

Developing sacred forests into biodiversity heritage sites-experiences from the state of Uttarakhand, Central Himalaya, India

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The provision of declaring Biodiversity Heritage Sites (BHS) in the National Biodiversity Act 2002 provides an opportunity to give recognition to the community initiatives *vis-a-vis* the institution of the sacred natural sites (SNS). In brief, the salient feature of the Biodiversity Act 2002, as relates to the BHS, is that the state government in consultation with the local bodies may notify in official gazette, biodiversity rich areas, including the SNS as BHS. Subsequently, under sub-section (2) of section 37, the state government in consultation with the Central government may frame rules for the management and conservation of BHS. As per the guidelines framed by the National Biodiversity Authority of India (NBAI), Chennai, for the selection of the sacred natural sites as BHS, and for the constitution of Biodiversity Management Committee (BMC) to manage the BHS, 13 sacred forests across eight hill districts of Uttarakhand were selected. The present paper in brief, attempts to bring forth the salient features of the sacred sites as relates to the precise status of the taboo system or the traditional norms governing the resource utilization, the floral diversity, ecosystem services provided, importance in terms of refuge for wild endangered species of fauna, eco-tourism potential, and else. The paper in addition incorporates the experiences gained in the constitution of BMC, and ends with recommendations as to how to proceed with the establishment of the biodiversity heritage sites *vis-à-vis* sacred forests.

Keywords: Biodiversity, Biodiversity heritage sites, Biodiversity management committee, Ecosystem services, Sacred forests and *taboo*

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Beginning several decades ago, the idea that indigenous people and other small-scale societies were exemplary conservationists gained widespread currency in popular media as well as in academic circles¹. This indigenous conservationism has often been attributed to a spiritual respect for, and a practical understanding of the natural world²⁻³. Evidence offered in support of this characterization, includes the culturally expressed conservation ethics, animistic religious beliefs that conceptualizes other species as social beings, and relatively higher biodiversity richness found within the sacred forests in the homeland of these people⁴⁻⁵.

Sustainable natural resource management is driven by the beliefs and behaviours of the human communities, and local cultures are strengthened by their intimate connections to the natural environment, which sustains them. Our modern world is often poorer for the scientific rationalism, which treats objective and sacred knowledge as separate entities. In contrast, the traditional cultures do not make such

distinctions, where very often, ritual and religion are intrinsically bound with the daily chores of living⁶⁻⁸. In fact, in the Himalayan context, the association of religion with eco-system management is interwoven in the symbolic network of the Himalayan communities⁹⁻¹¹. The institution of sacred natural sites, along with the strict norms and taboos that relates to resource utilization, invariably relates to the sustainable resource management practices¹²⁻¹³. It is strongly believed that a much clearer understanding of spiritual and mystical beliefs, and the related local institutions associated with traditional natural resources management, is needed. Such an assessment would provide valuable insights into the changing values of local people in relation to the protection of forests and other natural resources¹⁴.

The provision of declaring Biodiversity Heritage Sites (BHS) in the National Biodiversity Act 2002¹⁵ provides an opportunity to give recognition to the community initiatives *vis-a-vis* the institution of the sacred natural sites (SNS). In brief, the salient feature

of the Biodiversity Act 2002¹⁵, as relates to the BHS, is that the state government in consultation with the local bodies may notify in official gazette, biodiversity rich areas, including the SNS as BHS. Subsequently, under sub-section (2) of section 37, the state government in consultation with the Central government may frame rules for the management and conservation of BHS. Biodiversity Heritage Sites (BHS) have been defined as per Section 2 of the Biodiversity Act 2002¹⁵, as ‘Well defined areas that are unique, ecologically fragile ecosystems-terrestrial, coastal and inland waters and marine, having rich biodiversity comprising any one or more of the following components: richness of wild as well as domesticated species or intra-specific categories, high endemism, presence of rare and threatened species, keystone species, species of evolutionary significance, wild ancestors of domesticated/cultivated species, past pre-eminence of biological components represented by fossil beds and having significant cultural, ethical or aesthetic values and are important for the maintenance of cultural diversity, with or without a long history of human association with them’.

