PRESENT DISTRIBUTION AND STATUS OF PHEASANTS IN HIMACHAL PRADESH, WESTERN HIMALAYAS

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Introduction

Information presented in this paper is the result of surveys carried out in 1979 and 1980 by Himachal Wildlife Project. The main area of study was the upper Beas Valley in Kulu District of Himachal Pradesh, India (Figure 1), but surveys also covered adjacent parts of the Ravi and Sutlej valleys and some of the westernmost parts of the Yamuna catchment. The limits of surveys covered an area of approximately 25,000km^2, about a third of which is covered by forest suitable for pheasants. Within this enormous area we were able to visit only a few, widely separated localities, and we chose to concentrate on those most likely to harbour pheasants.

Seven species of pheasants occur within our area; Western Tragopan *Tragopan melanocephalus,* Monal *Lophophorus impejanus,* Kaleej *Lophura leucomelana,* Red Jungle Fowl *Gallus gallus,* Koklas *Pucrasia macrolopha,* Cheer *Catreus wallichii,* and Indian Peafowl *Pavo cristatus.* We concentrated our attention mainly on the high altitude species - Western Tragopan, Monal, Koklas and Cheer. Consequently, our information for the other three species is very sparse and their distributions are described only in general terms. For the Monal, Koklas and Cheer we describe each locality and the numbers of birds observed so that future investigators can make valid comparisons to assess changes in status. For the Western Tragopan, however, which is thought to be endangered with extinction (IUCN 1978) we have refrained, on the advice of World Wildlife Fund - India, from specifying particular localities in case we might give aid to people interested in trapping the birds illegally. We therefore give only a general assessment of its present range and status outside the uppermost part of the Beas River catchment, an area already proposed as a National Park. We have included some information derived from reports of forest officials or local people, but only where we judged it to be reliable and recent, and to add significantly to our own observations. Unless otherwise specified, all records refer to observations made by members of Himachal Wildlife Project.

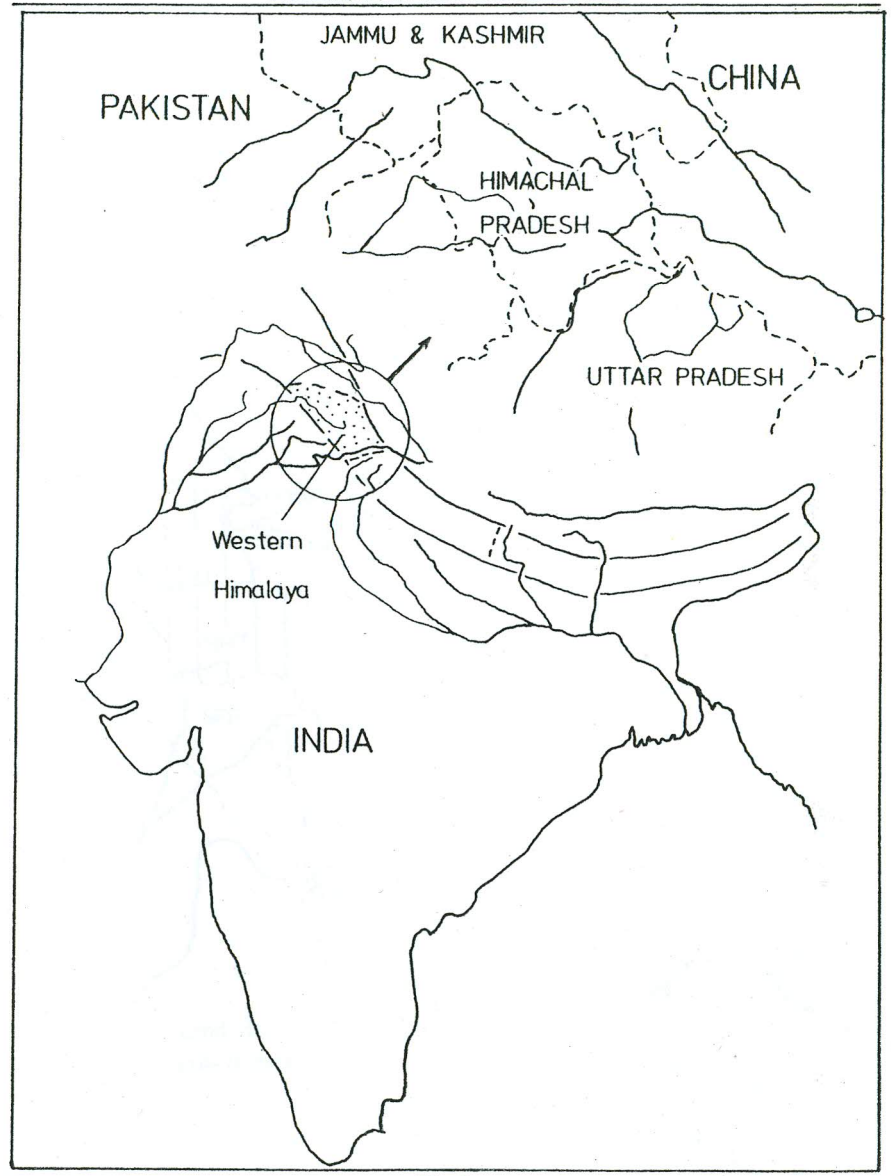


Fig. 1

Distribution and extent of forest types

The ecology of the area we surveyed is dominated by the effects of altitude and aspect which mainly determine the climax vegetation. Within the state of Himachal Pradesh, nine major forest types are present (Champion & Seth 1968), but only five of these concern us (Table 1, Figure 2). Generally, the

TABLE I

Major Forest Types of Himachal Pradesh (after Das Gupta 1976, Champion & Seth 1968)

Major Forest Types	Code in Figure 2	Principal Tree Species	Altitude
Subtropical Pine Forest	SPF	Chil Pine (*Pinus roxburghii*)	600-1,700m
Subtropical Dry Evergreen	SDE	Mixed; *Olea, Terminalia, Albizzia, Anogeissus, Dendrocalamus*	500-1,000m
Himalayan Moist Temperate	HMT	Ban Oak (*Quercus incana*), Moru Oak (*Q. dilatata*), Kharsu Oak (*Q. semicarpifolia*), Spruce (*Picea smithiana*), Fir (*Abies pindrow*), Deodhar (*Cedrus deodhar*), Blue Pine (*Pinus wallichiana*), Horsechestnut (*Aesculus indica*)	1,500-3,000m
Himalayan Dry Temperate	HDT	Holm Oak (*Q. ilex*), Edible Pine (*P. gerardiana*)	2,000-3,000m
Subalpine Forest	SA	Birch (*Betula utilis*), Fir (*A. pindrow*), Blue Pine (*P. griffithii*)	3,000-3,400m

Indian Peafowl and Red Jungle Fowl are restricted to the zone of subtropical forest, while all the other species occur in the temperate forest zone, the Monal extending into the subalpine zone. The Kaleej occurs in the subtropical zone in places, but appears to be most characteristic of the lower half of the temperate zone.

