

The Cambridge World Wildlife Study Centre  
Expedition to Kashmir 1974  
**Operation Hangul**  
Final Report

**ACTIVE CONSERVATION**

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# The Cambridge World Wildlife Study Centre Expedition to Kashmir 1974

## Operation Hangul 1974

### Full Report

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## **1 Introduction**

1.1 This is the report of the Cambridge World Wildlife Study Centre Expedition to Kashmir 1974, "Operation Hangul". Most of the team of twelve left Cambridge in the last week of June and returned in the first week of October.

1.2 The primary aim of the Expedition was to determine the status and range of the endangered Kashmir Stag, or Hangul, to aid future conservation measures.

1.3 The area of study can be described roughly as being the Zaskar range of the Kashmir Himalayas. All the work took place on Indian territory. Particular attention was paid to the area of Dachigam Sanctuary which lies about twenty miles to the northeast of Srinagar, the capital of the Indian state of Jammu and Kashmir. The Sanctuary, up until 1947 one of the private hunting preserves of the Maharaja of Kashmir, was created in order to conserve the many species of rare and beautiful animals of the Kashmir mountains. It now seems to be the only area where a viable population of the Hangul still exists.

1.4 The Expedition carried out a number of studies, many of which are either mentioned or described in this report, which deals mainly with the Hangul. The film team, consisting of a member of the National Film School working with an experienced professional wildlife photographer, made a non-commercial documentary on the area in which the Expedition was working, paying particular attention to the local wildlife, rare species, and their conservation. In addition to the filming, a large number of photographic records were made of a great number of

subjects of biological interest, including a series of pictures illustrating almost the entire area of Upper Dachigam, an area which, prior to this report, has been relatively little studied with respect to the Hangul. During the fieldwork the Expedition formulated a number of improvements in the management of the Sanctuary that would be highly desirable for the successful conservation of the Hangul.

1.5 Since none of the team had any previous experience of the more general conservation problems in India, the Project Director delayed his return to Great Britain and spent a number of days visiting three other well known Sanctuaries; Sariska, Bharatpur, and a Project Tiger area, Sawai Madhopur. This study brought out a number of points relevant to many wildlife conservation areas in India.

## **2 Background Information on the Hangul**

2.1 In the Red Data Book the total world population of the Hangul is given as "probably less than a thousand". Recent population studies on the Hangul have been largely limited to the area of Dachigam Sanctuary, the only area with significant numbers that is readily accessible to the visiting scientist, and the only area that carries full 'sanctuary' status in Kashmir. The Hangul is legally protected throughout its range, but it is only in Dachigam, where there is a small full-time staff, that any enforcement of the legislation occurs.

2.2 The Red Data Book describes the previous distribution of the Hangul as being roughly an arc, of about 65 km in width, to the North and East of the Jhelum and Lower Chenab Rivers. The former range falls almost completely into the area of the present state of Jammu and Kashmir, with the sole exception of a small area adjacent to the Chambar region of Kashmir which lies in Himachal Pradesh. This area contains a sanctuary, where Hangul have been sighted in recent years, called Gamgul Siya Behi. During the preparation of the Expedition, in Cambridge, information was gathered on the former distribution of the Hangul, including a remarkably detailed plot of the former range during the summer months for the early years of the century. On the basis of this plot, the Expedition planned its study period in the field.

2.3 In recent years, and certainly since 1972, the last Hangul have concentrated on the two areas of Dachigam and Gamgul Siya Behi, the latter bearing a very small group, Both these are protected areas. Outside the sanctuaries, with legislation difficult to enforce, and with such vast areas to cover, no reliable information has been collected; occasional unconfirmed sightings have been made, especially in the North of the former range, in the Lolab region, and more generally, on the North of the Sindh river towards Wular Lake.

2.4 The present area of Dachigam roughly corresponds to the old hunting preserve. It is only in this area that any game records exist. These, often based on wardens' estimates, were compiled in the 1960's by E P Gee, the well-known naturalist.

2.5 The Hangul population in the preserve fell by 50 per cent in the first half of this Century. In the following 25 years 90 per cent of the remaining population has been lost. A great number of conflicting opinions are put forward for the cause of this severe decline, and, as in many cases in

the animal world, all of them may be correct. It is likely that at different times of the year, and at different population levels, different factors exert widely varying amounts of pressure. Generally speaking, it is held that the major causes for the long term decline are as follows:

- excessive hunting, both for food and as trophies
- greatly increased human pressure in the area coupled with the increase of grazing of domestic stock
- periods of military unrest and fighting
- heavy poaching (after full protection) due to the large numbers of firearms owned by the local people.

There is no evidence to suggest that the Hangul is responsible for its own decline (by population-dependant controls).

### **3 The Present Situation**

3.1 The estimation of the present status and range of the Hangul was severely hampered by the lack of finance. This restriction was placed upon the Expedition as a result of disappointing British sponsorship, in a time of general economic recession. With a bigger budget, the Expedition could have achieved a great deal more. As it was, the Expedition was able to fulfil its primary aim with a high degree of reliability. As one of the techniques employed was questioning local people, it is likely that the observations are slightly imperfect (issues with communicating accurately) , but the findings as stated are believed to be an accurate representation of the present situation of the Hangul. During many interviews, only one area was reported to have significant numbers of Hangul; this is the area around the Sanctuary at Dachigam, around the Dagwan, Sindh and Liddar rivers. Once the presence of Hangul was established in an area, a party of three or four Expedition members went to investigate.

3.2 The present status of the Hangul is now a matter of very grave concern. The population in Dachigam probably now lies between 140 and 170 and seems fairly stable. The remnant population at Gwngul Siya Behi, adjacent to the Chambar region of Kashmir, but actually in Himachal Pradesh, now appears to be lost. The Expedition Leader went to Simla to see the Chief Warden and reported that during the 1972/73 census only four Hangul were sighted. In the latest census no Hangul at all were seen, nor were traces found. It was the conclusion of the observers, a highly trained group, intimately familiar with the ground, that the Hangul had died out in that area. Apart from those Hangul spotted in the Dachigam area the interviews with Forestry, and Game and Fisheries staff yielded the disturbing conclusion that no Hangul had been sighted elsewhere in the last two years.

3.3 Over two years ago there were reports of small numbers to the North of the Sindh valley, around the north of Wular Lake and in the Lolab region. The Expedition could not find any evidence to indicate the survival of these animals.

3.4 Since the range of the Hangul seemed to be restricted to the area of Dachigam and the neighbouring massifs, the Expedition spent the bulk of the time there. Much time was spent trying to confirm sightings, and to find the preferred summering grounds. In the course of these

movements through the mountains, the Expedition members became very familiar with the ground and the animals on it. Though bears were often encountered, and langurs appeared frequently, all the other species in the Sanctuary were very timid indeed. At a quick look the Sanctuary was devoid of life, even the birds being in small numbers. Doing a census of all the animals would be an extremely difficult task.

3.5 Possibly there are many fewer animals than the staff imagined. The amount of wildlife seen in no way compares with most of the African Parks, or indeed with the other sanctuaries visited in India. On a visit to the Pahalgam area of the Liddar valley (a few miles southeast of Dachigam) as much wildlife was seen in three days as was seen in the Sanctuary in a week,

#### **4 Brief Description of Dachigam Sanctuary and its Administration**

4.1 Dachigam Sanctuary is about twenty miles north and east of Srinagar, lying to the south of the Sindh river. It covers about 55 sq. miles and divides naturally into two regions, Upper and Lower Dachigam. Lower Dachigam, which represents the "winter habitat" of the Hangul, consists of the main Dagwan valley, running down to the west, with a number of smaller valleys leading off to North and South. The valley floor is about 6,000'.

4.2 Upper Dachigam consists chiefly of two lesser valley systems, Dagwan and Nagerberan. The former valley derives its name from the river running through the main valley which eventually feeds the Srinagar Reservoir at Harwan. At the pass into Upper Dachigam, at the head of the main valley, the Dagwan turns north-east towards the watershed to the South of the Sind valley. The Nagerberan system continues slightly south of east, along the line of the main valley. To its South it is bounded by the Tral range, a thin line of mountains at the edge of the Vale of Kashmir, which are intensively grazed.