As per the guidelines framed by the National Biodiversity Authority of India (NBAI), Chennai, for the selection of the sacred natural sites as BHS, and for the constitution of Biodiversity Management Committee (BMC) to manage the BHS, 13 sacred forests were selected across the eight hilly districts of the state as following: (i) Thatyur and (ii) Maanthaat in Dehradun district, (iii) Thal Ke Dhar, (iv) Serakot dedicated forest, (v) Chamunda and (vi) Hokara Devi in Pithoragarh district, (vii) Shyama Devi and (viii) Dhurka Devi in Almora district, (ix) Madhkeshwar Sacred forest in Uttarkashi district, (x) Tarkeshwar in Pauri Garhwal district, (xi) Hariyali Devi in Rudraprayag district, (xii) Sem Mukhim Nag in Tehri Garhwal district, and (xiii) Simgari dedicated forest in Bageshwar district. The present article in brief, attempts to bring forth the experiences gained during the study being conducted in the selected sacred sites, primarily as relates to the constitution of BMC, a prime pre-requisite towards the over-all objective of developing the sacred forests as BHS (Fig. 1).

Methodology

(i) Criteria for selection of the sacred forests for BHS

While selecting the above sacred sites, the following basic criteria were looked into: Whether the

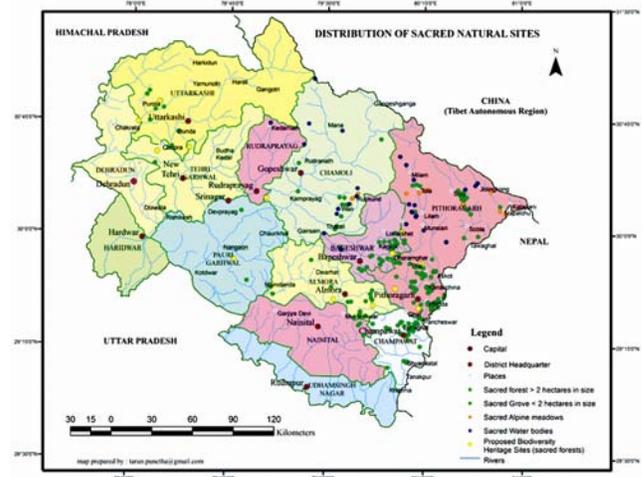


Fig. 1—Distribution of the sacred natural sites, including the sacred forests being proposed as BHS within the state of Uttarakhand

sacred forest (i) harbours relatively greater biodiversity, (ii) but faces intense human pressure in terms of resource exploitation, (iii) one which harbours relatively lesser biodiversity, but where the taboo system governing the resource exploitation is very closely adhered to, (iv) wherein one sacred forest additionally plays a very significant role, for example provides refuge to some of the endangered species (flora/fauna) or more ecosystem services (prominent among being that the sacred forest remains the only source of water), (v) To what extent the socio-religious norms governing the resource exploitation, the taboo system are practiced by the local populace (i.e. the fear factor towards the resident deity), and finally (vi) if selected as BHS, to what extent the local populace will render their all-out support to develop the same?

The sacred forests were divided into two basic categories, (i) those falling within the jurisdiction of the State, i.e. Reserve forests, and (ii) those being completely managed by the stakeholders, i.e. Panchayat forests. Even though, the former category of sacred forests, i.e. reserve forest would seem exclusive to the jurisdiction of the locals, however, the locals do exercise their traditional management principles, as also the institution of sacred vis-a-vis taboo system in these forests, too. This extends to even exploitation of the resource base, principally during the cultural rites, for example, during the celebration of Deolang festival surrounding Madhkeshwar sacred forest.

(ii) Biodiversity assessment, existent taboo, the ethnobotanical knowledge base

The knowledge based-systems methodology for acquisition of local ecological knowledge suggested by Sinclair and Walker¹⁶ was adapted, which involves knowledge collection from a small sample of deliberately chosen individuals, thought to be knowledgeable by other villagers about the domain of interest. The knowledge was collected through repeated, structured (questionnaire-based) interviews, with information being sought as regards the location of sacred forest, features related, local perception about the sacredness of the grove, and management (inclusive of caste dynamics). Prior to this, the informants were given a brief background of the subject area of interest (viz. the concept of the sacred forest), in their native tongues, as and when required, so that the requisite information could be gathered. Since the *taboo* system surrounding the sacred sites is very often governed by dominant castes, principally Brahmins and the Rajputs, with lower castes relegated to carrying out profunctionary functions/tasks, it was inevitable that the interviews were conducted across the different class of people, so that an overall picture of the taboo system could emerge.

