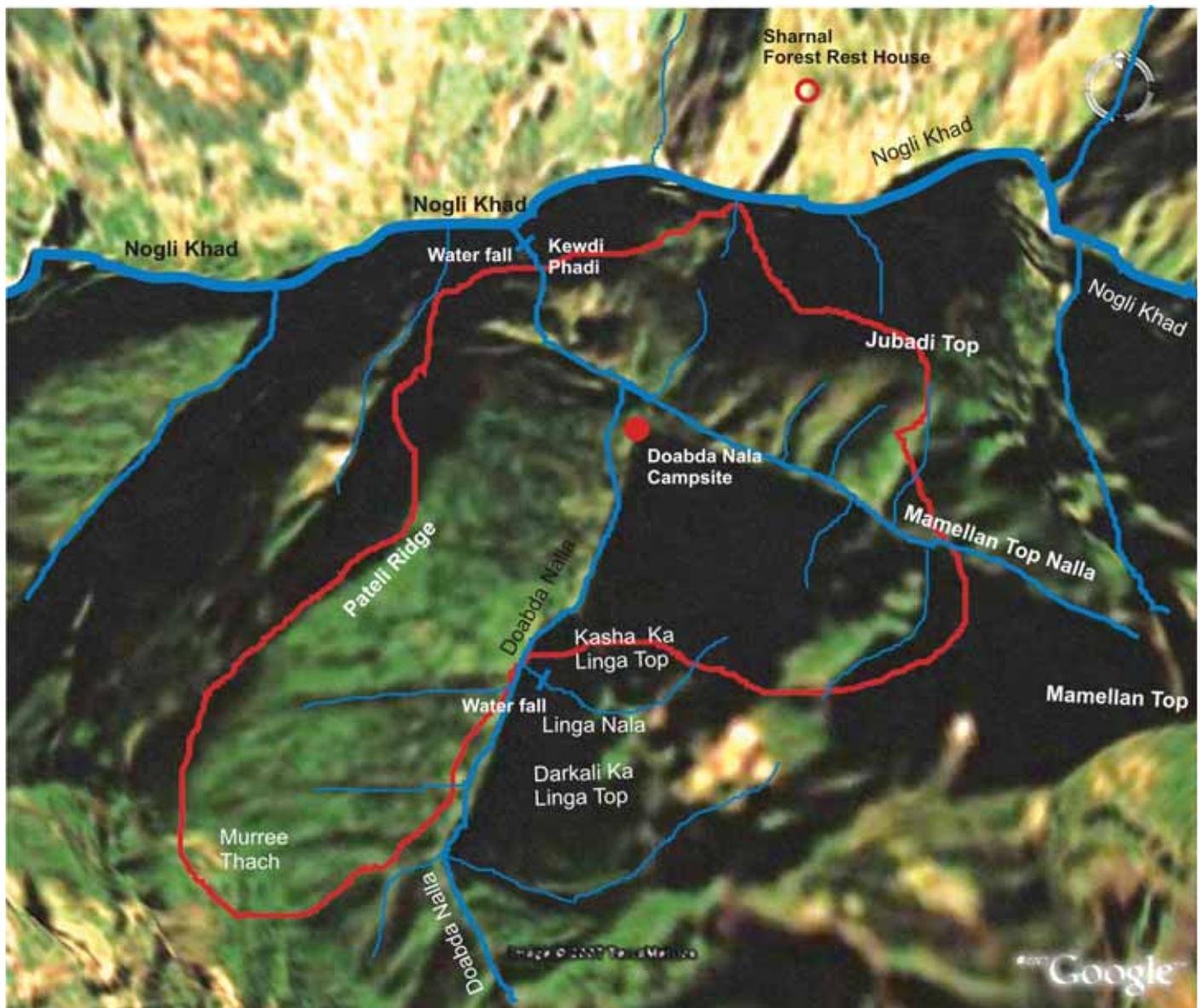


Fig. 3. Satellite image with map overlay of the area surveyed in December 2006 and April 2007 (Dhandsa forest)



Fig. 4. Temporary bridge on the Nogli Khad, enroute to Dhandsa forest

It should be noted that the data for spring includes far more call recordings than sightings, which increases the margin of error. Data from the May 2006 survey is not included for the purpose of this analysis as the area surveyed was different.

Observations on flushing behaviour

In order to detect the presence of these shy and skulking birds, we walked along trails as well as cross-country, flushing birds by making loud sounds and striking trees trunks. We observed that generally the birds were more difficult to flush in winter than in spring. In winter the birds allowed us to approach much closer before flushing, while in spring they tended to flush from much further away.

Other observations:

- When flushed from close proximity the birds took off with heavily flapping wings, which make a loud and peculiar rattling-thumping sound, which is easily audible and identifiable in the field, even at long distances. Flushed birds usually take a 'jump start', fly a short distance and then glide downhill, often across the valley to the opposite hillside. All flushed birds, which could be observed landing, landed on the ground except one that landed on a branch of a deodar tree about five

metres above the ground. This bird uttered a few alarm calls and then took off again and went downhill.