The temperate forest zone covers approximately 10,000 km² (map area) within the catchments of the Ravi and Beas, but of this area protected forests currently cover only 20%, the rest consisting of agricultural, grazing or derelict land, grasslands, or bare rocky areas on steep slopes (Das Gupta

Fig. 2.

1976). In general, the lower half of the temperate zone (below 2,200m) has suffered the greatest disturbance from man, and most undisturbed forest areas occur above 2,500m. The proportion of the total area covered by protected forest is higher in the Beas catchment (28%) than in the Ravi catchment (6%). Unprotected forests, except on very steep slopes, are generally much disturbed by grazing, firewood collection and other human activities. Consequently, they do not provide suitable habitat for pheasants, except the Kaleej which is relatively tolerant of disturbance and occurs in secondary scrub as well as climax forest.

The area of suitable habitat available for each species within Himachal Pradesh cannot be estimated from current information and consequently it is impossible to estimate total populations. We have made minimum extrapolations for certain areas, however, based on observed densities and estimates of the extent of available habitat. These are provided to indicate the possible long-term viability of pheasant populations. All areas referred to are measured from maps; actual ground areas will depend on topography.

Western Tragopan *Tragopan melanocephalus*

This species is the rarest of the pheasants occurring in the Western Himalayas. It is found only in the temperate and subalpine forests of Pakistan and India, the eastern limit of its distribution being somewhere in Tehri-Garhwal, western Uttar Pradesh (Hume & Marshall 1879, Delacour 1977, Ali & Ripley 1980), although there have been no definite sightings in Uttar Pradesh during the last 20 years, as far as we are aware. In Pakistan, the species apparently survives only in a few isolated pockets, although a good population is present in the Neelam Valley (Mirza 1981). In Jammu and Kashmir it is probably absent from the Vale of Kashmir, although it may still be present in Kishtwar (Ward 1906, Bates & Lowther 1952). Ian Grimwood found this species to be well distributed in small numbers within the upper Beas watershed in 1959 (IUCN 1978), and particularly so in the valleys around Manali (pers. comm.).

The main conclusion from our own surveys was that in the upper Beas area the species' status has probably changed little since Grimwood's assessment. Birds were seen or heard in four different areas within 20km of Manali, including Solang Nalla, the core area of the proposed National Park. Ten sightings were made in 1979-1980, nine of single birds, and one of a pair seen together in March. We also saw the remains of three birds that had been killed and eaten by local people.

Surveys in the Ravi Valley in the winter of 1978-1979 yielded only one sighting, but one, or possibly two males were heard calling in a different area in May. Good evidence was obtained from local people that the species is

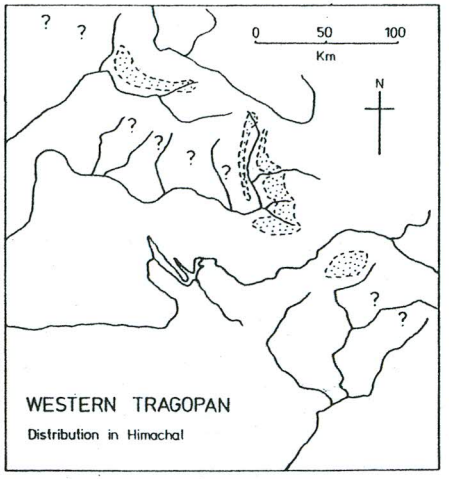


Fig. 3.

present in a third area (Brijendra Singh, pers. comm.). Suitable habitat for the Western Tragopan, in the form of moist, densely wooded valleys, is less extensive in the Ravi Valley than on the upper Beas. Further east, the species has been recorded recently in Simla District (Joginder Singh, I.F.S., pers. comm.), but the upper Beas is probably the species' stronghold.

From our meagre records it is impossible to estimate densities. A total of over 400 hrs of survey time spent in the Manali National Park area yielded only four sightings spread over the three main valleys (Solang, Manalsu and Hamta) and it is hard to believe that the area could hold more than 50 birds altogether. Other parts of the Beas Valley may provide more suitable habitat, but inspection of the total forest area available makes it unlikely that the whole upper Beas region could hold more than 1,000 birds. Information is presently lacking on the species' status in the eastern parts of Jammu and Kashmir bordering Chamba District, on the Dhaoladhar range in Kangra District, and in western U.P. (Figure 3). If these areas do not hold significant populations, and there is no evidence at present that they do, then the world population almost certainly numbers less than 5,000 birds.

Monal *Lophophorus impejanus*

The Monal occurs practically throughout Western and Central Himalayas, from Afghanistan in the Safed Koh (Whitehead 1910), to Bhutan, being replaced to the east by Sclater's Monal (*L. sclateri*) (Delacour 1977). Being a large and fairly conspicuous bird, often found in open areas, it is frequently recorded by casual visitors and is always very well known to local people. It must have been extremely numerous in some areas in the past; Wilson (quoted by Hume & Marshall 1879) mentions shooting a dozen in an hour and killing 1,000-1,500 yearly, probably mainly in Garhwal, although he notes that numbers varied unaccountably from place to place. Monals formerly occurred in the front ranges of the Himalayas around hill stations such as Simla and Mussoorie (Wilson in Hume & Marshall 1879).

