Eco-development and management needs for snow leopard conservation in Himalayan Protected Areas

Full Text:

India has set aside for wildlife conservation 16 National Parks (NPs) and some 60 Wildlife Sanctuaries (WSs) in the Himalayan region, covering 6% of the region's geographical area. Many more protected areas (PAs) have been proposed recently (Rodgers & Panwar 1988) so as to optimise the biogeographic coverage. Of these, more than 30 PAs (average size ca. 700 km^2) are known to have snow leopard (*Uncia uncia*) populations and many others are reported to include potential snow leopard habitat. Whereas conservation of overall biodiversity has become a major government thrust in recent years (National Forest Policy 1988), management must take indicator species such as snow leopard into consideration as important conservation objectives.

In general, the Himalayan region offers a better scope for wildlife conservation compared with other biogeographic regions owing to the relatively low human population, inaccessibility and remoteness. However, there is concern over ever increasing demands for natural resources and the effects of ill-planned developmental activities. Therefore, management of buffer zones and eco-development programmes in and around PAs have to be given high priority in order to save the parks (Panwar 1992). Despite the wide acceptance of this principle (Freeman 1988, Osmaston 1989, Rawat et al. 1991) such a programme has not been initiated so far. Paucity of scientific information and the lack of policy directives and financial resources are the major constraints. Mallon and Bacha (1990) and Pandey (1991) are the only attempts to prepare management plans for snow leopard areas that recommend eco-development measures for the parks.

Considering the urgent need for eco-restoration in and around PAs and promoting congenial people-park relationships, the Wildlife Institute of India (WII) has this year initiated a new course on eco-development planning apart from its regular research and training programmes. In this article, we discuss the need for management and eco-development initiatives pertaining to the conservation of snow leopard and its habitat. This issue is illustrated with the help of a case study in Pin Valley National Park, Himachal Pradesh. WII's role in the development and implementation of such plans for the future is also discussed.

MANAGEMENT STATUS OF HIMALAYAN PROTECTED AREAS (PAs) HAVING SNOW LEOPARDS

Settlement of rights and concessions in and around PAs, and protection of wild animals have been the major management activities in the Himalaya so far. Although PA legislation does not permit grazing and collection of non-wood forest products inside the NPs, these activities cannot be stopped overnight. Other management measures and supportive activities such as improvement of habitats (e.g., pasture and water development), research and monitoring are at a low key. Some status surveys, (e.g., Fox et al. 1991), a five-year WII research project on snow leopard (Chundawat 1992), other on-going WII research projects in the Himalaya and occasional reports from other agencies have shown that management problems of PAs throughout snow leopard range are common and are reasonably well understood now.

The major snow leopard range (cold, arid regions) are very low in primary productivity and cannot support a high herbivore biomass. This means the predator density cannot go higher than a certain level and is also relatively low. The livestock and people also share the biomass with wild herbivores. Management would need to address this balance between the park, people and their livestock. Unbalance leads to habitat degradation, loss of diversity, people-wildlife conflict, and several other problems. It is therefore evident that management authorities have to deal effectively with people's problems to ensure wildlife conservation. Also, management depends much upon information that comes from a variety of sources, and has to be systematically collected and analyzed to facilitate decision making (Jackson and Hillard 1991).

PIN VALLEY NATIONAL PARK - A CASE FOR ECO-DEVELOPMENT

Pin Valley NP (675 km^2, 32^o-33^o N, 77^o-78^o E) is located immediately to the north of the main Himalayan range in the cold arid zone. The altitude ranges between 3500 m and 6600 m and temperatures vary between - 35 ^{o}C and + 35 ^{o}C. The annual precipitation is about 400 mm most of which is in the form

of snow. The park falls in the Lahul & Spiti district of Himachal Pradesh and serves as a typical example for illustrating the problems and prospects of eco-development.