The precise delimitation of the boundaries of the sacred forest was accessed from the village development council or village *Panchayat* or records kept with the '*sarpanch*'. Information, as to the socio-religious role of the sacred forest was gathered through a preliminary survey, which primarily was mostly conducted among the elderly folks of the village between the age groups of 45-75 yrs. Ethno-botanical knowledge was accessed through, (i) interview- that involved asking questions about use of the plants (gathered from the forest) for different purposes (viz. medicinal, fodder, food and so forth), and (ii) the 'inventory' that involved collection of plant specimens and then interviewing the informants for their local names and uses. The role of traditional beliefs and customs in the conservation as well as management of the ecosystem, too were noted from individual's view and subsequently interpreted in terms of their ecological perspective/s. As relates to the biodiversity assessment, the floral diversity was carried out through phytosociology; for faunal diversity; the information was gathered from the locals.

(iii) Establishment of sacred forest as Biodiversity Heritage Site

The very objective and benefits of institutionalizing the sacred forest as Biodiversity Heritage Site, and the

subsequent formation of the Biodiversity Management Committee (BMC) was discussed with the stakeholders by organizing a number of meetings. The stakeholders were priorly briefed about the provisions of BHS through circulation of a pamphlet in their native tongue. Efforts were made to solicit the support and participation of every member of the village/s in the meeting, and to raise their apprehensions and queries. Wherever feasible, local experts, officials and NGOs, were invited to take part in the deliberations.

Results

I. Biodiversity assessment

A total of 613 species were enumerated, out of which a significant 181 species falling within 157 genera and 73 families were encountered being exploited for different purposes, dominated by Asteraceae represented by 18 species, followed by Lamiaceae with 13, Rosaceae with 11 species and Papilionaceae with 10 species. The detail of the ethno-botanical knowledge base is being presented Fig. 2, below. All together, the floral diversity was represented by 148 families, 417 genera and 613 species (Fig. 3). Salient features of the selected sacred forests presented in Table 1. Apart from the more conspicuous contribution of the sacred forests, in terms of availability of the fodder, litter, timber, and to a lesser extent the non-wood forest products, the sacred forests are very often rich in biodiversity, principally born out of 'the edge effect'. This latter fact becomes vivid when one endeavours to list the rare, endangered and threatened species encountered within these forests. The present study yielded a remarkable number of the same, 51 to be exact, harboured and protected within the sacred forests (Table 1).

II. Ecosystem services provided by the sacred forests

Ecosystem services were studied, in terms of (i) the resource utilization from the groves- procurement of the fodder, litter mass, fuel-wood or Non-wood Forest products, (ii) socio-cultural significance, collectively assessed in terms of the abode of the presiding deity, cultural rites and festivals conducted within, (iii) as being refuge of the fauna, and (iv) environmental role played, viz. whether in the perception of the local populace the forest provides protection to the village situated below from land slides, or remains the only source of water for them (Fig. 4). Infact, where ever the sacred forest remains the only source of water for

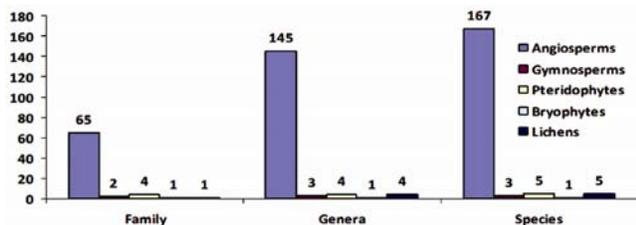


Fig. 2—Ethnobotanical knowledge-base within the 13 sacred forests covered

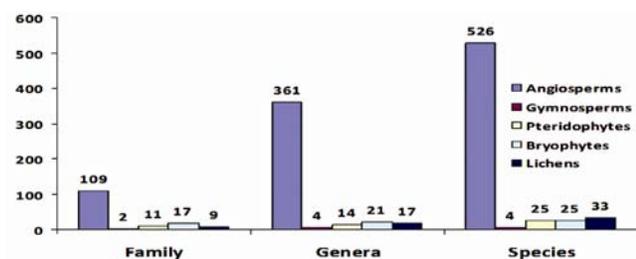


Fig. 3—Species diversity across the different taxa enumerated

the populace, more stringent are the traditional norms that govern the resource utilization from it, as exemplified by Bhataar and Madhkeshwar sacred forests, where complete ban to resource exploitation is enforced.

