Thematic Concept Note:

CULTURE AND BIODIVERSITY

Culture is understood as a way of thinking and acting, consisting of sets of codified and unspoken rules/practices, which give a society cohesiveness and which simultaneously reflect changes in the material and spiritual milieu of a society. Religious and spiritual beliefs, educational practices and curricula, themes in folklore and the classical arts, and recurring themes in the day-to-day life and language of people are some elements of culture that are visible and possible to document. Other parts of culture could be a general ethic which informs daily practices, such as a culture of re-use that pervades day to day life in India.

Elements of biological diversity have formed one critical basis of all civilisations. India is no exception. In fact, the direct link between biological diversity and cultures is more apparent in India today than in many other parts of the world.

Given this understanding, the thematic working group would identify the inter-relationships between biodiversity (both wild and domesticated, as the latter may have more substantial linkages with culture than the former in predominantly agricultural societies) and the different aspects of culture detailed above. It would then proceed to assess the current status of this relationship, and how it can be strengthened/revived in the current context.

Specifically, the Working Group would look do the following:

1. Identify the two-way positive links between cultural and biological diversity, how the former has arisen in response or amidst the latter, and has in turn nurtured/maintained/enhanced it through beliefs and traditions of conservation and sustainable/equitable use (it would be important to look at various strands of spiritual/religious systems in India);
2. Identify the two-way negative links between cultural and biological diversity, how certain cultural practices (e.g. of mass hunts) have resulted in biodiversity loss, and how methods of conservation (e.g. official protected areas) have resulted in cultural erosion (e.g. through alienation of communities from their natural surrounds);
3. Assess how different forms of culture (classical/mainstream, folk/non-mainstream, and popular/emerging) relate to biodiversity. Scale would also be an important consideration, e.g., how biodiversity and culture interact at a site-specific level, regional level, and national level);
4. Assess how and why the positive links between culture and biodiversity have been eroded in recent times, and the implications of this for conservation and sustainable/equitable use;
5. Identify and assess the ways in which elements of cultural expression have been and can be used to carry the message of conservation and sustainable/equitable use. This would involve estimating what formats (i.e. length, style, mode of presentation) are the most effective in relaying the message of conservation, and which media/formats have the maximum outreach. The review could also assess whether dissemination of messages is a major problem and how this can be dealt with;

of spin one-half. In the spring of 1969, which I spent at CERN, Chris Llewelynn-Smith and I analyzed the sum rules that followed for deep-inelastic neutrino-nucleon scattering using similar methods[28]. We were clearly motivated by the experiments that were then being performed at CERN. We derived a sum rule that measured the baryon number of the charged constituents of the proton. The experiments soon indicated that the constituents of the proton had baryon number $\frac{1}{3}$—in other words again they looked like quarks. I was then totally convinced of the reality of quarks. They had to be more than just mnemonic devices for summarizing hadronic symmetries, as they were then universally regarded. They had to be physical point-like constituents of the nucleon. But how could that be? Surely strong interactions must exist between the quarks that would smear out their point-like behavior.

After the experiments at SLAC, Feynman came up with his *parton* picture of deep inelastic scattering. This was a very picturesque and intuitive way of describing deep-inelastic scattering in terms of assumed point-like constituents–partons [29]. It complemented the approach to deep inelastic scattering based on the operator product of currents, and had the advantage of being extendible to other processes [30]. The parton model allowed one to make predictions with ease, ignoring the dynamical issues at hand. I felt more comfortable with the approach based on assuming properties of current products at short distances. I felt somewhat uneasy about the extensions of the parton model to processes that were not truly dominated by short distance singularities.

At CERN I studied, with Julius Wess, the consequences of exact scale and conformal invariance [31]. However, I soon realized that in a field theoretic context only a free, non-interacting theory could produce exact scaling. This became very clear to me in 1970, when I came to Princeton, where my colleague Curtis Callan (and Kurt Symansik) had rediscovered the renormalization group equations [34], which they presented as a consequence of a scale invariance *anomaly* [36]. Their work made it abundantly clear that once one introduced interactions into the theory, scaling, as well as my beloved sum rules, went down the tube. Yet the experiments indicated that scaling was in fine shape. But one could hardly turn off the interactions between the quarks, or make them very weak, since then one would expect hadrons to break up easily into their quark constituents. Why then had no one ever observed free quarks? This paradox and the search for an explanation of scaling were to preoccupy me for the following four years.

6. Identify initiatives to re-establish or strengthen the positive links between cultural elements and biodiversity, including some concrete case studies;
7. Recommend measures (short and long-term) to strengthen such initiatives and start new ones elsewhere;
8. Prioritise these measures in terms of their importance and immediacy; and
9. Identify resources (human, institutional, economic) needed for carrying out these measures.

The emphasis throughout should be on *biological* elements and *ecosystem* functions, though aspects like change of seasons would of course be included.

therefore might contain dynamical information that went beyond statements of global symmetry. Furthermore, as was soon realized, one could check ones' assumptions about the structure of local current algebra by deriving sum rules that could be tested in deep inelastic lepton-hadron scattering experiments. James Bjorken's 1967 paper [21,22], on the application of $U(6) \times U(6)$, particularly influenced me.

In the spring of 1968 Curtis Callan and I proposed a sum rule to test the then popular "Sugawara model," a dynamical model of local currents, in which the energy momentum tensor was expressed as a product of currents[23]. The hope was that the algebraic properties of the currents and the expression for the Hamiltonian in terms of these would be enough to have a complete theory. (This idea actually works in the now very popular two dimensional conformal field theories). Our goal was slightly more modest–to test the hypothesis by exploiting the fact that in this theory the operator product expansion of the currents contained the energy momentum tensor with a known coefficient. Thus we could derive a sum rule for the structure functions[24] that could be measured in deep-inelastic electron-proton scattering.

In the fall of 1968, Bjorken noted that this sum rule, as well as dimensional arguments, would suggest the scaling of deep inelastic scattering cross sections [25]. This prediction was shortly confirmed by the new experiments at SLAC, which were to play such an important role in elucidating the structure of hadrons [26]. Shortly thereafter Callan and I discovered that by measuring the ratio, $R = \frac{\sigma_L}{\sigma_T}$, (where σ_L (σ_T) is the cross section for the scattering of longitudinal or transverse polarized virtual photons), one could determine the spin of the charged constituents of the nucleon [27]. We evaluated the moments of the deep-inelastic structure functions in terms of the equal time commutators of the electromagnetic using specific models for these–the *algebra of fields* in which the current was proportional to a spin-one field on the one hand, and the quark-gluon model on the other. In this popular model quarks interacted through an Abelian gauge field (which could, of course, be massive) coupled to baryon number. The gauge dynamics of the gluon had never been explored, and I do not think that the model had been used to calculate anything until then. We discovered that R depended crucially on the spin of the constituents. If the constituents had spin zero or one, then $\sigma_T = 0$, but if they had spin-$\frac{1}{2}$, then $\sigma_L = 0$. This was a rather dramatic result. The experiments quickly showed that σ_L was very small.

These SLAC deep-inelastic scattering experiments had a profound impact on me. They clearly showed that the proton behaved, when observed over short times, as if it was made out of point-like objects

Final draft
22/2/2000

No. 1(V)(i)

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TWH Cultures 5.8.2/ Them Doc/ Draft Action Plan, Vol I/ Vol 2, 2003

CULTURE AND BIODIVERSITY
(Volume I)

PREPARED UNDER THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN- INDIA



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2003

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EXECUTIVE SUMMARY

1. The Thematic Working Group on Culture and Biodiversity is part of the National Biodiversity Strategy and Action Plan being prepared by Ministry of Environment and Forests, Government of India.
2. The objective of this group was to identify nature and extent of inter- relationships between wild biodiversity and different aspects of culture. The group was also to assess the current status of these relationships and to suggest a strategy and action plan to strengthen and / or revive these relationships in the present context.
3. The methodology adopted by the group was participatory. The group held several meetings of its members and consulted a large number of persons in the country for developing this report.
4. The report is presented in two Volumes. Volume I contains description and an analysis of various aspects of culture and biodiversity in the country. It also contains the recommendations. Volume II contains the contributions prepared by group members as well as the special invitees.
5. There are six substantive sections in the report that deal with positive and negative links between culture and biodiversity, religion and biodiversity, weakening of links between culture and biodiversity, initiative to revive and / or strengthen positive links between biodiversity.
6. The positive links between cultural and biological diversity have been examined from the point of view of individual species, habitats, and landscapes. The practices having positive links with biodiversity include totemic species, species of ritualistic importance, seasonal restrictions in hunting, ritual use, resource use diversification, territoriality, etc. Under habitat protection are included sacred groves, sacred ponds, trees and tanks, annual ritual hunt, shifting cultivation, the supply and safety forests, and Bishnois, and landscapes such as Rathong Chu in Sikkim.
7. A search of random literature reveals that perhaps there are hardly any traditional cultural practices in the country that have any significant negative impact on biodiversity. However, we have listed several practices that may have some negative impact. These practices are annual ritual hunt, hunt of particular species and shifting cultivation.
8. The section on religion and biodiversity brings out clearly that all religions in the country, especially Hinduism, Buddhism and Jainism have strong ethos related to biodiversity conservation.
9. Several traditional practices that have positive impact on biodiversity are becoming weak due to internal factors and / or external factors. Such phenomenon have been observed at species level and also at habitat level, e.g. sacred groves and sacred ponds, tanks and trees, shifting cultivation.
10. A number of examples of revival and / or strengthening of traditions having conservation value have been cited from different parts of the country and also among different communities. Examples have been given where religious ethos have been used in rejuvenating barren landscapes and protection of domesticated crop varieties.
11. Based on the analysis of the materials presented in the report, the group suggests the following recommendations.

Sacred Groves

It is recommend that an inventory of sacred groves should be prepared urgently for all the states in the country. The inventory among other aspects should include location, area under

the grove, ownership and management, cultural and biological dimensions, nature and extent of degradation and nature and extent of threats.

Action: The MoEF is best suited to undertake this task. All State forest departments should be advised to prepare such inventories in their respective states. In view of the multi-dimensional nature of SGs, a multidisciplinary team needs to be set up. The institutions that could contribute significantly are Anthropological, Botanical and Zoological surveys of Government of India. Besides state level NGOs, lead colleges/ schools and Panchayati Raj Institutions may also be involved in this process.

It is recommended that efforts should be made to map the nature and extent of vegetation cover in the SGs through out the country.

Action: The Forest Survey of India should be advised to develop suitable methodologies for mapping the vegetation cover in the SGs. For ground truthing support from a number of institutes, NGOs and communities currently working on biodiversity related issues could be elicited.

In absence of a policy on SGs, it is recommended that the MoEF develop a policy document on SGs. In this context it may be noted that in the document – National Policy and Macro-level Strategy on biodiversity – The MoEF, GOI, 1999 under section 1.4 Approach, item vii (pg. 13) writes "Sacred groves are the rich heritage of India. occuring in various parts of the country sacred groves harbour ecosystems at pristine level. These would be treated as special areas deserving full protection and conservation".

Action: MoEF may constitute a Working Group for this purpose involving forest departments, environmental lawyers, anthropologists, ecologists and representatives of Panchayati Raj institutions and communities. Experience learnt in Kodagu (see appendix III in this report) will be of immense help in this regard.

There are many groves that face threats, internal as well as external. It is recommended that in such cases campaigns should be undertaken to strengthen the SGs. The campaign could be in the form of yatras, exhibitions, workshops, printed literature, etc. (for details see Alkazi in this report, appendix II.5 in Volume II), especially aimed at people who live in the vicinity of

the SGs who may be made aware of the ecological functions performed by the SG and motivated to protect them.

Action: The existing networks of NGOs, functionaries of SGs and academicians could be entrusted with this responsibility. The travelling exhibition on SGs and several publication on SGs prepared by Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal (IGRMS) could be used effectively for this purpose. The experience learnt in Kodagu, given in appendix III, could be widely shared with such networks, institutions and individuals.

Sacred Ponds

In view of aquatic conservation value and the dearth of data available on sacred ponds in the country it is recommended that Statewise inventories of the sacred ponds should be made throughout the country.

Action: MoEF could involve its institutions like Salim Ali Centre for Ornithology and Natural History (SACON), Wildlife Institute of India (WII), Indian Institute of Forest Management (IIFM), and State Irrigation Departments, academic institutions and NGOs for preparing such an inventory.

It is recommended that in view of the importance of sacred ponds in conservation of aquatic biodiversity, MoEF should prepare a policy document on sacred ponds.

Action: MoEF may constitute a task force for this purpose involving fisheries departments, irrigation departments, forest departments, environmental lawyers, anthropologists, ecologists and representatives of Panchayati Raj institutions for developing a policy document.

Tanks and Trees

It is evident from the materials presented in section 3.2.3 that the cultural tradition of planting trees and other vegetation on tank embankments plays an important role in conservation of biodiversity. And in view of the considerable decline in number of tanks, *it is recommended that a multidisciplinary research should be initiated to document the cultural and biological dimensions of tanks and trees in the country.*

Action: MoEF could entrust this responsibility to IIFM, Bhopal, Gandhi Peace Foundation, New Delhi, Centre for Science and Environment, New Delhi and other relevant institutions.

Role of Religion In Conservation

From section 4, it is evident that religious ethics in all religions of the country have to a varying degree a strong positive bearing on biodiversity conservation from species, to habitats, to landscapes. *It is recommended that this religious ethos could be effectively used in declaring bare mountain tops and other degraded lands as sacred sites. Such sites could be designated variously depending on the religious faith.*

Action: MoEF could initiate on an experimental basis in some parts of the country this approach and evaluate the response of the people. Such a responsibility could be assigned to G. B. Pant Institute of Himalayan Environment and Development; the institute has rich experience and expertise in this kind of work. For details on this topic see the note prepared by S. P. Singh given in Appendix II.10 in Volume II.

Annual Ritual Hunt, And Other Hunt In the Country

It is evident from section 5.2 that the practice of annual ritual hunt is wide spread in the country among tribals as well as non tribal communities. It is also evident that a number of animals indeed are hunted every year. However, qualitative or quantitative data in terms of people involved, the quantum of animals and species hunted is not known at all. *It is therefore recommended that systematic studies in different parts of the country should be initiated immediately to understand fully the nature and extent of impact of these practices on faunal biodiversity.*

Action: MoEF could interest this task to Anthropological Survey of India, GOI. Anthropology and Zoology departments in the universities and colleges could also be involved in this task. Besides the State Tribal Welfare Departments could also contribute significantly. NGOs like Wildlife Trust of India and others could also be involved.

Shifting Cultivation

As noted in section 5.3, in many parts of the country, the jhum cycle has reduced drastically, and therefore has become unsustainable. This has resulted in loss of biodiversity. Although strictly speaking, this practice belongs to domesticated biodiversity, but in view of its impact on wild biodiversity, we thought it appropriate to flag it here.

Action: The above concerns of the group should be shared with the Thematic Working Group dealing with domesticated biodiversity, and they be requested to develop a set of appropriate recommendations.

Seasonal Restrains In Hunting

From section 6.2, it is evident that the traditional seasonal restrictions / taboos on hunting have been relaxed among many communities, and in many regions of the country like Bastar, Nagaland, etc. *It is recommended that awareness campaigns should be undertaken among identified communities / areas in the country emphasizing the conservation concerns.*

Action: Centre for Environment Education, Ahemdabad may be requested to develop suitable campaign material.

Role of folk music and drama and oral legends

From section 8 it is evident that rich folk music and drama and oral legends having profound impact on biodiversity conservation exists in all parts of the country. However, this rich material is scattered and often very difficult to access. *It is recommended that such materials from libraries and other places should be retrieved and a database be created.*

Action: MoEF may request any one or more of the Institutes like: Sangeet Natak Akademi, Delhi, Komal Kothari's collection, Jodhpur, American Institute of Ethnomusicology, Gurgaon, Folklore Dept. University of Mysore, Indira Gandhi National Centre for the Arts, New Delhi, etc. to create a databse as mentioned above.

ABBREVIATIONS USED

BCIL – Biotech Consortium India Limited
CBD – Convention on Biological Diversity

GEF – Global Environmental Facility
GOI – Government of India
IGRMS – Indira Gandhi Rashtriya Manav Sangrahalaya
IIFM – Indian Institute of Forest Management
INCERT – Institute for Natural Resources Conservation, Education, Research and Training
MoEF – Ministry of Environment and Forests
NBSAP – National Biodiversity Strategy and Action Plan
NGO – Non governmental organization
SACON – Salim Ali Centre for Ornithology and Natural History
TPCG – Technical and Policy Core Group
WII – Wildlife Institute of India

1.1 National Biodiversity Strategy and Action Plan - India

The National Biodiversity Strategy and Action Plan (NBSAP), a project of Union Ministry of Environment and Forests (MoEF) aims to produce a series of planning documents dealing with the conservation of India's biodiversity, sustainable use of its biological resources, and equity including in decisions regarding access to such resources and the benefits accruing from them. The project is funded by the Global Environment Facility through United Nations Development Progrmme (UNDP). A unique aspect of the project is that its technical execution is by a Technical and Policy Core Group (TCPG) being coordinated by an NGO Kalpavriksh, and administrative coordination is by Biotech Consortium India Ltd.

The NBSAP process has included extremely widespread consultation across the country and across all sectors of society, involving tens of thousands of people. It aims to produce not one national action plan, but 18 local (substate) plans , 33 state and union territory plans, 10 ecoregional (interstate) plans, and 13 thematic plans. All these will coalesce into a national plan, but will also remain independent for implementation purposes. In addition, over 30 thematic papers have been commissioned on a variety of topics related to biodiversity.

Within this over all process one of the thematic action plans is on ***Culture and Biodiversity***, which has been drafted by a working group consisting of persons experienced in the field.

1.2 Thematic Working Group on Culture and Biodiversity

Culture plays a significant role in determining the extent of use, maintenance and preservation of elements of biodiversity. Elements of biodiversity have formed one critical basis of all civilizations. India has a great diversity of people and cultures. The people of India are estimated to consist of over 40,000 endogamous groups (Malhotra, 1984). An Estimated 37,000 groups are structured in a system commonly referred as *Hindu Caste System*. Individually, each population in the system is called a *Jati* or a Caste (Karve and Malhotra, 1968). There are some 3,000 endogamous populations that, strictly speaking, are outside the caste system. These populations include tribal autochthonous and religious communities. The main features of the Indian population structure are summarized in figure 1. These 40,000 endogamous groups exhibit striking variation in cultural traits like skill possessed, food habits, dress, language, religious observances, as well as in a number of genetic traits. Further these groups display a rich and diverse ecological ethics emphasizing

the interconnectedness of the people and the nature as reflected in the various forms of worship, rituals and philosophy. Inspite of the advent of modernization and market – oriented land use policies, traditional ecological ethos still survive to a great extent among different communities. Given above understanding NBSAP set – up a group to work on the thematic area on **Culture and Biodiversity.**

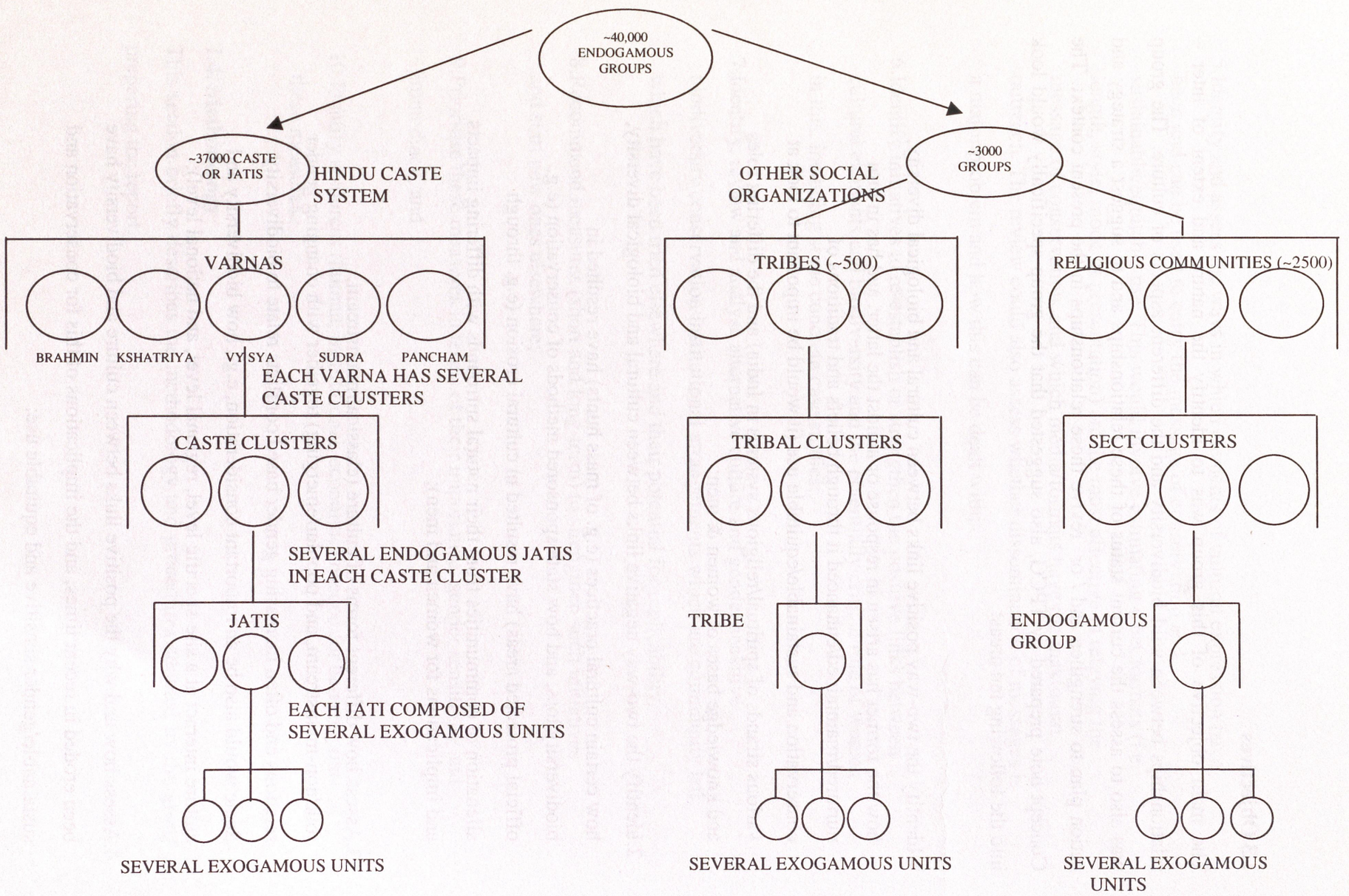


Fig. 1 Population structure of the Indian populations (after Malhotra, 1984).