- The birds usually give one or more alarm calls before taking flight, always followed by a few more calls while airborne.
- During the winter survey some birds flushed from just 2–3 m. In one such case, one of us (SS) flushed a juvenile male as he pulled himself up on a small rocky ledge where the bird was hiding under a rock. The bird almost struck SS as it flushed, giving the rest of the party, which were a few meters behind, a clear view of its flight trajectory.
- When alarmed from a distance, the birds sometimes ran and hid in the undergrowth or underneath rocks. In one case, we saw a male tragopan about 20 m away in a mass of large rocks on a slope angled 30–40 degrees. It ran and hid. Three people searched intensively for 30 min but could not flush it. In another case, we heard an alarm call from less than 50 m away. We could hear the bird running for cover, but though we searched for 30 min it did not flush nor give an alarm call. In this case the area had dense undergrowth, including some thorny bushes and boulders.

Effects of human activity

The area covered on the second and third surveys, in the Dhandsa forest, is less disturbed than the larger area of the Rangcha forest covered on the first survey. The main human activities in both forests are grazing livestock on undergrowth tree-logging for animal fodder, and fuel wood and minor forest produce collection.

Rangcha forest this forest is used for grazing throughout the year except in winter when there is heavy snow. It is easy to access and has good pastures and camping grounds. It also is the route through which sheep are taken to the alpine meadows in summer. Firewood and timber collection is also higher in this forest because it is close to the villages and is connected by a well-maintained track.

Dhandsa forest this forest is also used for grazing livestock but is relatively less disturbed because:



Fig. 5 Habitat of the April 2007 sightings

- The access route is more difficult as it involves a steep descent to the Nogli Khad and then a steep climb across a small pass. While there was some evidence of fuel wood collection around the pass area, we were told it was simply too cumbersome to venture further into the survey area for fuel wood.
- The Nogli Khad forms a natural barrier, as a bridge does not span it. A simple log bridge, constructed every season, is used to cross the Khad. The Nogli Khad cannot be crossed once the monsoon starts. Even before the rains, in spring and summer, the Nogli Khad cannot be crossed during the evening as snowmelt increases the water level. While collection of edible fungi and medicinal plants may cause disturbance during the breeding season in other areas (Gaston & Garson 1992; Pandey 1993), here the river is a natural barrier against human disturbance during this critical time (Fig. 4).
- Livestock grazing is kept at a minimum with one shepherd passing through the surveyed area once a week on average with his herd of 70 sheep and goats. During the spring these visits are limited to short half-day trips, which stop at the onset of the monsoon. Once the monsoon breaks the shepherd and his herd may camp above the Doabda Nulla till they move on to other pastures. Although we observed trees being lopped for livestock forage, it was on such a limited scale that in all probability would not have an adverse effect for conservation on the Western Tragopan in this area.
- The locals also avoid going into this forest in the summer and monsoon months due to the high population of Asiatic black bear *Ursus thibetanus*. A walk in the darkening Dhandsa forest is a foolhardy proposition due to the presence of the bears.
- Local shepherds also say that this forest has a type of grass (herb) that kills goats if they feed on it.
- A new motorable road to Kasha village is under construction and is expected to be ready in the next two years. Once this road reaches Sharnal, the Dhandsa forest will be a short two-hour walk from the road head. This will definitely lead to an increase in human activities in the Dhandsa forest. The construction of a permanent bridge over the Nogli Khad will also lead to an increase in human activities in this area.

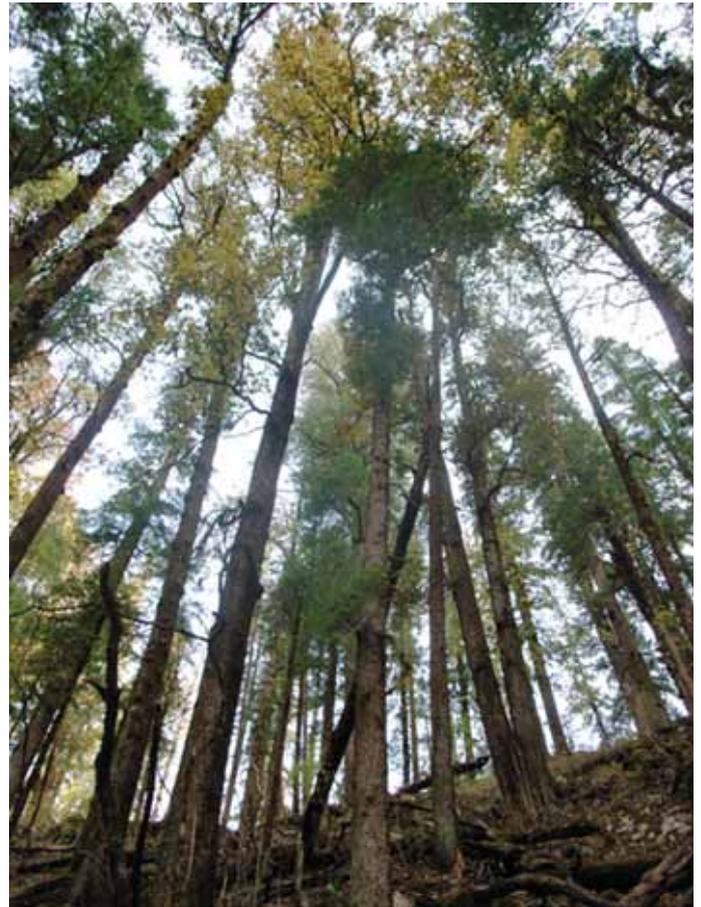


Fig. 6. The canopy at the roosting site

all the undisturbed sightings were on steep, 40–60 degree, rock strewn, north-facing slopes in areas remained that in shade throughout the day. These areas were quite exposed and had scanty tree cover.