III. Priorities of the local populace as relates to the utilization of the financial support

The aspirations of the locals, as relates to the utilization of the financial support, once BMC gets instituted were the following: (i) Construction of fences around the sacred site, (ii) Construction of bunds or water tanks to store water for irrigation purpose, (iii) Rehabilitation of the degraded landscape with fodder trees, (iv) Management, as relates to livestock grazing within the sacred forest, (v) Medicinal and Aromatic Plants (MAPs) cultivation, and (vi) Exploration of the tourism potential.

Table 1—Biodiversity aspects of the sacred forests and the taboo system in practice (as per the guidelines under Biological Diversity Act 2002¹⁵) (contd.)

S.No	Name of the sacred forest	Vegetation profile ^a	Rare, endangered & threatened species (RET species) ^b	Taboo system in practice ^c
1.	Bhataar	Dominated by <i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don	Flora: <i>Zanthoxylum armatum</i> DC. (V), <i>Selenarctos thibetanus</i> G. Cuvier (E)	1, 2 & 3
2.	Dhurka Devi	Dominated by <i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don, <i>Pinus roxburghii</i> Sarg.	Flora: <i>Berberis aristata</i> DC. (E), <i>Didymocarpus acuminatus</i> R.Br. (E). Fauna: <i>Panthera pardus</i> L. (E), <i>Selenarctos thibetanus</i> G. Cuvier (E)	1, 2 & 3
3.	Sem Mukhim Nag	Dominated by <i>Quercus leucotrichophora</i> A. Camus, <i>Q. floribunda</i> Rehder	Flora: <i>Benthamedia capitata</i> (Wall.) H. Hara (R), <i>Acer oblongum</i> Wallich ex DC. (E), <i>Aquilegia pubiflora</i> Wallich ex Royle (R), <i>Berberis aristata</i> DC. (E), <i>Carpinus viminea</i> Wall. ex Lindl. (R), <i>Roylea cinerea</i> (D.Don) Baill. (V), <i>Zanthoxylum armatum</i> DC. (V). Fauna: <i>Panthera pardus</i> L. (E), <i>Selenarctos thibetanus</i> G. Cuvier (E), <i>Nemorrhaedus goral</i> Hardwicke (E), <i>Capricornis sumatraensis</i> Bech. (R)	1, 2 & 3
4.	Tarkeshwar	Dominated by <i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don, <i>Quercus leucotrichophora</i> A. Camus	Flora: <i>Aquilegia pubiflora</i> Wallich ex Royle (R), <i>Desmodium gangeticum</i> (L.) DC. (R), <i>Piptanthus nepalensis</i> (Hook.) D.Don (R), <i>Terminalia bellirica</i> (Gaertner) Roxb. (R), <i>Skimmia anquetilia</i> Taylor & Airy Shaw (R), <i>Swertia chirayita</i> (Roxb.) Buch.-Ham. ex C.B. Clarke (CR), <i>Senecio graciliflorus</i> (Wall.) DC. (R), <i>Asparagus adscendens</i> Roxb. (R), <i>Cupressus torulosa</i> D. Don (R), <i>Evolvulus alsinoides</i> (L.) L. (R), <i>Callicarpa macrophylla</i> Vahl (R), <i>Boerhavia diffusa</i> L. (R), <i>Abutilon indicum</i> (L.) Sweet (R), <i>Abrus precatorius</i> L. (R), <i>Withania somnifera</i> (L.) Dunal (R), <i>Selaginella adunca</i> A. Br. (R), <i>Pteris vittata</i> L. (R), <i>Hedychium spicatum</i> Smith (V), <i>Berberis lycium</i> Royle (E), <i>Berberis aristata</i> DC. (E), <i>Bacopa monnieri</i> (L.) Wettst. (E), <i>Thalictrum foliolosum</i> DC. (V), <i>Zanthoxylum armatum</i> DC. (V), <i>Pyrrhosia flocculosa</i> (D.Don) Ching (AR). Fauna: <i>Panthera pardus</i> L. (E), <i>Selenarctos thibetanus</i> G. Cuvier (E), <i>Nemorrhaedus goral</i> Hardwicke (E)	1, 2, 3 & 5

(contd.)