1.3 Objectives

The main objective of this group was to identify the nature and extent of inter – relationships between wild biodiversity and the different aspects of culture. The group was also to assess the current status of these relationships and to suggest a strategy and action plan to strengthen and / or revive these relationships in the present context. The Concept note prepared by TPCG, also suggested that the group specifically would look into the following ten areas:

1. Identify the two-way positive links between cultural and biological diversity, how the former has arisen in response or amidst the latter, and has in turn nurtured/maintained/enhanced it through beliefs and traditions of conservation and sustainable/equitable use (it would be important to look at various strands of spiritual/religious systems in India) and the differing roles and knowledge bases of women & men;

2. Identify the two-way negative links between cultural and biological diversity, how certain cultural practices (e.g. of mass hunts) have resulted in biodiversity loss, and how state sponsored methods of conservation (e.g. official protected areas) have resulted in cultural erosion (e.g. through alienation of communities from their natural surrounds with differing impacts and implications for women and men);

3. Assess how different forms of culture (classical/mainstream, folk/non-mainstream, and popular/emerging) together with changing gender relations and often increasing gender based conflicts relate to biodiversity. Scale would also be an important consideration, e.g., how biodiversity and culture interact at a site-specific level, regional level, and national level);

4. Assess how and why the positive links between culture and biodiversity have been eroded in recent times, and the implications of this for conservation and sustainable/gender sensitive and equitable use;

5. Identify and assess the ways in which elements of cultural expression have been and can be used to carry the message of conservation and sustainable/equitable use. This would involve estimating what formats (i.e. length, style, mode of presentation) are the most effective in relaying the message of conservation, and which media/formats have the maximum outreach. The review could also assess whether dissemination of messages is a major problem and how this can be dealt with;

6. Identify initiatives to re-establish or strengthen the positive links between cultural elements and biodiversity and the potentially critical role of women in this, including some concrete case studies;

7. Identify, review and analyse alternative culture and gender sensitive biodiversity conservation institutional arrangements which are community led which have been tried elsewhere and their potential for replicability.

8. Recommend measures (short and long-term) to strengthen such initiatives and start new ones elsewhere;

9. Prioritise these measures in terms of their importance, gender sensitivity and immediacy; and

10. Identify resources (human, institutional, economic) needed for carrying out these measures.

1.4. Methodology

This section briefly describes the methodology and procedures adopted by the group for preparing the report.

1.4.1 Establishing contact with group members: The Coordinator of the group established contact with all the members proposed by TPCG, and their participation was sought in the process of preparing the report. Some of the proposed members, for a variety of reasons, could not accept the invitation. This necessitated inviting a few other persons. The final list of the members of the group is given in appendix I. On behalf of TPCG, Ms. Seema Bhatt was assigned to the group.

1.4.2 Finalization and adoption of the concept note: In consultation with the members a two – day meeting was held in Delhi. The agenda of this meeting was:

- To discuss the concept note, modify it if necessary and adopt it.
- To identify various tasks that need to be accomplished.
- To distribute the identified tasks among the members.
- To develop a time – frame for completing the report.

The group deliberated at length on the Concept note prepared by TPCG. The Group endorsed most of the contents of the Concept note. However, the Group felt that it did not have the necessary expertise in the area of domestic biodiversity, and therefore would restrict its engagement only to the wild biodiversity. The modified concept note adopted by the group is given in appendix II.

All the other items in the agenda were discussed and finalized. Among several decisions taken at this meeting, four need to be mentioned here:

a. Each member was to develop their own strategy in achieving the task assigned;
b. Keeping in view the resources and the time available, the members would primarily depended on their own research work and published and unpublished literature, and in general would avoid fresh field work;
c. To invite as per the need non- members in the subsequent meetings of the group; and
d. A conceptual frame work was deliberated and adopted (see section 2.2).

1.4.3 Review meeting: A two day review meeting was held in Delhi and the progress made by each member was reviewed. Each member made a presentation of their draft write – ups. The drafts were discussed at length keeping in view the objectives (see section 1.3).

The authors were asked to fill in the gaps and especially add a section that would address strategy and action plan. Members who could not attend the meeting, their contributions were also discussed and the views of the group were communicated to them.

1.4.4. Report writing workshop: A meeting (third in the series) was held at Bhopal to review the progress made so far; and to develop an outline of the contents of the report.

Although it was anticipated that the group will be able to develop a draft write – up in this meeting, but due to non- availability of some members and logistic constraints this could not be achieved. It was decided that with the help of other members the Coordinator will synthesize the draft report.

It was felt by the group that sufficient materials on religion and biodiversity, especially examples, were not readily available with the group and therefore we should contact more people in this field. Ms. Seema Bhatt accepted this responsibility and subsequently contacted a large number of persons through e-mail. We did receive some positive responses.

1.4.5 Preparation of draft report: The coordinator ran into some personal and logistic difficulties. He then moved to the Center for Ecological Sciences, Bangalore where with the help of Yogesh Gokhale (member of group) he prepared the draft report. All the contributions made by the members and others are given in Volume II of this report. In this report, however, only the main features emerging from the contributions have been included.

1.4.6 Preparation of final report: The draft report was shared with all the members of the thematic group on **Culture and Biodiversity**, as well as Coordinator NBSAP, MoEF and BCIL. The draft was sent to over 70 persons in the country and abroad. All of them were requested to comment on the entire draft. However, some persons were requested, in addition to comments, for additional information, data, references etc. A few were requested to develop write up on certain topics identified as gaps in the draft report. The response was indeed overwhelming. Written comments were received from over 49 persons.

Three workshops were organized in Bhopal, Calicut and Pune where the draft report was disscussed at length.

Prof. K.C. Malhotra personally contacted a number of persons for specific inputs including data, fieldwork, photographs, write ups, etc.

All the inputs we received from various persons have been incorporated in this final report.

2. CULTURE AND BIODIVERSITY

2.1 Introduction

Human cultures in India, as elsewhere in the world, evolved around different elements of nature. Our ancestors developed a special world view of nature around them. This resulted in a number of practices and many forms of nature worship. There are numerous examples from all over India that suggest the existence and persistence of such practices.

There are examples in which people protect species of plants and animals; for example trees like *peepal* (*Ficus religiosa*) and *banyan* (*Ficus benghalensis*) and animals like non – human primates (monkeys and langurs) are worshiped and protected in most part of the country.

There are also numerous examples in the country where people protect habitats with biodiversity (fauna and flora). The well known example of this type are sacred groves. There are also examples where people have protected large landscapes that include both

biotic and abiotic elements that exist there. The best example is from Sikkim (Ramakrishnan, 1998).

Thus, it may be highlighted that the nature worship related practices depict a vast range of variation: these could be individual, family/lineage specific, clan specific and community (endogamous group) specific, region specific or pan Indian (see below Fig. 2). While we need to understand about the conservation ethos at all the levels mentioned in Figure 2, unfortunately the literature available is highly scanty and widely scattered. It is therefore, beyond the scope of the present endeavor to compile all the available materials.

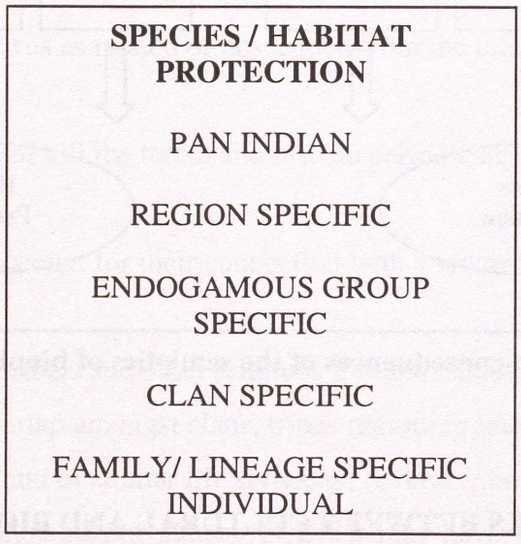


Figure 2. Different levels of conservation ethos.

2.2 The Conceptual Framework

It is evident from section 2.1 that cultural practices that could have both positive and negative links with wild biodiversity are numerous and practically present among all the 40,000 endogamous groups in the country. It is therefore, necessary to develop a conceptual framework for the present purpose. The framework has essentially three elements - ethos, institutions and conservation implications. These have been shown in Figure 3. We shall, therefore, consider the links between culture and biodiversity at three levels:

a. Species protection

b. Habitat protection

c. Landscape protection.

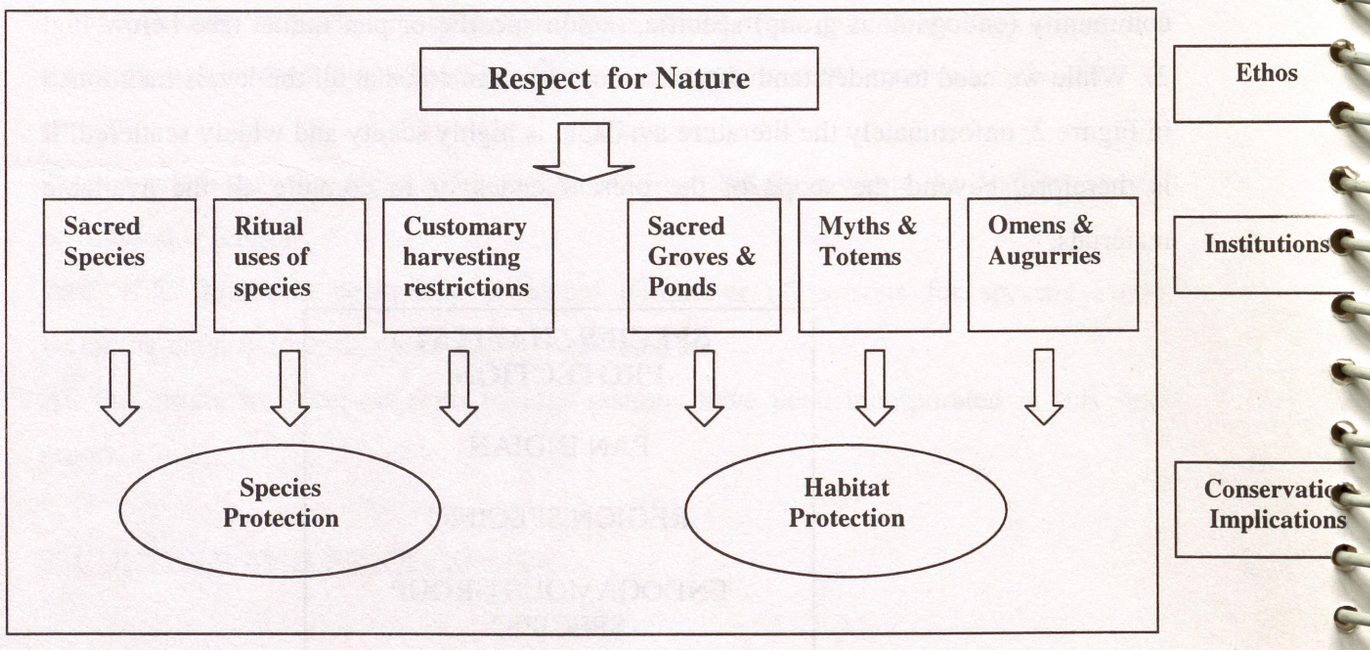


Fig. 3 Conservation consequences of the semiotics of biophilia in indigenous culture

3. POSITIVE LINKS BETWEEN CULTURAL AND BIOLOGICAL DIVERSITY

3.1 Species Protection

The customary restrictions may be arranged under the following broad cultural practices : taboos on killing of selected species, or cutting of selected species of trees, seasonal prohibitions on the use and or hunting of specified species, regulation on the quantity of harvest, and rites and ceremonies, resource use diversification and territoriality in the local cultures that may ensure sustainable use of selected species.

3.1.1 The species level conservation efforts are described under the following heads :

a. Totemic species

b. Species of ritualistic or religious importance

c. Seasonal restraints on utilization
d. Hunting restrictions
e. Ritual use
f. Resource – use diversification
g. Territoriality

This section, especially items a and b, have been drawn from the unpublished work of Yogesh Gokhale (Gokhale, 2000, unpublished).

a) Totemic species: The following are the main features of totemic tradition:

1. The group regard themselves as related or descended from the totemic animal or plant;

2. The group will not injure or kill the totem and instead periodically propitiate it; and

3. The group tell myths to account for their connection with a totem.

Out of 3,000 communities (tribals and other religious groups), about 1000 groups practice totemism. There may be overlap amongst clans, tribes regarding totemic species living in the same geographical area and of similar life style e.g., several tribes like Oraon, Munda, Birjia etc. coexisting in Chhotanagpur plateau of Bihar may have same totemic species common in between them. We give below a few illustrative examples of tribes and the associated totemic species from different parts of the country.
There are at least thirty-five tribes in Central - India that exhibit features of totemism (Presler, 1971). The commonest sacred animals are the tiger, calf, peacock, tortoise, cobra, elephant, monkey, buffalo, bear, jackal, hog, deer, and black buck. Plant totems include rice, *kodan* (cereal), sandalwood, cucumber, and peppers.

- Examples of totemic plant and animal species among 5 tribes in southern West Bengal are listed in Table 1.

TABLE 1 Example of Totemic Plants and Animals for Five Tribes

Tribe	Plant	Animal
Bhumij	Wild Yam (*Dioscorea spp.*)	Mollusc
		Sacred Chank (Xancus [= *Turbinella*] *pyrum*)
		Fish
		Bhuya (*Channa gachua*?)
		Shal (*Channa Marulius*)
		Bird
		Geese
		Ducks (*Anas* spp.)
		Kites and buzzards
		Crow (*Corvus splendens, C. indicus*)
		Indian roller (*Coraicus benghalensis*)
		Mammal
		Tiger (*Panthera tigris*)
Kora	Betel nut Palm (*Areca catechu*)	Fish
	Baola alu (*Dioscorea sp.*)	Shal (*Channa marulius*)
		Shol (*Channa Striatus*)
		Ban (*Mastacembelus armatus*)
		Bird
		Crimson - breasted
		barbet (*Megalaima haemacephala*)
		Crow pheasant (*Centeropus sinensis*)
		Reptile
		Tortoises
		Mammal
		Squirrel (*Ratufa* spp.)
		Pig
		Ox
		Goat
Lodha	Chirka alu (*Dioscorea sp.*)	Insect
		Grasshoppers
		Dragonflies
		Fish
		Shal (*Channa Marulius*)
		Shol (*Channa Striatus*)
		Chand (*Chanda chanda*)
		Reptile
		Turtles and tortoises
		Bird
		Magpie robin (*Copsychus saularis*)
		Mammal

		Tiger
		River dolphin (*Platanista gangetica*)
Munda	Kul (*Zizyphus spp.*)	Mollusc
	Shaluk (*Nymphaea spp.*)	Sacred Chank (*Xancus pyrum*)
	Padma (*Nelumbo nucifera*)	
		Fish
		Shal (*Channa Marulius*)
		Reptile
		Snake
		Tortoises
		Gharial (*Gavialis gangeticus*)
		Crocodiles (*Crocodilus* spp.)
		Bird
		Gray partridge (*Francolinus pondiceriarus*)
		Ducks (*Anas* spp.)
		Mammal
		Horse
Santal	Bael (*Aegle marmelos*)	Insect
	Supari (*Areca catechu*)	Tassar silkmoth (*Anthaeria paphia*)
	Dhaw (*Anogeissus latifolia*)	Mollusc
	Palash (*Butea frondosa*)	Sacred Chank (*Xancus pyrum*)
	Piyal (*Buchanania Latifolia*)	Reptile
	Parashi (*Cleistanthus collinus*)	Rat snake (*Ptyas mucosus*)
	Amla (*Emblica officinalis*)	Lizards (*Calotes* spp., *Mabuya* spp.)
	Sal (*Shorearobusta*)	Bird
	Ischemum rugosum (grass)	Geese
	Champa (*Michelia champaka*)	Ducks (*Anas* spp.)
	Murum mushroom	Kites and buzzards
	Tulsi (*Oscimum sanctum*)	Jungle fowl (*Gallus sonneratii*)
	Kath – champa (*Plumeria rubra*)	Gulls (*Larus* spp.)
	Kurchi (*Holarrhena antidysentrica*)	Blue rock pigeon (*Columba livia*)
		Vultures
		Crow (*Corvus* spp.)
		Mammal
		Squirrel (*Ratufa* spp.)
		Horse
		Nilgai (*Boselaphus tragocamelus*)

- Among the Maiteis of Manipur the different clans have a number of totems forbidden from touching or eating. For example, the taboo - object of the Ningthouja clan is reed, of the Khuman clan a simul cotton seed, of the Moirang clan a buffalo and of the Angom clan a white goat. Killing a snake is forbidden for the members of the Khuman clan. As parts of the clan the lineages also have certain taboo regulations to validate their blood affinity. For example, if lineage member meets his death in an extra - ordinary way the elders of the lineage assemble together and declare the object, tree, plant or animal causing the miraculous death a taboo applicable only to the lineage. Thus the pumpkin *(Cucurbita moschata)* is a taboo for all the members of the Salam lineage. A lineage member has to observe the clan taboo as well as the lineage taboo (Singh and Singh, 1998).
- The tribals of tea gardens of Jalpaiguri district of West Bengal migrated mostly from Jharkhand continue to practice totemism. They have several totemistic clans which are named after various birds and animals. For example Lakra clan represents the tiger, Minj represent a fish and Kachua represent tortoise (Banerjee, 2002).

Box 1. **Totemic clans among the Oraons of Bahagima village of Jaspur district of Chattisgarh**.

1	Tigga	Grasshopper
2	Kirkita	Woodpecker
3	Kujur	Date Palm
4	Dhek	Hyena
5	Hanuman	Monkey
6	Jigra	Cricket
7	Ekka	Tortoise
8	Lakra	Tiger
9	Kindo	Fish

Amitabh Pandey (pers. communication, April 2003).

b) Species of ritualistic/religious importance: Various tribal mythologies as well as mythologies of organized religions like Hinduism have given importance to several

individual species for ritual performance. Many festivals are also associated with specific species of plants or animals.

- In Kerala certain crocodiles are regarded as sacred, and are feed in tanks at certain temples. Priests regularly feed them at places such as Pommala, Palliport, Tripayar, Madai, etc. On the western bank of the Ponnani is a famous temple dedicated to the crocodiles; the animals are decorated with gold and other ornaments, and it is the religious duty of the pilgrims to feed them (Presler, 1971).

- In South West Bengal in tribes like Bhumij, Kora, Lodha, Munda and Santal a number of species are associated with events which are shown in Table 2

Table 2 Plants and their Parts Used in Rites of Passage

			Rite of Passage		
Tribe	**Birth**	**Naming**	**Menarche**	**Wedding**	**Death**
Bhumij			Banana (Fruit)	*Bassia Latifolia*	*Azadirachta*
			Oscimum sanctum	(Flower, fruit, twigs)	*indica* (wood)
			(leaf)	Banana (fruit)	*O. sanctum*
				Terminalia chebula	(Whole plant)
				(fruit)	
				Lagerstroemia	
				parviflora (twig)	
				Jatropha Gossipifolia	
				(twig)	
Kora	O. Sanctum			*B. latifolia* (flower)	*O. Sanctum*
	(*whole plant*)			*Mangifera indica*	Whole plant)
				(leaf)	*Chrysopogon*
				Terminalia	(Grass)
				chebula (fruit)	*Areca catechu*
				L. Parviflora (twig)	(fruit)
				Cynodon dactylon	*Saraca indica*
				(grass)	(leaf)
					T. chebula
					(fruit)
					Shorea
					robusta (resin)

Lodha	*O. sanctum* (leaf)		Seven kinds	Banana (fruit)	*Ficus religiosa*
	Turmeric		of flowers	*B. latifolia* (flower and twig)	(twig)
				Shorea robusta (twig)	
				M. indica (twig)	
Munda	*O. sanctum* (leaf)			*Ficus hispida*	*Aegle marmelos*
				(Flower)	(Leaf)
				Calotropis	*O. sanctum*
				indica (flower)	(whole plant)
				A. Marmelos	*S. robusta*
				(Leaf)	(twig)
				O. Sanctum	
				(Whole plant)	*F. bengalensis*
				C. dactylon (grass)	*F. religiosa*
				S. robusta (twig)	(Twig)
				B. latifolia (flower)	*Zizyphus*
					jujuba (twig)
Santal		*Terminalia*		*M. indica* (leaf)	*A. indica*
		tomentosa		*B. latifolia* (flower)	(twig)
		(leaf), turmeric,		*S. robusta* (leaf)	*B. latifolia* (twig)
		A. indica (leaf)			

Many species associated with rituals may have other importance like medicinal value, food value, economic value etc. Also the season in which the species is used or ritual is performed may have other implications than only the sacredness i.e. the Table 2 mentions about *Salui* and *Karam pooja* associated with *Shorea robusta* and *Adina cordifolia*. Both the species are economically important. The months of the worships of these species are flowering and fruiting season of both the species. Before worship no one is allowed to use the species, thus allowing plants to reproduce to use in future is probably the major implication along with the sacredness of the worship (Deb and Malhotra, 1997).