Roosting site

While walking back from the Kewdi Faldi top on 19th April 2007 at 0845 hrs we came across a cluster of droppings. Birsen, our local guide, identified them as Western Tragopan droppings. There were four droppings within 30 cm of each other. These were not like the usually round Western Tragopan droppings. They were squashed and a bit splattered as if they had fallen from a height—very probably from a roosting bird. The droppings were collected and handed over to the Himachal Pradesh Forest Department for further analysis (Fig. 6).

If these droppings (Fig. 7) were from a roosting bird, the bird would have been perched on a 5 cm thick branch of a Moru oak *Quercus dilatata* about 10 m above the ground and 5 m from the main trunk. There was very little ground cover and no middle storey in this region. The tree was on a 40-degree south-facing slope. The part of the branch on which the bird roosted was quite exposed and it did not have a dense leaf cover.

Use of small caves and cavities under rocks as cover

Almost all areas where Western Tragopan were observed had rocks and boulders strewn about. This jumble of rocks

Habitat

During the May 2006 and April 2007 surveys the birds were found scattered uniformly in the forest. All birds seen were alone. An analysis of the calls suggests a minimum distance of about 300 m between two calling males.

The four visual records in April 2007 were from areas with fairly thick moist temperate deciduous forests. The areas had 30–40 degree slopes and also had rocks and boulders strewn all over (Fig. 5).

During the December 2006 survey a majority of the birds were found in coveys of 3–8 birds in isolated pockets. Almost

form many small caves, cavities and tunnels which, along with undergrowth, provide numerous safe hideouts.

During the survey all birds that were flushed, took off from the ground. On eight occasions Western Tragopan were seen flushing from under rocks. Twice they were flushed from under rocks when we were in close proximity (less than 10 m). While on two other occasions birds were seen running into a boulder strewn area, which was subsequently searched.

One male, calling from without success near the camp, would give off an alarm call when we made any sudden noise. Subsequent imitation of the same noise would not elicit any more calls. Over the days several attempts were made to locate the bird—but it neither called nor flushed. Even an entire herd of 70 goats walking through the area did not flush this bird, which had been calling as usual until just before the goats arrived. The bird resumed calling 15 min after the goats left the area. There was little ground cover in this area except for a jumble of rocks. Since the bird was not heard taking off, it is highly probable that it used the caves and tunnels under the rocks in this area to hide. The shepherd informed us that rarely had he observed Western Tragopan flushing when he walked his livestock through these forests. This also confirms the observations of Beebe (1918–1922) who describes such efforts to flush hiding birds as futile.

All these instances pointed to the fact that, when disturbed, the Western Tragopan used spaces under rocks for concealment. Locals informed us that it was a well-known fact amongst the shepherds that the Western Tragopan liked to hide under rocks and boulders. In fact, our guide Shyam Lal informed us that, in his childhood, he had caught one male tragopan, which was hiding in a small cave (1 m deep) under a boulder.

Acknowledgments

Any project, however small, cannot be completed in isolation. Without the guidance, support and help of friends and well-wishers even a small undertaking soon becomes an impossible task. This survey report has become a reality due to the active support and help received from a large number of friends, guides and well-wishers to whom we are extremely grateful.

We would like to thank the Himachal Pradesh Forest Department for their help and cooperation during this survey.



Fig. 7. Droppings at the roosting site

We would like to thank Dr Lalit Mohan IFS, Conservator of Forests—Wildlife, Shimla and Mr B. L. Negi IFS. Without their guidance, encouragement and help this survey would not have been possible.

We would like to express our gratitude to Mr Arun Sharma, DFO Sarahan, and to the staff of the Daranghati Wildlife Sanctuary, especially Mr Ram Das and Mr K. R. Thakur. Their professional advice and help made this survey possible.

We would like to thank Mr Harkirat Sangha for the time and effort that he put in to edit and



Fig. 8. Chwoi Nala campsite

refine the many drafts of this report that we sent to him for critical assessment and review.

Last but not the least, we would like to thank the members of our field team, Mr Pawan Kumar, Mr Shyam Lal, Mr Bir Sen, Mr Kushal Singh Saini, Mr Tulsi Das and all the other porters whose unstinting help and cheerful hard work made this survey a reality and an enjoyable and memorable experience.