We recorded Monal in 13 localities (figure 4); two in the Sutlej Valley, nine in the upper Beas Valley and two in the Ravi Valley. The species ceased to occur around Simla prior to the 1920's (Whistler 1920, Waite 1945) and local

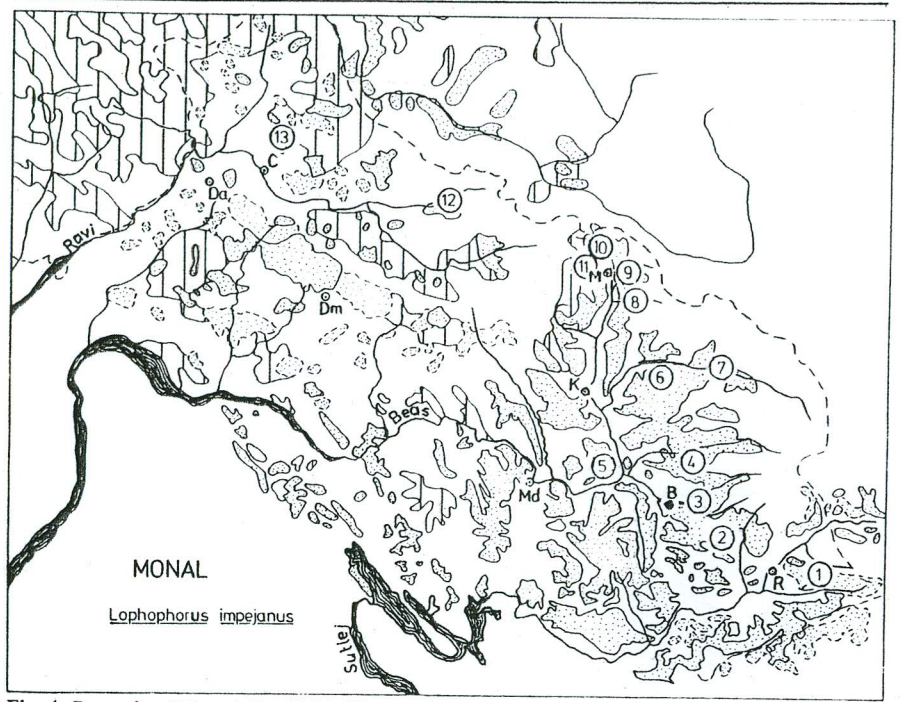


Fig. 4. Records of Monal. See Table II opposite.

people report that near Dalhousie, another hill station, it appears only in winter. It probably still occurs around Chor Peak, an isolated massif to the east of Simla, but otherwise seems to have disappeared from the front ranges. In Kulu District and the Dhaoladhar Range, however, Monal are still widespread and certainly numerous in places.

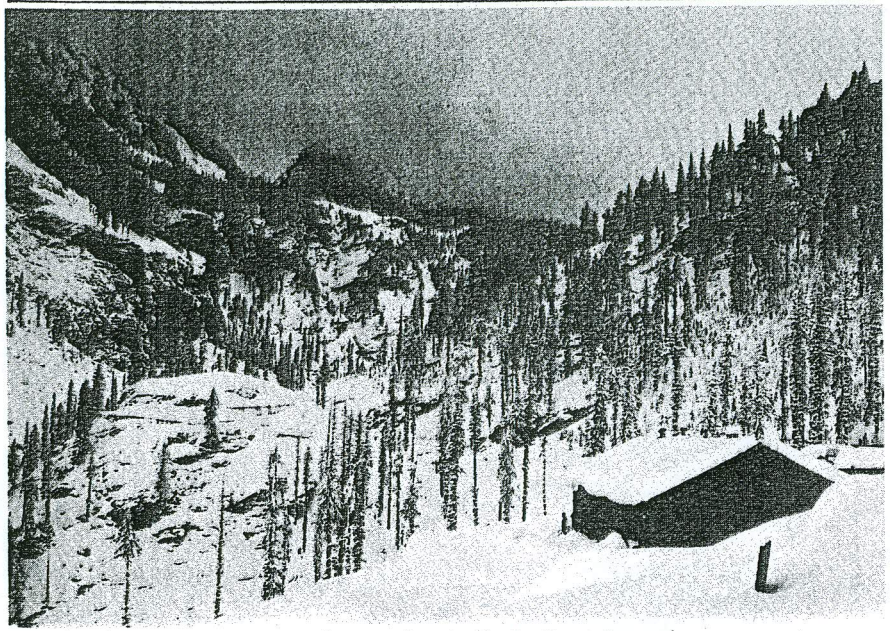
Estimation of densities was attempted in only a few areas, but some measure of relative abundance can be obtained by comparing numbers of birds seen in relation to the length of time spent in the field by survey parties. On this basis, Monal were most abundant in the Bandal area and at Sarahan, and least abundant in Solang Nalla and at Parashar (Table II). The overall rate of sightings within the proposed Manali National Park area was highest in Hamta Nalla in early March, when widespread snow cover was apparently concentrating Monal on a small area of steep, southeast-facing, and therefore relatively snow-free slopes. By April few birds remained in this area; they had presumably ascended towards their breeding grounds by then.

Actual density estimates, based on numbers of calling males heard giving "crescendo calls" at dusk, were made at Solang Nalla, and at Nada Thach in the Bandal area. At Solang three, perhaps four, males called in May in an area of about 1 km² between 2,900-3,400 m, while at Nada Thach at least

Records of Monal *Lophophorus impejanus* and number recorded per 100h spent in the field

Locality	Sightings	Individuals	Individuals/Sighting	Individuals/100h	
1) Daranghati; March	16	25	1.56	71.9	
2) Sarahan; March	13	17	1.31	75.5	
3) Bandal; March	49	93	1.90	64.4	76.5
April	43	67	1.56	103.5	
4) Sainj; May	13	18	1.38	37.3	
5) Parashar; May	2	3	1.50	13.1	
6) Kasol; February	23	71	3.09	46.7	40.7
April	14	25	1.79	29.8	
7) Khirganga; September	3	3	1.00	21.5	
8) Jagatsukh; May	7	9	1.29	35.1	
9) Hamta; March	9	13	1.44	115.6	39.2
April	2	2	1.00	7.0	
10) Solang; January	11	11	1.00	14.4	Manali
April	10	10	1.00	12.7	17.3 area
May	18	19	1.06	25.2	22.9
11) Manalsu; April	11	12	1.09	51.7	
12) Kugti; May 1979	2	2	1.00		
13) Sara; January 1979	3	3	1.00	16.7	

TABLE II



Koti rest-house in January. Monal were wintering in the forest beyond.