Box 2. Conservation Ethics and practices of Hill Kharias of Similipal Forest Hill ranges of Orissa

The Hill Kharias are one of the primitive hunter - gatherer tribal groups of Orissa. Similipal Forest hill ranges of Mayurbhanj District, Orissa have been the primordial home of the Kharias. The forest resources of Similipal with all its wilderness provide the bulk of subsistence to the people. The collection of roots and tubers ,arrowroot, mushrooms, nuts and berries, honey etc and hunting of small games are usual round the year activities of Kharias. Although Kharias live in the heart of forest and meet their survival requirements from it, in true sense of the term, they are the rational conservators

of forest. The following are some of the conservation ethics and practices of the the Kharias;

1.They do not participate in Akhanda – sikar, annual ritual hunting of wild animals being practiced by other tribal and non tribal groups in the region .

2. Killing of elephant and tiger is prohibited .

3. Each and every hill of Simlipal is a sacred abode of deities. The presiding deity 'Badam' and his family members live in the caves of sacred hill called 'Athara Deula'. A plentiful of rituals are conducted in the forest with the onset of each and every gainful activity.

4.The members of each and every clan of the Kharia do not kill their totems. The list of clans and their respective totems is given below:

The List of Clans and Respective totems

	Clan	Totem
1	Sankiala	A type of bird
2	Siala	A type of bird
3	Salku	A type of bird
4	Sarulia	A type of bird
5	Katulipania	A type of bird
6	Bisoi	Sal fish

5.The Kharia observe a number of taboos in their day to day life and breach of taboos is believed to cause depletion of forest resources.

6.The streams at source points are considered sacred and making those sites polluted through bathing , other body cleaning activities are prohibited.

7. The females of the hunted species are not hunted.

8.They have a strong sense of territoriality. Protection and conservation of each ones forest territory rests on the village. (P.K.Das).

Thus as mentioned in the table above, certain species are required for the specific rituals. In northeast Indian tribes like Dimasa specific variety of bamboo is needed to perform many rituals in the sacred grove called `Madaico'. Dimasa also maintain a separate banana plant in their homestead garden and leaves, flowers, fruits of that plant are used only for performing rituals whenever required (pers. comm. S. Thousain, 1998.).

Similarly Hindu mythology prescribes several events some are also called as `*Vratas*' i.e. ritual performances for respective deities like *Ganapati vrata, Laxmi vrata, Nitya*

Somawara vrata, etc. Each *vrata* has its own objective associated with the qualities of deity like the deity *Ganapati* is known for his quality of clearing obstacles while completing any task in hand. So *Ganapati vrata* is performed to please *Ganapati* so that he will remove all the obstacles in way of achieving the objectives. *Laxmi* is the goddess of wealth. So *Laxmi vrata* would fulfill the desire of money. These various *vratas* needs to be performed by using specific plant species. Most of the sacred Hindu literature like Vedas, Puranas prescribe numerous *vratas* which require specific plants. A smaller compilation by Karnataka Forest Department regarding *vratas* and associated plants describes about 19 *vratas* and more than 100 plant species required for 19 *vratas*. *Swarna Gowri Vrata* which has been vouchsafed by Lord Shiva himself to his son Shanmukha. To perform this *vrata* about 13 species of plants are required, out of which flowers of 8 species like *Jasminum grandiflorum, J. offcinale, Clitoria terneata, Pandanus odoratissimus, Nelumbium speciosum, Michelia champaka, Chrysanthemum indica, Nyctanthes arbortristis* and leaves of 6 species like *Artimisia indica, Chrysanthemum indica, Aegle marmelos, Oscimum sanctum, Hibiscus abelomoschus, Origanum marjorana* are prescribed. All these 13 species have medicinal properties and some of the species also have other useful attributes. e.g. *Pandanus odoratissimus* yields medicinal oil, useful for headache, rheumatism, earache. Fruits are used on Vata and Kafa. The flowers are famous for the fragrance. *Aegle marmelos* has rich medicinal properties. Its roots, bark, leaves, flowers and fruits are used for various disorders. The plant is also considered as sacred to Lord Shiva (Kerala Forest Department).

c) Seasonal restrictions: Restrictions on the use of resources item for specified seasons are observed among a large number of communities in the country. A few illustrative are given below:

- The Santal and Munda do not harvest any part of the sal (*Shorea robusta*) tree until their *Salui / Sarhul* festival is over in March –April..
- No part of *karam* (*Adina cordifolia*) tree in harvested by the Kora, Santal, Munda , and Bhumij until the karam festival is performed in August- September.
- Among the Hindus, Ber fruits are not eaten until the full moon day of January.
- Sea fishing on the west coast of the country is banned during rainy season.

d) Hunting Restrictions: Several communities who derive livelihood or sustenance form hunting wild animals do not kill pregnant females. For example, Hamars, Harangkha Debbarma , and Akuras in Assam do not kill deer in mating season, a pregnant female, and a leader of a group of deer and wild boar. Some of the tribes in Bastar do not kill birds during their breeding season.

- The fishermen and the villagers in and around Chilka Lagoon in general do not hunt Dolphins. Whenever a Dolphin gets entangled in a fishing net, the dolphin crie for help by making a specific sound and attract sympathetic attention of the fishermen. They believe that if they do not save the dolphin bad times would come. If they save dolphin they will get more fish catch (Sinha et al., 2002)

e) Ritual use: All religious ceremonies and festivals among of the communities in India require use of a range of plant parts. A wide diversity of plant resources is also needed in ceremonies associated with *rites de passage* in tribal and other cultures. Most of the plants required for these ceremonies and rituals are found in the forest. For Example, flowers, fruits and twigs of *Madhuca indica* and fruit of *Terminalia chebula* are required during wedding ceremony among Bhumij and Kora of West Bengal.

The ritual usefulness of certain species necessitated the practice of domestication, for example, *Oscimum sanctum* is grown in Hindu homesteads.

- At the outskirt of the villages, cultivation of bamboo and conserving forest patches for fulfilling the firewood and small timber needs are the integral parts of Apatani culture of Arunachal Pradesh. These areas are also used for rituals and worships. Such cultural practices are being observed for generations and are sustainable biodiversity conservation practices (Barik and Darlong, 2001)

f) Resource – Use Diversification: The sedentary endogamous groups living together or sympatrically, display a remarkable diversification of resource use. For example, in the village Masur – Lukkeri in Kumta taluk of Karnataka thirteen different endogamous groups live. The thirteen endogamous groups were engaged in seven categories of primary occupations – fishing, agriculture, horticulture, entertainment, service, artisans and traders. This pattern reduced a competition over resources, and can be considered as a social mechanism of prudent use of resources (Gadgil and Guha ,1992).

g) Territoriality: There are a number of groups that are identical in their resource – use patterns. Such groups tend to have a non – overlapping geographical distribution in what may be thought of as an analogue to Gause's principle of competitive exclusion. For example, the two castes, Tirumal Nandiwallas and the Phulmali Nandiwallas, are both non- pastoral nomads, making a living by display of the sacred bull, by selling trinkets and by hunting. Both the groups operate in Maharashtra. They both originated from common ancestral stock in Andhra Pradesh. They thus exemplify castes with completely identical ecological niches. It is notable, therefore that these two castes of Nandiwallas show no geographical overlap whatsoever i. e; they are completely allopatric (Gadgil and Malhotra, 1983).

Box 3. Patterns of Niche Diversification among the Indian Fishermen:
Our extensive field investigations among the fishermen of coastal Karnataka, Andhra Pradesh (AP) and Orissa reveal innumerable examples of niche diversification implicit in the way fishermen populations are distributed along the coast, the type of nets/boats used by different cohabiting groups of fishermen, the zones of fishing adhered to etc. We shall illustrate this with two examples from coastal Orissa and coastal Karnataka.

Case Study 1: Coastal Orissa

Our survey of the Orissa coast and a detailed study of the migrant fishermen at Puri brought out an interesting fact that there have been no indigenous marine fishermen, all those who fish on the Orissa coast are migrants, mostly from AP. A few towards the northern end of the Orissa coast are from West Bengal. Most Oriya fishermen are engaged in the Chilka lake estuary and in other inland water sources. They never seem to have had technology and/or expertise suitable for fishing in the sea, thus leaving the vacant marine fisheries to the migrants.

There is a migrant population of about 20,000 fishermen on the coast of Puri town in Orissa, competing for the same aquatic resources. They belong to three endogamous groups, had migrated at different points of time (Figure 4). Competing for the same set of resources, although they had several conflicts initially, gradually diversified their niche, so as to moderate competition and for peaceful coexistence. The Jalary numbering about 1,000 persons were the earliest to migrate to the Puri coast and are known for sea fishing at their parental areas in the southern parts of the coast clearly diversified from the other groups. They not only concentrate in fishing in the Chilka Lake during the rainy season, but also adopted other part time occupations like helping the tourists in bathing in the sea, selling conch-shells, beads, corals etc. to tourists. Furthermore, they do fish in shallow waters along with the Vadabalija of Vadapeta, using beach-scene etc. Nevertheless, the Jalary play a supporting role rather than of competitors as the operation of this huge net requires large number of people. However, the nets and boats of these two groups are clearly different from that of Vadabalija of Penticotta which is the most recent to migrate

to Puri from about 100 coastal villages of AP. The Vadabalija of Penticotta is the largest group (about 15,000) in Puri the members of which are equipped to do relatively more deep-sea fishing, for which neither of the former groups have the expertise. Implicit in these differences is clear diversification of not only the fishing zones but also the prey species that they target, thus providing a clear example of niche diversification among the traditional fishermen. However, there are indications that the recent introduction of mechanized boats may obliterate this fine-tuned adaptation in the near future.

Case Study 2: Coastal Karnataka

As part of a major study on the ecological overview of Karnataka coast, we surveyed 150 of the 300 fishermen settlements. A guild of 8 specialized fishing groups competing for the marine resources are found along the coast who show series of adaptations in diversifying their niche and partitioning of the resources (Figure 4).

Habitat specialization and geographical ranges of distribution

Certain habitat specializations and the ranges of distribution of these fishing groups can be interpreted in terms of diversifying their niche to avoid competition. Among the eight groups while the Ambiga and Bhoi are primarily river and/or estuarine fishermen the remaining 6 groups are marine fishermen. Among the marine fishermen there are three indigenous (Harikant, Mogir and Moghaveera) and three migrant (Gabith, Dalji and Kharvi) groups. While the ranges of distribution of the former are clearly non-overlapping and mutually exclusive the arrival of migrant groups from the neighboring areas of Goa and Maharashtra imposed certain degree of overlap. However, migrants show certain characteristic pattern of settlement- either they occupy areas near the river mouths or exclusively certain stretches on the coast. Where there is overlap they do show diversification with reference to nets, boats and fishing zones to moderate or avoid competition.

Diversification with reference to nets, boats and fishing zones

Several examples of niche diversification could be seen in terms of fishing methods specific/characteristic to the groups in the area where the ranges of the distribution of different groups overlap and this largely pertains to Uttara Kannada coast. The groups involved are Harikant, Ambiga, Kharvi, Gabith and Dalji. While the Ambigas use Sannapattis (small canoe) and *Beesubale, Oddubale* even when they fish in the sea, Gabiths use *Ullandi Done* with sails facilitating longer and faster travel, and gillnets targetting big fish. Harikants and Kharvis use *Dodda pattis* (big canoes) and fish more in shallow waters with nets belonging to Rampani (purse seine) family. Their niche, therefore, were naturally diversified both in terms of prey species and the zones of fishing.

The Guilds

At the local level several interesting examples can be cited for niche diversification among the sympatric groups. Kali river estuary and the coast contiguous to the river

mouth present an interesting situation. There is a large population of Gabiths near the river mouth, Ambigas and Kharvis on the coast nearer to the estuary and Harikants on the Kharwar coast, slightly ahead, but within overlapping range of fishing. While Harikants and Kharvis fish mostly with *Rampanis*, with times and zones of operation of these nets being clearly demarcated, Gabiths near the sea concentrate in gilnetting in deep sea beyond 20 nautical miles. Although Ambigas fish in the sea they use mostly hooks and *Beesubale* in the surface waters with their small canoes. Given the large population of Gabiths here it would not have been feasible to depend on gillnetting alone, hence those near the estuary specialized themselves in Shell-fish collection for which Kali estuary is very rich.

This could be seen as the most vivid demonstration of niche partitioning both within the caste and between different groups of fishermen on the Karnataka coast.
However, introduction of mechanization which facilitated entry to many non-fishermen into this industry already had its impact on disrupting these traditional adaptations, leading to many conflicts.

We thank Mr. Vikrant Kumar, our Ph.D. student for his help in making the schematic diagram (B. Mohan Reddy and Madhav Gadgil, personal communication, 2002).

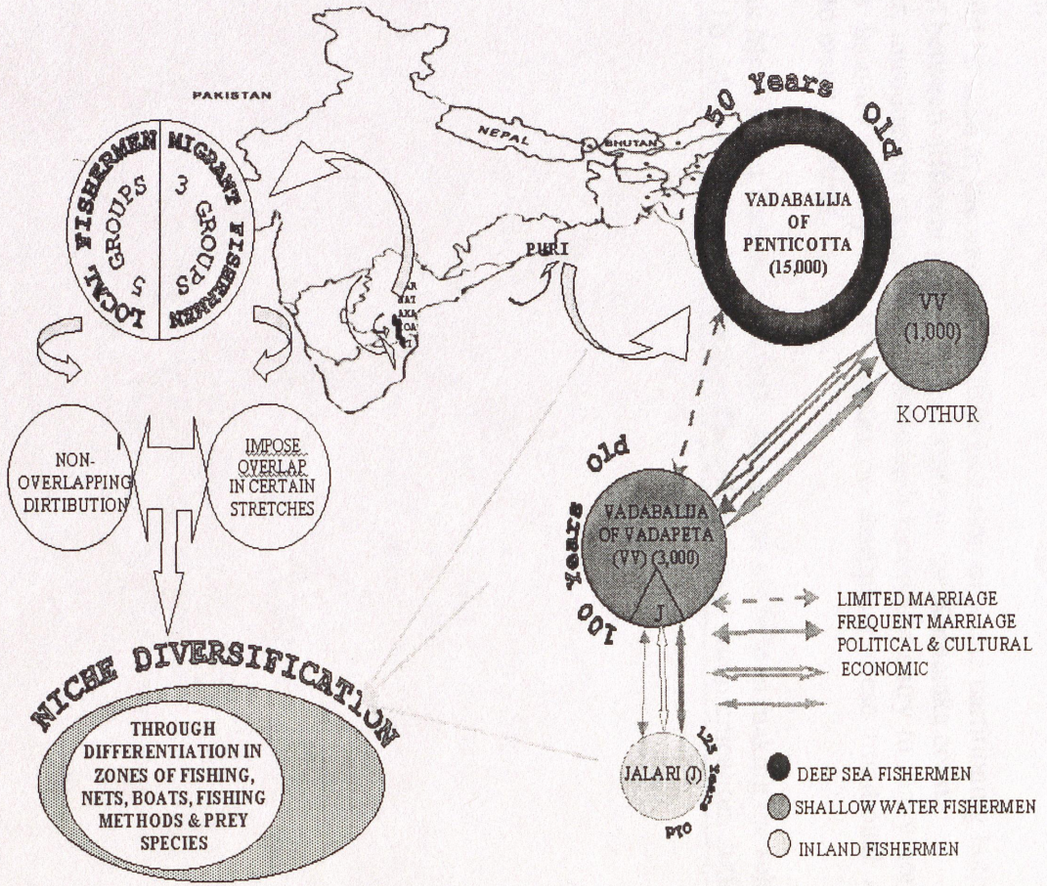


Fig. 4: Schematic Diagram Depicting Patterns of Niche Diversification Among the Indian Fishermen

3.2 Habitat protection

In India a number of communities practice different forms of nature worship. One such significant tradition is that of providing protection to patches of forests (sacred groves) and ponds (sacred ponds). In this section we shall give an overview of the relevant aspects of sacred groves and sacred ponds.

3.2.1 Sacred groves in India: The materials presented here are substantially drawn from an earlier review article of Malhotra et al. (2001) and notes prepared by Debal Deb, Yogesh Gokhale and Abhik Gupta. These are given in full in Volume II of this report.

One of the many forms of nature worship in India is the tradition of consecrating certain forest habitats to a deity or ancestral spirits. These patches of forests, designated as sacred groves (SGs), constitute natural or near-natural vegetation, where harvesting of any living matter is generally prohibited. This customary protection of the habitat over centuries has resulted in conservation of a range of rare and endemic species in the sacred groves, which constitute a glorious example of traditional cultural institutions fostering biodiversity conservation.

The sacred groves in different parts of the country are known by different names: *Deorai* (Maharashtra), *Orans* (Rajasthan), *Kavu* (Kerala), *Devar kan* and *Devarakadu* (Karnataka), *Dev van* (Himachal Pradesh), *Sarana* (Bihar), *Umanglai* (Manipur), *Kovilkadu* (Tamilnadu), *Jaherthan* (West Bengal) etc.

Antiquity of SGs

Several scholars have noted that SGs are a very ancient and widespread institution in the Old World cultures. According to Kosambi (1962) the institution in India is very ancient

and dates back to the pre-agrarian hunting-gathering stage, before humans had settled down to raise livestock or till the land.

Geographical Distribution of SGs in India

In the present day India the tradition of SGs is reported from most parts of the country. However, for the following states there are no reports or studies available regarding the presence or absence of the tradition: Andaman and Nicobar Islands, Jammu and Kashmir, Lakshadweep, Nagaland, Delhi, Goa, Punjab and Tripura.

Number and Size Distribution of SGs

In Box 4, readily available data in terms of number of SGs in India are presented. At least 13,720 SGs have been reported so far in India.

Box 4. Reported number of the SGs in India.

State	No. of SGs
Andhra Pradesh	750
Arunachal Pradesh	58
Assam	40
Chhattisgarh	600
Gujarat	29
Haryana	248
Himachal Pradesh	5000
Jharkhand	21
Karnataka	1424
Kerala	2000
Maharashtra	1600
Manipur	365
Meghalaya	79
Orissa	322
Rajasthan	9
Sikkim	56
Tamil Nadu	448
Uttaranchal	1
West Bengal	670
Total	**13720**

This figure of 13,750 is, however only an indication of the extent and magnitude of the presence of SGs in the country. It is certainly difficult to make a guess regarding the total number of SGs in the country but in view of the known presence and pattern of distribution of sacred groves in Chhattisgarh, Jharkhand, Orissa, Uttaranchal, Madhya Pradesh and West Bengal for which detailed inventories are not available, we strongly feel that the number of SGs in India is likely to be between 100,000 and 150,000 (Malhotra, 1998).

According to Gokhale et al. (1998), the total area of SGs in India as a whole, would be about 33,000 ha. or 0.01 percent of the total area of India. This seems to be an underestimate as just 4,415 SGs reported so far cover over 42,000 ha (Box 5). Although based on the rather incomplete data, it is not possible to come up with a reasonable estimate. However, it can safely be said that the area under SGs will be many times more than Gokhale et al. have estimated.

Box 5. Reported Area of SGs In India.

State	No of SGs	Area (ha.)	References
Karnataka			
Kodagu	1214	5947	Kalam,1996
Kerala	2000	500	Rajendraprasad,1995
Maharashtra	483	3570	Gadgil and Vartak,1981
Meghalaya	79	26326	Tiwari et al.,1998
Orissa	322	50	Malhotra et al., 1998
Rajasthan (1)	1	83	Singh and Saxena, 1998
(2)	8	158	Jha et al., 1998
Tamil Nadu	10	127	Swamy et al., 1998
Uttaranchal	1	5500	Sinha and Maikhuri,1998
West Bengal (1)	7	2	Malhotra et al., 1998 &
(2)	290	15	Deb et al, in press
Total	**4415**	**42278**	

The size of the existing SGs varies widely from a cluster of a few trees to several hectares. Inter as well as intra-State variation has been noted with regard to size of the groves. In Maharashtra, for example, the size of the groves tend to increase from south to north (Deshmukh et al. 1998; Malhotra et al. 2000). It appears that SGs in western

Maharashtra, Kodagu and Uttara Kannada district of Karnataka (see Box 6), Tamil Nadu and Rajasthan are considerably larger in size than those in the Orissa, Jharkhand and West Bengal.

Box 6. Kans – The sacred groves of Western Ghats of Karnataka

*Kan*s are the sacred groves constituting of patches of evergreen forests in the Western Ghats of Karnataka. These forests are reported from Uttara Kannada district and Old Mysore State districts like Shimoga and Chikmagalur.

It is estimated that historically about 6% of the landuse was under kan forests. Uttara Kannada in a 25 km^2 area enabled to reconstruct the traditional landuse system. Percentages of land under different landuses in the focal area are given below in the Box.

The treatment of *kan*s by British Government was different in the erstwhile Bombay Presidency and the Old Mysore State. The Bombay Presidency curtailed the rights of local people on the *kan*s and treated these forests for timber exploitation. In the Old Mysore State local landlords enjoyed the rights over the *kan*s till 1970s. Thus the area under Old Mysore State had formulated elaborate rules and regulations regarding the management of *kan*s. The rights of people over the produce were also identified.

As regards the *kan* holder, the kan shall be deemed to be a district forest and as regards strangers, it shall be deemed to be as state forests within the meaning of the Forest Rule of 1878 and all breaches of these rules will be liable to be punished under the Forest Rule of 1878 or under the Indian Penal Code (Anon, 1901).

The status of *kan*s in mainly two ranges of Sirsi forest division – Siddapur and Kyadagi administratively falling into Siddapur taluk is given below.

Siddapur taluk shows large number of *kan*s – about 113 kans - (84 in Siddapur range and 29 in Kyadagi range) according to the records of Village Forest Registers (VFRs). Most

of the *kan*s form a contiguous forest patch by merging with the *kan* of neighbouring village.