Conservation Values

The park represents a unique transition from Himalayan to Trans-Himalayan elements in its flora. Except for some willow (*Salix*) and poplar (*Populus*) plantations and isolated *Juniperus* trees (those surviving the over-exploitation for fuelwood), the area is devoid of trees. Among shrub communities a *Hippophae - Myricaria* association and patches of *Salix, Rosa, Lonicera, Ephedra,* and *Artemisia* are common. Other herbaceous communities are distributed among five major habitat types, the valley bottoms, moraines, meadows, cliffs and plateaus. An endangered lily *Eremurus himalaicus* grows sporadically in the park and is exploited by the local people as a vegetable. The park harbours a large population of Asiatic ibex (*Capra ibex sibirica*). Other mammals include snow leopard, blue sheep (*Pseudois nayaur*), Tibetan wolf (*Canis lupus chanco*), red fox (*Vulpes vulpes montana*), Tibetan woolly hare (*Lepus oiostolus*), pale weasel (*Mustela altaica temon*), and mouse hare (*Ochotona roylei*). Over 40 species of birds have been recorded so far, important ones being the golden eagle (*Aquila chrysaetos*), Himalayan snowcock (*Tetraogallus himalayensis*), chakor partridge (*Alectoris chukar*), and pigeons (*Columba* spp.). The area is quite rich in marine fossils. A few places within and in the vicinity of the park are of high cultural significance.

Management Issues

The park is surrounded by 17 villages with a total population of about 1300. The local people are basically Buddhist farmers. The farming is based on a combination of irrigated cultivation in the valley bottoms with extensive grazing of yak, horses, donkeys, sheep and goats. The estimated number of yaks, horses, donkeys, hybrid cattle, and sheep and goats in these villages are 300, 450, 600, 650, and 450, respectively. A few families trade in horses and wool. Production of cereals as well as livestock/dairy products is quite low, however, the farmers cannot dispense with the cattle because they are essential for ploughing, threshing, the production of dung-fuel and maintenance of soil fertility. Thus the agricultural and pastoral sectors are closely interdependent.

Our preliminary survey indicates that on average each household (5 -7 persons) uses about 45 donkey loads of fuelwood each winter (December - April) in these villages. Every donkey load consists of 2 bundles, each about 1 m x 1 m x 0.5 m and weighing approximately 10 - 15 kg. In recent years the Himachal Government has been supplying fuelwood to the villagers at subsidized rates. The locals, however, continue to extract the roots and woody parts of local shrubs for firewood throughout the summer and divert the larger pieces of wood to carpenters who make utility items for sale in the area. Likewise, solar cookers supplied so as to reduce the use of firewood are not much in use. This suggests a lack of participatory planning and motivation in the conservation of forests and pastures. This would mean that there has been a gradual attrition in the sense of belonging for the common property resources (CPRs) including the forests and pastures. Alternative sources of income and progressive marginalisation of people stand in the way of mitigating the compatible developmental plans. It can also be inferred that rural development inputs which are reaching the area are not realistic and fail to take into account the link between sustainable lifestyles and discipline in use of natural resources. A holistic approach that takes into account the farm practices, livestock raising, and other uses of CPRs supported by alternatives is called for. Its success will primarily depend upon participatory initiatives to prepare inventories of resources, utilization practices, livelihood patterns and cultural concerns. Based on this, again using the participatory planning processes, a package of alternative resources and practices should be evolved. This strategy will have the support of people's convictions and as a result, measures will find ready acceptance and will not get diluted or abused.

The park is used every summer by over 8000 sheep and goats belonging to migratory sheep herders from Kinnaur and other low-lying valleys. Most of the good quality pastures are occupied by them, thus competing with local livestock and wild herbivores. This is one of the most important management problems of the park as well as for local people. But these practices are not possible to stop because the use by such transhumant pastoralists is also traditional. This therefore, also has to be a major parameter in the planning process.

Proposed Eco-Development Measures

Eco-development is seen as a site-specific and conservation-friendly package of measures for rural development and use of biomass resources by local people, so as to be of help to PA conservation in the following ways:
- Enhancing sustainable economic productivity of the buffer zone as well as augmenting income from on-farm and off-farm activities, so that communities have less economic dependence upon the resources of the PA.
- Enhancing productivity of the buffer zone especially to meet the resource needs of people while rationalising practices for gathering and utilising resources.
- Providing technology to improve efficacy of use of conventional resources and to promote use of substitutes, where necessary and feasible.