Monal disturbed by Himalayan Palm Civet.

eight males were calling and displaying in April in an area of less than 1km^2 between 3,000-3,300m. The latter area held the greatest density recorded anywhere, with 52 birds seen in a single day by AJG and V. Matthai, a density perhaps comparable with those familiar to Wilson in the last century.

In areas of suitable habitat throughout Kulu District the density of calling male Monal probably lies between 1-10 km^2. Males exceeded females in our sightings (141:122 in January-May), but males are more conspicuous and hence more easily observed. The sex ratio is probably roughly equal. The total area of suitable habitat within the Manali area is approximately 100 km^2, but densities are generally low and the Monal population probably consists of less than 250 pairs. In the upper Tirthan Valley, which includes Nada Thach, suitable habitat covers about 40 km^2 and the total population may be in the region of 400 pairs. For the entire upper Beas Valley containing about 600 km^2 of potential habitat, a population of 1,000-5,000 pairs is indicated.

Cheer *Catreus wallichii*

The Cheer formerly ranged from Pakistan to the Kali-Gandaki River in Western Nepal (Ali & Ripley 1980, Delacour 1977). In Pakistan it has disappeared from all areas except Azad Kashmir, although attempts are currently underway to reintroduce the species in the Margalla Hills (Mirza 1981). It apparently never occurred in the Vale of Kashmir (Ward 1906, Osmaston 1927, Bates & Lowther 1952). Accounts given by Hume and Marshall (1879) suggest that the Cheer was always patchily distributed, although they describe it as common in Kumaon, Garwal, and as far west as Chamba. It is presently listed as endangered in the *Red Data Book*, (IUCN 1978) and although it has disappeared from some areas formerly occupied, the overall range of the species has probably contracted little. The Margalla Hills were apparently always close to its western extremity.

Within Himachal Pradesh, Hugh Whistler (1926a) recorded the Cheer as uncommon on the southern slopes of the Dhaoladhar Mountains around Dharmsala and sparsely distributed and local in the Kulu Valley (Whistler 1926b). It was also recorded at Daranghati by Winter-Blyth (1951). It occupies a wide altitude range, having been recorded from 1,200-3,000m, and occurs on steep grass-clad hillsides with scattered trees, particularly where interspersed with rocky crags. The preference for long grass may have contributed to the species' decline, particularly in the lower parts of its range, as most areas of grassland below 2,000m are heavily grazed, suffer frequent burning, and hence provide little cover.

We recorded Cheer at five localities in 1979-1980, AJG recorded the species at another four localities during 1978-1979, and we obtained convincing reports of the species from two other places (Figure 5).

Chail. This small wildlife sanctuary, a former hunting reserve of the Maharaja of Patiala, was estimated to hold about 40 pairs of Cheer in April 1979, with a density on suitable habitat of about six pairs/km² (Gaston & Joginder Singh 1980). *Wildlife Sanctuary.*

2. Kandaghat. Cheer are reported to occur here, close to the main Simla-Chandigarh road (Joginder Singh, I.F.S. pers. comm.). The habitat appears to be very suitable. *Reserve Forest.*

3. Daranghati. No Cheer were found in March 1980 in the area from which they were reported by Winter-Blyth (1951); some nearby hills, now heavily grazed, may have provided suitable habitat in the past. *Wildlife Sanctuary.*

4. Nadar (Bandal). A small population of Cheer was located here through information supplied by a local resident, Ranjiv Bharti. At least six pairs were heard on 28 and 29 March from the small hamlet of Nadar at about 2,000m. The villagers mentioned that the birds sometimes eat their crops and make such a din at times that they cannot get to sleep! The extent of suitable habitat is small, probably less than 1 km², but other small pockets of Cheer may occur nearby. *Not protected.*

5. Parashar. Two heard calling morning and evening on south-facing slopes near Parashar temple, 18-19 May 1980. *Not protected.*

6. Kasol. Cheer were recorded here by Whistler (1926b), but despite extensive surveys we located only one pair, heard calling at the lower end of Garahan Nalla on 22 April. *Reserve Forest.*

7. Hamta Nalla. A maximum of five calling birds or pairs recorded from southeast-facing slopes near the lower end of the valley in March and April. The total population of the area is probably no more than 10 pairs. *Wildlife Sanctuary.*

8. Lam Dubh (Manalsu Nalla). At least two birds present on east-facing slopes at 2,750m on 29 April. *Wildlife Sanctuary.*

9. Budhal Nalla. Three different birds heard calling both morning and evening from Sandi rest-house on 13-14 May and again on 18 May; there were probably four pairs involved. Fifteen kilometres further up the valley a single bird was heard at Kugti. There was much suitable habitat in intervening areas and the population of Budhal Nalla could amount to as many as 50 pairs. *Not protected.*

10. Khajjiar. A single bird, possibly two, heard calling in November 1978 and January 1979 within the boundary of the Khajjiar-Kalatope Wildlife Sanctuary. Local people described the species accurately and reported recent sightings in adjacent areas outside the sanctuary. *Wildlife Sanctuary.*

11. Sara. At least two heard calling below the village of Sara, 12km northwest of Chamba in January 1979. *Not protected.*

12. Siul Valley. Cheer are reported to be present in several places in this

valley north of Chamba (Brijendra Singh, pers. comm.), but recently a hydroelectric project on the Siul River may have caused disturbance and the destruction of some suitable habitat. *Not protected.*

Overall, it appears that Cheer are still tolerably well distributed in Himachal Pradesh. Our evidence suggests that there are probably viable populations in several areas; Chail Wildlife Sanctuary, the Budhal Nalla area, the Khajjiar/Chamba area, and the upper Beas Valley. In the upper Beas, Cheer are only sparsely distributed around Manali, but further south the fact that we located them in practically every area we visited suggests that the total population may be fairly large, perhaps amounting to some hundreds of birds. Because typical Cheer habitat is very local and unpredictable in its distribution, it is impossible to estimate the total population with any accuracy but it seems safe to assume that there must be more than a thousand pairs still surviving in the state.