In contrast to *Kan*s in Siddapur taluk, Sorab taluk *kan*s are still retaining better potential. There were 116 *kan*s in the taluk but according to the forest department the present number of *kan*s is 65. The total number of kans in Sorab taluk could be more than 65 as many earlier *kan*s are now under the status of Minor Forest or District Forest. (Gokhale Y., in this report, see appendix II.4 in Volume II).

Table 3: Proportionate reconstructed landuse pattern in the Western Ghats of Karnataka

Sl.No.	Landuse	Percentage of area
1.	Kans	5.85
2.	Supply forest	24.14
3.	Shifting cultivation lands	23.40
4.	Grazing lands	6.46
5.	Fields and other cultivated lands	28.19
6.	Area under miscellaneous uses	6.12
7.	Ponds and rivers	2.00
8.	Hamlets	3.84
	Total	100.00

Source: Chandran and Gadgil (1993).

Ownership and Management of SGs

It appears that in terms of the legal tenurial rights, SGs fall under three categories:

- SGs under the control of State forest departments;
- SGs under the control of revenue and other government departments; and

- Privately owned SGs.

A large number of SGs in Maharashtra are under the control of the Forest Department. Gadgil and Vartak (1981) have documented 223 such groves. Legally all sacred groves in Meghalaya are under the control of District Councils (Tiwari et al., 1998). Kalam (1996) reports that *devarakadus* in Kodagu district of Karnataka are under the control of the Revenue Department. However Shri K.G. Uthappa (pers. communication, May 2002) clarifies the situation as 'The correct position is that the officials of the forest department or the revenue department never bothered to understand the notification of 1905 (for details see appendix 3) wherein it is clearly stated that the devarakadus which are protected forests are under the custody of the forest department and when a revenue officials acts with regard to such an area he shall be deemed to be a forest officer'. Godbole et al. (1998) and Roy Burman (1996) mention that many SGs in western Maharashtra are under the control of the Revenue Department. Roy Burman further mentions that a few thousand temples and their groves in western Maharashtra were brought under the scrutiny of the government by forming the Paschim Maharashtra Deosthan Prabodhan Samiti in the 1960s.

Several SGs are also privately owned by a family, a group of families, a clan, or a trust body. Chandrashekara and Sankar (1998) give examples of such groves in Kerala: Ollur *kavu* is owned by a single family, the S.N. Puram grove owned and managed by several families, and the Iringole *kavu* owned and managed by a temple Trust.

There are significant variations in terms of management of the SGs, i.e. upkeep, protection, performance of rituals and festivals, conflict resolution and harvesting of biomass. To cite a few examples: *orans* in Rajasthan are usually managed by Gram Panchayats (Jha et al., 1998); the Haryali grove in Garhwal is managed by a temple committee consisting of members of three villages (Sinha and Maikhuri, 1998); Roy Burman (1996) mentions that among the Mahadeo Kolis of Pune district, the management is usually vested with the clan elders, whereas among the Kunbis of Kolhapur district the groves are managed by village elders; the *Kantabanshini Thakurma* SG in Koraput district is managed by two clans of the Proja tribe (Hemam et al., 1997).

Clan-based management appears to be a widespread practice among the Santhal, Oraon, Munda, Kharia and other tribes of central, eastern and north-eastern India.

Ethnicity and Sacred Groves

SGs are known to be a characteristic of most tribal villages in Andhra Pradesh, West Bengal, Chhattisgarh, Jharkhand and Orissa. However, a large number of SGs are also maintained by the non-tribal segment of the population in many parts of the country. A recent study reports SGs in Mayureswar block of Birbhum district associated with shrines of Pirs (Sufi saints).

A few tentative inferences in terms of association of SGs with different ethnic groups that can be drawn from the materials described earlier are:
(i) that sacred groves are found among both tribals and non-tribals; (ii) there is regional variation in terms of ethnic association; (iii) the association with castes of different *varnas* is not clear; (iv) in States like Bihar, Madhya Pradesh, Orissa, West Bengal, etc., where we have both tribals and non tribals the presence or absence of groves in the non-tribal areas is not clear.

Gender and SGs

The role of gender in SGs can be analysed at least at four levels: (a) the gender of the deity associated with the sacred groves, (b) the gender of the priest serving the groves, (c) the nature and extent of access to men and women in various rituals, festivals and ceremonies that take place in the groves, and harvest of biomass from the groves, and (d) the role of gender in the management of the SGs.

A random literature search reveals that by and large a majority of the SGs are associated with female deities.

Regarding the gender of the. priest, it appears that without an exception the priesthood rests with males. However, this aspect needs to be further studied, as many studies do not provide explicit details on the gender of priests.

The data in terms of access to sacred groves by women are also very scanty. It appears that generally women are not permitted into the groves after attaining puberty. However, women's entry is not restricted in West Bengal SGs.

Although many studies have dealt with harvesting of biomass from SGs, it is not clear whether women are allowed to gather the same (see, among others, Unnikrishnan, 1990; Mitra and Pal, 1994).

Finally, nothing is known at all about the kind of role women play in decision-making regarding management of SGs. It will be of immense value to examine whether women are represented in the numerous trust bodies that are managing SGs, in particular in Maharashtra, Karnataka and Kerala. The limited information available from the studies in West Bengal and Orissa (Deb et al., 1997; Deb et al., in press; Malhotra et al., in press) suggests practically no role of women in the management of SGs.

Interface between People and Sacred Groves

In this- section we examine the role of sacred groves in the lives of the people from four aspects: (i) religious; (ii) socio-cultural; (iii) economic, and (iv) political.

Religious

There is a category of SGs among many communities that are associated with certain deities. In such groves annual rituals and ceremonies are performed to propitiate the deity. During these rituals sacrifices of animals (such as fowl, goat, pig, buffalo) are made. In other sanskritized groves offerings of vegetable items are made. These rituals are performed for the well-being of the people, animals, crops, etc. Details of such offerings are available in the anthropological literature.

The presiding deities are believed to look after the well-being of the people, and also protect the groves by administering punishment (mostly death) to the offenders. The practice of oath/vow taking in the groves is fairly widespread in the country (among others see Sisodia and Malhotra, 1963; Kalam, 1996). People take vows for wish-fulfilment when there is a crisis, particularly bearing on health,. and offerings mostly of

terracotta of animals, birds, humans, etc., are made. In some of the groves of West Bengal heaps of such terracotta offerings of elephants and horses are found (Malhotra and Das, 1997).

Box 7. Hierarchical Levels of Sacred Groves in India.

	Levels of Sacred Groves	Management of Sacred Groves
V	Pan-Indian	By trust
IV	Regional	By trust
III	Local	By whole village/community/local committees
IL	Village	By whole village
I	Intra-village	By separate communities

Modified from Malhotra, 1998.

There seems to be a hierarchy of sacred groves in terms of their geographical influence. At least five such hierarchical levels are discernible (Box 7). Inhabitants of a village or even different ethnic groups! different castes in multi-ethnic situations have their own groves. Roy Burman (1996) reports the existence of such groves for different castes in villages of Kolhapur and Pune districts. Malhotra et al. (1997) observed in Kendua village of Jamboni taluk of Midnapore district where Kora and Santhal communities have their separate groves. Such a pattern seems fairly widespread among the tribes of Jharkhand, Chhattisgarh and Orissa. Such groves are mostly managed by the local community(ies), and owned by a family, group of families, or a clan.

A second category of SGs is represented by those managed by the entire village community, regardless of ethnic composition of the village.

The local-level groves are where people from somewhat larger geographical areas, usually a few neighbouring districts come to worship a particular grove. Examples of such groves are *Iringole* in Kerala and *Kantabanshini Thakurma* in Orissa. Such groves are usually managed by local community and/or committees.

The regional-level sacred groves are where people from several districts! States participate. Such an example is the Sabarimala sacred grove in Kerala. Such groves are usually managed by temple trusts.

The next higher level of SGs involves those of Pan-Indian character where people from many parts of the country participate. An example of such groves is the Hariyali sacred grove in Garhwal Himalayas (Sinha and Maikhuri, 1998). Such groves tend to be larger and managed by temple trusts.

Another category of SGs includes those that are believed to be abodes of ancestral spirits. Often these groves are, in fact, burial grounds. Such groves have been reported from a number of places. A few illustrative examples are: *masani* SGs, among the Maler of Bihar (Vidyarthi, 1963); SGs in Sangameshwar tehsil of Ratnagiri district in Maharashtra (Godbole et al., 1998); north Kerala SGs where ancestor worship is performed with *theyyam* ritual (Unnikrishnan, 1990); *sasan* SGs as burial grounds in Chhotanagpur (Fernandes, 1993); SGs among the Bhils of Ratanmal (Nath, 1960). It may be mentioned that sometimes a grove may serve both the functions, i.e. deity worship and ancestor worship. Unlike the groves associated with deities, the groves associated with ancestor worship, in particular burial grounds, do not seem to have a hierarchical pattern.

Socio-cultural

SGs have important socio-cultural functions, in addition to the religious functions. Several festivals are performed at SGs. Nath (1960) mentions that once a year on the occasion of Deepavali, offerings of food and liquor are made in groves among the Bhils of Ratanmal; Deb and Malhotra (1997) report that, among the tribals of southwest Bengal, social gatherings take place in these groves on the occasion of Salui and Karam festivals, as well as wedding ceremonies; Vidyarthi and Rai (1997) report that different tribes of Bihar celebrate their major festivals at the SGs; marriage ceremonies of the Mahadeo Koli of Pune district of Maharashtra are held in their SGs. Fernandes (1993) has stressed on the role of sacred groves in the socialization of the youth among the tribes

of Chhotanagpur; Godbole. et al. (1998) report that festivals like Holi, Navratri, Devdiwali are performed in sacred groves in Ratnagiri district of Maharashtra; Troisi (1978) mentions that the association of a village with *jaherthan* expresses the unity of the group. No two villages share the same *jaherthan,* and this serves as an important criterion to ascertain village membership and geographical boundary; Paranjapye (1989) highlights that the function of the SGs is to maintain a caste hierarchy within the village. The clan control over resources is signified by the SGs among the Mahadeo Koli of Western Maharashtra (Roy Burman, 1996).

The purpose and meaning attached to various rituals, ceremonies and functions performed in SGs are summarised in Table 4.

Table 4. Services and Functions of SGs[1].

	Types	Functions provided by SGs
1.	**Religious**	Propitiation of deity/spirits
		Propitiation of ancestral spirits
		Propitiation of totems
2.	**Secular**	
	2.1 Cultural	Provides cultural space to the community as a common property resource
	2.2 Political	Assertion of group identity Assertion of group solidarity Establishing new alliances
	2.3 Health	Fertility and Paternity Well-being of individual/family Well-being of community
	2.4 Economic	Good rainfall Good agricultural production Well-being of crops and animals Success in hunting Gift exchange
	2.5 Psychological	Moral support and guidance

1. Modified from Malhotra et al. (1998).

Many Cultural beliefs relating to fertility and paternity find expression in vows and prayers made at SGs. Similarly, different moral support and guidance for individuals are derived from the cultural value associated with the SGs.

Economic

Several economic activities take place in SGs. Also certain community activities with economic implications are associated with the SG (see Table 4).

Harvesting of biomass

There is a general belief that biomass is not harvested from the SGs. This is certainly true in many SGs found across the country. Gadgil and Vartak (1976), Roy Burman (1995) and Godbole et al. (1998) report such groves in the Western Ghats of Maharashtra. Malhotra et al. (1998) report such groves in southwest Bengal and in Koraput district of Orissa. Pushpangadan et al. (1998) report the existence of numerous groves in Kerala from which plants and animals are not harvested, and Swamy et al. (1998) report such groves in Tamil Nadu.

However, there are many groves from where biomass is extracted, and thus the local communities derive certain direct economic benefits from the groves. A few illustrative examples are: Singh and Saxena (1998) and Jha et al. (1998) report that in many *orans* people graze their animals; Godbole et al. (1998) report collection of dead wood and dried leaf litter and harvesting of certain species of trees *(Caryota urens and Mangifera indica)* from groves in Ratnagiri district of Maharashtra; Malhotra et al,. (1997) report 192 out of 322 groves from Koraput district from which dead wood and several non-timber forest products are gathered; Unnikrishnan (1990) observes that certain plants extracted from SGs of Kerala provide livelihood to many artisans; Gadgil and Vartak (1976) report that villagers of Tunbad in Kolaba (now Raigad) district use the bark of *Entada phaseoloides Merr.* for the treatment ofcattle against snake bite; wood is also extracted from many groves dedicated to ancestor spirits for cremation (Mitra and Pal, 1994).

Box 9. Sacred groves among the Bondas of Orissa

The Bondas of Badapada village of Mudilipada grampanchayat in Koraput district of Orissa have left a whole hill with dense forest as a sacred grove because the villager deity *Thajurari* lives in the forest. Collection of fuelwood, logs and other non-timber forest products from this grove are prohibited. Even shifting cultivation is a taboo.

The Bondas of Andrahal gram panchayat regard Bali dongar (Bali Parbat) as sacred and do not collect any biomass from it, nor is shifting cultivation permitted. The village god, *Mahaprabhu* resides in this sacred forest. (B. Modak and P. K. Das, personal communication 2002).

Gift exchange

Exchange of gifts is an important social activity, which takes place at SGs during certain festivals. Malhotra et al. (in press) report that villagers in Koraput district of Orissa engage in gift exchange at their SGs during the annual festival associated with the SGs.

Activities with economic implication

Deities/spirits of SGs are propitiated by devotees with a view to ensuring success in hunting and good harvest. Rituals are also performed in. SGs to bring in good rainfall, health of livestock and fending off disasters. Kalam (1996) mentions offering of miniature images of cattle and buffaloes to the SC deity in Iyappa *devarakadu* by villagers in Kodagu district of Karnataka, to keep their livestock healthy.

Political

This section draws heavily on a series of articles by Roy Burman (1992, 1995, 1996), which have demonstrated the political dimensions of SGs in the local and regional context.

Sontheimer (1989) showed linkages of forest deities of the Western Ghats with the pastoral nomads as a means of drawing their territorial affinity. Kosambi (1962) observed that SGs are usually found along the preagrarian trade routes and cross-roads. Sawant (1990) wrote that SG at Phondaghat in Sindhudurg district of Maharashtra was a resting

place for traders and that the troops of Shivaji passed through it while depredating the coastal townships. Roy Burman (1996) described that at Jhinji mahal sacred grove in Kolhapur district, Shivaji had taken shelter before attacking Shayasta Khan in Pune. This grove has been a hiding place for the troops and also their training centre. Sacred groves have often been supported by the local rulers. Shau Chattrapati, the king of Kolhapur, use to support a sacred grove dedicated to Amba Devi (Roy Burman, 1992). Kalam (1996) has written about the State patronage of sacred groves in Kodagu district of Karnataka.

Roy Burman (1992) mentions the strategic location of SGs along the trade routes in Meghalaya where the moral authority of the priests-chiefs facilitated the flow of commodity. As noted earlier, village membership among the Santhal and the geographical boundary of their village are defined by the SG (Troisi, 1978).

Hembram (1983) states that *sarna dharma* (religion) brought together discrete ethnic groups of Chhotanagpur in to a common platform for asserting their rights to self-determination. The *sarna dharma,* in fact, helped them in consolidating their common identity and solidarity between the Christian and non-Christian tribes of the region. Mitra and Pal (1994) observed that *sarana* was one of the basic factors that stalled the Koel-Karo dam project in Bihar a decade ago.

Roy Burman (1995) has also highlighted this aspect of self-assertion among the Gonds of Gadchiroli district of Maharashtra. The Gonds have revived the Danteshwari sacred grove to' assert their identity and right of self-determination. Self-assertion of the tribes through sacred groves is not always strong. D.N. (1990) interprets the construction of temples in the groves or replacement of local deities by the idol of Hanuman as reflecting subjugation and marginalisation of the tribal communities by the mainstream Hindu culture.

Biological and Ecological Dimensions

A number of scholars have studied biological and ecological value of SGs in the country. The literature is too vast to be described here. We shall, therefore, mention only some of the main findings as illustration.

Biological Value

The institution of SGs as noted earlier is very ancient in the country. Access to and interference with SGs has been culturally restricted and, thereby, reduced the human impact in terms of harvesting of natural resources. The consequence of such restriction has been that SGs have evolved as important reservoirs of biological diversity and permitted the complex and diverse array of ecological processes to continue uninterruptedly over long period of time.

Many SGs constitute pristine vegetation, and are particularly rich in trees and associate groups of organisms, like epiphytes, amphibia, reptiles, birds, butterflies etc.

Box 10. Sacred Groves in Barak valley of Assam

Unlike the sacred groves of Meghalaya, which usually enclose a large area of climax virgin forest, the sacred groves of Barak Valley are small, commonly having 5-10 trees. These groves, locally called 'thans', are mostly maintained by the tea tribals, tribes, as well as by the Bengali Hindu community. One or more deities are associated with these thans where total conservation is enforced. Lopping off of branches or twigs, removal of leaf litter and dead wood are usually prohibited and violation is believed to incur the wrath of the presiding deity. Visitors are required to remove footwear and advised not to harbour any evil thoughts in their minds when inside the grove. Animals inside the grove are also accorded protection. We have observed relatively higher animal diversity in the form of spiders and insects, mammals like squirrel, civet, mongoose, monkey, etc., several species of birds and snakes inside these groves, as compared to the barren areas surrounding them. Besides the thans, several Muslim graveyards also have a dense vegetative growth inside, which are not disturbed. People often plant trees inside the graveyards, as it is considered of religious merit (Guha, K. et al., 1999; Gupta and Guha,

2002).

Of the nine *thans* recorded by us in Cachar and Karimganj districts, four are maintained by the Bengali Hindu community, in association with temples of Goddess kali, four by the tea tribe community, and one graveyard by the Muslim Khadims. The major tree species found inside these small groves include *Ficus benghalensis, F.religiosa, Flacourtia cataphracta, Dillenia pentagyna, Carallia integerrima, Artocarpus lakoocha, A. heterophyllus, Bombax ceiba, Aegle marmelos, Cynomefra polyandra, Michaelia* sp., *Vitex altissima, Xanthoxylum budrunga, Mangifera indica, Alstornia scholaris, Aquileria agallocha, Amoora wallichii,* various species of bamboos, canes like *Calamus tenuis* and *C. mastersianus,* and a rich ground flora including many medicinal plants. The wildlife commonly found include squirrel, mongoose, civet, fruit bat, Rhesus Monkey, Phayre's Leaf Monkey, Chinese Pangolin, occasional visitors like the Muntjac or Barking Deer, *and* wild boar among the mammals, Green Pigeon, Rose-ringed Parakeet, Black-headed Oriole, Racket-tailed Drongo, Common Myna, Hill Myna, Red-vented Bulbul, Woodpecker, Blue Rock Pigeon. Ring Dove, and Tree Pie among the birds, and different types of snakes, lizards, butterflies, other insects and spiders. These groves are small, ranging in area from around 0.05 - 0.80 ha. (Gupta, A. in this report , see Appendix II.8 in Volume II).

A number of studies have emphasized that many SGs are climax forests, and probably constitute the only representative of near-natural vegetation in many parts of India. Such island of climax vegetation amidst a degraded landscape can be seen in many parts of the Western Ghats, Koraput and Kalahandi districts of Orissa and South-west Bengal. Several studies have shown that many groves in Meghalaya (Tiwari et al., 1998), Kerala (Chandrashekara and Sankar, 1998), Maharashtra (Gadgil and Vartak, 1976) and Himachal Pradesh (Sinha and Maikhuri, 1998) harbour rich floral and faunal biodiversity. Pushpangadan et al. (1998) demonstrated that the biological spectrum of groves in Kerala closely resembles the typical spectrum of tropical forest biodiversity. For example, the

SGs occupying only 1.4 sq. km contained 722 species of angiosperm, compared with 960 species occurring in 90 sq. km of the Silent Valley forest.

With the continuing destruction of forest all around them, the SGs have become fragmented habitats housing a variety of genetic pools and became the last refuge for many threatened endangered and endemic plant and animal species. Tree species like *Phoeba hainsiana* (vulnerable), *Rhus hookeri* (endangered) and *Flacourtia cataphracta* (endangered) have been found to be well represented in, two sacred groves in Manipur valley. *Syzygium travancoricum,* an endemic tree, reported from the low-level evergreen forests of Kulathupuzha (South Kerala has been totally eliminated from its type locality. Today, only a few plants are reported thriving in some sacred groves of Pathanamthitta district and in the marshlands of Quion-Asramam in the southern Western Ghats of India. Haridasan and Rao (1985) reported at least 50 endangered and rare species in SGs of Meghalaya. Sacred groves of Kerala are also found to harbour a number of plant species that are wild relatives of many crop species. These wild relatives are important for improving the cultivated varieties of plants.

Sacred groves, in general, act as a nursery and storehouse of many of the ayurvedic, tribal and folk medicines. Species not under any immediate risk of extinction, if preserved in SGs, may have great potential of diverse uses in the future. The SGs may also serve to preserve genotypes which may be useful in forest tree-breeding programmes.

The sacred forests are also of great forestry interest as indicators of the natural productivity of the region. Ecologically valuable species like *Albizia lebbeck* and *Ficus glomerata,* which conserve high amount of nitrogen, phosphorous, magnesium and calcium in their leaves, are found in several SGs of Manipur. Keystone species that contribute to the maintenance and enhancement of biodiversity, are also species that are socially valued by local communities for cultural or religious reasons, and often found in SGs. In' *orans* of Rajasthan, the khejari *(Prosopis cineraria)* is a keystone species, inseparably linked to the survival of many other species, and occupies a special position in Rajasthani culture.