4.3 The boundaries generally follow the ridges, and there is a fine system of paths and simple bridges which are now in a state of disrepair. Along these paths, and at certain locations around the boundaries, are sited pickets to reinforce the integrity of the Sanctuary. At Zaskar, Dagwan, Sangar Gulu, Grat Nar, Palipora and at other locations lower down the main valley, are hunting lodges and other service buildings all of which are in varying states of decay.

4.4 The responsibility for the administration of the Sanctuary lies with the Department of Game and Fisheries of the Jammu and Kashmir Government. The Department is represented to higher levels by the Secretary of Forests. Entrance to the Sanctuary is by special pass only. The pass is issued by the Director, Game and Fisheries, and is checked by the gate staff at the road entrance to the area. There are some exceptions to this rule with respect to the members and guests of the Departments of Tawaza (Entertainment), Animal Husbandry and of course, Game and Fisheries.

4.5 Very frequently service departments need to carry out operations in the Sanctuary and the Expedition was informed that the Indian Army has frequently sent patrols through the wilder areas. Evidence of the latter was found in the form of spent rounds of 7.62 mm. automatic rifle ammunition.

4.6 The Game and Fisheries staff in the Sanctuary consists of: a Park Supervisor (who is a science graduate); a highly experienced forester who has served in the area since before the J & K Government took it over; a number of foresters, guards and chowk-i-dars (night watchmen) numbering probably twenty or so (highly variable) and two or three people involved in the maintenance of the enclosure area. In addition to the Game staff there is also a small staff associated with the Fish Farn (trout hatchery).

4.7 The Departments of Tawaza and Animal Husbandry also have establishments in the Sanctuary in the form of a VIP Lodge and a very large Sheep Farm and Breeding Station. The positions of all the buildings and the main paths are shown in Map 1.

4.8 Map 2 is a sketch of the relative covers of the different habitat types found in Dachigam. It was decided to use six basic types for the survey:

1. Rock/Scree
2. Silver Birch
3. Pine/Conifer
4. Broadleaf Valley floor/Riverain
5. Broadleaf and Pine
6. Mountain Pasture.

4.9 Within these general classifications there are numerous variations, especially in the density and the clumping of the cover. The rock and scree comes in two forms, depending on the altitude. On Mahadeo (altitude 13,013' to the North of Palipora) there is a large amount of vegetation in the sheltered cracks and gullies, which affords fair cover and feed. In the Mar Sar area the rock and scree is completely bare of useful vegetation. The silver birch woods at the southeast of the Sanctuary lie at 10,500'-11,500'. The trees clump in groups of 5-10 and are about 20' high and the clumps 12'-15' apart. They occupy North-facing slopes and afford good cover.

4.10 There is considerable variation in the areas dominated by the conifers. Pine and fir exist with or without ground cover of up to 3' in height. The woods are either continuous or clumped with interspersed mountain pasture, the latter being frequent on slopes with spurs of different exposures, or at high altitudes. Frequently conifer and broadleaf are mixed. Generally the conifer stands offer excellent cover, and the generous borders with pasture render it a fine type for the Hangul. The majority of Hangul observed were associated with this habitat. The conifers are typically 20'-30' high and at spacings of 15'-20'. The broadleaf/conifer mixed stands cover the whole of the North-facing slopes of Lower Dachigam. This cover is dense and the trees are clumped. The canopy is typically 20', but near ridges it is as low as 10'. Northeast facing slopes have less cover and have open pasture. The undergrowth stands up to 3' and consists of grasses, thistle, dock, scabious and woodspurge,

4.11 The broadleaf and riverain vegetation is very dense with heavy undergrowth. The riverain trees stand higher than the rest of the valley floor vegetation, which consists of trees, bushes, grasses, thistles and many flowering and fruit plants. There are occasional clearings of tall

grasses of high quality. The mountain pasture varies in height with exposure and altitude, and can be 5' high. The composition is reminiscent of rich Alpine pasture. At 11,500' and above, the cover is thin and the pastures brittle, being very sensitive to erosion. As a general rule the North and West facing slopes in the Sanctuary are wooded, with conifer or conifer/broadleaf, the South and East faces are pasture, and the valley floors are broadleaf.

4.12 During the survey of the habitats a note was made of the numbers of domestic stock observed from the survey route. In just the area of Nagerberan, during a two-day trip, the following numbers were observed from the path: 200 buffalo, 110 cattle, 90 sheep, 75 horses, 40 goats and 20 people. This represents a grazing load much greater than that of the 900 sheep recommended by the Bombay Natural History Society for the entire Sanctuary.

## **5 The Conservation Problems**

5.1 A number of factors appear to have accounted for the decline of the Hangul to date, principally excessive hunting of all types, and displacement by intense human pressure.

5.2 The Hangul population in Dachigam is about 150, and seems to be fairly stable. There is no evidence to show that there is any population elsewhere of any significant size, though there is a chance that the estimate of 150, which is restricted to those animals wintering in the Sanctuary, may not represent the total population in the Sindh, Liddar and Dagwan valley systems. At times during the winter Hangul have been sighted by reliable observers in the Liddar and Sindh valleys, though not in great numbers (single animals, twos and occasionally threes).

5.3 The picture emerging, of a small population of animals centred on the Sanctuary and its environs, demands a careful analysis of all the conservation problems involved, and their eradication, in order of importance. The Expedition made a study of all the potentially dangerous influences on the conservation of the Hangul. The findings, described below, fall into two categories:

- Those causes for concern which are legal and supported by the J & K Government
- The problems due to illegal use of the Sanctuary and to contravention of protective legislation.

The discussion, which deals with problems of very different magnitudes, touches on many topics of political significance and may raise sensitivities, but these are issues which may affect the successful conservation of a magnificent and highly endangered animal. Suitable action to reduce or eliminate the various problems are discussed in the section of Recommendations.

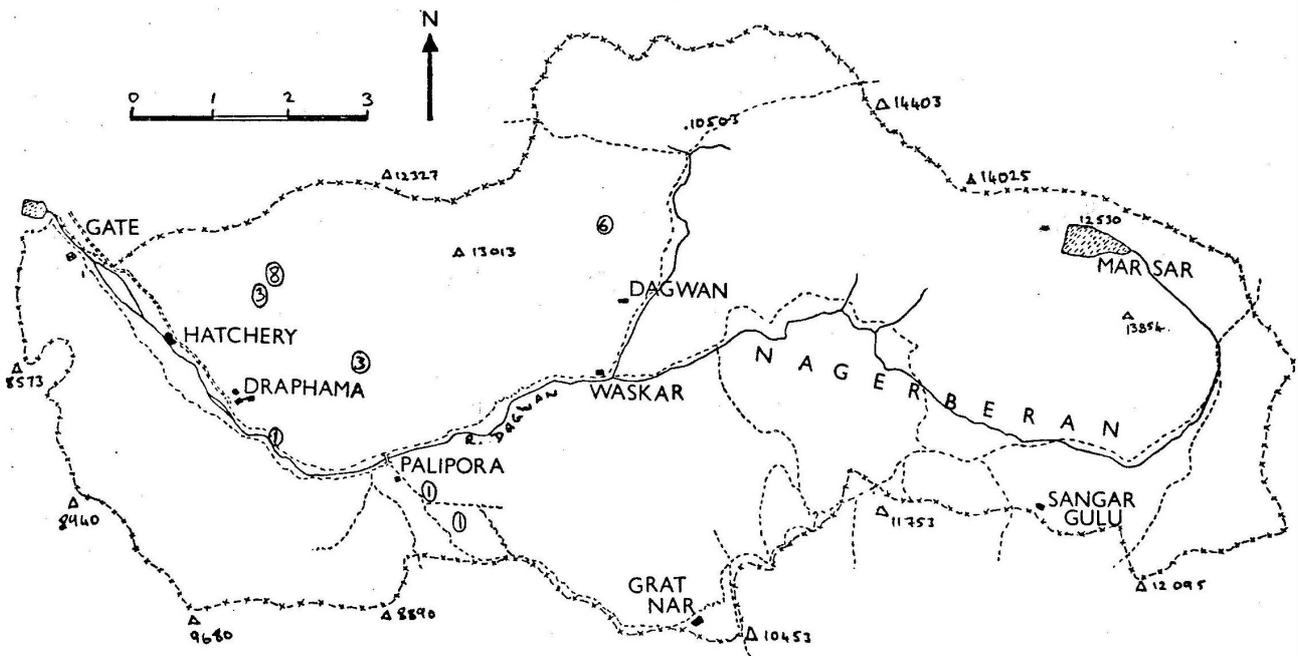
## **6 Government sponsored projects in Dachigam**