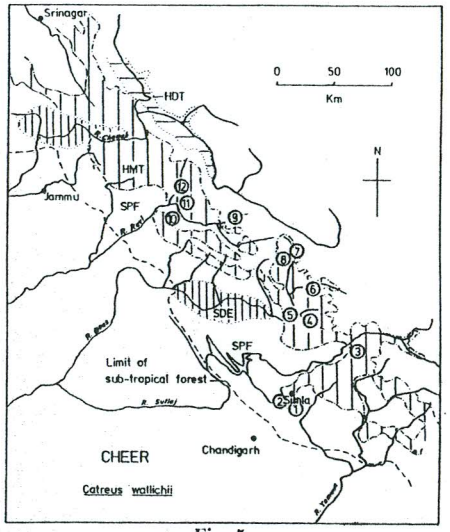


Fig. 5.

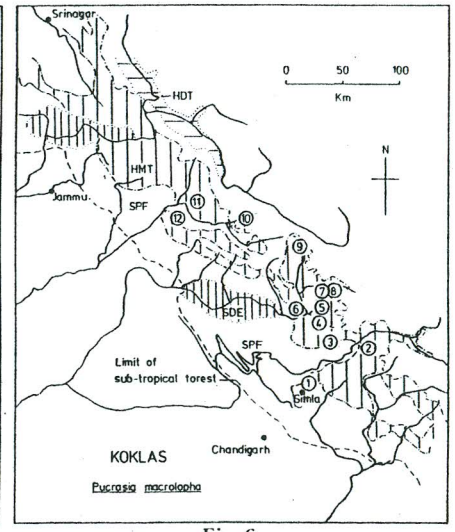


Fig. 6.

Koklas *Pucrasia macrolopha*

The Koklas has an extensive range from Afghanistan to eastern China and north to Manchuria, but Himalayan populations, which extend as far east as central Nepal, are disjunct from those of China, being separated by a gap of about 1,500km (Vaurie 1965).

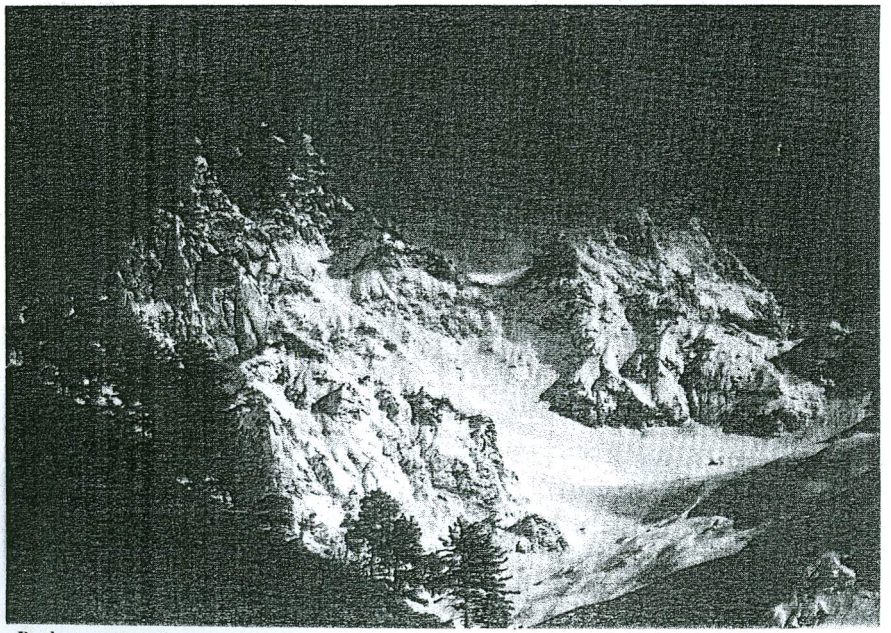
Earlier authors are unanimous in describing the Koklas as a common bird in the Western Himalayas, wherever suitable forest occurs. Several note that it is commonest in oak forest (Wilson, quoted by Hume & Marshall 1879, Whistler 1926a) and the altitude range is given as 1,300-3,000m, occasionally higher. We found it still common in certain areas, but only sporadically below

2,000m. In areas where the population appeared to be dense the forest generally supported a well-developed understory and because of grazing this requirement was lacking in most lower altitude forests. We recorded Koklas in 12 areas (Figure 6).

1. Simla Water Catchment Reserve. Koklas were censused in this area by members of the pheasant census camp organised jointly by World Pheasant Association and the Himachal Pradesh Forest Department in April 1979. Mapping of calling males recorded by six pairs of observers spread along the road through the reserve yielded an estimate of 44 birds. The overall density in the reserve was estimated to be 17-25 pairs/km^2, giving a total population, assuming equal sex ratio, of 170-250 pairs. The maximum number of calling birds heard from one spot was eleven. This reserve has been totally protected since 1890, apart from a little felling during the Second World War, and may represent the only remaining example of undisturbed middle-altitude forest in the front ranges of the Western Himalayas. The density of Koklas here is probably close to the maximum that can be anticipated under natural conditions. *Wildlife Sanctuary*

2. Daranghati. Dawn counts in March at three places near the Daranghati rest-house yielded 0, 4, and 6 calling males. *Wildlife Sanctuary.*

3. Sarahan, Kulu. Eight males were heard calling at dawn in March, close to Sarahan rest-house. *Reserve Forest.*



Peak near Kasol.