Table 1—Biodiversity aspects of the sacred forests and the taboo system in practice
(as per the guidelines under Biological Diversity Act 2002¹⁵)

S.No	Name of the sacred forest	Vegetation profile ^a	Rare, endangered & threatened species (RET species) ^b	Taboo system in practice ^c
5.	Chamunda Devi	Dominated by <i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don	Flora: <i>Bergenia ligulata</i> (Wallich) Engl. (V), <i>Hedychium spicatum</i> Smith (V), <i>Malaxis acuminata</i> D.Don (R), <i>Caloplaca himalayana</i> (R), <i>Lecanora japonica</i> (R), <i>Macromitrium rigbyanum</i> Dixon (R), <i>Berberis aristata</i> DC. (E), <i>Valeriana jatamansii</i> Wall. (CR). Fauna: <i>Selenarctos thibetanus thibetanus</i> G. Cuvier (E), <i>Nemorrhaedus goral</i> Hardwicke (E)	1, 2, 3 & 5
6.	Hariyali Devi	Dominated by <i>Quercus semecarpifolia</i> J.E.Smith, <i>Q. leucotrichophora</i> A. Camus	Flora: <i>Benthamedia capitata</i> (Wall.) H. Hara (R), <i>Desmodium gangeticum</i> (L.) DC. (R), <i>Desmodium podocarpum</i> (Thunb.) DC. (R), <i>Strobilanthes wallichii</i> Nees (R), <i>Indigofera hamiltonii</i> Duthie & Prain (E), <i>Berberis aristata</i> DC. (E), <i>Polygonatum verticillatum</i> (L.) All. (E), <i>Swertia angustifolia</i> Buch.-Ham. ex D.Don (E), <i>Thalictrum foliolosum</i> DC. (V), <i>Hedychium spicatum</i> Smith (V), <i>Bergenia ligulata</i> (Wallich) Engl. (V), <i>Roylea cinerea</i> (D.Don) Baill. (V). Fauna: <i>Panthera pardus</i> L. (E), <i>Selenarctos thibetanus</i> G. Cuvier (E), <i>Martes flavigula</i> Boddaert (R)	1, 2, 3 & 4
7.	Serakot dedicated forest	Dominated by <i>Quercus leucotrichophora</i> A. Camus, <i>Rhododendron arboreum</i> Smith	Flora: <i>Skimmia anquetilia</i> N.P. Taylor & Airy Shaw (R), <i>Cupressus torulosa</i> D. Don (R), <i>Berberis aristata</i> DC. (E), <i>Bergenia ligulata</i> (Wallich) Engl. (V), <i>Hedychium spicatum</i> Smith (V), <i>Zanthoxylum armatum</i> DC. (V). Fauna: <i>Panthera pardus</i> L. (E), <i>Nemorrhaedus goral</i> Hardwicke (E), <i>Ophiophagus hannah</i> (E)	1, 2 & 3
8.	Thal Ke Dhar	Dominated by <i>Quercus leucotrichophora</i> A. Camus	Flora: <i>Acer oblongum</i> Wallich ex DC. (E), <i>Trachycarpus takil</i> Becc. (E), <i>Asparagus adscendens</i> Roxb. (V), <i>Berberis aristata</i> DC. (E), <i>Cinnamomum tamala</i> (Buch.-Ham.) T. Nees & Eberm. (T), <i>Rhus semialata</i> Murray (V), <i>Thalictrum foliolosum</i> DC. (V). Fauna: <i>Selenarctos thibetanus</i> G. Cuvier (E), <i>Panthera pardus</i> L. (E), <i>Capricornis sumatraensis</i> Bech. (R)	1, 2, 3 & 5
9.	Hokara Devi	Dominated by <i>Quercus leucotrichophora</i> A. Camus, <i>Q. floribunda</i> Rehder	Flora: <i>Cupressus torulosa</i> D. Don (R), <i>Daiswa polyphylla</i> (Smith) Rafin. (R), <i>Berberis aristata</i> DC. (E), <i>Cinnamomum tamala</i> (Buch.-Ham.) T. Nees & Eberm. (T), <i>Zanthoxylum armatum</i> DC. (V). Fauna: <i>Selenarctos thibetanus</i> G. Cuvier (E), <i>Panthera pardus</i> L. (E)	1, 2 & 3
10.	Shyayi Devi	Dominated by <i>Quercus semecarpifolia</i> J.E.Smith, <i>Q. leucotrichophora</i> A. Camus	Flora: <i>Cupressus torulosa</i> D. Don (R), <i>Berberis aristata</i> DC. (E). Fauna: <i>Selenarctos thibetanus</i> G. Cuvier (E), <i>Panthera pardus</i> L. (E)	1, 2 & 3
11.	Thatyur	Dominated by <i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don, <i>Q. leucotrichophora</i> A. Camus	Flora: <i>Asparagus adscendens</i> Roxb. (R), <i>Thalictrum foliolosum</i> DC. (V). Fauna: <i>Panthera pardus</i> L. (E), <i>Selenarctos thibetanus</i> G. Cuvier (E)	1, 2, 3 & 5
12.	Madhkeshwar	Dominated by <i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don	Fauna: <i>Panthera pardus</i> L. (E), <i>Selenarctos thibetanus</i> G. Cuvier (E), <i>Martes flavigula</i> Boddaert (R)	1, 2 & 3
13.	Simgari dedicated forest	Dominated by <i>Quercus leucotrichophora</i> A. Camus and <i>Rhododendron arboreum</i> Smith	Flora: <i>Cleyera japonica</i> Thunb. (R), <i>Cupressus torulosa</i> D. Don (R), <i>Begonia dioica</i> Buch.-Ham. ex D.Don (R), <i>Meliosma arnottiana</i> (Wight) Walp. (R), <i>Asparagus adscendens</i> Roxb. (R), <i>Berberis aristata</i> DC. (E), <i>Carpinus viminea</i> Wall. ex Lindl. (R), <i>Pistacia Integerrima</i> J.L. Stewart ex Brandis (R). Fauna: <i>Panthera pardus</i> L. (E), <i>Nemorrhaedus goral</i> Hardwicke (E)	1, 2 & 3