6.1 **Trout Hatchery and Enclosure** Near the entrance to the Sanctuary, at the lower end of the main valley (see map 1), the Department of Game and Fisheries administers a Trout Hatchery. The Hatchery, consisting of trout tanks and a few buildings, is situated between the tarmac road to the V.I.P. Lodge and the Dagwan river, from which the pool water is drawn. The entire installation

covers a couple of acres and is manned by a small staff. The work is not noisy, and there is not much disturbance at any time. The **Enclosure Area**, which contains representatives of most of the indigenous mammal species, including the only two Hangul in captivity anywhere in the world now, is located about four hundred metres from the Hatchery. In this way both the Department of Game and Fisheries projects are co-located, and hence any disturbance arising is limited to a very small area, near the busy western edge of the Sanctuary. The Expedition considered that the Hatchery did not represent in itself any significant conservation problem, but it does set a precedent in that it is a Government sponsored project within the Sanctuary which is not connected with indigenous wildlife conservation.

**6.2 VIP Lodge** About four miles from the entrance gates, on the main road up the Dagwan valley, is sited a fenced area administered by the Tawaza Department. In the centre of the area (which is about ten acres) stands a large modern group of buildings which constitute the VIP Lodge. The Lodge is at the disposal of the senior members of the Jammu and Kashmir Government, and may be used by certain selected members of the Indian Central Government and important foreign visitors. Use of the VIP Lodge area is restricted to only those people bearing written permission from the Tawaza Department, and this same pass may be used to gain admission to the Sanctuary at the main gates. Once inside the Tawaza area guests would require a pass from the Department of Game and Fisheries to go out into the Sanctuary. During the Expedition's stay, a number of parties ventured considerably beyond the fence, in Jeeps and on foot. The majority of the parties were ill-equipped for the rugged country and were very noisy. The Tawaza area alone is responsible for considerable disturbance, requiring its own generator, a permanent staff, a large number of gardeners, and chowk-idars. Guest parties increase the noise and the need for supplies, which must be brought up through the Sanctuary. The VIP Lodge is used mainly during the summer, when most of the wildlife is at higher altitudes, so the disturbance is probably not of major importance. It does become undesirable in the autumn, when the animals are beginning to move to the lower pastures around the main valley, and it is this time when greater control is needed of the noise and other disturbance. One further point is that the parties coming out of the Tawaza area frequently carry transistor radios and the other trappings of Western civilization. Every effort must be made to eliminate the chances of litter and habitat disruption at all times through the year. One animal that probably spends all its time in the main valley is the very rare wild pig, which exists in Dachigam in small numbers. It may be particularly sensitive to the activities of the Tawaza area.

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**Map 1 - Sketch map showing Hangul sightings (number of individuals seen in circles at locations) place names, main peaks and footpaths in and around Dachigam. Scale in miles.**

**6.3 Sheep Farm and Breeding Station** The chief cause for concern, and the only Government project which is desperately needing action, is the Sheep Farm and Breeding Station. This scheme is very close to the heart of the J & K Government as it is one of the major hopes in producing better breeds of sheep to exploit the Kashmir pastures, The scheme, which is largely based on cross-breeding with the Australian Merino sheep, is pioneering sheep breeding in India and is of considerable importance. There are a number of similar stations in Kashmir, though Dachigam is one of the largest.

**6.3.1** The original siting of the Dachigam project was made a number of years ago, before the conservation of the Hangul was such a pressing issue, but it does display a remarkable lack of foresight to place a huge production unit in a wildlife sanctuary area. The planners at that time did realize that there may be a conflict of interests between the domestic and wild animals, especially in the biological carrying capacity of the Sanctuary. Experts from the Bombay Natural History Society were invited to investigate the scheme and to give a ceiling to the number of sheep that the Sanctuary could carry, consistent with the requirements of the wildlife. After their study the final number was quoted as 900 for the whole Sanctuary area.

**6.3.2** The Station was built on the North side of the main valley, about a mile from the entrance gates. The management scheme to be employed for the sheep was to graze them in the summer pastures of Upper Dachigam, and winter them in enclosures at the Station. This system required the construction of extensive accommodation at the Station, and the allocation of areas of Upper Dachigam for the summer. As the Department of Animal Husbandry was conducting breeding experiments, laboratory and other facilities were required. The present situation is that the Station itself now resembles a small village, with many buildings and large enclosures and there is a constant flow of traffic of different kinds (mainly lorries). The number of sheep was investigated

by the Expedition and was found to be about 2200.

6.3.3 The need for winter feed for the sheep requires the cutting of vast amounts of herbage, and the number of animals in the summer pastures requires the use of most of the Dagwan valley system in Upper Dachigam. The whole scheme seems to be very much out of hand.

6.3.4 The station itself is sited on the lower slopes of the mountain Mahadeo. This area is a rich habitat, ideal for both wintering the Hangul and feeding bears. The breeding station staff complain that since the beginning they have been constantly hindered and endangered by bears, and press for their destruction. High above the Sheep Farm the Expedition found the highest concentration of Hangul in the Sanctuary (see Map 2). These animals would no doubt naturally move down into the main valley to where the sheep farm is presently situated. In order to keep off the wildlife, and presumably to construct new enclosures, the Animal Husbandry Staff have recently cleared a large area higher on the slopes. Luckily the vigilance of the Director of Game and Fisheries prevented this dangerous scheme from completion, but it will be many years before the habitat recovers.

6.3.5 The few domestic animals kept by the staff are probably of little or no importance, with the exception of the large number of dogs. The presence of the dogs under the original scheme was solely justified by their role as sheepdogs. However even in summer, when the sheep were in their summer pastures, dogs were associated with the Station. As already mentioned, the summer grazing requirements of such large numbers of sheep mean that most of the Upper Dagwan valley is under constant disturbance from shepherds, dogs and ponies, the latter bringing up supplies to the encampments. This area, allegedly once very rich in Hangul, contained no more than a group of five or six, which were seen by the sheep staff for a short while, before they moved out of the Sanctuary to the North onto the slopes of the Sindh valley.

6.3.6 The final cause for concern associated with the Sheep Station is the need to provide winter fodder. In September grass-cutting is in full swing in the main valley. The cutters take enormous quantities of grass from the areas around Zaskar, Palipora and the V.I.P. Lodge. They move into the area, often with dogs, and put up grass huts in which to live; they stay in the Sanctuary, dotted about in separate parties, cutting grass and singing by day, cooking, talking and sleeping by night. As the size of the Government flocks increase, so the cutters have to collect more fodder. Three features of this scheme cause concern.

- First, a very great deal of fodder is now being cut. The Expedition could not estimate this figure accurately, but it seemed likely that as much as a half to three quarters of the useful fodder in Lower Dachigam was being taken and would thus be unavailable for the Hangul and other wildlife..
- Second, some of the cutters' dogs run wild, and probably never leave the Sanctuary. The Expedition was constantly troubled by a pair of "wild dogs" around camp. Their presence represents a severe threat to many of the wild species, especially the Hangul.
- Third, the presence of the cutters themselves, near the time of the rut, may be of considerable danger to the successful reproduction of the Hangul.



**7.3 Grazing of Civilian Domestic Stock** The extensive grazing of civilian domestic stock in the Sanctuary is a complex conservation and administrative problem. In the past, until 1974, only the Government sheep were permitted to graze in the Sanctuary. In 1974, after particularly severe conditions in the preceding months, there was so little grazing available to the civilian grazers that they were, as a special concession, permitted to enter and use the Sanctuary. The whole area of Nagerberan, one of the two main areas of Upper Dachigam, was immediately invaded by two groups of people, the Bakr-wals and the Gujars.