4. Bandal and Tirthan Valley. Dawn counts were made in March above Bandal rest-house at about 2,200m, and above Rolla at 2,800m, producing six and seven calling birds respectively. Several counts along the bottom of the Tirthan Valley at Rolla produced 0-4 birds but the range of audibility was probably much reduced by the noise of the river. In April eleven males were counted calling at dawn on successive days at Nada Thach, above Rolla at 3,200m in an area of Kharsu Oak forest. This density is similar to that recorded in the Simla Water Catchment Reserve. *Reserve Forest.*

5. Sainj Valley. Dawn counts were made at Shangarh in May (two birds) and at Lopah in September (11 and 15 birds). The latter area appears to hold an exceptionally dense population. *Reserved Forest.*

6. Parashar. Three males heard calling at dawn from close to Parashar temple. *Not protected.*

7. Kasol and Garahan Nalla. Dawn counts at about 2,000m in Garahan Nalla in February yielded counts of 0, 1, and 2 calling males, but a surprisingly large number of sightings were made and the area may have been used at that time by birds driven down by snow from higher altitudes. Nine males were counted calling at 2,300m in the same area in April. *Wildlife Sanctuary.*

8. Pulga and upper Parbatti Valley. Single Koklas were heard calling at dawn near Pulga rest-house in February and September. Seven birds were calling near Khirganga Thach in September. *Reserve Forest.*

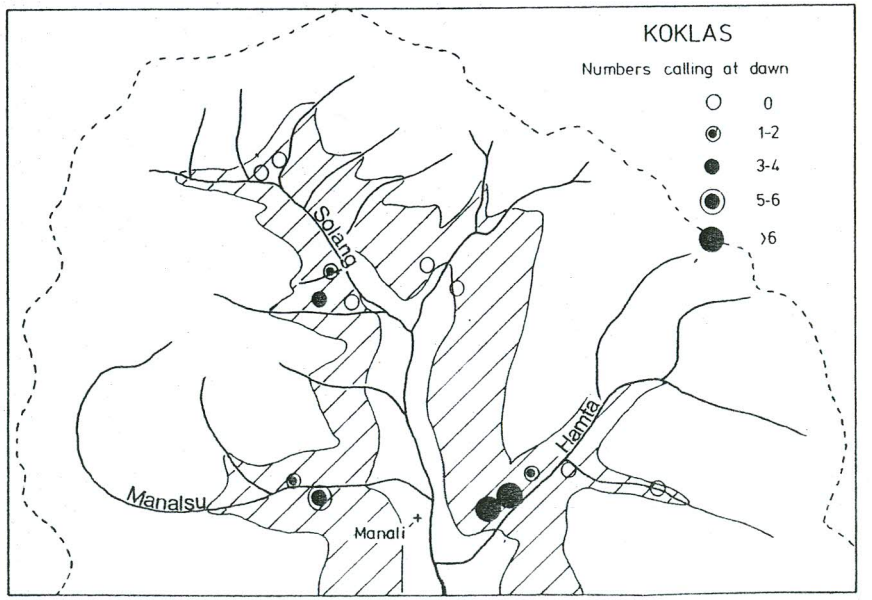


Fig. 7.

TABLE III

Records of Koklas *Pucrasia macrolopha* and numbers seen per 100h spent in the field; winter and spring only

Locality	Sightings	Individuals	Individuals/Sighting	Individual/100h	Total field time
2)Daranghati	3	4	1.33	11.5	34h45'
3)Sarahan, Kulu	2	2	1.00	8.9	22h30'
4)Bandal; March	15	19	1.27	13.4	144h35'
April	8	9	1.12		64h45'
5)Sainj Valley	5	6	1.20	12.4	48h15'
6)Parashar	1	1	1.00	4.6	21h55'
7)Kasol; February	13	14	1.08	9.2	152h
April	6	6	1.00	7.1	84h
8)Manali area:				8.5	
Solang; January	0	0	0	0	
April	1	2	2.00	2.5	76h50'
May	8	9	1.12	11.9	75h25'
				4.7	
Manalsu	2	2	1.00	8.6	23h10'
Hamta; March	9	10	1.11	88.9	11h15'
April	10	11	1.09	40.7	27h
				54.9	

9. Manali area. Koklas were recorded in Solang, Hamta, and Manalsu Nallas, being most common at the lower end of Hamta Nalla, where eight males were counted from one spot in March and April. Koklas were heard in Solang Nalla from only two out of seven points where dawn counts were attempted in April, May and September and the species was definitely absent from apparently suitable habitat around Dundhi Thach (Figure 7). *Wildlife Sanctuary.*

10. Budhal Nalla. Calling birds were heard in May 1979 at Sandi rest-house and in the Kugti Wildlife Sanctuary.

11. Sahu Nalla. Four and eight calling males were recorded on two dawn counts in January 1979 at 2,300m near the village of Sara. *Reserve Forest.*

12. Khajjiar/Kalatope Sanctuary. Fourteen males were recorded on one dawn count in November and twelve in January from the same spot, close to Khajjiar tourist bungalow. The forest here appears very similar to that in the Simla Water Catchment Reserve and densities of Koklas are of the same magnitude. *Wildlife Sanctuary.*

The frequency of sightings in relation to time spent in the field was remarkably uniform (Table III), with the exception of Hamta Nalla, where the habitat occupied was more open than elsewhere. Throughout most of the upper Beas area it appears that observers can expect to encounter 10-15 Koklas per 100h in the field (excluding the dawn chorus). No Koklas were recorded at Chail, where the sanctuary reaches a maximum altitude of only 1,800m, or at Ganahati, a small reserve near Simla at about 1,600m. Both of these areas carry predominantly Ban Oak forest and support large numbers of Kalcej, but these lower altitude oak forests are apparently unsuitable for Koklas.

Counts of dawn calls suggest that densities of Koklas comparable to those in the Simla Water Catchment Reserve occur in a number of areas; Sarahan and the Bandal area, the Sainj Valley, some parts of the Garahan Nalla and the lower part of the Hamta Nalla. Most Reserve Forest areas above 2,000m probably support Koklas densities of at least five pairs per km² and, assuming an area of ca. 600 km² of suitable forest in the upper Beas Valley, this suggests a minimum population of 3,000 pairs. The real figure could be two or three times as high. In other areas of Himachal Pradesh the species is probably divided into numerous isolated populations and if deforestation continues these may be vulnerable to extinction in the long term. The large block of suitable habitat provided by the forests of the upper Beas, however, and particularly that in the Parbatti-Sainj-Tirthan area, constitutes a solid refuge for the species.