References

- Ali, S. & Ripley, S. D. 2003. *Handbook of the birds of India and Pakistan together with those of Bangladesh, Nepal, Bhutan and Sri Lanka*. Vol 2. New ed. Delhi: (Sponsored by Bombay Natural History Society.) Oxford University Press [Oxford India Paperbacks.].
- Baker, E. C. S. 1932–1935. *The nidification of birds of the Indian Empire*. 4 vols. London: Taylor & Francis.
- Beebe, C. W. 1918–1922. *A monograph of the pheasants*. 4 vols. London: Witherby & Co.
- BirdLife International. 2001. *Threatened birds of Asia: The BirdLife International red data book*. 2 vols. Cambridge, UK: BirdLife International.
- Gaston, A. J., Garson, P. J. & Hunter, M. L., Jr. 1981. Present distribution and status of pheasants in Himachal Pradesh, western Himalayas. *World Pheasant Association Journal* 6: 10–30.
- Gaston, A. J. & Garson, P. J. 1992. Himachal wildlife project—III. A reappraisal of the Great Himalayan National Park. Himachal Pradesh Department of Forest Farming and Conservation, International Trust of Conservation, World Wide Fund for Nature-India and the Oriental Bird Club.
- Jandrotia, J. S., Sharma, V. & Katoch, S. S. 1996. A pheasant survey in the Ravi catchment of Chamba district, Himachal Pradesh, India. *Annual Review of the World Pheasant Association* 1994/1995: 67–74.
- Javed, S., Kaul, R. & Khan, S. B. 1999. Status, distribution and ecology of the Western Tragopan *Tragopan melanocephalus* in the Western Himalayas. Aligarh, India: Department of Wildlife Sciences, Aligarh Muslim University.
- Johnsgard, P. A. 1999. *The pheasants of the world*. 2nd ed. Washington DC: Smithsonian Institution Press.
- Liley, D., Thompson, G., Gandy, D. & Ghafoor, A. 1995. Survey of Western Tragopan *Tragopan melanocephalus* in the Keyal and Palas Valleys. February 1995. Palas: Himalayan Jungle Project. Unpublished report.
- Nawaz, R., Garson, P. J. and Malik, M. 2001. Monitoring pheasant populations in montane forest: some lessons learnt from the Pakistan. Galliformes project. WPA-Pakistan.
- Pandey, S. 1990. Management plan of Daranghati Sanctuary (1990–1991 to 1994–1995). Shimla: Department of Forest Farming and Conservation.
- Pandey, S. 1993. Pheasant surveys and the conservation of protected areas in the Upper Beas Valley, Himachal Pradesh, India. Pp. 58–61. In: *Pheasants in Asia 1992*. Jenkins, D. (ed.) Reading, UK: World Pheasant Association.
- Ramesh, K., Sathyakumar, S. & Rawat, G. S. 2001. Radio tracking of Western Tragopan in Great Himalayan National Park. Final report:

a collaborative work of Wildlife Institute of India and World Pheasant Association, U.K.

- Ramesh, K., Sathyakumar, S. & Rawat, G. S. 1999. Ecology and conservation status of pheasants of the Great Himalayan National Park, Western Himalaya, Himachal Pradesh. (IN) An ecological study of the conservation of biodiversity and biotic pressures in the Great Himalayan National Park Conservation Area an ecodevelopment approach. Forestry Research Education and Extension Project Great Himalayan National Park (FREE-GHNP), Final Project Report, Wildlife Institute of India, Dehra Dun. Vol. 1–6.
- Singh, S., Kothari, A. & Pande, P. (eds.). 1990. *Directory of national parks and sanctuaries in Himachal Pradesh, management status and profiles*. New Delhi: Indian Institute of Public Administration.
- Wani, M. & Kothari, A. conservation and people's livelihood rights in India, January 2007. UNESCO India.
- Whale, R. 1997. Survey of Western Tragopan *Tragopan melanocephalus* in Bar Palas, December 1996. WPA-Pakistan. Unpublished.
- Whistler, H. 1928. *Popular handbook of Indian birds*. London: Gurney & Jackson.

APPENDIX: Survey notes

Visit 1: 9th–12th May 2006

We started the trek for Sharnal on 8th May 2006 from a small teashop just after the village of Kinnu on the Sarahan–Mashnu road. This route to Kasha is not frequently used as it involves a long and difficult trek over Bubala pass.

During this survey we took a team of five porters. Pawan Kumar, the forest guard at Kasha, was also with us. The other two guides were the *chowkidar* Shyam Lal and Kushal Singh Saini. Our team consisted of eight people. The porters did not take part in the survey walks.

A part of the Rangcha forest was surveyed during this visit. Two camps were set up during this survey. The first



Fig. 9. Laila Dwar campsite

was at Chwoi Nala dwar (Fig. 8), where two nights were spent. The second camp was at Laila Dwar (Fig. 9), for two nights.

Weather: the weather was mostly clear and sunny except on the afternoon of 10th May 2006. It started drizzling at about 1200 hrs continuing till about 2000 hrs.

Records: No Western Tragopans were seen during this survey. The calls of eight male birds were heard.

The routes taken during the walks, the campsites and the estimated position of the calling birds (Fig. 10).

Visit 2: 8th–14th December 2006

This time we used the Dhandhol route. This is a much easier route, as it does not involve steep gradients. There is a fair amount of traffic on this track as the villagers of Kasha–Pat use it too to transport supplies.

During this survey we formed a base camp at Doabda Nulla. We took a team of five porters and three guides. The guides, Shyam Lal, Bir Sen and Kushal Saini, stayed back with us while the team of porters left for Kasha after dropping our luggage at the campsite. Since the campsite was centrally located we did not plan to shift camp. At the end of the camp the team of porters came back and took our equipment back to Sharnal.

A part of the Dhandsa forest was surveyed during this visit. Seven nights were spent there.

Weather: Mostly overcast, wet and cold. Even when the sky was clear the campsite received only about two hours of sunlight a day as it was situated in a deep valley. The temperatures were below freezing during most of our stay. The minimum temperature recorded was -8°C at 0500 hrs on 12th December 2006.

It started snowing from around 0000 hr on 10th December. The snowfall continued overnight and on the morning of 11th December an eight-inch layer of snow covered the ground. This wet snow made walking cross-country dangerous.

Records: A total of 41 Western Tragopan were seen during this survey visit.

The routes taken during the walks, the campsites and the places where the birds were seen (Fig. 11).

Visit 3: 17th–22nd April 2007

This time also we used the Dhandhol route.

The base camp was at the Doabda nulla campsite. Our team consisted of four people. We had Bir Sen and Kishen Das as guides and two porters for our equipment. The entire team stayed at the campsite for the duration of the camp.