7.3.1 Of the two ethnic groupings, the Bakr-wals, or goat-herds, are probably the lesser threat to the Hangul. They are nomadic, spending the winter in the south, towards the Punjab, and the summer in the Zaskar mountains. Similar ethnic groupings occur all along the Himalayas and cause the same grazing problems. They live off their goats almost exclusively, though they have ponies to carry their equipment. They are polygamous, and buy their wives. As goats command a good price in the local markets, and many of the Bakr-wals have very large herds, they are generally richer than many of their neighbours, and can afford fine wives. They move their herds into a mountain pasture, erect their tents, and wait until the pasture is exhausted before moving on to another area. There is great competition for the best pastures, and minor wars often occur. Sometimes financial arrangements are made for good pastures. Goats strip pastures severely.

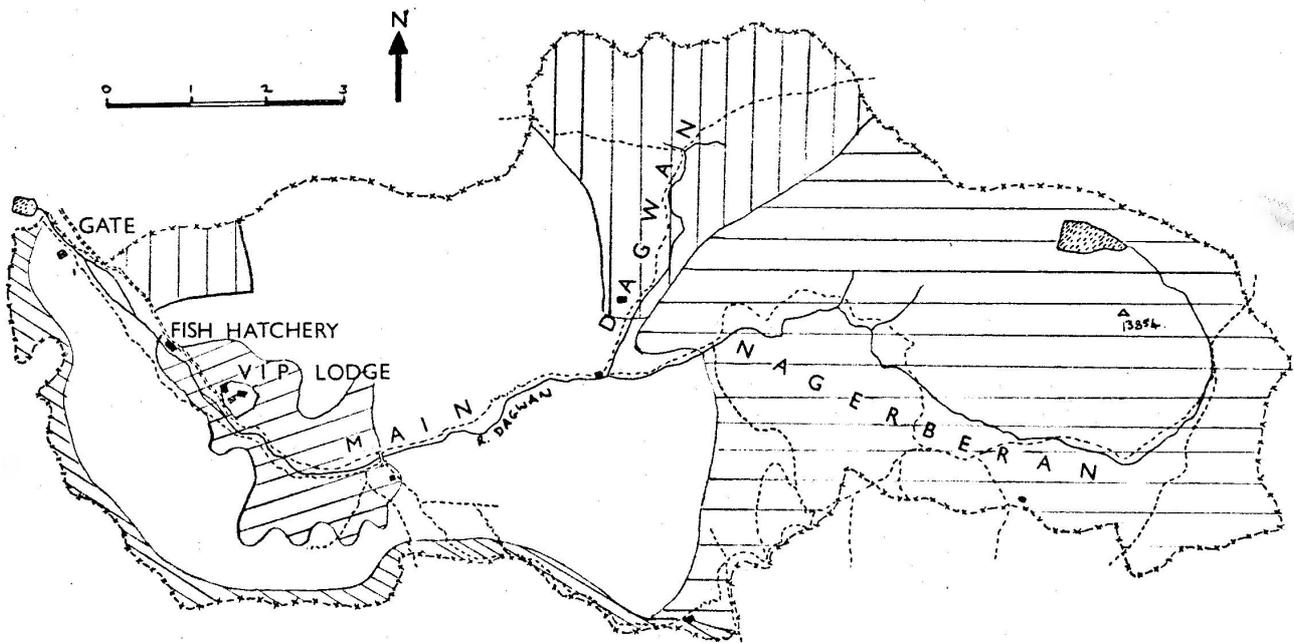
7.3.2 In the summer of 1974, though the Bakr-wals had a legal right to be there that year, the Expedition had reason to believe that illegal grazing had been occurring on the Nagerberan system for some time. The goats are able to exploit even the highest pastures there, which in turn are the most sensitive. There is strong evidence to show that the selective grazing habits of the goats, and the stock of the Gujars, is now causing serious habitat destruction. Many of the pasture slopes are covered in dense stands of ragwort; this is a poisonous plant to domestic species, and hence is not taken while grazing. The plant is thus given a selective advantage and flourishes, rendering the pasture useless for a number of seasons till the "normal" balance is reached again, assuming the pasture remains untouched.

7.3.3 Apart from the indirect disturbance caused by the grazing of their goats, the Bakr-wals cause a great deal of noise by their shouting and with their dogs. Though Hangul were reported to be above Sangar Gulu (see Map 1) while the Expedition was in the area once, no Hangul were actually sighted in three visits to Nagerberan.

7.3.4 The types of direct disturbance attributable to the Bakr-wals is also caused by the Gujars. These nomads, in the same way as the Bakr-wals, spend the winter in the Punjab and the summer in the Himalayas. The differences between the two ethnic groups are in their stock and style of life. The Gujars herd buffalo. These animals, unknown to the people of the Vale of Kashmir, are plains animals adapted to life in the Punjab and further South. They are larger than the average British Friesian cow, and with the same poor climbing ability. This has the result that the buffalo lumber about the mountains awkwardly, often causing serious scarring on the slopes. This, coupled with their propensity all to follow different routes in the same direction gives rise to a mass of potential erosion sites. What makes this even more worrying is the thin topsoil and the torrential rains that occur in the area.

7.3.5 Instead of living under canvas, the Gunjars build semi-permanent huts in their summer pasture locations. The valleys of Nagerberan were littered with these wood and grass dwellings, which are usually built near water courses. Since the heavy buffalo are unable to exploit the highest pastures, the Gujars occupy the lower slopes, and the Bakr-wals the higher. The nomads, especially the Gujars, represent the greatest danger to the habitat in Upper Dachigam. Illegal grazing, and great human pressure, are features associated with many Indian national parks and sanctuaries, as discussed later. What makes this situation different is that there is a clear conflict between two conservation interests – one to conserve the Kashmiri wildlife, and one to conserve the unique ethnology of some of the world's last nomadic peoples.

7.3.6 Another matter to consider is the danger to the Srinagar water supply. The Harwan reservoir is fed by the Dagwan river, which in turn collects from the Dagwan and Nagerberan valleys in Upper Dachigam, the two areas that are heavily grazed by domestic stock. The Expedition observed two dead buffaloes rotting in the streams that feed the Dagwan. In a land where water is such a health problem, and purification so primitive, dangers such as this are to be avoided”



**Map 3 – Sketch Map showing areas impacted by activities causing disturbance and damage.**  
(vertical marking – sheep farming, horizontal – Gujars and Bakr-wals, diagonal – tree cutting (southern rim) and grass cutting (central valley floor))

## 8 Other factors that affect the Conservation of Wildlife in Dachigam

8.1 One of the chief requirements of a successful conservation effort is a highly trained, reliable staff. At present only two or three of the Game and Fisheries staff in Dachigam are trained in the administration of the Sanctuary; the Supervisor, Mr Kaul, who has a degree in Sciences, the Chief Forester, Qasim Wani, who has spent most of his life in the service of the Sanctuary and has learnt much by experience, and one of the foresters at the Enclosure, who has similarly been in the area for years. None of the staff have had sufficient training in the more specific field of wildlife

management. The Expedition considered that the calibre of the rest of the staff could be greatly improved by even a little training by an expert. One problem in recruiting better educated people into the staff of the Sanctuary is the quality of the terms of employment, which appears to be very poor.

8.2 The staff in the Sanctuary are severely hindered, and at times made uncomfortable, by the severe lack of even the most basic items of equipment, such as good shoes or boots, binoculars, whistles, waterproofs and modern camping equipment. Radios and carefully controlled firearms would considerably improve the anti-poacher deterrent.

## **9 Summary of Conservation Issues**

The chief hindrances to the successful conservation of the Hangul appear to be, in order of importance:

- Buffalo grazing in the Sanctuary
- Goat grazing in the Sanctuary
- The Government sponsored sheep farm and associated activities
- The presence and activities of various unauthorised persons (eg tree-cutting & poaching)
- The presence and activities of the VIP Lodge and personnel
- The Trout Hatchery

## **10 A Comparison by Observation between Scottish Red Deer and Hangul**

*John J Buxton writes:*

10.1 My contribution to the Expedition report is confined to a comparison by purely visual observation based on a month's presence with the Expedition in Dachigam. My observations in Scotland have been carried out over a period of many years practical experience with Red Deer in the wild state, and a shorter and limited series of observations in the Exmoor district of Devon and Somerset.