Kaleej *Lophura leucomelana*

The highly variable Kaleej Pheasant extends, in its various races, from the river Indus in Pakistan to northern Thailand (Delacour 1977, Vaurie 1965). In the Himalayas it is characteristic of the front ranges rather than the interior valleys, occurring mainly between 1,200-2,500m. Because of its altitude range we encountered it less frequently than the Monal or Koklas during our surveys but this does not necessarily imply that Kaleej are less numerous in Himachal than the other species. We recorded the species in nine localities (Figure 8).

The populations of the Chail Sanctuary (2), the Simla Water Catchment Reserve (3) and the Khajjiar/Kalatope Sanctuary (9) appear to be large, with covies of ten or more birds recorded commonly in autumn (AJG & Joginder Singh). In September 1978 a covey of ten birds was seen close to the outskirts of Simla town and on the road between Kufri and Chail many birds were seen gritting on the highway in the early morning, suggesting that there is a continuous population extending between the Chail Sanctuary and the Simla Water Catchment area.

In the Beas River catchment, Kaleej were recorded only in the Tirthan Valley (5), near Kasol in the Parbatti Valley (6), and at Parashar (4) on the southern edge of the upper Beas area. Only one or two sightings were made in each locality and the species is apparently uncommon in the upper Beas. The same probably applies in the upper Ravi area where one sighting near Durgatti (7) was the only record.

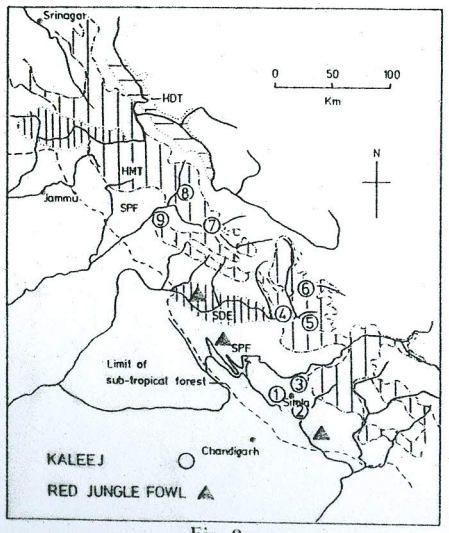


Fig. 8.

In the Chail-Simla area there appears to be a positive association between people and Kaleej, with most birds being seen in disturbed forest close to human habitation. The ability of the Kaleej to exist under these conditions should ensure the survival of the species throughout its present range in Himachal.

Red Jungle Fowl *Gallus gallus*

Red Jungle Fowl occur throughout the Himalayan foothills from northwestern India to Burma and extend into the hills of the peninsula to approximately 17°N (Ali & Ripley 1980), the limit coinciding roughly with the

southern limit of Sal *Shorea robusta* forest. Our surveys covered little habitat suitable for jungle fowl, which mainly occur below 1,200m, and hence we obtained few sight records (Figure 8). The species appears to be most common in subtropical dry evergreen forest which occurs in the low Siwalik ranges to the south of the Kangra Valley. Large numbers were recorded there by AJG in April 1977 around Haripur and Masrur. Jungle fowl are also numerous in Chil Pine forest where gullies supporting dense shrubs occur, as around Haritalyangar, Bilaspur District, but where the forest undergrowth is open the species does not occur. Jungle fowl are hunted throughout Himachal but apparently maintain good populations despite this.

Peafowl *Pavo cristatus*

The Peafowl is common throughout India and is protected in most areas by strong local sentiments. In Rajastan it is a commensal of human activities, living on agricultural land and stalking about the villages quite openly. In Himachal Pradesh, however, Peafowl tend to be shy and scarce, being hunted except where local tradition forbids, as around Chaini in the Tirthan Valley. In the upper Beas area we encountered the species only at Chaini and Bandal, both in the Tirthan Valley. Elsewhere, AJG observed the species frequently around Haritalyangar in 1970 in the same habitat as Red Jungle Fowl and at Ganahati in 1978 in Ban Oak forest.

Discussion and summary

Our surveys suggest that habitat destruction is by far the most immediate threat to pheasants in the Western Himalayas. The greatest pressure is being exerted on the lower parts of the temperate forest zone and the most susceptible species are those requiring dense undergrowth, particularly the Western Tragopan and the Cheer. The largest area of undisturbed temperate forest occurs in the Upper Beas Valley and its tributaries, and this area probably forms the most important stronghold of the Western Tragopan at present. The survival of this species depends on the preservation of an adequate area of forest free from disturbance, and this in turn depends on action by the State Government in gazetting Wildlife Sanctuaries or providing other protection for such areas of exceptional wildlife habitat over the next few years. We shall be making recommendations to the Himachal Pradesh government to this effect, but international pressure must continue in order to ensure the survival of the Western Tragopan in the wild.

It seems likely that Cheer habitat has contracted more markedly than the habitat of the Western Tragopan, but Cheer appear fairly resistant to disturbance, occurring close to villages in most areas where they were recorded. The chief problem in their conservation is that present populations seem to be rather small and it is impractical to attempt to protect them all.

Four of the known populations are within the boundaries of designated Wildlife Sanctuaries. If proper protection can be given to these then this is probably the best that can be expected, but regular monitoring of all populations would be desirable.

The status of the other species appears fairly secure. We thought Monal might be suffering from the effects of overhunting, because the male's crest feathers are prized as hat adornments in this part of India. However, it appears to be holding its own, particularly in the Sainj and Tirthan valleys. A probable and more serious result of Monal hunting is the incidental slaughter of Western Tragopans which occupy similar habitat in winter. Koklas are numerous in places, but they require forest with good understory and the habitat of the species, which must have contracted considerably over the past hundred years, will probably continue to diminish. Any measures taken to protect the Western Tragopan are likely also to protect significant populations of Koklas.

In the light of the economic problems facing India it is unrealistic to think that large areas of forest can be managed solely for the protection of pheasants. There are, however, many sound environmental reasons for protecting the forests in the catchment area of the major Himalayan river systems (Baig 1980, Cronin 1979, Gupta & Desh Bandhu 1979). Protection means the rigid control of timber cutting and grazing and the encouragement of reafforestation programmes, measures which should benefit all species of wildlife. Those concerned with protecting pheasants in the Himalayas can probably contribute most towards their objectives by lending their support to the growing chorus calling for more effective management of Himalayan forests for the benefit of wildlife, the people of the hills, India as a whole, and ultimately the benefit of all mankind. The problem is huge and time is very short.