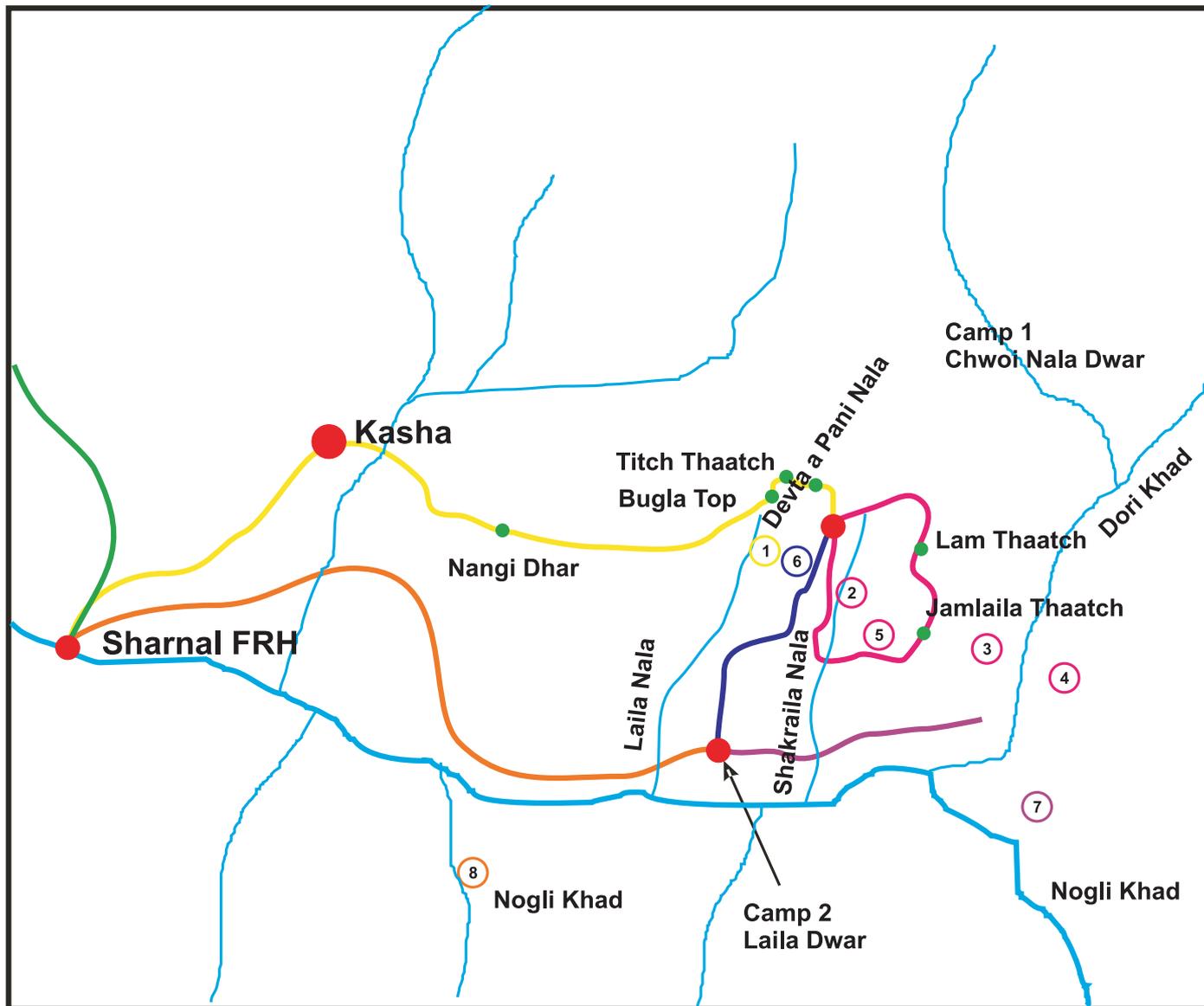
We covered the same part of the Dhandsa forest that was surveyed during December 2006 visit our.

Weather: Clear during most of the trip. It rained from 1200 hrs till 2000 hrs on the 19th of April.

Records: Four Western Tragopans were seen during this survey, and a total of 31 birds were heard calling.

The routes taken during the walks, the campsites and the places where the birds were seen or heard (Fig. 12).