^a In order of abundance.

^b E-Endangered, R- Rare, CR- Critically rare, T- Threatened, V-Vulnerable, AR- at risk

^c Taboo system classified:

1. Segment taboo: Regulation of the resource use principally on the basis of caste and sex; viz., schedule caste and the womenfolk in menses (irrespective of caste) are prohibited from entering into the sacred forests.
2. Temporal taboo: Regulation of access to resources in time.
3. Method taboo: Regulation of the methodology applied for the resource use.
4. Life history taboo: Regulation of the use/hunting of the vulnerable life history stages of a species.
5. Species-specific taboo: Total protection of one of the species (totem?) in time and space.

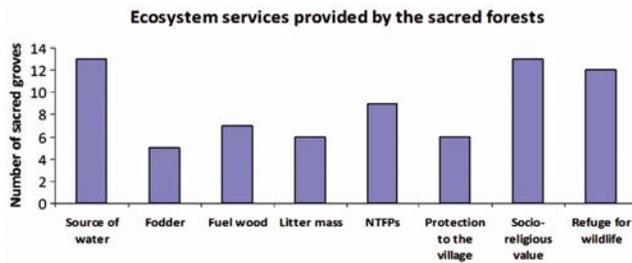


Fig. 4—Ecosystem services provided by the sacred forests. It is important to take note that even though all the sacred forests covered do possess fodder, fuel or litter mass; however, in some of the sacred forest a complete ban extends to their exploitation, and hence forth are being excluded vis-a-vis their anthropogenic use, even when it is understood that the accumulation of litter mass, or of fodder leaves, does aid in the conservation of water, and thus recharge.