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SUMMARY/ZUSAMMENFASSUNG/RÉSUMÉ/SAMENVATTING

Although seven species of pheasant occur within the study area, efforts were concentrated during 1979 and 1980 on the high altitude species. Two of these, the Cheer and Western Tragopan, are listed as endangered. The surveys suggested that destruction of habitat, particularly the once thick undergrowth, posed by far the most serious and immediate threat to these two species. Conversely, it was in the few undisturbed forest areas that sizeable populations of these pheasants still survive. Regular monitoring of all populations is recommended. There are particularly valid reasons for conserving the forests within the catchment areas of the main Himalayan rivers.

Obwohl sieben Fasanenarten im Untersuchungsgebiet vorkommen, hat man sich in den Jahren 1980 und 1979 auf die Arten in den höher gelegenen Regionen konzentriert. Zwei dieser Arten, der Wallichfasan und der Western Tragopan, werden als gefährdete Arten geführt. Die Untersuchungen zeigten, daß die Zerstörung des Liebensraumes, speciell die Vernichtung des einst dichten Unterholzes, für diese beiden Arten am schlimmsten sei. Verständlich ist, dä diese Fasanen in einigen unzerstörten Forstgebieten noch überleben. Regelmäßige Beobachtung dieser Populationen wird empfohlen. Es gibt wichtige Gründe, die Forstgebiete zu schonen, die innerhalb der Staugebiete der wichtigsten Flüsse des Himalaya Liegen.

Bien qu'il n'y a que sept espèces de faisans dans cette régions étudiée, les auteurs se sont concentrés spécialement sur les espèces de haute montagne, pendant les années 1979 et 1980. Deux espèces, le faisan de Wallich et le Tragopan de Hastings, sont considérés menaçées. Les rapports suggèrent que la destruction du milieu, particulièrement de la végétation dense du sousbois, est le plus grand danger immédiat pour la survie de ces deux espèces. D'autre part, dans les quelques forêts vièrges survivent encore de grandes populations de ces espèces. Un controle régulier de toutes les populations est à recommander. Des raisons particulièrement valables suggèrent que les forêts soient conservées dans les lieux de capture de la région des grandes rivières de l'Himalaya.

Alhoewel er 7 fazanten soorten voorkomen in het studiegebied, heeft men toch getracht zich te concentreren op de soorten die in de hoger gelegen voorkomen. Deze studie werd gedaan gedurende 1979 en 1980.

Twee van deze soorten, de Cheer fazant en de Westelijke tragopan, staan als bedreigd bekend.

Het rapport wijst er op dat vernietiging van de biotoop, vooral die van de eens zo dichte onderbegroeiing, verreweg de belangrijkste bedreiging is van deze twee soorten.

Dit alles blijkt wel uit het feit, dat in een aantal afgelegen en niet aangetastte bossen redelijke populaties van deze fazanten toch nog kans zien zich te handhaven.

Regelmatige controle van alle populaties wordt aanbevolen.

Er zijn bijzonder geldige redenen om de bossen in de stroomgebieden van de Himalaya rivieren te beschermen.

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ASPECTS OF THE BIOLOGY OF THE HELMETED GUINEAFOWL *(NUMIDA MELEAGRIS GALATEA* PALLAS) IN NIGERIA

J.S.O. AYENI

Introduction

Studies on the biology and utilisation of the West African grey-breasted helmeted guineafowl (*Numida meleagris galeata* Pallas) were undertaken in Nigeria from 1976 to 1980. The aspects studied include distribution, daily activity patterns, habitat requirements, and food selection in natural areas. A study of the "social acceptance" of guineafowl was also carried out, in order to determine how readily acceptable this source of protein is among various ethnic and religious groups of Nigerians. The present manuscript gives a brief synopsis of certain aspects of these studies, the majority of which were carried out within the Kainji Lake Basin area (Fig. 1).

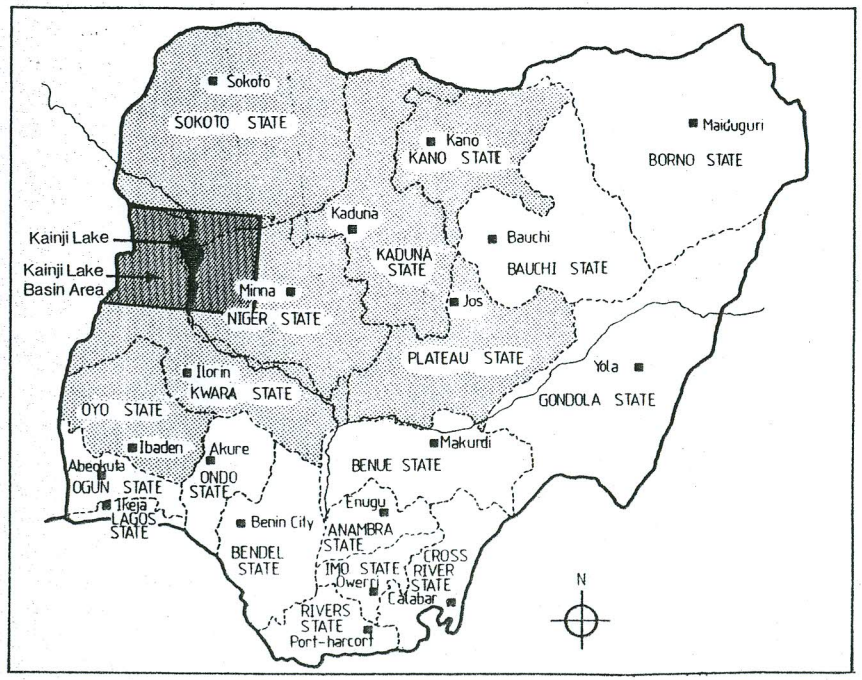

Fig. 1. The location of States (shaded) visited during studies of husbandry practices and social acceptance of guineafowl.