10.2 My observations of Hangul in the wild state were confined to sightings within the Lower Dachigam Sanctuary and were acute while they lasted. A great deal of time was spent in the early mornings "spying" in the Highland stalker's sense, and using both binoculars and stalking telescope to full advantage. In the small enclosure within the Sanctuary I was able to make brief but close observations of a 12 pointer stag and a single mature hind.

10.3 In the Enclosure under captive conditions, activity of these animals was not particularly significant as no breeding behaviour was evident at all, although at the end of the time (10th September) there might well have been some activity on the stag's part. He had shed his velvet by the 25th August and seemed in good condition with a splendidly even head of twelve points. The stag and the hind were in the same pen of about 50yds by 30yds and the hind was quite evidently frightened of him, and always hurried off if he approached in her direction which, significantly, he did only if it were for food near to her.

10.4 To my immediate sight there were some definite points about the hind which were different to the Red hind of Scotland. Her tail was short, her ears longer, her legs taller. Her colour was not very different from that of a Scottish hind at that time of the year, but, if anything, she was slightly less red and slightly paler in the grey parts of her face and neck. The stag was certainly bigger than an ordinary good-sized Scottish stag, and my estimate was that he would weigh at least 300lbs. His horns were well formed with no sign of palmation with a good wild head of even points, speaking in purely stalking terms. I believe he was captured as a small calf in the Ladak region and was now seven years old. There seems to be some chance that the hind was not entirely healthy for breeding. This I cannot confirm from my own brief observations.

10.5 In the wild observations I had of Hangul there was nothing that seemed different from the above points, except for the extraordinary lack of numbers. I only once saw three animals together, and one of these was a young calf of that year. It is significant to me that the game warden in charge at Dachigam was sure that this calf was born the previous June and was merely slower to mature than the Scottish Red Deer. I do not believe this and am certain it was approximately two months old. When its head was up the ears came to its mother's withers and there were distinct signs of faint spots on its coat. I saw the same two hinds and a calf a few days later and three other single hinds. All the single ones were alone in the last week in August and no other deer were within 400 yards of each in open ground at the time. There was another single hind that lived to the South of our camp at Palipora, that I saw quite closely over a period of three weeks. She was definitely on her own. We heard a single hind bark quite often at night near the camp and this was almost certainly the same one. One afternoon I had been photographing some flowers at the side of a path through very thick Hazel copse and tall grass only 100 yards from the camp an hour before dusk, I was suddenly aware, whilst bending over a flower, that something was coming along the path within 20 yards of me. I froze completely, and though I heard nothing at all I was fully aware that an animal was near and had paused. I very slowly rose from my stooping position so as to be able to see better, and just caught a glimpse of the ears of a hind as she saw me. It was a very exciting moment and such bad luck that I had not been a few feet away from the path. I think she might have grazed past without ever seeing me, and I am sure I had been aware of her before she was of me. She then gave a tremendous bark, obviously intended as a warning of danger. It was almost a shriek at the first voluble outburst, but went on and on more like a Roe buck's warning bark. It was repeated now and then as she went further away into the thick cover and she kept up a splendid chorus of fading series of barks for five minutes with intervals and short bursts. It was never a short and single bark like that of a Scottish hind.

10.6 On one occasion in the evening I saw a young stag in the wild. He was not close to any other deer and was an evidently young, white horned beast, and certainly in stalking terms would be called a "nobber" and might have been three years old. The fact that this young stag's horn was almost white merely confirms that he was very recently clean of velvet. The tame stag in the enclosure shed his velvet remarkably quickly. From the actual day it started to strip to the day his horns were clean was only two full days, and he was very actively rubbing at anything that would serve as a buffer for a few more days after that, presumably to stain and darken the colour as in a natural wild state. It seemed significant to me that members of the Expedition found two single antlers at different times, but both in the first week in August. They were completely whole and belonged to mature stags, though they were found quite far apart and were from quite different

animals. I think it extremely unlikely that any antler would be found whole at that time of the year in Scotland as it would undoubtedly have been eaten by other deer long before. The fact that deer do dispose of antlers which have been shed by chewing them away in Scotland is probably due to various mineral deficiencies there. Hinds in calf are particularly fond of eating cast antlers. In Dachigam there would seem to be none of this urge or necessity to eat the horns, so presumably the minerals are reasonably sufficient on that ground.

10.7 A final point in relation to the disturbance factor of wild Hangul by domestic buffalo or cattle. I have found it a very evident fact in the Highlands of Scotland that Red Deer are terrified of lowing cattle. Possibly the noise is similar enough to that of a roaring stag to sound utterly wrong at the wrong time of year. However, I have seen deer in Scotland behave in a most frightened way at the sound of lowing cattle, and I am quite sure that Hangul would react exactly the same way to the similar noises of domestic stock invading their normally secluded habitat. Sheep, on the other hand, do not normally seem to give much worry to the deer.

## **11 Recommendations**

For easy reference the Expedition's recommendations are listed below in brief. A full explanation of their significance is given immediately after the list.

11.1 An effective complete ban on illegal grazing, or grazing by any agent other than the Jammu and Kashmir Government, within the traditional boundaries of Dachigam.

11.2 A complete ban on the erection or use of human habitation by anyone other than authorised Government or scientific personnel within Dachigam.

11.3 A reduction in the number of sheep administered by the Government Sheep Breeding Station to the previous BNHS recommendation of 900.

11.4 The movement of the summer grazing areas of the Government Sheep Breeding Station from the Dagwan system to the Nagerberan system.

11.5 That the cutting of winter fodder for the Government sheep be rigorously controlled with respect to the areas affected, the amount taken, the dates of cutting, the number of workers and the exclusion of dogs.

11.6 That heavy fines be imposed on persons making unauthorised use of the Sanctuary, either by entering the boundaries, or by straying out from the fenced area administered by the Tawaza Department, and that those persons caught poaching be dealt with very severely indeed.

11.7 That certain areas, immediately to the North of the Sanctuary and to the South of the Sindh river, be taken over by the Sanctuary in order to provide more protected summer range for the Hangul.

11.8 That the area of the Enclosure be developed for the easier and more successful

management of the species in captivity, and that Hangul be kept for the purpose of breeding in sufficient numbers to preserve the gene pool.

11.9 That the conditions of employment for the conservation staff be made more attractive, especially by higher pay and the provision of life insurance, and by training and the provision of the basic items of equipment.

11.10 That the mountain paths and hunting lodges be restored to their former condition to permit easy and commodious access to the Sanctuary patrols and visiting scientists.

11.11 That a programme of conservation propaganda be launched to ensure the goodwill of the populace towards the Sanctuary.

## **12 Explanation of Recommendations**

12.1 Though the summer of 1974 was the first year that the civilian grazers were officially permitted to use the area of the Sanctuary, the Expedition had reason to believe that illegal grazing had been occurring in preceding seasons. It is clear that the first step to be taken is the withdrawal of permission to graze civilian stock within the traditional boundaries of Dachigam. Dachigam, preserved for many decades as a hunting ground for the Maharajas of Kashmir, probably represents the smallest area that provides all the necessary cover, altitude and grazing for an appreciable stock of Hangul. Any intrusions into the traditional area used to keep Hangul are highly undesirable. Once civilian grazing is returned to illegal status in Dachigam, the next problem is the enforcement of the legislation. The presence of pickets or patrols along the boundaries is of no consequence unless they are fully backed by higher authorities. At least one member of each picket or patrol should bear sufficient authority to arrest any offenders and possibly impound any stock. If a case is proven against an offender severe fines must be exacted, most suitably in the form of confiscation of stock to a value. Such severe measures are recommended purely because the conservation of the Hangul now requires urgent measures against the most pressing problems.