**Fig. 10. Rangcha Forest Map of the area surveyed
08 to 12 May 2006**

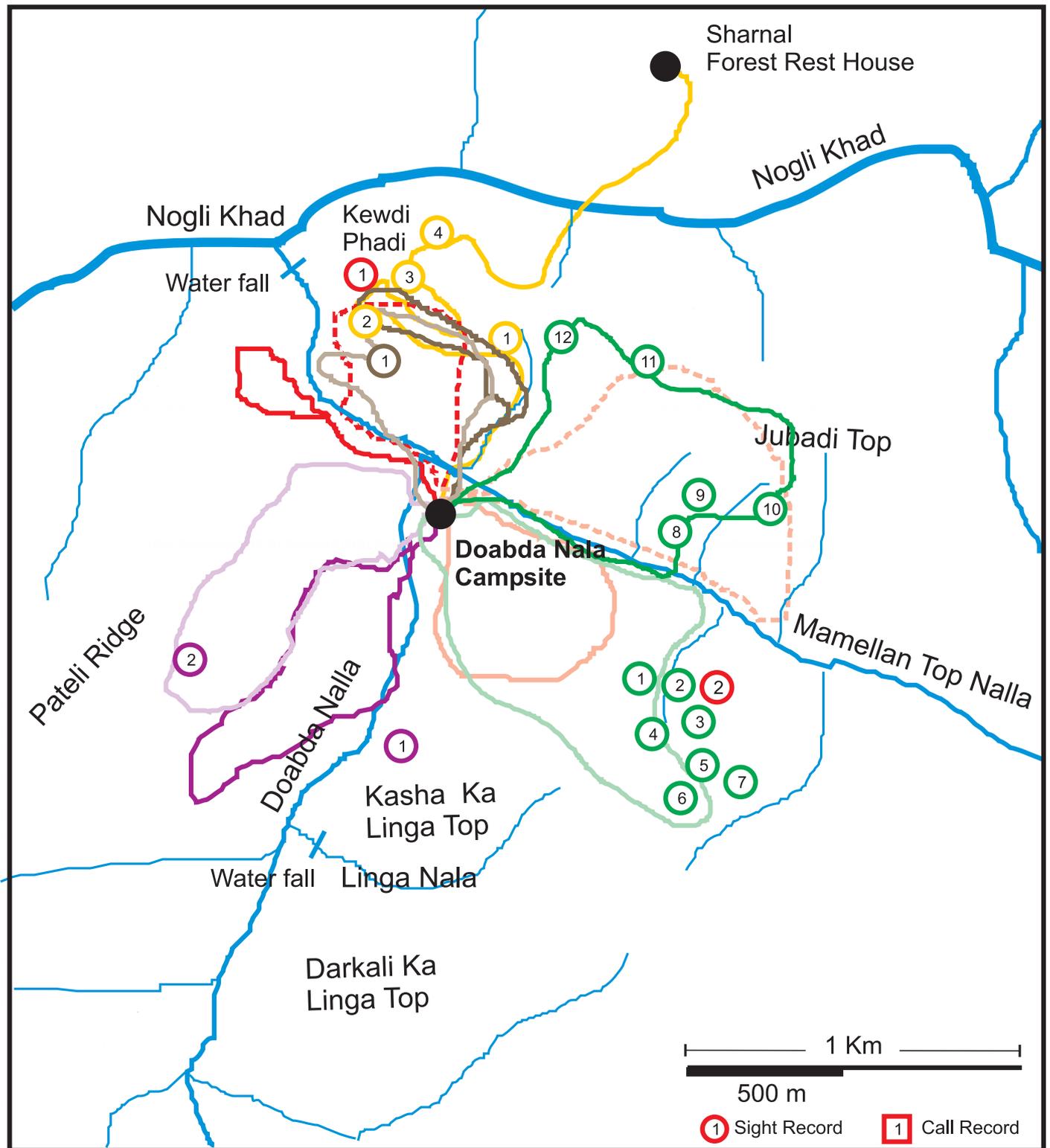


① Sight Record ① Call Record

Approximate locations and altitude of calling male Western Tragopans in May 2006			
	Date	Time	Altitude
①	9	1830 hrs	3,200 m
②	10	0615 hrs	3,200 m
③	10	0810 hrs	3,200 m
④	10	0905 hrs	2,900 m
⑤	10	1630 hrs	3,000 m
⑥	11	0600 hrs	3,200 m
⑦	12	0800 hrs	2,800 m
⑧	12	1200 hrs	2,500 m

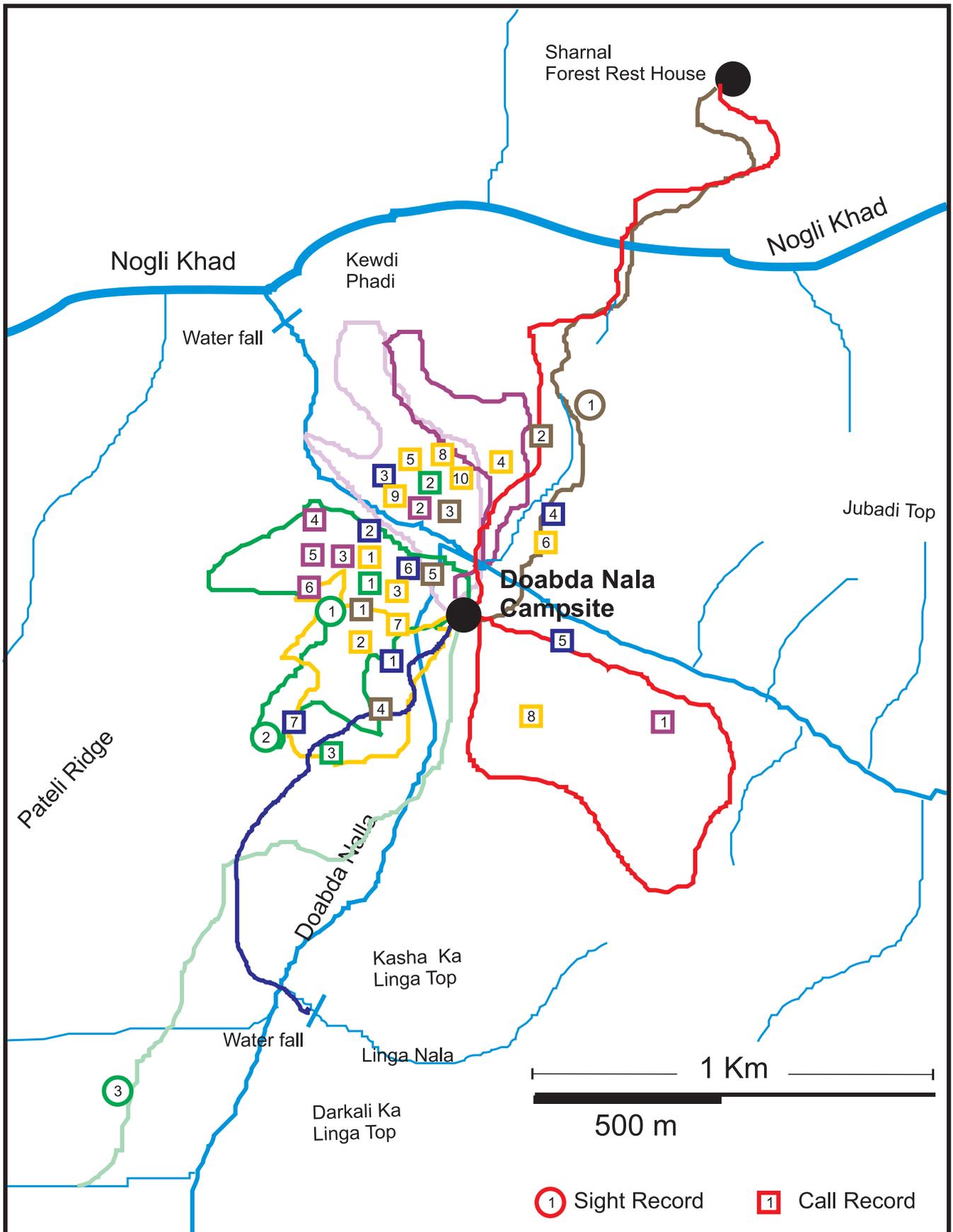
Treks in May 2006	
Date	Route to
8	Sharnal FRH
9	Chwoi Nala Camp
10	Dori Catchment, Jamlaila Thach, Laam Thach
11	Laila Dwar Camp
12	Dori Khad and Back
12	Sharnal FRH