Kunstleria keralensis, a climbing legume, reported from a sacred grove in southern Kerala, is a species found only in that SG (Mohanan and Nair, 1981). *Belpharistemma membranifolia, Buchanania lanceolata* and *Syzygium travuncoricum* are rare species found only in some SGs of Kerala (Nair and Mohanan, 1981). Mohanan also discovered a rare species of *cinnamon, Cinnamomum quilonensis,* in some of the *kavus* of Alapuzha district in Kerala (Unnikrishnan, 1995). The Kallabbekan SG in Kumta taluk, Karnataka, over 50 ha in extent, despite being in the midst of arecanut-spice gardens of a populated village, is rich in endemics like wild nutmegs *(Myristica malabarica), cinnamon, Garcinia gummi-gutta* and wild pepper (Chandran et a!., 1998). A new species of frog, *Philautus sanctisilvaticus,* has recently been reported from Amarkantak sacred grove, Madhya Pradesh (Das and Chanda, 1997).

Many animal species including birds that are otherwise threatened or becoming rare find a safe refuge in many a sacred groves. The *orans* in Rajasthan, managed by the Bishnoi community, provide protection to the Indian gazelle *(Gazella gazella),* blackbuck *(Antelope cervicarpa)* and to the migratory bird Demoiselle crane *(Anthropoides virgo).* A similar study by Deb et al. (1997) has shown that a number of local bird species find refuge exclusively in relict SGs of West Bengal. The flying fox (bat) prefers to roost in large *Ficus benghalensis* (Bniyan tree) which are located in sacred groves (Agoramoorthy, 2002).

Ecological Services

Some of the important ecological services provided by the SGs that have been reported in the literature are summarized below.

Recharge of aquifers

Many SGs hold water resource in the form of springs, ponds, lakes, streams or rivers. Not only that, but the vegetative mass of the grove itself retains water, soaking it up like a sponge during wet periods and releasing it slowly in times of drought. It is evident that one of the important ecological roles of these groves is to provide a more dependable

source of water for the organisms living in and around the SGs (Puspangadan et al., 1998). The ponds and streams adjoining the groves are often perennial and in some cases, act as the last resorts to many of the animals and birds for their water requirements, especially during dry seasons. Another function may be to reduce the incidence and intensity of forest fire, at least in some climates. In addition, transpiration from the SGs vegetation would increase atmospheric humidity and reduce temperature in the immediate vicinity and produce a more favourable microclimate for many organisms (Khiewtam and Ramakrishnan, 1989).

Soil conservation and in nutrient cycling

Sacred groves play a crucial role in soil and water conservation. The Mawsmai sacred groves in the Cherrapunji ecosystem receive very high rainfall. With a rapid litter decomposition rate, nutrient release in the soil of these groves is very high. The soil itself has little nutrients to support a large biomass of the sacred grove. The fine root mat developed on the surface layers of the soil is important for supporting the large above-ground biomass and for tight cycling of nutrients. Many microorganisms, invertebrates, fungi, etc. flourish and a vast array of species not hitherto indigenous to the groves may also colonise and thrive. The root mat prevents the nutrients from leaching out. The land surrounding the SGs in this area, which is devoid of necessary root mat and litter decomposition, can no longer sustain vegetation (Khiewtam and Ramakrishnan, 1989).

All of these factors indicate that the conservation of sacred groves is essential for maintaining local/regional biodiversity, the comprehensive health of a landscape, and preserving the socio-cultural integrity of local communities. The existing SGs thus provide far greater benefits than their small size would otherwise indicate.

3.2.2 Sacred ponds, pools and rivers: Unlike sacred groves, sacred pounds in India have received scant attention from researchers in socio – cultural institutions with biodiversity conservation consequences. One plausible reason is that aquatic biodiversity is less familiar than more visible terrestrial biodiversity, in particular forests. Thus, conservation

status of such uncharismatic organisms as algae, diatoms, zooplanktonic animals, amphibians, reptiles, fisher and molluscs tends to remain neglected.

There are between 1 .2 to 1.5 million ponds still in use in the country (Pandey, in this report, see appendix II.9, Volume II). However, we do not know how many of these infact are sacred. It is generally believed that ponds associated with temples and other places of worship are sacred. Moreover, although we are certain that quite a bit has been written about the sacred ponds, but the literature seems highly scattered and dispersed. It is therefore, not possible to present a comprehensive overview on sacred ponds in this report. The materials presented here, therefore of necessity are in the form of examples from different parts of the country.

- The only pond in the Indian sub-continent that has received any repute in ecological studies is the Bostomi pond in Chittagaong, a district of Bangladesh. This ancient pond protected by Buddhists, Vaishnava and Sufi monks is the only habitat for the last population of the black turtle Melanochelys.
- The Vembanad lake in Kerala is the only habitat for the half – beak fish (*Haplobatrachus*) population.
- A large sacred tank in Sirsi town, Uttar Kannada District, Karnataka use to harbours a variety of fishes and aquatic flora till 1970 ‘s (The Fishery Dept., took over the tank in 1970 ‘s).
- In Himachal Pradesh there is an important conservation tradition called Machhiyal. It is a pool in streambeds or riverbeds where fishes are allowed to breed. These pools are associated with local deities and fishing in the Machhiyal is a taboo some distance upstream and downstream. In village Tharu, Dharamshala district, Machhiyal is associated with a Hindu saint Machhindranath . On specific days people come to Machhiyal and feed the fishes. In Mandi and Kangra valley many Machhiyals have been reported (Gokhale, , unpublished).

Box 11. Sacred ponds in Western Rajasthan
Though every village has a sacred pond in Western Rajasthan, most of these are not well known as sacred because they usually dry up before the onset of winter.

The ponds/waterbodies which retain rain water through out the year are listed below. People of the area are attached with these waterbodies by religious sentiments and usually have temples in close vicinity of these bodies.

Sacred ponds	District
1. Kapil Sarovar	Bikaner
2. Gajner village pond	Bikaner
3. Gadisar pond	Jaisalmer
4. Amar Sagar pond	Jaisalmer
5. Ramdevra pond	Jaisalmer
6. Pokhran pond	Jaisalmer
7. Lalsagar	Jodhpur
8. Gulabsagar	Jodhpur
9. Bisalpur dam	Jodhpur
10. Jajiwal Kalan pond	Jodhpur
11. Lakhotia pond	Pali
12. Pushkar pond	Ajmer
13. Gen pond Mundva	Nagaur
14. Gudarama Pond	Jalore

Faunal status of these water bodies is not known because the local people do not allow any surveys to be conducted in these water bodies.
(personal communication, Qaiser H.Baqri, 2003 Zoological Survey of India, Jodhpur).

- In Cachar and Karimganj district of Barak valley in Assam, sacred ponds are associated with Pirs Durgah or Mosque. Fishing from these pounds is strictly prohibited.
- The tradition of Machhiyals is also present in Uttaranchal. The Machhiyal at Baijnath, district Almora, is such an example where fishing is not permitted. The stretch of Ganges between Haridwar and Hrishikesh is protected traditionally from fishing (Gokhale, Y. unpublished.).
- Crocodiles is Kerala at many temple ponds like Pommala, Palliport, Tripayar , Madai etc. are considered sacred and looked after by the priests and the pilgrims; at Ponnani the famous temple dedicated to crocodiles, the animals are decorated with gold and other ornaments (Presler, 1971).

- A recent survey in West Bengal indicates that such sacred ponds may be more common in the country than suspected. In Chhandar village, near Beliatore of Bankura district, a small pond is accorded total protection by villagers. The pond's name – Bodh's pond – seems to be a derivative of the word "Bouddha" (=Buddhist). Suggesting that its sacred status is legacy of the Buddhist period (12^{th} – 13^{th} century) in Bengal. The villagers believe that human use of the pond might disturb the goddess, and that whoever pollutes the pond water would be mortally punished by the angry goddess. The villagers observe a strict taboo on using the pond water for any purposes, except for a brief ritual ablution on the manasa festival in mid-June (Deb and Malhotra, 2001) . Preliminary results of an ongoing taxonomic study indicate at least two uncommon zooplanktonic rotifer species, eight fish species, and two frog species live in this pond (Deb and Bersier, unpublished mss).

Another sacred pond in Belboni village, Bankura district, is used as a principal source of drinking water for two neighboring villages. Attached to a sacred grove consecrated to the goddess Manasa, this pond is customarily immune to any polluting activities like washing, bathing, etc. IN order to prevent pollution by outsiders, the villagers have fenced the pond with barbed wire, the cost of which was borne by every household (Deb and Malhotra, 2001).

The Jakshabasi pond at eastern Calcutta Metropolis is attached to a temple of a deity whose identity is mysterious. Jakshabasi has no image, but the temple contains those of Radha and Krishna. The fish population is given total protection by the local community, and the fishes, composed mainly of Indian major carps, gather at the appearance of any humans at the quay of the pond in expectation of food offerings. The fishes are known to be fearless and fairly used to caressing by human hands. The age of the pond is uncertain, but seems to be at least as old as the city of Calcutta, that is, over 300 Years.

Community Management of Ponds

The Jakshabasi pond is managed by the Jakshabasi temple trust. In contrast, Bodh and Manasa ponds in Bankura are privately owned. Nevertheless, they are managed by the

entire community as commons. Particularly noteworthy is the fact that the respective owners of these ponds do not show any intention of excluding the community users from the property, neither do the villagers mind protecting of the ponds of the owner's behalf.

These sacred ponds provide several important insight into the modes of common property resource management. First, all these ponds belief Hardin's (1965) conjecture of the 'tragedy of the commons'. Rather, the protection of the Manasa sacred pond indicate that a resource (in this case drinking water) may be commonly managed for the common interest then the stake is shared. The community may even go so far to incur considerable cost to protect it (by fencing with barbed wire) from external polluters. Second, the Bodh pond demonstrates that a landscape element may be respected and protected even when it has no use value to the community.

Finally, a common property resource management regime is possible to remain effective even in privately owned resources, provided it has a living tradition of community utility and cultural connotations of its customary use. However, further case studies are needed to infer any generalities in respect of management of sacred ponds.

Box 12. Khechioparli Sacred Lake

Khecheoparli Lake in Sikkim is considered one of the sacred lakes revered by both Buddhist and Hindus in the State. Located at 1790m at MSL, Khecheoparli remains hidden in the rich forest cover surrounding it. It is situated between Pelling and Yuksam and is famous for its sacredness and clear holy water, and is a home for many winter migratory birds. It is believed that birds do not permit even a single leaf to float on the lake surface. There is a motorable road from Pemayangste right up to the lake area. The meaning of Khecheoparli is "*wishing*", so the lake is called the Wishing Lake.

Biodiversity aspect of the lake

Chettri (2000) while preparing a check-list of birds recorded a total of 213 species of birds, belonging to 38 families and 4 sub families in the surrounding of Khecheoparli lake. Of these, 132 species of birds were found to be resident (excluding local migrants), 9 winter migrants, 18 summer migrants and 54 were the less frequently sighted birds.

These species have been distributed in different habitats such as lakes, wetlands, stream, meadows, utility corridors, pastures, conifer forests, mixed forests and bush, shrubs etc. The Forktail, Dipper, Wren, Wagtail, Blacknecked Grebs, Cormorant, Baers Poachard, Bareheaded Goose, Common Teal, Eastern Goosander, Mallard, ruby Shelduck are mostly found in the area.

The lake has an area of 2,200 sq.m and is surrounded by a 12 sq.km watershed supported by mixed broad-leaved forest. The forest area is dominated by *Castanopsis sp. and Michilus sp.* (Chettri, 2000). The lake area comes under warm temperate ecological zone. It is also observed that the species distribution in the warm temperate and cool temperate region (mid hills) is close to 50% for the surrounding of Khecheoparli lake in Sikkim (Rastogi and Chettri 2001). While precise land use data is not available, extensive travel in the field gives the impression that the surrounding area of Khecheoparli lake (mid hills region) has suffered maximum habitat loss and conversion and only 12 sq. km forest is left in the lake zone. Local community practises cardamom cultivation under forest trees (P. Bhattacharya and Bharati Joshim, personal communication, 2002).

3.2.3 Tanks and Trees : This section draws heavily on the contribution of Pandey (see in this report appendix II.9 in Volume II and a note prepared by P. Bhattacharya and Bharati Joshi). As noted earlier, there are 1.2 to 1.5 million tanks still in use in the country. Irrespective whether the tanks are sacred on not, there in a wide spread tradition throughout the country of planting trees on the embankments of the tanks, while strictly speaking, the trees planted on the tanks do not fall under the category of wild floral diversity, it is seen that several species planted are in essence wild species. Therefore, the group thought it appropriate to include this aspect in this report.

While it is possible that scattered and diffused information may exist on trees on the embankments of the tanks, systematic studies are awfully lacking. The only systematic studies that are available are by Mishra (1993) and Pandey (in this report).

Mishra reports that embankments are found to have been planted with peepal, bargad (*Ficus benghalensis*) and gurlar (*Ficus glomerata*) immediately after the construction of embankments.

Mango (*Mangifera indica*) in also planted usually towards the outer slopes of the embankment. In the state of Chhattisgarh, neem (*Azadirachta indica*) was necessarily planted as the abode of goddess Shitalamata. Age of the tank could be determined by the age of the oldest surviving tree(s) on the embankment. Once the trees are felled the tank too goes into peril. And if the tanks are imperiled trees follow suit.

Pandey carried out systematic study in a number of tanks in Kota district of Rajasthan. The main findings of the study are summarized below.

The tanks have six main segments : the embankment, reservoir, *lakheta*, seepage area, *upra* and the watershed. Embankment is the physical barrier erected across the streams or outlet of the watershed and is made of elongated heaping of earth, 3 to 5 meter of height that may run 40-100 meter length. It is locally known as *paal* or *bandha*. Close to the shallow end of the embankment an arrangement is made to drain the excess rain water during rainy season. This structure is called *upra*. Reservoir is the impounding area where water remains stagnant for most part of the year, and locally called *peta* or *aagaur*. *Lakheta* or the tank bed island is a very small area made up of heaped soil that remains surrounded by water for most part of the year. Beyond the reservoir, towards upper slopes lies the watershed of the tank called *aagaur*.

After the construction of embankment, heaping the soil in the form of *lakheta* and excavation of the impounding area it is used for planting of the tree groves and construction of small temple. The commonly used species for plantation are : *Ficus benghalensis*, *Ficus religiosa*, *Mangifera indica*, *Azadirachta indica*, *Holoptelia integrifolia*, etc.

In order to make use of seepage water that goes down stream beyond embankment, beautiful gardens have been developed near some large tanks. These gardens are planted by water-loving species such as *Terminalia arjuna*, *Pandanus tectorius* and *Syzygium cuminii*. Some of the best gardens are found close to the embankments. For example, *Gulab baug* in Udaipur, *Bada baug* in Jaisalmer, and

Chatravilas garden is Kota. The area of these gardens vary considerably between 1 to 50 ha.

It is not always the case that only seepage water is used for the gardens. Some of the large tanks in Rajasthan additionally have small canals to irrigate the gardens (Mishra, 1993).

Lakheta is after planted with 5 to 10 trees. Commonly plants species include *Phoenix sylvestris* , *Azadirachta indica*, and *Butea monosperma*, and a variety of shrubs and herbs. Unlike the embankment plantation, the vegetation in *lakheta* is seldom used. Absence of any biotic pressure is *lakheta* has helped the natural successions in the vegetation. Thus a dense and multi – storied view of the vegetation is not uncommon. *Lakhetas* provide safe refuge to reptiles, amphibians and birds.

In the *aagaur* either naturally occurring vegetation is protected or mango garden is planted. Sometimes *aagaur* may support sacred groves. For Example, Khade Ganesh tank is Kota has a sacred grove (2 ha) opposite the embankment.

The ponds and the vegetation (planted and natural) serves vital social, religious, ecological and economic functions (see Box 13)

Box 13. Current resource use from the tank of Talwas village, Bundi district, Rajasthan.

- Vegetation, lotus, thatching grass
- Fish
- Tank site as form manure drinking
- Water for wildlife and livestock
- Water for irrigation
- Water for bathing
- Habitat for migratory birds
- Ground water recharge
- Flood prevention
- Mango fruits from the garden in seepage area
- Meeting place for the village

(Pandey, in this report, see Appendix II.9 in Volume II)

- **Trees on Bunds & Trees along Water bodies**

Agroforestry is a multi-disciplinary and applied science that promotes establishment of an efficient land-use system to meet the basic requirements of the people, while also creating a better environment for the living. India has its own age-old tradition of agroforestry systems that are still practised by many indigenous and rural communities in different parts of the country. The role of agroforestry in genetic resource conservation cannot be disputed. Agroforestry is in fact, an ancient form of land use that has been practised by rural people in many parts of the world since older times.

Agroforestry by definition may appear to be complex, as it adds on to the previous land uses - new plants, new cropping patterns and new management systems. But its concepts have been derived from carefully observed, evolved and inter-generationally handed-down practices, rather than being a products of academic contemplation. In to agroforestry are brought the character, methods, paradigms and various cultural aspects of both forestry and agriculture.

Two of the popular agroforestry (AF) systems traditionally practised in India include trees on bunds and trees on the boundary of various water bodies.

TREES ON BUNDS

Trees on bunds have been found to be particularly good for the arid and semi-arid areas where such an arrangment permits optimal land use apart from conserving soil and water resources. While *Khejri* (*Prosopis cineraria*) trees have been found growing on the bunds as well as scattered within the fields in Rajasthan, legume trees like *Acacia auriculiformis* that thrive in acidic soils are being planted extensively in Kerela and Karnataka. While *Acacia, Albizzia casuarina* & *Eucalyptus* are popular as Nitrogen-fixing trees in South India, *Populus deltoides* and *P. ciliata* are the farmers' choice in Northern India.

Plantations on farm bunds and rows of trees planted as windbreaks and shelterbelts are very common in Andhra Pradesh, where trees like *Albizzia lebbek, Azadirachta indica, Casuarina equisetifolia, Borassus flabellifer, Mangifera indica* and *Tamarindus indicus* are common. In the Deccan traps, in Sikkim and in the tribal areas of Madhya Pradesh trees like *Acacia nilotica, Butea monosperma, Terminalia arjuna, Emblica officinalis, Gmelina arborea* and *Tectona grandis* are planted on bunds surrounding paddy fields. The leaf litter and twigs from these trees add green manure to the paddy fields. In the Western Ghats, according to a traditional practice, leaves of *Terminalia sp.* are still harvested, spread on land and burnt before sowing paddy, ragi and minor millets.

The West Godavari District of Andhra Pradesh represents a cyclone-prone area where even the Government is now promoting traditional agroforestry systems in canal and roadside plantations, block plantations, shelterbelts and windbreaks. Typical species composition in case of trees on bunds and boundary plantations consists of *Mangifera indica, Tamarindus indicus, Ficus sp.*, Jackfruit, Coconut, Toddy palm and *Tectona grandis*.

Sikkim is another State of India that is endowed with a repository of Biodiversity and a rich tradition of natural resource management systems, including agroforestry. Mountain agriculture is a characteristic of this hilly State; hence, agroforestry practices that would conserve soil and water are of paramount importance. Often, trees and shrubs are planted on field bunds along terrace farms in Sikkim. *Citrus reticulata*, for example, is grown with ginger and seasonal vegetables, while cardamom is grown along the terrace crops of paddy, beans and off season vegetables. Fruit trees like orange and avocado are also included in these traditional systems.

The rural community in Coimbatore District of Tamil Nadu also maintains and promotes tree- and crop- diversity on and along its farms, by adopting age-old AF systems. Trees like *Azadirachta indica, Eucalyptus globulus, Tamarindus indica, Borassus flabellifer, Albizzia lebbeck, Cocos nucifera, Leucaena leucocephala, Pongamia pinnata, Prosopis juliflora, Moringa oleifera, etc.*are grown along farm boundaries and / or on bunds. This is in case of both irrigated and non-irrigated croplands in the District. Generally, Generally people avoid planting trees along irrigated land, especially in case of paddy fields, fearing resistance from farmers of adjoining fields. But when the same agricultural field lies besides an unutilized piece of land or along a canal/road, trees are planted. Otherwise, no spacing is followed in boundary plantations, since many of the trees and other species grow naturally along farm boundaries and these are only protected and encouraged intentionally by the local farmers. This practice is more popular with small and marginal farmers who want to maximise benefits from their limited land resources.

In the Uttara Kannada District of Karnataka, trees like *Eucalyptus globulus, Cocos nucifera,* Jackfruit, *Glyricidia, Leucaena* and *Terminalia* are often grown along paddy and groundnut fields. It needs to be mentioned here that Uttar Kanara District receives very heavy rains and the coastal wind blows at high velocities; this combined with the undulating topography makes it essential for the farmers to adopt effective soil and water conservation methods. Boundary plantations, wind breaks and hedgerows have been adopted in response to these climatic threats.

TREES ALONG WATER BODIES

The State of Andhra Pradesh has a rich diversity of traditional agroforestry (AF) models that help in meeting the day-to-day and livelihoods needs of the local people, while contributing substantially to natural resource conservation and improvement. One of these traditional systems is tank foreshore plantations. In-land fish cultivation is widely practised in West Godavari District of the State and fish-based AF production systems have been evolved over generations to increase fish yield and, thus, rural incomes. Such is the importance of fish in the productions systems of the area that about 10,000 acres of paddy fields have been converted into fish tanks with coconut and fodder growing on tank bunds. Under the traditionally practised *Silvo-fisheries* system, fish like Barbus, catfish, mullets, Murupu, prawn, Tilapia and carps are reared and coconut trees flank the water-body boundaries.

In the South and West District of Sikkim, it is common to find bamboo and fruit trees like papaya, banana and guava, growing on channel embankments.