12.2 The presence of the civilian stock causes three major dangers:

- Considerable disturbance of all types
- Habitat destruction by over—selective grazing leading to pasture deterioration
- Habitat destruction by, for example, creation of multiple erosion sites

All three are sufficiently influential to be disastrous to the Hangul. The legislation required to completely remove these threats is simple, and the enforcement cheap. It is of paramount importance that this recommendation is acted upon immediately.

12.3 The removal of all former habitations from the Sanctuary, other than those used by the conservation staff, will further discourage unauthorised persons from using the area for illegal purposes. There is the secondary consideration that by removing human artefacts the Sanctuary will return to virgin land and will remain as a monument to future generations of the way the mountains used to be. This aesthetic factor must not be under-estimated as in the coming years

there is the potential for very considerable profit from the tourist industry. At present it would be highly undesirable to open the Sanctuary to tourists, but, if the area is well managed, and carrying sufficient stocks of all species, it could become a major source of revenue to the Jammu and Kashmir Government; this scheme has been operated by many other countries, especially in the USA and Africa.

12.4 The question of the sheep farm is highly sensitive to the Jammu and Kashmir Government, and a compromise must be reached. Commercial pressures favour the further development of the sheep breeding project. At the same time the urgency of the conservation effort for the Hangul is not widely appreciated; nor is the long term potential for future revenue fully understood. It is the purpose of this report to suggest the optimal compromise for the Hangul taking into consideration the requirements of the sheep project. The first of the three aspects of the sheep project that requires change are:

- The size of the flocks. It is recommended that a reduction in the number of sheep occurs over the next two or three years down to the previous limit of 900 that was set by the experts from the Bombay Natural History Society. This is a hard idea for the Dept Animal Husbandry to accept, but it must be remembered that they run a number of projects in other areas, of which Dachigam is not the largest, and the Dept Game and Fisheries administers only one area in which there are Hangul. The broader issue of much greater significance to the rest of the world, is that Dachigam is the only area where a rare and beautiful deer still exists; there are tens of thousands of establishments carrying out research on sheep. The immediate action would be to move sheep, slowly running down the scale of the Dachigam project, to one of the other Dept Animal Husbandry areas. It must be emphasised that little competition occurs between Hangul and sheep at present simply because there are so few Hangul. If the Hangul is to return to its productive status in the wild then there must be room for population growth in all areas. The effects of a reduction in the number of Government sheep would be to lessen the disturbance associated with the larger flocks and their movement through the Sanctuary and to lessen the fodder burden during the summer and winter. The former effect is of greater importance in the short term, and the latter in the long term. A further consideration to be taken into account when weighing up the importance of the Hangul to Kashmir, is one that may be of considerable moment to the Dept Animal Husbandry; in many ways the Scottish mountains are akin to the Kashmir mountains, even to the level of being the habitat of a very similar deer, of the same species, but long since reproductively isolated. The British Government is at present sponsoring a project to attempt to domesticate the Red Deer and to farm them for profit. As in many cases, the wild animal, usually ideally adapted to its habitat, has a much greater productive potential than has the introduced domestic species. Early results from the British project are most encouraging,
- The second aspect of the sheep project that requires change is the siting of the summer grazing areas. At present the sheep are driven through the Sanctuary in spring up to the valley system of Dagwan and are grazed there till the first snows in the mountains. Dagwan has long been a stronghold of the Hangul due to both its suitability in terms of grazing and cover, and to its relative inaccessibility to outsiders. Since the sheep staff

started using this area the number of Hangul has rapidly declined. The alternative area to Dagwan is Nagerberan, to the South of the Sanctuary. Two distinct advantages of considerable importance would result in the relocation of the sheep during the summer from Dagwan to Nagerberan. First, both Dagwan and Nagerberan are denied to the Hangul for reasons already stated. If the sheep moved to Nagerberan, Dagwan would be left to the Hangul, as illegal grazers would be discouraged by its inaccessibility and, as an area, it is easier to patrol than is Nagerberan. Once the sheep were established in the Nagerberan system the shepherds would be a constant discouragement to illegal grazers; this scheme does support the integrity of the Sanctuary, and still gives the sheep good grazing, while giving the Hangul a suitable summer range. The second advantage of this scheme is that the need to drive hundreds of sheep through the Sanctuary twice a year is no longer necessary. Though at first it may seem strange, the movement of the sheep round the south of the Sanctuary by road, and then driving them up into Nagerberan from Sotura, is a much more satisfactory plan. The transport is available, the paths easily negotiable (much more so than those within the Sanctuary) and there is the advantage that the sheep themselves will be less hard-worked, with the consequent improvement in productivity.

- The final aspect of the sheep project requiring change is the administration of the fodder regime. The areas affected, amounts taken, and the number of workers, are all related factors, and are all connected to the number of sheep at the farm. The importance of these factors will be considerably reduced when the number of sheep at the farm returns to a reasonable figure. The dates of cutting are a matter that will require constant scrutiny. At present the Director Game and Fisheries, a very experienced conservationist, sets the dates between which the cutter may operate. It is questionable whether these dates are adhered to, for during the Expedition's stay in the Sanctuary the Hangul had started moving lower while the grasscutters were still in full swing. It is of paramount importance that grass cutting does not interfere with the rut.
- A problem associated with the grasscutters, and for that matter with the sheep farm, is that of dogs. Wild dogs are a constant danger to all other forms of life in the Sanctuary, especially the staff, the Hangul, and the Government sheep. Dogs which are not under the strictest control, for use by the shepherds, must be shot on sight.

12.5 The local populace must not be made to resent the presence of the Sanctuary but at the same time the integrity of the area must be maintained. Therefore the fines imposed upon people convicted of trespass must be significant but carefully scaled to the unauthorised activity. On-the-spot fines should be made on the person causing an unnecessary disturbance by being in the Sanctuary area without Game and Fisheries permission. Poachers should be dealt with very severely indeed. Very heavy fines, or prison sentences, should be given to convicted poachers. If the poacher cannot be dissuaded or frightened away before the event then he must be made an example.

12.6 Most of the direct observations of Hangul took place to the North of the Sanctuary on the slopes of Mahadeo and the other mountains to the South of the Sindh river. No direct sightings were made in the Nagerberan valley nor the Tral range. This indicates that most of the Hangul in

the Dachigam region spend summer in the North of the Sanctuary. The border of the Sanctuary to the North excludes a lot of land that would be of great use to the Hangul, but due to its inaccessibility is not very useful to the grazer. It is recommended that these areas to the North be included in the Sanctuary. Obviously areas that are privately owned, or that are already heavily grazed need not be included, but those areas at present administered by another Government Department and lying fallow, should immediately be placed under the authority of the Dept Game and Fisheries and afforded full Sanctuary status with anti-poaching precautions. It is hoped that this increase in the summer range will make up for those areas lost to the sheep farm. It is emphasised that unless all the conditions in the Sanctuary are such that increase in the population is possible, it seems unlikely that the Hangul will ever return to its productive status in the wild.

12.7 The Enclosure area, which contains individuals of most of the endemic species in Dachigam, was set up by the Director Game and Fisheries as a permanent exhibition of the animals which the Sanctuary was conceived to conserve. The only two Hangul in captivity, a stag and a hind, have not yet produced any young, even though two ruts have passed which could have done so. It is the opinion of the Director Game and Fisheries that the hind is in some way defective. The stag undergoes the recognised seasonal changes and during the rut makes the usual advances; the hind expresses no interest. The other animals, with the exception of the black bears, are kept singly. It is recommended that the enclosure be developed as a breeding unit of small size, so that sufficient numbers of any endangered species, especially the Hangul which is not found outside Dachigam, are maintained in maximum security, in semi-natural surroundings. There is the second consideration that, once established and producing, the offspring could be used to restock certain areas. Though some of these ideas are open to criticism from the purists, it is suggested that in a situation where a species is on the brink of extinction, every effort must be made to conserve it.