In his management plan Pandey (1991) has proposed several eco-development measures for the Pin Valley National Park. Over a duration of 10 years this plan envisages a budget of about Rs. 50,000,000 (approx. US $1,600,000) with nearly one third of this total proposed for eco-development initiatives. The plan needs approval and implementation by the Himachal Pradesh State Government. According to the management plan the following measures are suggested:
1. Identification of buffer zones: Some additional areas outside the park boundary are to be identified as multiple use zones to implement various eco-development programmes. This would include conservation buffers which will be used by people as well as wild animals and a buffer for peoples' use.
2. Construction of rope bridges: As there are no bridges across the Pin and Parahio rivers in the valley, it is proposed that seven rope bridges with trollies be installed at various places to facilitate the movement of local people.
3. Employment generation for locals: Schemes like farm forestry and soil conservation measures through check dams are proposed which would generate some labour-intensive employment for locals, thus diverting them from attritionary practices such as harvesting of rootstocks for firewood.
4. Education and health: There is a provision for nature education for children and facilitation of health programmes under park management to establish a better working environment.
5. Supplement fuelwood: The Forest Department has been doing some plantation work (poplar and willow) at various village sites. There are about 13 sites of 8 - 10 year old plantations with a total area of 66 ha. It is recommended that additional plantations around villages should be created to meet the increased demand for fuelwood and timber. This should follow the pattern of joint forest management wherein the right to use the produce rests with the villagers, subject to their direct participation in protection and sustainable harvests.
6. Agriculture: Better irrigation facilities for the village fields and introduction of better crop varieties are proposed.

Cooperation from other government agencies such as the Desert Development Corporation are to be sought. Incentives should be given to local people for minimising the number of local scrub cattle. The management plan discusses a scheme for rotational grazing and control of migratory livestock herders.

ROLE OF THE WILDLIFE INSTITUTE OF INDIA IN ECO-DEVELOPMENT PLANNING

Considering the urgency of eco-development around PAs, a country-wide programme has been launched by the Government of India this year. The first step in this regard is to have personnel trained in undertaking preparation of eco-development plans with full participation of local people. A new training course is commencing at WII in late 1992 with partial support from UNDP. It envisages identification of park sites as well as that of state wildlife officials and Non Government Organization (NGO) representatives selected to undergo training and is coordinated through a tripartite consultative process involving the Ministry of Environment & Forests, the state Wildlife Organizations and WII. The trained officers will be helped by WII in preparing the plan on locations at particular sites. NGO nominees earmarked for such sites will also be encouraged to undergo this training so that joint efforts can result in better planning and implementation. Central Government funds are assured for the implementation of such plans, at least for a few sites.

The planning phases include: (1) Selection of sites, specifying actual sections of buffer zones or adjacent areas in each case, (2) criteria and procedure for selection of key personnel, (3) training of personnel within-institution and on the job, for planning, implementation and monitoring, (4) initiative process for site-specific participatory planning alongside trust-building activities that include advisory assistance from WII, (5) identification and involvement of credible NGOs from planning right through implementation and monitoring, (6) formation of local apolitical committees, especially including women, for planning and implementation that include joint management and sharing of resources, (7) formation of "user groups" or "protection committees" for the protection, collection and use of biomass resources, (8) clarify procedures for approval of plans and allocation of funds that adopt a committee approach combining concerned state and Central Government authorities to ensure expeditious consideration, sanction and authorization, (9) set up procedures for early authorization of some urgent and justified activities ahead of the regular plan coming into operation, as a means of early relief and trust building, (10) monitoring, feedback and course-correction mechanisms, and (11) mid-term and final evaluations.

CONCLUSION

The eco-development measures suggested for the buffer zone of Pin Valley NP envisage an integrated land and resource use system that would simultaneously aim at conservation of the park with its endangered species such as snow leopard, Asiatic ibex and rare plants to ultimately usher in the sustainable well-being of local people. WII is interacting with state governments and the Government of India to identify additional sites in the Himalayan region for such measures. It is important that proper management plans with strong eco-development components are prepared for more areas. Such programmes need encouragement and help from national and international conservation organizations.

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