**Fig. 11. Map of the area surveyed - 08 to 14 December 2006
Dhandsa Forest**



Date: December 2006 [Total sightings]	Serial No.	Time (hrs)	Coordinates	Altitude (m)	Notes
8th [5]	①	0815	31°23'42.97"N 77°48'49.73"E	2,485	Flushed by B & seen by S.
	②	1500	31°23'14.78"N 77°49'15.96"E	3,155	4 birds seen & alarm calls heard by B & KT.
9th [13]	①	1100	31°23'13.64"N 77°49'16.86"E	3012	One tragopan flushed by B and KT.
	②	1110	31°23'12.70"N 77°49'17.71"E	3050	One tragopan flushed by B and KT.
	③	1115	31°23'11.69"N 77°49'17.10"E	3070	One tragopan flushed by B and KT.
	④	1117	31°23'11.69"N 77°49'17.10"E	3100	2 tragopans flushed by B & K. One (F) flew across the nulla, landing 30 m below. Gave alarm calls in flight and also after landing.
	⑤	1119	31°23'10.39"N 77°49'18.12"E	3130	2 tragopans flushed by B & KT, both flew across the nulla. One landed 100 m below & the other 30 m above them. Both gave alarm calls in flight.
	⑥	1125	31°23'9.34"N 77°49'16.00"E	3160	One tragopan flushed by B & KT.
	⑦	1145	31°23'9.21"N 77°49'17.84"E	3160	One male tragopan flushed by B & KT. Flew down along the nulla.
	⑧	1220	31°23'23.89"N 77°49'14.64"E	2740	One tragopan flushed by us. Flew down and landed just across the nulla from us.
	⑨	1225	31°23'26.50"N 77°49'16.84"E	2760	SS flushed 1 M tragopan from c. 10 m, which landed on a Tosh pine branch & took off after 2-3 sec. after giving alarm calls.
	⑩	1300	31°23'27.19"N 77°49'20.21"E	2800	SM flushed a juv. M tragopan from 2 m from under a rock.
	⑪	1550	31°23'38.38"N 77°49'20.08"E	2880	SM flushed a F tragopan from 20 m.
	⑫	1700	31°23'39.00"N 77°49'6.42"E	2700	SS flushed 2 tragopan (1 M & 1 F) from 20 m.
10th [9]	①	1225	31°23'09.12"N 77°48'57.44"E	2750	One tragopan flushed. Flew down the nulla.
	②	1430	31°23'10.06"N 77°48'30.98"E	2970	Eight tragopan flushed by B & K.
12th [6]	①	1330	31°23'38.81"N 77°48'49.86"E	2500	6 tragopans flushed & seen by B on his way up to the Kewdi Phaldi top. We heard 3 of these birds flush.
13th [6]	①	1225	31°23'41.85"N 77°49'10.58"E	2740	Flushed 2 tragopans at the Pass above Nogli Khad. One gave alarm calls before taking off.
	②	1325	31°23'46.92"N 77°49'1.03"E	2640	Flushed a F tragopan from c. 20 m.
	③	1350	31°23'47.12"N 77°49'4.84"E	2650	Flushed a M tragopan from c. 10 m. The bird was sitting under a rock. The area has large rocks (1-5 m) scattered around. We had passed about 20 m from the rock under which the bird was sitting about 10 minutes earlier, without disturbing the bird.
	④	1425	31°23'51.71"N 77°49'3.39"E	2600	2 F tragopans flushed by B. Both gave alarm calls. Both were flushed from under rocks, and flew down hill. One gave alarm calls for 2-3 seconds before taking off.