12.8 As discussed earlier, it is highly desirable to improve the quality of the conservation staff in the Sanctuary and the surrounding areas. At present the terms of employment are very relatively poor with low pay, training, pension and fringe benefits. The work in the Sanctuary is hazardous, with the constant danger of attack by an angry bear (both the red and black bears of the Sanctuary can be very aggressive), a disturbed snow-leopard, a viper (which exist in large numbers, are slothful, and are very poisonous) or even a poacher, afraid of arrest. It is recommended that the appointments in the Sanctuary be upgraded to attract higher quality staff by a better salary, and that a life insurance policy is provided by the Government in case of injury or death to the employee so that his family will be provided for. Better equipment is highly desirable in terms of high quality uniforms and waterproofs, whistles, binoculars, good boots, light modern camping equipment and cooking utensils, and, in time, portable radios and light rifles for self-protection.

12.9 It is of great importance that the Sanctuary staff possess authority over all other persons in the Sanctuary, naturally including trespassers, over which they should have the power of immediate arrest. Thus it is important to emphasise that the Dept Game and Fisheries must be in control of the Sanctuary, and all other Departments be made subordinate.

12.10 As always, financial considerations are limiting, and thus the restoration and refurbishing

of the old hunting lodges in Dachigam may not be possible for some time. The mountain paths, preserved with great care during the Maharaja's time, are now in an abysmal state, especially in the areas not frequented by the shepherds and the illegal grazers. It would render movement much easier and much quieter if these paths were restored to their former condition. This would mean the mobility of the anti-poacher patrols would be increased, and that other functions, such as census or scientific studies, could proceed more efficiently and with less disturbance.

12.11 The Expedition spent much time trying to assess the degree of knowledge and concern the local people had for the Hangul. It appeared that many people did not even know what the animal was, especially among the younger age groups. This is not so surprising considering the Expedition's findings on the present status in unrestricted areas. Even more time was spent trying to educate people about the animal and the more general issues at stake. The response was encouraging, and many were very interested in the Expedition's work. It is recommended that an educational programme be launched by the Dept Game and Fisheries to familiarise people with the aims of the Sanctuary and the long-term benefits involved. The radio is an obvious medium, as it is very popular at all levels of society, and even among the Bakr-wals in the high mountains. Exhibitions of pictures, talks in schools and universities, and articles in newspapers would also be of great use. During the study period articles appeared in Indian national papers and in many local papers. The Expedition Leader gave an interview on All-India Radio news which was broadcast throughout India, and heard by a potential audience of over five hundred million. The response to this publicity was excellent and many bodies in India made enquiries about the project and invited the members to speak at several meetings. This does indicate the potential of a publicity drive, as has been so successfully done for Project Tiger.

### **13 Conservation in Northern India**

13.1 This section deals with some of the personal, subjective observations made by the Expedition on the various issues surrounding the conservation effort in Kashmir, and the more general problems encountered by the Project Director during his short tour of three other wildlife conservation areas in Northern India.

13.2 India has a very large population, now in excess of 530 million. Traditionally there has been an immense pressure on the resources of this potentially very rich country with the result that the standards of living and education have always been low for much of the population. With the advent of modern medicine and the consequent increase in life expectancy and fall in infant mortality, the problems have been accentuated. Only in very recent years, after enormous efforts, has India been able to see the future with some optimism.

13.3 Hunting wild animals is a passion of many elites. So devoted were the rulers of India in the past, including the Nawabs and the Maharajas, that they set up huge hunting reserves in magnificent scenery devoted to the provision of exciting hunts and fine specimens. The reserves were well staffed and administered with great energy and rigour. Roads, paths and well-sited hunting lodges and palaces were constructed to facilitate the hunting. In the reserve, the animals came first, and trespassers and poachers were severely dealt with. In the last thirty years most of the power and privilege has passed into the hands of local State Governments, and the large hunting preserves are administered by new masters in the respective Government departments,

usually the Forestry Department; this varies in some states, as in Kashmir. The Government in India operates on a broadly similar model to the American Federal System, each State having a high degree of autonomy in most areas, with responsibility to the Central Government in others. If there is a collapse of democracy or a great emergency in a state, the Governor can rule the state in conjunction with the Centre. Certain functions, such as the Armed Forces and the Police are directly controlled by the Centre.

13.4 At present wildlife conservation and the administration of the national parks and similar areas are functions which seem to be controlled largely at State level. Though the day to day running is carried out under the direction of the Chief Conservator of Forests, or the Director Game and Fisheries, decisions affecting policy are made at State Government level. The State Government itself is an elected body whereas the departments are staffed by the permanent civil service. This means that if the State Government is sympathetic towards the wildlife conservation projects, the degree of success achieved is directly related to the ability of the wildlife staff, assuming that sufficient funds are available. If the State Government is disaffected to such projects the wildlife staff is powerless against disruption resulting from the efforts of rival agencies more in favour at the time.

13.5 Two major issues arise from this situation, the constant jockeying of various State Government Departments for a bigger budget and greater resources, and the possibility of the complete elimination of wildlife reserves by the pressures of ill-educated people and vested interests. Without specifying the State in question, it was once observed that there was serious rivalry between the Forestry and the Wildlife sections. There was repeated gossip of intentional discharge of firearms by the Forestry section in an area administered by the Wildlife section in order to regain the administration of the area by demonstrating that the Wildlife section was unable to patrol and administer the area adequately. Several such shots were heard one night, but neither the source nor the cause were found. This desire for prestige, or for that matter any inter-section bickering, cannot do anything but destroy efficient administration. In areas related to the conservation of highly endangered species it could be disastrous.

13.6 The four wildlife areas visited by the Project Director were all different in type. Dachigam is a very mountainous region, at a high altitude. Sariska (in Rajasthan, as are Sawai Madhopur and Bharatpur) is a hilly area of bush and low trees. It is roughly five times the size of Dachigam at about 250 square miles, and has much less water. Bharatpur, primarily a bird sanctuary but with a number of mammal species, is a small area, which is largely swamp and lake. Sawai Madhopur, one of the Project Tiger areas, is of intermediate size and has a large lake (with crocodiles) as well as some large hills; there are no great plains.

13.7 The one factor which was a problem throughout was the invasion of the wildlife reserves by domestic stock. In different areas the effects on the wildlife and habitat were different, but all were deleterious, especially in Dachigam. The second major issue resulting from the wildlife administration in India, that of vested interests and human pressures, becomes important in dealing with the unwanted grazers. It was very strongly hinted by a number of officials in different states that if a very hard line was taken by the wildlife sections, and all the grazers fined and their stock confiscated for invading a sanctuary, the vested interests would bring about pressure at

State Government level to completely abolish the wildlife reserve in question.

13.8 This situation is intolerable to workers trying to save species from extinction. Even within the relatively tiny areas allocated to wildlife, the conservation staff have to accommodate misuse of the land. The dedication, hard work and extensive knowledge of the permanent civil servants can be overridden by the pressure for land. A counter argument is that India is a country in dire need of nutrition, and that all areas must be used for the production of food for human consumption; the loss of one or two animals is of no consequence compared to the loss of even one human life. In the short term this argument is acceptable to many, but in the long term the presence or absence of a few small sanctuaries will have no effect whatsoever on the amount of human suffering. Abandonment of the sanctuaries may provide some limited relief for two or three years, but after that time the suffering will be at its former level. All that would have changed would be the loss of an important part of India's heritage, and a very significant source of potential tourist and other revenue in the future. (NB In Sariska there is already considerable development to accommodate the tourist, and there will be fine facilities in Bharatpur in a year or two.) Thus there is no adequate reason to allow misuse of Sanctuary areas.

13.9 The political threat must be removed from the wildlife administration. It is not the aim of this report to make recommendations on this topic, but a useful guide would be the study of the American and South African wildlife services. The entire conservation of rare species is administered by a Central Agency, including the sanctuaries and national parks themselves, no matter in which state or province they are in (there are often additional parks and reserves administered by the state or province). The State Governments have no jurisdiction in the sanctuaries or national parks (except for police/customs and the like), and a high degree of integrity and continuity can be afforded.

13.10 The Project Director believed that the administration in Sawai Madhopur was of a high calibre, and the conservation-related equipment relatively plentiful. This reserve had been selected as a Project Tiger area and was thus receiving aid and technical assistance from the World Wildlife Fund. As this help had such beneficial effects, it is highly desirable that the WWF be encouraged to assist in Dachigam, and other critical areas. Every effort must be made.