IV. Difficulties faced, lessons learnt and the viability of the envisioned BHS

A number of initial sacred forests listed as probable sites for developing into BHS had to be replaced by others, simply for the reason that the stakeholders were not willing to be part of the exercise. It was probably on account of the inherent feeling amongst the stakeholders that the programme as laid out, would impinge upon their own rights, or that it would construe as an outside interference. The success of the initiative, it is perceived, would be more, if the sacred forests are selected, which are either remotely located, and with intact taboo system in practice. While convenience in terms of the easier accessibility to the selected sites was one major factor, as related to the selection of the SNS for BHS, it was unfortunate that the intactness of the traditional norms governing the very viability and success of the institution of sacred was inversely related to easier accessibility, i.e. means of transport, and thus development. The same fact, in fact poses the challenge- how to offshoot the decline in taboos system vis-a-vis development. Secondly, the stakeholders were all-out for the establishment of the BHS in those sites, where their dependence on the sacred forests was inevitably very conspicuous, as in case of the Hariyali Devi. In short, greater the ecosystem services provided by the forest (viz., as the only source of water), greater would be the chance that the stakeholders would extend their active support for the constitution of BMC.

Discussion

Cultural and biological diversity are intimately and inextricably linked¹⁷. Traditional knowledge systems are important for modern societies, not only because

traditional knowledge itself is a valuable aspect of cultural heritage and should be protected in its own right, but also because it is of great value in modern development, especially regarding sustainable use of forests, ecosystem management and poverty reduction. Certain guidelines should be put in place to safeguard the sacred groves and promote the traditional knowledge of conservation, namely: the revitalization and enforcement of traditional education; the delineation of boundaries; the improvement of relevant knowledge and their official recognition through a legal status¹⁸. Efforts should be made to develop mono-religious incentives for local people to protect sacred forests for example, community members should be educated on the ecological values, functions, and need of intact forests. Such knowledge might also encourage local people to become more involved in afforestation programs.

A vast body of recent literature indicates that the surest way to conserve the commons such as sacred forests is by ensuring customary community custodianship, where profligate use of the resource is prohibited through various socio-cultural restraints¹⁹. However, the community can hardly maintain its custodian role, if the resource is owned, and its benefits are usurped, by an external authority, whose interests are divergent from that of the users. There is a need to appreciate that the local communities often value forests in a rather different way than professional foresters or the state organizations do, for the simple reason that a forest for the locals remain an invariable part of their livelihood strategy. Depending on the strategies of resource use of local farmers²⁰, sacred forests may be integrated in the local resource utilization system because they have one or more of the following functions²¹:

- 1 Production of valuable products for household consumption (construction material, foods, medicines).
- 2 Production of materials for generating income and employment through possible local manufacturing and sale (selected foods, resins/gums, construction material).
- 3 Provision of inputs (farm implements, litter, mulching material, erosion control, fodder, bedding material) for agricultural and livestock production.
- 4 Protection of water resources and provision of shelter.
- 5 Cultural functions, such as conservation of tribal lands or role in religious beliefs.

Conclusion

Needless to emphasize here, the very concept and objectives of BHS vis-a-vis the institution of BMC would need an active support base of the experts towards;

- 1 Conceptualizing a mechanism whereby a sustainable exploitation of the forest resources could be harnessed.
- 2 Educating the stakeholders of the vital need to preserve their age-old traditional knowledge-base, pass on the same to the younger generation; emphasize that culture can only be conserved, if practiced.
- 3 It is important that information related to policies governing conservation, which would directly affect the stakeholders be informed to them on a regular basis. In this effort BMC could (and should) play a vital role. The government agencies should therefore endeavour to facilitate such reciprocal interactions.
- 4 It would be vital that safeguards are placed to ensure that the financial support given to the BMC, is utilized judiciously and scientifically, keeping the long-term conservation goals in sight; that eco-friendly technologies are extended to the BMC; that sound, equitable models of eco-tourism are pursued, and lastly,
- 5 The BMC be encouraged to safeguard their traditional ecological knowledge-base for the posterity, by making local education more sensitive to their own culture, and ecosystem surrounding them. In brief education should be pro-nature in approach and action.

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