**Fig. 12. Map of the area surveyed - 17 to 22 April 2007
Dhandsa Forest**



Date: April 2007 [Total sightings]	Serial No.	Time (hrs)	Coordinates	Altitude (m)	Notes
18th [3]	①	0825	31°23'26.19"N 77°48'49.72"E	2730	Flushed one tragopan. It was sitting on the ground in a dry rocky nulla. The nulla was not very steep (40 degree) slope. Good upper storey cover but not middle storey and little lower storey vegetation. The bird gave alarm calls before taking off. It landed about 150 m away on the ground amongst rocks with little ground cover. Flushed the tragopan again, this time it took a long flight and went down towards Kewdi Phaldi.
	②	0910	31°23'9.87"N 77°48'44.00"E	2750	Saw a male tragopan at about 20 m. The bird was in a mass of rocks on a 30-40 degree slope. The rocks were upto 5 meters in size, lying in a jumble. The tragopan did not flush; instead it ran into the rocks. We searched for it for 30 minutes without any luck. The bird did not flush.
	③	1500	31°22'53.05"N 77°48'35.45"E	2800	Tragopan flushed by Birsen. Collected fresh droppings.
Call records 18th	①	0630	31°23'36.36"N 77°48'57.71"E	2563	Heard from the camp.
	②	0635	31°23'30.53"N 77°48'52.69"E	2630	Heard from the camp.
	③	1645	31°23'11.30"N 77°48'47.35"E	2700	2 calls heard while returning from evening trek.
19th	①	0700	31°23'14.59"N 77°49'19.12"E	3020	Heard from the camp.
	②	0715	31°23'37.11"N 77°48'59.78"E	2600	One alarm cry heard while walking up to Kewdi Phaldi top.
	③	0730	31°23'28.82"N 77°48'53.15"E	2650	Called for about 15 seconds.
	④	0731	31°23'30.77"N 77°48'49.82"E	2680	Called for about 20 seconds.
	⑤	0845	31°23'28.21"N 77°48'50.59"E	2700	Called three times.
	⑥	1910	31°23'26.23"N 77°48'51.81"E	2700	Heard from camp.
20th	①	0230	31°23'27.90"N 77°48'49.51"E	2730	Calling at night, heard from the camp
	②	0430	31°23'22.11"N 77°48'49.44"E	2740	Heard from the camp.
	③	0430	31°23'25.46"N 77°48'51.15"E	2700	Calling intermittently till 0530 hrs. Heard from the camp.
	④	0430	31°23'34.46"N 77°49'7.22"E	2680	Calling intermittently till 0530 hrs. Heard from the camp.
	⑤	0430	31°23'37.41"N 77°48'58.19"E	2580	Calling intermittently till 0530 hrs. Heard from the camp.
	⑥	0740	31°23'31.49"N 77°49'11.36"E	2700	Called 4 times.
	⑦	0810	31°23'22.39"N 77°48'51.78"E	2700	Called continuously for around 2 mins.
	⑧	1030	31°23'18.50"N 77°49'9.40"E	2820	Gave a few alarm calls then called for about 3 minutes.
	⑨	1800	31°23'35.24"N 77°48'59.58"E	2560	Alarm call
	⑩	1900	31°23'35.36"N 77°49'2.14"E	2600	Called 8 times then after a gap of 1 minute again 8 times.

Date: April 2007 [Total sightings]	Serial No.	Time (hrs)	Coordinates	Altitude (m)	Notes
21st	1	0415	31°23'17.30"N 77°48'51.34"E	2690	Heard from the camp. Calling intermittently till c. 0515 hrs.
	2	0415	31°23'26.79"N 77°48'51.42"E	2700	Heard from the camp. Calling intermittently till c. 0515 hrs.
	3	0415	31°23'36.00"N 77°48'58.82"E	2570	Heard from the camp. Calling intermittently till c. 0515 hrs.
	4	0415	31°23'30.81"N 77°49'8.50"E		Heard from the camp. Calling intermittently till c. 0515 hrs.
	5	0415	31°23'21.26"N 77°49'10.31"E	2740	Heard from the camp. Calling intermittently till c. 0515 hrs.
	6	0645	31°23'24.81"N 77°48'52.58"E	2679	Called eight times.
	7	1205	31°23'15.89"N 77°48'47.64"E	2735	Heard an alarm call from c. 50m away. Conducted a search of the area, which was dry and strewn with boulders. Slope about 30–40 degrees. Lot of gooseberry-like thorny bushes. No middle storey forest yet. Good upper storey cover of mainly broad-leaved trees (maples, etc.) with one or two Tosh trees. Did not see or hear the bird again even after searching the area for 30 mins.
22nd [1] Call records	①	0815	31°23'26.19"N 77°48'49.72"E	2730	B & KD flushed one on the pass while returning from Sharnal. They also collected (warm) droppings of the same bird.
	1	0700	31°23'24.24"N 77°48'53.61"E	2660	Heard from the camp. 4 calls.
	2	0715	31°23'36.43"N 77°49'5.22"E	2670	Heard from the camp. At least 15 calls.
	3	0835	31°23'36.06"N 77°48'58.30"E	2560	Alarm call heard from the camp.
	4	0836	31°23'20.67"N 77°48'53.63"E	2660	Alarm call heard from the camp.
	5	1000	31°23'26.11"N 77°48'55.45"E	2630	Alarm call heard from the camp.



Fig. 13. A view of the Dhandasa forest from a point above Sharnal