**List of Kashmir birds seen and identified 28<sup>th</sup> July to 28<sup>th</sup> September 1974**

Species			Location
Bee Eater	European	<i>Merops apiaster</i>	Dachigam
Bittern	Little	<i>Ixobrychus minutus</i>	Srinagar – Lakes
Bulbul	Himalayan black	<i>Microscelis psaroides</i>	Palipora – Lodge
Bulbul	White cheeked	<i>Molopastes leucogenys</i>	Srinagar and the Sanctuary
Buzzard	Common	<i>Buteo buteo</i>	Upper Dachigam
Chikor/chukar		<i>Alectoris graeca chukar</i>	Sanctuary
Chough	Alpine	<i>Phyrhocorax graculus</i>	Sangergulu/Dagwan
Crake	Ruddy	<i>Amaurornis fuscus</i>	Nagin Lake
Crow	Jungle/eastern carrion	<i>Corvus corone corone</i>	Ubiquitous
Crow	Hooded	<i>Corvus corone cornix</i>	Ubiquitous
Dipper	Indian brown	<i>Cinclus cinclus</i>	Dachigam River
Dove	Turtle	<i>Streptopelia orientalis meena</i>	Sanctuary
Drongo	Indian	<i>Dicrurus leucophaeus lougicaudatus</i>	Srinagar and the Sanctuary
Eagle	Golden	<i>Aquila chrysaetus</i>	Upper Dachigam and Dagwan
Flycatcher	Red breasted	<i>Ficedula parva</i>	Sanctuary
Flycatcher	Red breasted	<i>Siphia parva</i>	Palipora
Flycatcher	Paradise	<i>Tchitrea paradisi</i>	Lower Dachigam
Goldfinch	Himalayan	<i>Carduelis caniceps caniceps</i>	Palipora
Grebe	Little	<i>Tachybaptus ruficollis</i>	Nagin Lake
Greenfinch		<i>Hypacanthus spinoides</i>	Palipora and Grat Nar
Griffon Vulture	Himalayan	<i>Gyps himalayensis</i>	Dagwan
Heron	Night	<i>Nyctocorax nyctocorax</i>	Dal and Nagin Lakes
Hoopoe		<i>Upupa epops epops</i>	Gate house of Sanctuary
Jay	Black throated	<i>Garrulus lanceolatus</i>	Lower Dachigam
Kestrel		<i>Falco tinnunculus</i>	Sanctuary
Kingfisher	Blue	<i>Alcedo atthis</i>	Dal & Nagin Lakes, Dagwan River
Kingfisher	Pied	<i>Ceryle rudis</i>	Nagin Lake
Kingfisher	White breasted/	<i>Halycon smyrnensis</i>	Nagin and Dal Lakes

Species			Location
	Smyrna		
Kite	Block eared/ common Pariah	Milvus migrans	Srinagar
Lammergeyer		Gypaetus barbatus	Sangar Gulu
Magpie	Yellow billed blue	Urocissa flavirostris	Lower Dachigam
Myna		Acridotheres tristis	Srinagar and Lower Dachigam
Nutcracker		Nucifraga caryocatactes	Sangar Gulu
Oriole	Golden	Oriolus oriolus	Lower Dachigam, VIP Lodge
Owlet	Spotted	Athene brama	Lower Dachigam (climb above camp)
Parakeet	Green	Psittacula krameri	Lake edges of Srinagar, VIP Lodge
Partridge	Grey	Francolinus pondicerianus	Lower Dachigam
Redstart	Black	Pheonicurus ochruros	Dagwan River, Waskar
Redstart	White capped black	Chaimarrhornis leucocephalus	Sangergulu, by the river
Reed Warbler	Indian Great	Acrocephalus stentoreus	Nagin Lake
Shikra		Astur badius	Lower Dachigam
Shrike	Lesser grey	Lanius minor	Lower Dachigam & Nagin Lake
Shrike	Rufous backed	Lanius collurio	Lower Dachigam
Spotted Forktail		Enicurus macalatus	Mountain streams Waskar/Sitora
Stonechat		Saxicola torquata	Lower Dachigam
Swallow		Hirundo rustica	Nagin Lake
Swift	Alpine	Apus melba	Lower Dachigam
Thrush	Blue headed rock	Monticola saxitilis	Palipora
Tit	Crested black	Lophophanes melanolophus	Sangergulu
Tit	Kashmir grey	Carus major kashmiriensis	Palipora
Treecreeper	Himalayan	Certhia himalayana	Dagwan/Sangergulu
Vulture	Egyptian	Neophron percnopterus	Sanctuary
Wagtail	Grey	Motacilla cinerea	Dagwan River and Lakes

Species			Location
Wagtail	White	Motacilla alba	Dagwan River and Lakes
Wagtail	Yellow headed	Motacilla citriola	Dagwan River and Lakes
Warblers	Numerous	Sylviida	Sanctuary
Whinchat		Saxicola rubetra	Lower Dachigam
Woodpecker	Pied	Dryobates himalayensis	Sanctuary
Wren	Kashmir	Troglodytes troglodytes neglectus	Sangergulu

Many more birds were seen but could not be conclusively identified, so have been omitted from the list.

**References:**

- |                                   |                                  |
|-----------------------------------|----------------------------------|
| Ali, Salim                        | The Book of Indian Birds         |
| Bates, R.S.P. and Lowther, E.H.N, | Breeding Birds of Kashmir        |
| Heinzel, Fitter and Parslow       | The Birds of Britain and Europe  |
| Koul, Samsar Chand                | Birds of Kashmir                 |
| Whistler, Hugh                    | Popular Handbook of Indian Birds |

## Summary of Accounts

<b>Income</b>	<b>£</b>	<b>Expenditure</b>	<b>£</b>
Fauna Preservation Society	300	Purchase of Vehicles	798
ICI Ltd	200	Maintenance and Repairs	433
Mary Euphrasia Moseley Fund	140	Petrol, Tolls and Ferry Fares	926
Mr Peter Storrs	140	Field Equipment	224
Lord Rupert Neville Fund	100	Food	720
Emmanuel College	75	Other Living Expenses	121
World Expeditionary Association	50	Insurance, Documents	524
Mr J B Aspinall	50	Administration Costs	94
Augustine Courtald Trust	50		
Christ's College	50	<b>Sub-total</b>	<b>3840</b>
Other Charitable Donors	186	Excess of Expenditure	
Members' Contributions	1902	over Income, secured	
Sale of Equipment	242	by one vehicle still	
Insurance N .C .B .	27	in hand	(328)
<b>Total</b>	<b>3512</b>	<b>Total</b>	<b>3512</b>

<b>Bank Account</b>	<b>£</b>		<b>£</b>
Total Bankings	3324	Cheques drawn	2258
Overdraft (at 31.4.75)	328	Travellers cheques	1380
		Bank charges	14
<b>Total</b>	<b>3652</b>	<b>Total</b>	<b>3652</b>

## Cash Reconciliation Statement

<b>Cash Drawn</b>	<b>£</b>	<b>Expenditure</b>	<b>£</b>
Travellers Cheques	1380	Vehicle Expenses	260
Sale of Equipment (cash)	188	Petrol and Tolls	873
		Visas and Local Taxes	90
		Food	191
		Other Living Expenses	121
		Disbursements en route	11
		Currency Exchange losses	22
<b>Total</b>	<b>1568</b>	<b>Total</b>	<b>1568</b>

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Welch's Garage (Stapleford) Ltd  
Scientific Exploration Society  
Phoenix Assurance Co  
E H Price Ltd, Cambridge  
Shippams Ltd  
Nelson's Preserves Ltd  
Morrell's  
Ltd; Whitworths Ltd  
Glaxo Ltd  
Moss Bros. Ltd;  
Swain's Packaging Ltd  
Maxwell House Ltd  
Forodo Ltd;  
Girling Ltd  
Duckham Oil Co

Fram Europe Ltd  
Champion Spark Plug Co  
Whiteley's Ltd  
Kodak Ltd  
Smith's Watch Co Ltd  
Metallifactory Johnson Sales Ltd  
Step Industrial Equipment Ltd  
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