Uttara Kannada district of Karnataka receives a very heavy rainfall from the South-West monsoons. Fisheries is the main occupation of the people in coastal areas of the District and a large number of commercial fish are reared here. *Silvofisheries* is quite common here with traditional fisheries pursued mainly during the monsoons and modern aquaculture carried out throughout the year. The tree component in the traditional system plays a role in providing fish feed through leaf litter falling in the pits. However, another requirement of trees on pit boundaries is wind-breaks against strong, coastal monsoon winds. The tree species found suitable for these systems include *Eucalyptus, Acacia auriculiformis* and *Cocos nucifera* which are also planted along 20mX40m or 40mX60m and 1.5 to 2 m deep pits where aquaculture is practised. The aquatic species reared in these pits include Shark, Oil sardine, Mackeral, Seerfish, Pomphrets and crabs.

All the examples of trees on bunds and plantations along the boundaries of water bodies, cited in this note have at least one thing in common. They represent how traditional AF systems have been evolved, adapted and adopted by the local population according to the prevailing environmental conditions. However, the farmers in these areas are today facing hardships like scarcity of land (due to repeated fragmentation), inadequacy of irrigation facilities and lack of appropriate and seed resistant planting material. Also, unless these farmers are provided both marketing and technical support, they would not, for long, be able to commit themselves to the agroforestry traditional systems in practice as much as they do in belief (P. Bhattacharya and Bharati Joshi, personal communication, 2002).

3.2.4 The Sacred Landscape : Materials presented in this section have been drawn from Ramakrishnan (1998).

Elaboration of the concept of the sacred grove representing a given ecosystem type leads into a set of interacting ecosystem types, both natural (terrestrial, wetland and/or fresh water systems and human-made (agro ecosystems and indeed village ecosystems), in which humans can be viewed as an integral component of ecosystem/landscape function. The ultimate expression of this is the way in which many societies such as the traditional American Indians have viewed 'nature' itself as sacred in a more holistic sense.

One of the best example of sacred landscape is that represented all along the course of the sacred river *Ganga*, originating from the higher reaches of the Garhwal

Himalaya of the northwest, tracing through the plains of Uttar Pradesh, Bihar and West Bengal, before the river drains into the Bay of Bengal. The sacred land all along the course of the river, the human habitation and the land based activities, the ancient temples, the sacred cities such as Badrinath, Kedarnath, Rishikesh and Haridwar in the Himalaya and sub-Himalayan tracts, Allahabad and Varanasi in the alluvial plains, altogether represent a set of inter-connected ecosystems types bound together by the sacred river itself. The variety of natural ecosystem types ranging from the alpine vegetation above the timberline, through the temperate oak and pine forests down below, the sub-tropical moist deciduous to dry-deciduous forests in plains and a variety of human altered ecosystems terraced agriculture and valley land agriculture all along are tightly linked together and controlled by the sacred river and its tributaries in a variety of ways through flooding and silt deposition.

The concept of sacred landscape found further holistic expression under the Buddhist philosophy.

While Sikkim as a whole is considered sacred by the Sikkimese Buddhists, the area below Mountain Khanchendzonga in West Sikkim, refereed to as 'Demojong' is the most sacred of all, being abode of Sikkim's deities. The air, soil, water and the biota are all sacred to the people, because of the interconnections that they perceive to exist. Any human-induced perturbation is considered by the Sikkimese Buddhists to spell disaster to Sikkim is a whole. Therefore, the very cultural fabric of the Sikkemese society is obviously dependent upon the conservation of the whole scared landscape of interacting ecosystems. The value systems here is interpreted in a more holistic sense the soil, the water, the biota, the visible water bodies, the river and the less obvious notional lakes on the river bed, are all taken together with the physical monuments.

Box 14. Conservation Ethics among the hill community of Garhwal Himalayas

The hill community of Garhwal Himalaya regards a variety of natural objects-rivers, lakes, rivulets, springs, confluences , mountain peaks, plants, animals, flowers and even the entire Himalayas as sacred. The Himalayas have been considered to be the home of Lord Shiva and Vishnu. The Deodar (*Cedrus deodara*) has been considered the tree of

god and is planted around temples. The flowers of Brahma Kamal (*Saussurea obvallata*), an alpine species of lotus is the most valued offerings to Lord Shiva (Shri Kedarnath) and lord Vishnu (Shri Badrinath). It is interesting to observe that there are so many landscapes (Tarkeshwar, Hariyali, Binsar, Kiunkaleshwar, Tapovan, Nagdev, Kalimath, Syahi Devi and Chandrabadni) represented by rich biodiversity of species and ecosystems in Garhwal Himalaya which had been considered sacred and conserved in their pristine condition by forbidding the use of any resource from any of these landscapes. This strategy is analogous to the present days concept of species conservation through protected areas. The Tarkeshwar sacred grove is located at 5500 m above m. s.l. near Landsdown (Pauri), named after lord Shiva who killed the demon Tarka in a fierce battle (Skanda Purana). Felling of Deodar trees is strictly prohibited and Aswal community is banned in the sacred grove. A sacred water pool is also located in the grove. The Hariyali sacred grove is located at an altitude of 2850 m above m.s.l. in the Rudraprayag district of Garhwal Himalaya. Fetching of fodder, fuelwood, and the movement of women and shudras (Scheduled caste) have been strictly prohibited since Mahabharata period. The Binsar sacred grove is located at a distance of 20 km north of Thakisain (Pauri Garhwal)at an altitude of 2567 m above m.s.l. A close linkage between cultural attributes and forest conservation has been clearly visible since post vedic period. The Kiunkleshwar sacred grove is located at a distance of 31 km from Srinaga (Pauri Garhwal) at 1814 m abovem.s.l. This temple was established by Yamraj (the god of death) for worshipping lord Shiva. The free movement of people especially scheduled caste and women are prohibited. The Tapovan sacred grove, 2744 m above m.s.l. is situated 17 km from Joshimath (Chamoli district). This area has a dense forest with rich wildlife.

There are many fresh water bodies in Garhwal Himalayas which are considered sacred. The entire Ganges and its tributaries (Bhagirathi, Bhilangana, Alaknanda, Mandakini, Pinder, Nayar and Dhauliganga) and their confluences (Karnaprayag, Vishnuprayag, Rudraprayag, Ganeshprayag and Deoprayag) are considered sacred. Entire stretch of Ganges at Hrishikesh and Hardwar has been declared as fish sanctuary. Fishing in this stretch of river is strictly prohibited. Some of the lakes (Masar tal, Nachiketa tal) are sacred where exploitation of fish has been strictly prohibited. Some of the hot springs (Tapta kund and Gauri kund) and some Sulphur springs (Tapovan, Sahastradhara) are also sacred. Any kind of pollution is not permitted in these water bodies. Some of the wild animals (wild goat, cobra. Jackal) and wild birds (Ababil, Neelkanth, Hilas and Vulture) are considered sacred. Killing of these animals and birds is strictly prohibited (R. C. Sharma and Archana Sharma, personal communication, 2002).

3.2.5 The Supply and safety forests: Traditionally the land use system at the village level in Mizoram in northeast is divided into two distinct categories : supply forests from which only regulated harvest of biomass is permitted, and the sacred safety forests from which removal of biomass is strictly prohibited (Malhotra, 1990). Gadgil et al (1998) report similar land use pattern among the Gangte tribals of Manipur.

3.2.6 The Bishnois: In the year 1451 A. D. an extraordinary man was born in the village of Peepasar in Rajasthan. The boy was called Jamboji. By caste a Brahmin Rajput, he was destined to influence the destiny of many outside his own village and caste. When Jamboji was 25 years old, a great disaster over took the whole region. The drought continued for 8 consecutive years. The people had hacked and hacked and hacked the last bit of foliage, for every tree which finally began to dry up one by one. When the stored grains was exhausted, people ate *Khejdi* pods, flour of dried Ber seeds and even bark of the *Sangri* and *Khejdi* trees.

Jamboji's mind was much affected by this drought. And at the age of thirty-four he had a vision. If life was to flourish again in the desolate land, Jamboji saw that man would have to live in a different way, and according to different tenets and beliefs. Jamboji knew the way and began to broadcast his message in the year 1485. His message included 29 basic tenets. Its two major commandments were a prohibition against the cutting down of any green tree or killing of any animal. His message of humanity and respect for all living things was eagerly accepted by Jats , Rajputs and Brahmins.

His following were called Bishnois or twenty-niners because they adhered to Jamboji's 29 percepts. They preserved trees around their villages and protected the blackbuck, the chinkaras, the peafowl and all other birds and animals.

It is a historical fact that in the year 1730, 363 Bishnoi's sacrificed their lives to protect *Khejadi* trees when the princes of Jodhpur Maharaja Ajit Singh tried to fell *Khejadi* trees for his lime kilns.

One can see even today lush green vegetation and wildlife (blackbuck, chinkaras, and a variety of birds, reptiles and other wildlife) around villages inhabited by the Bishnois. Infact today every Bishnoi village has within it one or more sacred groves (*oran*). In the village Jamboji was born i.e., Peepasar there are four *orans*, covering an are of about 37 ha. (adopted from Gaddil, 1980).

3.2.7 *Herbal Gardens* : Apart from Kerala where there are many good examples of family tradition of maintenance of Ayurvedic gardens and sacred groves for several generations, examples are also found in some families or clans maintaining such gardens in Andhra Pradesh. For example Chitaloori (Surname) family is related to Ayurvedic practices. At the outskirts of Calcutta in the village Sonarpur the migrant Munda tribals generally prefer traditional medicine practiced by a local tribal. The tribal maintains a local garden on his own land where he has planted most of the medicinal plants required for his practice (T.S. Vasulu, pers. communication, 2002).

4. The Role of Religious Ethics in Biodiversity Conservation in India

This section is based on the background paper prepared by Debal Deb (in this report, see appendix II.2, Volume II). It attempts to briefly describes the role of religious ethics in biodiversity conservation in India. This section should be read in conjunction with the preceding section, and the background paper prepared by Tiplut Nongbori entitled Myths, Legends and the Conservation of Nature in the Hills of North-East India (in this report, see appendix II.6, Volume II).

Introduction

In the wake of White's (1967) critique of the Judeo-Christian ethic of subjugation of nature by man, a plethora of work have been published to show that non-Western indigenous cultures maintain conservationist ethos. Gadgil hypothesized that in contrast with the modern Western economy based on exhaustive resource use modes, pre-industrial economies of hunter-gatherer-shifting cultivators are apt to be protective of the wild biota and habitats on which they depend for survival (Gadgil, 1989; Gadgil and Guha, 1992). Thus, religious mores, folklores and cosmologies of most indigenous societies maintain a conservationist ethos in order to sustain their natural resource base.

This message seems to have opened the floodgate of studies into the relationship of religious systems and nature conservation. In this tide of critical assessment of religious scriptures from an ecological perspective, a few studies have indeed demonstrated that socio-religious institutions of several pre-industrial societies have a number of cultural-religious mechanisms with important conservation consequences (Bilimoria, 1998; Deb, Deuti and Malhotra, 1997; Deb and Malhotra, 2001; Gadgil, 1989, 1995; Gadgil and Iyer, 1989; Gadgil and Chandran, 1992; Orr, 1993). While Buddhism and Jainism are known to have had explicit conservation concerns and consequences (Badiner, 1990; Batchelor and Brown, 1994; Singhvi, 1990; Tobias, 1994), it has been

suggested that ecological concerns were not unique to any religion. White's thesis was challenged by some authors who suggested that Judeo-Christian ehics also fostered an attitude of stewardship towards nature (*e.g.* Van Dyke et al., 1996; Hessell and Ruether, 2000). However, a large number of publications amount to an exercise in hermeneutics of religious texts. In a bid to reveal that all religious institutions and practices served to promote nature conservation, such studies allude to obscure texts, take recourse to exegesis of scriptures, and provide biased interpretations of different portions of scriptural text (e.g. Chapple and Tucker, 2000; Khalid and O'Brien, 1997; Prime, 1992; Rose, 1992; Singh, 1992; Van Dyke et al., 1996). From the claims of such publications, it appears that all the big institutional religions have directives with an explicit or implicit object to conserve nature.

A consequence of concern is that such publications serve to mount a general functionalist argument to justify all religious practices. In this era of resurgence of religious fundamentalism, studies in religious traditions must be kept from functionalist proclivities.

Compassion and Practical Theology in Major Indian Religions

The Puranic Scripture

For meditation Hindu, Buddhist and Jain monks and saints sought a natural and peaceful environment, the highest expression of which is the forest. Thus traditionally temples were often built in forests, and by association the surrounding forest became sacred space to be preserved rather than exploited. Traditionally this would tend to promote the conservation of all the species diversity within the surrounding ecosystem.

Jainism

The biocosmology of Jainism presents a worldview that stresses the interrelatedness of life-forms. Its attendant nonviolent ethic might easily be extended to embrace an "earth ethics" (Chapple, 1998). In Jainism, life is arranged hierarchically according to the number of senses a particular life form has. Thus, earth, water, fire, air, microorganisms, and plants each has its own life (*jiva*), and experiences the world through the sense of touch. Worms add the sense of taste. Crawling bugs can feel, taste, and smell. Flying insects add seeing. Higher orders of animals, including fish and mammals, can feel, taste, smell, see, hear, and think. To hurt any of the sentient beings results in the thickening of one's karma, obstructing advancement toward liberation. To reduce karma, Jainas avoid activities associated with violence and follow a vegetarian diet.

Due to their perception of the "livingness" of the world, Jainas hold an affinity for the ideals of the environmental movement. The practice of nonviolence in Jainism fosters an attitude of respect for all life-forms, and assumes the most extreme form. Many Jains wear masks to prevent invisible creatures from getting killed while breathing and speaking. The advanced monks and nuns would sweep their path to avoid trampling on insects.

Apart from *ahimsa*, all the Jain vows are easily apt to be interpreted in ecological terms. For example, *aparigraha*, the discipline of nonpossession, prevents one from indulging in the acquisition of material goods, one of the root causes of current ecological concerns.

Brahmacharya or sexual restraint might help minimize population growth. The monks and nuns, due to the heightened nature of their daily spiritual practice, leave little or no imprint on the broader ecological system. However, the Jain practices are not without contradictions. Tree planting is considered an important activity associated with environmentalism but poses a dilemma for Jainsim: while Jaina laypeople might participate in such activities, their nuns and monks most likely would not plant trees because of the harm caused to the earth and the earth-dwelling creatures in the digging process (Chapple, 1998).

Buddhism

Buddhism has long advocated reverence and compassion for all life. In the case of animals this encompasses invertebrates as well as vertebrates (Sponsel, 1991). However, Schmithausen (1997:11-12) denies any such associations of early Buddhist doctrine with explicit care for nature: "the ultimate analysis and evaluation of existence in early Buddhism does not seem to confer any value on nature, nor does it motivate efforts for preserving nature, not to mention restoring it, nor efforts for transforming or subjugating it by means of technology. It only motivates the wish and effort to *liberate* oneself (*vimutti*) from all constituents of both personal existence and the world." Thus early Buddhism preached for detaching oneself from any worldly activity, and abstaining from acts that enhance *dukkha* (woes) of beings.

In contrast, other scholars (*e.g.* Harris, 1995) argue that the original, genuine teaching of Buddhism is a theory of universal interconnectedness, which, by dismantling the separate, continuous ego-self, leads to identification with and responsibility for the whole world of beings. Accordingly, in contrast to a certain tendency among Theravaada Buddhists and especially Western interpreters, original Buddhism (as well as early Mahaayaana) is not escapist but world-affirming, aiming at an awakening which puts one into the world with a more caring sense of social engagement (Macy, 1991). It appears that the Buddha, in contrast to the Jainas, said yes to bodily existence and hence to the food chain and to nature as it actually is, and that it is due to this affirmative attitude to bodily existence that *ahimsa* is considerably less strict in Buddhism than in Jainism.

While environmentalism emphasizes that natural resources are limited, Buddhism is more direct in encouraging individuals to limit their resource consumption to the optimal satisfaction of the four basic needs of food, clothing, shelter, and medicine. This vantage point renders ecology a very concrete and personal matter. Following the Middle Way, one lives and progresses in accord with the principles of detachment and moderation. In short, the Middle Way avoids the extremes of denial (asceticism) and overindulgence (consumerism) (de Silva, 1987). *Nirvana* or *Nibbana* (the awakening into a state of bliss) is reached when the boundary separating the finite self from its surroundings and also all mortal craving are extinguished (Smith, 1958). Accordingly Kaza (1990:25) recognizes that "An environmental ethic is not something we apply outside ourselves; there is no outside ourselves. We are the environment, and it is us." From this recognition of the unity of human and nature it follows that the laws of nature apply to humans as well as to other living beings.

Box 15. Sikhism and Biodiversity Conservation

The sikhism deals with the natural phenomena, animals and birds, seasons, flora and fauna and above all the creation of the workd. Part of God's divine plan is to have himself represented in the environment. Man's relationship with the environment is physical and spritual.

"Although tree worship is not prevalent among Sikhs, cultivation and farming have been emphasized to a great extent. Sikh philosophy deals with the garden, fields, flowers, trees, growth and decay, pruning and grafting, manuring and weeding and so on."

"Environmental and ecological balance can only be achieved if the conservation designed by God is maintained, and it can only be maintained to adherence to ethical behaviour. All organisms and elements of nature function under the Supreme divine will and fear. Sikhism expects men to develop a respectful and frarful attitude towards ecology and the environment. Only then is full developments of nature and men is possible" (Kushwah and Kumar, 2001).

Box 16. The Islam

The Islam acknowledges the links between religious belief and living planet by not emphasizing the actual place of worship, but pray at set times each day. Islamic teachings states that:

All living creatures are worthy of our respect and that we were entrusted with the Earth to God: thus it is our duty to care for our planet. We have a duty of care and respect for all people and other forms of life.

The holy Quran says "Allah does not approve of ecological disturbance." The protection of fauna in Islam is directly associated with moral values. The teachings of mercy is an essential part of the faith of Islam. The Quran not only discourages the killings of animals for mere fun and sport, but also enjoin kind treatment towards them. "There is rather an animal on earth nor being that flies on wings, they are communities like you." Islam is very much for the conservation of life, both wild and human, on earth. It regards the killings of the single soul in terms of the entire humanity, and the saving of a single soul as the saving of the total human race. Islam does not permit to use animals for hard work beyond their capacity.

A tree in Quran symbolizes eternity and never dying ownership, as well as the medium of life and inspiration. The Prophet regards "Damseus", the land of trees and forest, as one of the garden of Paradise. The Quran is very sensitive to the cutting of trees, which is sanctioned only under extreme conditions (Rafique & Ajmal, 1991): *It is a duty of all Muslims to respect the God – given environment, and to this end. Islam dictates responsible and proper management of resources. The concept of environment in Quran is distinct enough. It has given the values of unity, balance, order and harmony. Today when we are exploiting nature and its resources injudiciously and moving towards chinos, such understanding must be developed by re-establishing the cultural and religious values in society.*

So in Islam it is also the linear view of time and the supremacy of humanity as the vice-regent of "Allah" that shapes ethics; conservation of environment is based on the principle that each one of its components was created by God, each having a different function measured and balanced by the creator. Human use is the only one of the reasons

for the creation of all the many parts of the natural world; other creatures are also beings worthy of respect. The environment is the gift of God to all ages, past, present and future and God entrusted humans with the duty of protecting it (Beazley, 1993; cited in Kushwaha and Kumar, 2001).

Syncretism and Hindu Pantheon

The indigenous societies as we see them are results of centuries of cultural changes wrought by intra- and inter-societal dynamics. Contrary to past beliefs in the isolation and timelessness of pristine cultures, small localised groups of hunter-gatherer-shifting cultivators as well as pastoralists are known to have living contacts with other groups, and maintain a symbiotic relationship with their agricultural neighbours (Headland and Reid, 1989; Gadgil and Guha, 1992; Velling, 1995). In the Indian context, the cultural exchanges between pre-literate (tribal) and literate societies on complex semiotic levels are often reflected in the multitude of shared myths and rituals.

India is a land where a marvelous confluence of a multitude of belief systems, iconographies and mythologies from different fountainheads of cultures has taken place. The spirit of syncretism has in fact permeated in all the religions taking roots in the country, where hardly any of them can claim absolute purity of the original precepts.

The birth of Hinduism as we see it today is obviously of multiple origins. It has a multitude of icons, myths and rituals borrowed and adopted in the past from aboriginal cultures. Sanskrit texts composed after the *Rg-Veda* represent a composite culture. Originally pre-Vedic deities like Pashupati and Mother Goddess were incorporated into the Aryan fold after the Rg-Vedic phase of the Aryan culture (Kochhar, 2000). Archaeological evidences and linguistic affinities between Sanskritic names for goddesses and Dravidian languages show that numerous non-Aryan myths and icons have been Sankritised into the mainstream Brahmanical culture in order to give them a symbolic acceptance and recognition through textualisation (Beane, 1977; Coburn, 1984).

The variegated theologies of Hinduism suggest that the earth can be seen as a manifestation of the goddess *(Devi)* and that she must be treated with respect; that the five elements hold great power; that simple living might serve as a model for the development of sustainable economies; and that the concept of *Dharma* can be reinterpreted from an earth-friendly perspective.

Jainism and Buddhism, which arose as a challenge to Brahminical Hinduism, were eventually described as different tenets of ascetic Hinduism. Buddha himself, who posed the greatest threat to Brahminism in his lifetime, was later described as the penultimate *avatar* (reincarnation) of Vishnu, signifying the epitome of human compassion and understanding. The myths of Jain Tirthankars as well as the Buddhist myths draw on several Sanskritic Hindu deities and cosmology.

Inter-penetration of Religious Beliefs

Buddhism and Hindu sects:
Just as Buddha and Buddhism were sanskritized over time, a number of Hindu traditions were influenced by Buddhism. A new sect of Vajrayana evolved in Bengal, Sikkim, Nepal and Tibet, in which Buddhist reincarnation myths and Tantric principles of transcendentalism were combined. Such inter-penetration of symbols and myths took

a perverse streak in the Kapalik sect in Bengal, which translated the Vajrayana principles of sacrifices into ritual sacrifices of humans – a practice reminiscent of ancient fertility cults.

Principles of Tantra, hathayoga and Vajrayana continued to inform the various subaltern and obscure cults like Sahajiya, which sought to draw popular erotic interpretations of different yogic techniques and rituals. These sects were repudiated by the mainstream Hinduism as vulgar, but scholars read a profound transcendental philosophy of union of the body and the cosmos through carnal practices. Of importance to our discussion is that these sects emphasized the union of souls, oneness with the cosmos, and love for all life forms – tenets of belief that reinforce the value of life, what Fromm (1973) calls *biophilia*.

Sanskritic Hinduism and Local cults:

The confluence of Hindu and indigenous animistic religions in India is an important phenomenon in the evolution of the general religious ethos in the country (Datta, 1944; Doshi, 1992). Numerous tribes were drawn within the pale of Hindu society (Hunter, 1903; Lal, 1974). The cultural and religious fabrics of many hunter-gatherer and shifting cultivator societies were *sanskritized* and eventually assimilated into the Hindu pantheon.

The aboriginal taboos on extraction and use of the sacred species of plants and animals seem to have translated into Hindu religious restrictions on killing of certain life forms. The hanuman langur (*Presbytes entellus*), and the banyan tree (*Ficus bengalensis*), for example, enjoy full religious protection from the entire Hindu society.

A vivid demonstration of how effectively the concept of the sacred could give protection to species and habitats is the Bishnoi community in Rajasthan. Founded by Bhagwan Jammeswar in the 15th century, the Bishnoi observe twenty-nine commandments, many of which are directly related to conservation of nature, such as giving full protection to the khejri tree (*Prosopis cineraria*) and the blackbuck. Strict ritual protection given to the khejri, a keystone species in the desert ecosystem providing food and fodder, has enabled both the blackbuck and the nomadic Bishnoi people to survive the uncertainty of food availability.

On a smaller scale, the strength of religion in protecting species, is instanced by a sacred complex of the Shiva temple at Panchami village in Birbhum district of West Bengal, where the temple walls were ruined by the growth of a banyan tree. The demolition of the temple by the growing tree over decades was withstood by the worshippers, a new temple was erected close by, and the sacred trees, occupying the previous temple site are still given full protection by the local community (Deb and Malhotra, 2001).

Protection of natural habitats (forest patches, stretches of river, ponds and lakes) in indigenous cultures is typically achieved by demarcating it as sacred, by association of ancestral sprits or a local deity. Sacred groves and ponds characterise the tribal villages, but the institution is also considerably strong in local Hindu cultures (see Sections on Sacred Groves and Sacred Ponds). Fishing is prohibited in the Ganga from Gangotri to Hardwar, as this stretch of the river is considered sacred. Similar stretches of other rivers like Mahanadi, Narmada and Godavari are also deemed sacred, where no fishing is permitted. These stretches serve as important refugia for fish in these rivers. Also, religious restrictions on fishing and hunting at certain time of the year are traditionally observed by many communities. For example, the taboo on fishing during

the monsoon periods in Ganga waters was observed by traditional fisherfolk, a taboo that ensured growth of populations of anadromous fish like *Hilsa ilisha*. Hunting taboos on animals at critical life history stages – like pregnant deer - also ensured a sustainable harvest of the prey population. Restrictions on consumption of plant parts at important certain seasons also ensured the propagation of the plants. For example, consumption of the ber (*Zizyphus jujuba* and *Z. oenoplia*.) fruits is prohibited in Bengal until the Saraswati festival is over on the full-moon day of *Magh* (late winter). The restriction is clearly to ensure full ripening of the ber fruits, which would enhance the chances of seed germination after consumption by humans (Deb and Malhotra, 2001).

Many local cults arose in the Mediaeval India to challenge Brahminical Hinduism based on caste exploitation and ritualism. Illiterate, low-caste saints like Dadu, Kabir and Ramdas became immensely popular by dint of their elegant folk philosophical appeals, and established their own cults. All these cults taught non-violence and compassion toward all fellow creatures, and were eventually assimilated by the Hindu pantheism. The neo-Vaisnava movement of Medieval Bengal, led by a Brahmin scholar Chaitanya challenged all the divides of traditional Hinduism based on caste, religion or community, and accreted a large number of followers from all communities including non-Hindu communities in the entire eastern and north-eastern States, but eventually came to be identified as another Hindu sect. Of course, these movements never sought to overthrow the traditional Hinduism, but to cleanse the religion of its ritualistic debris and give it a more humanistic base.

Islam and Local Cults:

Although Islamic scriptures dictate no taboos on hunting of animals (excepting the pig) or harvesting any plants, Muslim shrines in different places in India exhibit a few locally held taboos. Thus, Malhotra et al. (1993) document a Muslim shrine in Maharashtra where a pomegranate tree is held sacred, and Deb and Malhotra (2001) report several Sufi shrines in Bengal where groves attached to the shrines are maintained and protected by the local Hindu and Muslim devotees.

The Religious Base of Conservation Ethics

As the previous Section on **Biophilia** elaborates, there is a biophilous ethic inherent in the Indian cultural-religious traditions. These traditions, governed by both scriptural religions and local/subaltern myths and belief systems, tend to foster a pervasive love and respect for nature. Myths and auguries, dissociated from religious rites, are often steeped in a multitude of meanings related to biophilia. Thus, regardless of the original function, different institutions and ritualistic behaviours have important conservation consequences (Deb and Malhotra, 2001).

The continuation of the tradition of biophilia, intertwined with religious ethics, seems to pose a unique opportunity of taking pro-active measures of biodiversity conservation. As Vivekananda once put it, people of India tend to go a long way to do something if that is associated with religion. This social trait is indeed apt to be considered a weakness in a democratic, secular, civil society; by exploiting this very trait, politicians have stoked the flames of religious fundamentalism and communal riots. However, this same trait may also be *co-opted* or enlisted for orchestrating a conservation movement. The strength of religious belief systems in forging environmental movements is instanced by recent social movements in Sri Lanka,

Thailand, USA, and Brazil, among other countries, where Buddhists are becoming environmental activists and applying the principles of Buddhist ethics and ecology (Sponsel, 1991). The "Ecology Monks" of Thailand, for example, are preaching nature conservation as an important principle of Buddhism, and are spearheading a social movement to promote nature conservation and provide sustainable livelihood for local people (Darlington, 1997).

In India, such local movements inspired by religious beliefs have taken place, albeit seldom recorded. However, two recent examples given below may suffice to indicate that there is an immense potential of enlisting support from religious institutions in local movements for nature conservation in India.

Our first example is a NGO project for eco-restoration of Vrindavan. After centuries of negligence of the municipal authority, the route of the pilgrims' *parikrama* at Vrindavan was denuded of greens, and was strewn with garbage. A WWF-India project initiated in the 1990's a campaign of cleaning up the garbage and planting of thousands of saplings of traditional trees. These saplings were raised and distributed among the local inhabitants, who also expressed a desire for developing tree groves within the city and on the *parikrama* route. A strategy of taking recourse to the ancient tradition and myths of Krishna and his green valley of Vrindavan proved successful. For the first time in the town's history, the municipal authorities and temple priests joined hands to form the an advisory group to help and advise WWF-India's project staff. People's enthusiasm towards the project was contagious. This particular project started by WWF-India a decade ago has encouraged many other organisations taking up similar work in the town of Vrindavan.

Our second example is from Chamoli, Uttarakhand, where Navdanya has been working with farmers to conserve traditional crop genetic diversity. Against the tide of the Green Revolution, it has been difficult to maintain a viable *in situ* stock of traditional seed varieties, because of the on-going chemicalisation and industrialization of agriculture. However, in 2000, Navdanya enlisted support of local priests, along with other influential people, to promote the message of conservation in 2000. The message of the erosion of the region's cultural heritage took its roots, and the priests launched a unique campaign of their own accord: each priest asked their *jajmans* (patrons) to save and exchange crop seeds of folk varieties on every religious and social ceremonies they were to perform. Thus, in every household ceremony where relatives and neighbours are invited to attend, people ritually exchange different local varieties of crop seeds, which they also grow in their farms. These seeds are now widespread in the district.

Conversion and Conservation

Indigenous ethnic religious traditions often give way to dominant religions; local belief systems are brought into the pale of dominant religions in three ways. Firstly, the economic and social positions of the followers of dominant religions may provide an incentive for abandonment of local belief systems in favour of the dominant religion. The fact that Hindus in India and Nepal occupy high echelons of power, wealth and social prestige has served to persuade most tribal communities to adopt the Hindu religion. Indeed, this drive for climbing the social ladder has been a major cause for the rapid and thorough success of sanskritization of tribal and subaltern cultures. Thus, the Rajbanshi, Koch and the Bhumij consider themselves as segments of the Hindu society, belonging to the *Kshatriya varna*, and the Santal belief system has incorporated a

multitude of scriptural Hindu rituals and deities. Many of the tribal deities and rituals have been sanskritized to such an extent that it is often difficult to discern their original identity. The continuing process of sanskritization has also engulfed typically aboriginal societies like the Toda, Chenchu, Bhil, Pahariya, Oraon and the Cholanaiken.

Secondly, local populations may be converted into followers of dominant religions by conscious missionary preaching. The insightful preachings of the Buddha, Mahavir, Tirthankar and Nanak who travelled across the States made thousands of people abandon their own belief systems and embrace the new belief systems. The *Bhakti* cult spread from Bengal into the northeastern States of Assam and Manipur during the mediaeval period through a number of Vaisnava saints, most notably Shankar Deb. In the 7th century, king Cheraman from the Chera dynasty of Kerala gave a patient hearing to the discourses of the Messengers of Islam, and voluntarily converted to Islam. In the 19th and 20th centuries, whole untouchable-caste villages converted to Islam to escape oppression of the Brahmanical hegemony, and in some cases reconverted back to Hinduism, in response to blandishments of Islamic da'wa and neo-Hindu reform organizations. The spread of Christianity in Nagaland and Mizoram was an offshoot of the expansion of an effort of the tribals at protecting their identity, when they felt besieged by the process of sanskritization of the Meitei in Manipur and the Ahom in Assam (Shahin, 2001).

Third, indigenous communities may be coerced to accept the dominant religion. Conversion into Islam and Christianity in the Indian subcontinent was in some cases achieved through coercion, especially during conquests. Forced conversion of minorities in Bangladesh has been reported in media to be continuing over the decade (HRCBM petition, 2001; HLB, 2001). The process of Christianisation in Goa was violent, induced through coercion relating to the loss of land and payment of taxes during early Portuguese colonial rule. The process of Westernisation was inherent in the conversion rituals of the Portuguese empire, just as it was part of the process of education in British India, which accounted for the 19th century Christianisation of some of the educated elite in Bengal.

A significant consequence of such conversion is that much of the traditional worldview of the proselytized people in relation to natural resource use has altered. The most obvious change resulting from sanskritisation of tribal sacred groves is that the sacredness of the grove is now confined to a shrine of the residing deity, rather than the trees which comprise the grove. Thus, whereas the tribal sacred groves generally are characterized by the absence of any idol or temple structure within the grove, the Hindu sacred grove usually contains a built structure (a shed or an elaborate temple) to shelter an idol of the sanskritized deity. Such structures are as a rule constructed with wood from the felled trees of the grove. Upon sanskritization, the community-held groves are converted into open access resources, and traditional sanctions against destructive use of the sacred groves become lax.

On the theological ground, the Hindu pantheon allows, and in some cases sanskritize, the tribal customs of various forms of nature worship, whereas monotheistic religions repudiate and forbid traditional animism and idolatry. Thus, many of the ancient institutions like sacred species and sacred groves were abolished in Mizoram and Nagaland soon after the tribes were Christianized. Nevertheless, an awareness of the functional utility of the early sacred groves dawned on the Mizo people when they realized that conversion of sacred groves into open access resources had led to an acute

shortage of forest resources. This understanding led to the reinstatement of the institution of sacred groves in Mizoram in the 1980s, without reinvoking the traditional religious beliefs in animism. Modern Mizo equivalent of the sacred groves was named "safety forest", which the Mizo village councils protected from exhaustive extraction of wood by villagers. In contrast, village forest patches that are meant for regular collection of fuelwood were named "use forests" (Malhotra, 1990). This unique instance of re-establishment of a traditional institution for promoting conservation, without recourse to any ritual or theological prejudice, indicates the possibility of a rational separation of religious beliefs from traditional ecological knowledge, and of a secular use of the latter.

5. NEGATIVE LINKS BETWEEN CULTURAL AND BIOLOGICAL DIVERSITY

A search of random literature (exhaustive search under the circumstances was not possible) and discussions with a number of persons, reveals that there are perhaps hardly any traditional cultural practices that would have had significant negative impact on the wild biodiversity. There are, however, several traditional practices that have changed in recent times, and have some negative impact on the biodiversity. Therefore we thought it appropriate to list them here briefly.

5.1 Hunter gatherers

There are many endogamous groups in the country whose primary occupation was and for some even now hunting and gathering. The notable examples are Phasepardhis of Maharashtra (also found in few other States), Birhors of Madhya Pradesh and Bihar, Lodhas of West Bengal, Nari Kuruvas of Tamil Nadu and Andhra Pradesh; there are ofcourse many other groups in the country, beside these. Traditionally they hunted a variety of animals: Phasepardhis snared partridges, quails and peafowl on a large scale, and to some extent deer; Birhors hunted several animals including monkeys and langoors; Lodhas hunted mammals (Indian hare, mongoose, bandicoot rat, squirrel), birds (dove, quail, partridges, mayna, blue jay, eagret, babbler, sparrow, bulbul, etc.) and reptiles (monitor lizard, chamaeleon); Nari Kuruva hunted a variety of birds, small mammals, and reptiles mostly monitor lizard:

Traditionally all these communities hunted animals for mostly self-consumption. The technologies they used like snares, traps, nets etc. were such that large-scale hunting was not possible. There is abundant evidence that these communities traditionally followed strict taboos like no hunting during breeding season, taboo against killing of pregnant and young animals.

- Malhota et al (1997) studied various dimensions of interference (cultural, socila, religious, economic) between faunal diversity and the local forest dwelling communities. The study was conducted in 10 villages inhabited by Kora, Lodha, Santhal and Kurumi Mahato in Midanapore district of West Bengal. The salient findings of the study are:
  - About 50% of the 169 household studies in the 10 villages reported hunting.
  - Out of 128 faunal species found in the area, 35 (27%) were hunted.
  - Before communities altogether hunted about 1,419 during the year preceding the study; mammals & birds constituted the bulk.
  - Majority of hunted animals were consumed as food at home.
  - Besides the consumptive use of hunted faunal species, the animal were found to be integrated in a variety of ways in to cultural, social & religious aspects of the lives of the 4 communities such as dance, charms, forecasting, totem, medicine, sounds, folklore, magico religious anima motives, entertainment etc.

In short, these practices coupled with territoriality and nomadism would have hardly over-hunted any species, and therefore were sustainable.

5.2 Annual Ritual Hunting

This section is written based on the materials provided by K. C. Malhotra, B. Modak, P. K. Das, P. Bhattacharya and William Stanley and his colleagues.

The tribes of central India (Chhattisgarh, Bihar, Orissa, south West Bengal, Jharkhand, eastern Maharashtra) in particular and tribes of other areas traditionally practice a ritual hunt once a year. For example, in Bastar it is called *Paradh*, in Orissa *Akhand Shikar* and among Bonda of Orissa as *Bento* and among Paroja of Orissa as *Chait Parab*. Although the main elements of this ritual among all the tribes are same i.e. worship of forest deities and hunt of wild animals, there are several differences between state and / or between tribes.

The general pattern of the ritual, however are (i) a series of worships of the forest deities are performed over a period of a week to two weeks in the month of Chait (February to March); (ii) all the able bodied adult males of a village participate in the hunt; (iii) the priest of the village decides the direction of the movement of the hunters; (iv) hunting in sacred groves and sacred landscapes is a taboo; (v) hunting of all the carnivorous animals is taboo as well as the clan totem; (s) of the hunters; (vi) sleeping animals are not hunted

– they are awoken by the beat of drums and sounds; (vii) the most prefered animals those are hunted are deer, wild boar, rabbit etc.; and (viii) the meat of the animal is shared among all persons participated in the hunt.

There are absolutely no data available on the quantum of animals or details of the species that are hunted annually. It is therefore, not possible to infer whether this traditional practice that continues even till today has any significant negative impact on the hunted species. This is one area that requires systematic research documentation and analysis.

Box 17. Annual Ritual Hunt (April 2002) in 10 villages of Koraput and Kalahandi districts of Orrissa. (B. R. Bagh, Hemlata Hontal, Mohan Hontal, P. K. Khora, Pramod M, G. Soren, W. Stanley, and K. C. Malhotra)

As noted above, data on the species and their numbers hunted during annual ritual hunt (ARH) even for a single village in the country are not available. In view of this K. C. Malhotra initiated a pilot study in 10 villages (7 villages from Koraput and 3 from Malkangiri) of Orissa with a very limited objective of documenting the species and their numbers hunted in these 10 villages during the ARH of April 2002. A team of 6 persons from an NGO Integrated Rural Development of Weaker Sections in India IRDWSI / WIDA working in south Orissa was trained to collect the data using recall method in villages they were working. Except for identification of a few birds (n=15) and mammals (n=3) no difficulties were encountered in eliciting information presented here. The fieldwork was conducted during June 2002. Results of the study have been given in tables 5 and 6.

The salient findings of the study are:
The names of the ARH, as expected, show variation in the region. In the 10 villages studied four different names were reported – *Hire Lenju, Beni, Chaito Parab and Bento.*
In all villages the ARH was held in the month of April.
Altogether 363 animals were hunted during ARH – April 2002 comprising of two texas of animals - birds and mammals. The birds were represented by 10 identified and one unidentified species. The mammals comprised of 8 identified and one unidentified species. Thus, altogether 20 faunal species were hunted.
Of the animals hunted, birds constituted the bulk 80.7% (n=293) and mammals 19.3% (n=70). Among the birds hunted 3 species quail (n=157), dove (n=42) and wild fowl (n=29) accounted for 77.8%. Among the animals hunted 3 species rabbit (n=41), deer (n=14) and wild boar (n=5) accounted for 85.7%. While various bird species that have been hunted were somewhat expected, hunting of 14 crows in one village and one kite in another village were quite surprising.
There is considerable inter-village variation in the number of animals hunted; it varies from 10 in Putsil to 64 in Bodogam.
Although the data presented here are rather insufficient to draw substantive and reliable inferences in terms of the impact of ARH on the conservation status of wildlife in general

and species that have been hunted in particular, the data does not appear to raise any immediate striking alarms. The species hunted are profuse breeders, in particular the ones that have been hunted in large numbers like quail, dove, rabbit, deer and wild boar.

Table 5. Annual Ritual Hunt in April 2002 in 10 villages of Koraput and Malkangiri district of Orissa

S.No	Village	District	Ethnic composition	Animals hunted			Hunting month	Name of ARH
				Birds	Mammals	Total		
1	Pirimachi	Koraput	Kondh	29	1	30	April	Hirei Lenju
2	Jholagudа	"	Kondh	21	6	27	April	"
3	Bariguda	"	Poroja	26	2	28	April	Beni
4	Barokotni	"	Kondh, Paroja	23	8	31	April	Chaito Parab
5	Porja Pungar	"	Paroja	39	3	42	April	"
6	Bodogam	"	Konda Porja	60	4	64	April	"
7	Putsil	"	Kondh	3	7	10	April	"
8	Seleiguda	Malkangiri	Bonda	29	6	35	April	Bento
9	Podeigudа	"	Bonda	28	18	46	April	Bento
10	Mudlipodа	"	Bonda	35	15	50	April	Bento
Total				**293**	**70**	**363**		
%				**80.7**	**19.3**			

Table 6. Animals hunted during Annual Ritual Hunt (April 2002) in 10 villages of Koraput and Malkangiri.

S.No	**ANIMALS**	**Villages***										**TOTAL**
	BIRDS	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
1	Quil	28	18	26	4	15	10	2	19	15	20	157
2	Wild fowl	1	3		4	4			5	6	6	29

3	Dove				10	6	6		5	7	8	42
4	Peacock							1			1	2
5	Owl					4	2					6
6	Crow						14					14
7	Stark						15					15
8	Mayna						10					10
9	Water hen						2					2
10	Kite						1					1
11	Unidentified				5	10						15
	MAMMALS											
12	Deer							1	3	6	4	14
13	Sambhar							1				1
14	Wild boar						1	1		2	1	5
15	Porcupine				1							1
16	Mangose				1		1					2
17	Wild cat						1					1
18	Wild rat							2				2
19	Rabbit	1	6	2	4	2	1	2	3	10	10	41
20	Unidentified				2	1						3
	TOTAL	**30**	**27**	**28**	**31**	**42**	**64**	**10**	**35**	**46**	**50**	**363**
	%	**8.3**	**7.4**	**7.7**	**8.5**	**11.6**	**17.6**	**2.7**	**9.6**	**12.7**	**13.8**	

* Names of the villages: 1. Pirimachi, 2. Jholagoda, 3. Bariguda, 4. Barokotni, 5. Porja Pungar, 6. Bodogam, 7. Putsil, 8. Seleiguda, 9. Podeiguda, 10. Mudlipoda.

In so far as *Paradh* involves burning the undergrowth, forest regeneration is very seriously affected in parts of Bastar. The burning also results in dessication of the soil at a time when sal is putting on leaves. And may be responsible for the phenomena known as sal drought in Chattisgarh, where thousands of acres of forests have died simultaneously. (Rauf Ali, personal communication, 2002).

5.3 Shifting Cultivation

Shifting cultivation (or slash and burn agriculture) variously know in the country: - *jhum* (in northeast India), *podu* (in Orissa and Andhra Pradesh), *kumri* (in Maharashtra and Karnataka) – is widely practiced by primarily the tribal populations in various parts

of the country. For example, it is practiced in all the northeastern states, on the Eastern Ghats, on the Western Ghats and the Vindhyas. The chief elements of shifting cultivation are: rotation of fields, use of fire for clearing the land and burning the vegetation, keeping the land fallow for a number of year for regeneration of forest, use of human labour as chief input, non-employment of draught animals and use of very crude and simple instruments such as dribbling stick, scrappers etc.

A number of studies carried out in different part of the country where shifting cultivation is practiced, unequivocally establish that till recent times this traditional practice with long fallow periods (up to 20 and more years) was sustainable (see among others Sachchidananda, 1989; Ramakrishnan, 1992).

As would be seen in the following section 6, this practice in many parts of the country has become unsustainable.

5.4 Non-Timber Forest Products

People living in and around forest areas have depended on a large number of non-timber forest products to meet their subsistence needs of fuel, fodder, food, medicine, timber, etc. A number of studies have shown that till recent times the technologies and methods used for harvesting were eco-friendly and did not have perceptible impact on the species harvested.

5.5 Hunting of Chamaeleon in Bastar and Uttara Kannada District

Sighting of chamaeleon among Maria Gonds of Bastar in Chhattisgarh in a very bad omen. Sighting a chamaeleon will bring wrath to the person sighting it. Therefore, if a Maria happens to see a chamaeleon, there is absolutely no chance that it will escape being killed. No matter how much time or effort it might take, the Maria Gond will make sure that it is killed and burned.

In Uttara Kannada district of Karnataka, the lizard called Chamaeleon is hunted by the people of lower caste. It is believed that the upper caste poison the lower caste people

extracted from the skin of chameleon. It is supposed to act as slow poison and person dies days after since he has been poisoned. The animal is locally called as *gosambi.*

It is a well known belief in this area that an upper caste community people poison the strangers visiting their houses. It is also said that certain houses of upper caste people in the village are known for poisoning.

There are no studies to understand whether the population of chamaeleons has dwindled due to this belief and practice (Yogesh Gokhale, personal communication, 2002).

Therefore in absence of any study it is not clear whether this cultural practice had any negative impact on the population of chameleon in Bastar and Uttara Kannada.

5.6 Jackal Hunting In Karnataka

Jackals are hunted at Vaddarhalli village in Tumkur district of Karnataka for ritual sacrifice to a local deity. Similar kind of incidences also have been reported at Kadabhalli in Hasan district of Karnataka (Sridhar, S. in this volume, see appendix IV, Volume I). These hunts take place on the day of Sankranti festival in January month.

There are no studies available to understand whether this practice has resulted into reduction in number of jackals in the area.

- The Soladevanahalli ritual hunt has the following explanations

1. The Maharajas used to come to their forests regularly (atleast four times in a year) for a hunt, which was purely for game and used to take the village community into the forests. They used to hunt only animals that could be eaten i.e. herbivores.
2. The community used to report the damage caused by the wild animals for their crops and therefore the Maharaja used to visit them frequently for both hunting of animals and compensating them for the loss.
3. The villagers who generally are not hunters in this part of Karnataka used to consider this as a group activity *saha bhojana* for all the members to unite at the place and discuss common matters. The hunt would also supplement their protein requirements.
4. Over a period of time this became a sport for the community as the youth used to gather and hunt. The best hunter was given an award and social recognition (K.S.Murali, personal communication, 2002).

5.7 Hunting of Wild Boars In The Western Ghats

Wild boars are hunted in the Western Ghats around Deepawali festival in Karnataka and Maharashtra. There is no information available about this practice. Also the nature of belief, if any associated with this tradition are not known.

But unlike other wild animals, the increasing population of wild boars has been a menace for the agriculture. So there could be a remote possibility that the tradition of hunting wild boars during Deepawali would in short term reduce the populations of wild boars in the area and would thus cause less damage to the crops (Yogesh Gokhale, personal communication, 2002).

5.8 Promotion Of Hunting Of Wild Animals In The *Theyyam* Ritual In Kerala

In Kasargod district of Kerala, *Theyyam*, a local ritual is performed for the local deity called Wayanadan Kulawan. Wild animals are offered to the deity. Several species of animals are hunted from palm squirrels to bigger animals like wild boars, sambar, etc. Also it is believed that the deity prefers smaller animals than the bigger animals probably to encourage the youngsters to participate and keep the instinct of hunting alive.

This is not a yearly ritual unlike the other ones described earlier. This particular Theyyam is performed by the family who wants to worship this particular deity. Also it requires lot of investment for this ritual as the family has to feed large number of people. There could be a gap of about 60 years in two worships of the Wayanadan Kulawan Theyyam by the same family (Yogesh Gokhale, personal communication, 2002).

6. WEAKENING OF LINKS BETWEEN CULTURE AND BIODIVERSITY

In section 3, we have described some of the cultural practices that have positive links with biodiversity. In section 4, we gave details of some of the cultural practices that were traditionally sustainable without much discernable negative impact. In this section we shall examine the nature and extent of weakening of these institutions and the resultant

possible consequences on the biodiversity. For the sake of brevity, we shall describe each of the practices separately.

6.1 Sacred Species

As noted earlier, a number of wild plants and animal species are considered sacred and protected in India. While in general, the practice of conservation for a majority of the species remains fairly strong, there is some evidence that suggests that in some parts of the country the practice is weakening for some species.

For example, in early 1970s to late 1980s a large number of peepal (*Ficus religiosa)* and banyan trees (*Ficus benghalensis)* outside the habitation area in many villages in coastal districts of Maharashtra in particular Ratnagiri district, and in Himachal Pradesh were felled for making boxes for packing and transport of the alphanso mangoes and apples. It seems, however, that this pressure in recent years has been considerably reduced due to the introduction of plastic boxes.

6.2 Seasonal Hunting

In general, restrictions on seasonal hunting of animals and taboos on hunting of animals at critical life history stages – pregnancy, breeding season, young ones of a species, etc. – have weakened drastically in many parts of the country. Illustrative examples of this change in traditional practices are given below:

- In Bastar of Chhattisgarh State, it is extremely difficult to site birds over the long stretches of the landscapes, including well-wooded forests. The population of a number of birds have declined drastically. One particular bird, wire tailed swallow has become extremely rare. The Maria Gonds use the two long tail feathers of this bird as symbol of identity in their head gears. In absence of the availability of the natural feathers, these have been replaced by plastic feathers, readily available in Jagadalpur and weekly markets in Bastar.

- It is rather hard to site birds in the Nagaland in the north-eastern India. It is a usual site to watch scores of people, young and adult males, with catapult or guns (bow and arrows in some places) on the roads looking for birds in particular and other animals – reptile and mammals in general. They hunt birds, irrespective of species, sex, age or season. It is however not clear whether this reflects a recent change or it is an old traditional practice. Notwithstanding this, the consequence is a drastic reduction in the population of the birds and several animals in Nagaland. T.S.Vasulu (pers. communication, 2002) reports that ' in centre and western parts of Arunachal Pradesh it is very difficult to sight birds and small animals. I tried to trace some birds in the area. The town Pasighat where I spent about a month, I could not locate even a single crow, dove or a sparrow. However, in the six nearby villages that I visited on the top of the hills after the rains I found a flock of birds negotiating downstream river to approach a village hamlet. I was surprised and amazed to see this flock. My guide told me that the flock came just today only and they are migrating birds trying to take shelter possibly because of rains. I also could not sight birds in the west and east Kemang district of the state.'

- In Arunachal Pradesh, and perhaps in other parts of north-eastern India, the populations of the bird hornbill have been reduced drastically. The primary reason being that the Apatanis and perhaps other tribes use the beak and feathers of this bird as part of the head gears symbolising social and ritual status. The use of these items is thus an integral part of cultural, social and religious life of the Apatanis.

- Sudipto Chatterjee of WWF-India, New Delhi informs us that recently they have introduced fibre glass hornbills in the area on an experimental basis to reduce pressure on hornbills. The extent and magnitude of acceptability of these plastic gadgets needs to be followed up.

6.3 Natural Resource Use Partitioning And Territoriality

- The earlier natural resource use partitioning among the sedentary populations and the territoriality among the non-pastoral nomads has also weakened in many parts of the country resulting in more human conflicts and pressure on natural resources (Gadgil and Guha, 1992).

- Several taboos earlier practiced by the hunter-gatherers have also eroded. This has happened primarily because of the introduction of new hunting / trapping technologies such as nylon nets and guns and the substantial increase in the market demand for products from wild life. A number of traditional hunter-gatherers now sell a variety of live birds as pets and parts of animals of some species like snakes and monitor lizards, and other animals as charms and for medicinal purposes. The tail of squirrels is in high demand in Mumbai for making artist's soft brushes.

6.4 Sacred Habitats

6.4.1 Sacred groves : The ancient and wide spread institution of sacred groves detailed in section 3.2.1, shows signs of weakening in terms of both cultural and biological integrity in many parts of the country. The nature and extent of threats and pressures are often region and even grove- specific. The magnitude of these threats therefore vary from region to region as well as from one type of grove to another type. It is not fully understood in view of diverse nature of SGs in terms of ownership and management practices, which type of groves are in fact relatively under great threat.

The reported threats can be grouped under the following heads, and contain only illustrative examples rather than complete enumeration.

Commercial forestry : Over the past two centuries, in many parts of the country the local people have lost their customary rights of forest management to the government. Many sacred groves were destroyed under commercial forestry operations.

Development projects: Some of the sacred groves that fell under government vested

lands, were destroyed when townships grew. Railroads and highways have also taken their toll of many sacred groves. Others were flooded by big dam projects.

Shift in belief system: In some cases, conversion to other religions has resulted in the degradation of sacred groves.

Sanskritisation: In many places, local folk deities have been, and continue to be, replaced with Hindu gods and goddesses. This has resulted in the erection of a temple in the sacred grove.

Pilgrimage and tourism: The integrity of many groves with regional or pan-Indian character, has suffered due to the influx of large number of pilgrims and tourists.

Removal of biomass: In many sacred groves, removal of biomass and cattle grazing is permitted. Continuation of these practices over generations has resulted in the dwindling of the groves. *Encroachment:* Many instances are reported where the groves have been encroached by local communities and/or by various government line departments as well as by people migrating from outside.

Modernisation and market forces: The most recent threat to sacred groves comes from the process of modernisation. Local traditions are being challenged by westernised urban cultures. Modern education system fails to instill respect for local traditions. As a result, the institution of sacred groves is losing its cultural importance for the younger generation of local people. The spread of market economy has resulted in the denial and erosion of separate identities of local communities. The lure of short-term commercial gains has prompted destruction of traditional resource base, including the sacred groves.

Fragmentation and perforation : Many of the SGs are fragmented and perforated by roadways, extension of power lines, or reclaimed land for agriculture. Such fragmentation leads to loss of species, and disruption of ecological functions.

Box 18. The degradation of *kan*s in Siddapur could have following three major reasons:

*1) Loss of rights of local people in Bombay Presidency*_– The forest department established by British Government in the Bombay Presidency denied right of local people on their 'Sacred *kan* lands' (Chandran and Gadgil, 1993; Buchanan, 1870). This decision had very adverse impact on the local management of not only *kan*s but also overall natural resources in Malnaad area.

*2) Plantations of Acacia auriculiformis*_– During the period 1966 to 1985, selective felling was done in the evergreen *kan* forests in Siddapur taluk. The plantations of *Acacia auriculiformis* were done in place of clearfelled areas. People had dependence on these *kan*s for several needs like dry leaves, several non-timber forest produces like pepper, wild nutmegs, etc. apart from the daily requirements like firewood. The plantations were unable to complete the needs of people. Obviously the earlier untouched *kan*s became the only available resources to complete the daily requirements of the growing population. The village Kadkeri lost its *kan*s to plantations of *Acacia auriculiformis*; hence, people of the village turned to the *kan* land of the neighbouring villages to complete their requirements.

*3) Areca nut cultivation*_– The last decade of 20th century saw the huge market prices for the Areca nuts from the Malnaad region. It prompted even the marginal farmer to convert the paddy land or encroach the *kan*s in the valleys for the cultivation of Areca nut without official *soppinabettas*. The vegetation in these encroached *kan*s could be easily distinguished from undisturbed *kan*s due to the selective protection to *Hopea ponga*.

Also in many *kan*s selective protection has been given to *Garcinia gummi-gutta*, *G. morella* and *G.indica* due to the economic value; especially to the first species in last few years (Gokhale, in this report, see appendix II.4 in Volume II).

Box 19: Why sacred groves dwindled in eastern India

Distribution of sacred groves is the richest in the southern and the northeastern States (Gadgil and Vartak 1976, 1981; Chandran, 1997; Khiewtam and Ramakrishnan, 1989; Tiwari et al., 1998). Large sacred groves from these States have been reported to represent climax vegetation and to contain rich floral biodiversity (Mohanan and Nair, 1981; Chandran et al., 1998; Tiwari et al., 1998).

In contrast, sacred groves seem to have the scarcest distribution in States where the British East India Company enforced a novel land use system for maximizing revenue extraction. The *zamindars*, created by the 1793 Permanent Settlement Act of 1793, brought all "unproductive" woodlands under cultivation in order to maximize yield of land revenue, for the

British East India Company (Duyker, 1987; Rangarajan, 1994). The oppression by *zamindars* and moneylenders forced the forest tribals of the western districts of Bengal to migrate *en masse* to neighbouring districts (Duyker, 1987). Permanent Settlement thus marks a watershed in the ecological history of eastern U.P., Bengal, Orissa and Bihar, which sealed the fate of the pristine forest tracts including sacred groves. While there is no concrete documentary evidence, it can be surmised that at least some of the sacred groves were cleared for revenue generation.

The next phase of destruction of the sacred groves began with the passage of the 1876 Forest Act, which brought most of the pristine forests, including sacred groves (SGs), under the Forest Working Plans for extracting valuable timber, first for the Empire and then, after Independence, for the state government. Brandis (1897, p. 14-15) acknowledged the existence of SGs "in nearly all provinces" since pre-colonial ages. Most of them disappeared after the enclosure of forests by the state.

After Independence, the waves of urban-industrial development marked the Third phase of destruction, which expunged most of the remnants of SGs from the village landscapes. Coal mines, steel plants, and big river projects took their toll on vast tracts of forest and tribal hinterlands, including their SGs.

In spite of these phases of destruction, numerous patches of SGs still exist in eastern India (Deb and Malhotra, 1997, 2001; Malhotra and Das, 1997). Deb *et al.* (1997) reported existence of "remnants of SG in almost every tribal village" in the southwestern districts of West Bengal, and showed that these SGs still served as important bird refugia. Although severely fragmented and decimated, these SGs clearly account for a large area under vegetation cover outside the State forests. An inventory of local land birds in five forest ranges of Medinipur district revealed a distinct preference of 18 birds for the sacred groves. Four of these birds were sighted exclusively in the sacred groves (Deb *et al.*, 1997) (Deb, in this report, see appendix II.1, in Volume II).

Box 20: Killing of SGs for development: instances from West Bengal

The process of fragmentation of SGs is spectacularly instanced by an ancient SG at Chhandar village of Barjora block, Bankura district, where it has been crisscrossed by a busy road from Beliatore to Vishnupur town and a road to Bardhaman town. A small Kali temple with a clump of trees at the tri-juncture maintains the sanctity of the place. A century-old sprawling banyan (*Ficus benghalensis*) tree, and an old *Saraca indica* tree survive across from the temple. Along the road, about 10 m away from the temple, another couple of banyan trees constitute another small SG, where a newly-built Shiva shrine was recently built. The area covered by these

tiny SGs around the tri-juncture of roads as well as the age of a banyan tree suggests the large area and rich species composition of the original grove.

In many places, local people reported that a SG had existed there before it was expunged by a governmental agency. All such cases related to roads, power transmission lines, dam, irrigation canal, or public buildings. A large SG in Baghmara village of Neturia block, for example, was destroyed in the 1960's by the National Thermal Power Corporation in a bid to extend power lines over the area: the SG was too dense to extend the line through it. The Panshet and Maithon dams of Damodar Valley Project, submerged several SGs in dozens of villages upstream. In Garia village of Mayureswar-I block in Birbhum district, a small SG, along with the adjoining agricultural lands, was engulfed about 10 years back by a stone quarry.

Although SGs are by and large immune from extractive exploitation of plants and animals sheltered there, wood required for construction and repair of a temple is in some cases harvested from its grove. In the absence of regeneration or replacement of trees, timber removal, even at a low frequency, eventually leads to dwindling of the grove. In Bankura district, images of Shiva and other Hindu deities have been erected in a number of ancient SGs, and most of the trees in the groves have been cleared to make room for temple structures ((Deb, in this report, see appendix II.1, in Volume II).

Box 21. Loss of sacred groves due to Panshet dam in Maharashtra

Pressures for alternative uses from outside the local community may also affect sacred sites due to government intervention. These include construction of reservoirs for hydroelectric or irrigation projects, leading to submergence of lands, including sacred groves. A large number of sacred groves have thus submerged under the Panshet dam west of Pune city (Velhe taluk, Pune district, Maharashtra). Many other sacred groves that remained above the submersion zone were cut down by farmers whose cultivated lands were submerged and who expected to be settled in alternative sites several kilometers away (Gadgil and Vartak, 1976). Similarly in Mayurbhanj district of Orissa, Subarnarekha Irrigation project has destroyed about 62 'Jahiras' -sacred groves recently. The main canal of the project is also going to threaten many more Jahiras (Gokhale et al.,1998).

Yatras, exhibitions, workshops, printed literature etc. are needed to create awareness in forest department, NGOs, community leaders etc. However, these will not be collocate to address the basic threats to sacred groves, modernization, market forces, migration to urban areas, increased pressure for biomass, fragmentation or loss due to land need for settelements and infrastructure. (N.H.Ravindranath, pers. communication, 2002).

6.4.2 Sacred ponds: As noted earlier in section 3.2.2, data on sacred ponds in awfully lacking. However a few examples given below illustrate the nature of threats the sacred ponds and the sacred stretches of rivers and streams are facing.

- Devekere, a large sacred tank in the town of Sirsi, Uttara Kannada district, Karnataka was taken over by the Government Fishery Department in early 1970s. They poisoned the tank and removed diverse aquatic communities and converted the tanks into culture fish. The fish so cultured were auctioned to the traders with revenue accruing to the government. It seems that several such sacred ponds in Karnataka have been taken over by the government (Gokhale et al.,1998).

- Often the outsiders do not respect sites considered sacred by the local people. For example in Machhiyal village in Himachal Pradesh, the army personnel were reported to have fished in the sacred pond (Gokhale et al., 1998).

- On 26th May 1996, a tragedy struck the congregation of Mahseer fishes at Shishila near Sullia, a small village in Dakshin Kannada district of Karnataka. The entire lot of Mahseers, zealously guarded and protected by the local villagers in the river Kapila flowing by the side of Shishileshwra temple was poisoned by fishermen with severe toxic compounds, and killed all the fishes amounting to about 6 truck loads. The reason was that being a protected place, a temple sanctuary, where fishing has been strictly prohibited since 1938, the villagers reprimanded four fishermen for fishing illegally in the night (Jayaram, 1997) . A similar incidence has been reported from Sringeri taluk of Chikmagalur district of Karnataka.

6.4.3 Tanks and trees: The number of tanks in the country have substantially declined in the last 50 years as revealed by the net area irrigated by the tanks in India in 1950-51 which was about 8.9 million acres (17% of total irrigated area in the country), which fell to 7.7 million acres in 1985-86, that is 7% of the total irrigated area in the country (Singh, 1994).

- One of the threats to sacred groves and sacred ponds is commercialisation and internal class differtiation for example in Kukanar village in Bastar where I did field work there is a sacred pond, where an annual fishing event is held – every one in the village participates on that one day. No fishing is allowed through the rest of the year. Yet portions of that pond have been encroached by the Pujari (as he has the grove around the devgudi) (Nandani Sundar, personal communication, 2002).

It is evident that the decline in the tanks is due to various reasons. We summarise here the causes of this decline based on Pandey (in this report, see appendix II.9, Volume II).

The Decline: A Product of State Take-over and Subsidies

As has been discussed rulers, *zamindars* (landlords), *talukdars* (feudal lords) and village communities took a keen interest in tank construction in pre-independent India. Abolition of *zamindari* and *talukdari* in the post-independent era led to an end of private ownership, and the confiscated tanks were vested mostly in State Governments and, in some cases, handed over to village *panchayats.* On the one hand, state was not so efficient, and *panchayats* lacked resources to manage the property, and on the other people, bereft of access to tanks, lost interest in management. One would assume that *panchayats*[8] should have managed the tanks efficiently, but unfortunately these bodies are not as apolitical and coherent as the traditional local village councils and village institutions that operated on the principle of caring and sharing.

Thus, tanks became open-access, and all farmers in the command area could-receive access to water and groves even without any obligation to help in the management. This resulted in a gradual breakdown of the traditional system of repair and maintenance of the tanks.

For example, encroachment of the tank beds and embankments in Kota district of

Rajasthan was restrained by customary regulations laid down after a series of trial and error over hundreds of years by the community. But, once the large dam called Kota barrage constructed across the river *Chambal* brought the subsidised supply of water tanks virtually became redundant for the people. People no longer needed to contribute for the upkeep of the water source. This resulted in the large-scale encroachment on tank-beds and embankments for farming, sandstone mining, expansion of the city, waste dumping, establishment of the industry and several other reasons. Table 3 shows a variety of other reasons for the decline of the specific tanks near the Kota city in Rajasthan.

Table 7: Decline of the tank management in Kota

No.	**Reasons for decline**	**Examples of the tanks**
1	Expansion of Kota city	Ganesh Chattrapura
2	Dumping fly-ash of Kota Thermal Power Station	Jawahar Sagar Abheda
3	Establishing industrial units of Indraprastha Industrial Complex	Dakaniya
4	Alignment of canals of the Kota Dam	Kotree, Rampura, Umedhpura
5	Fissures in impounding area	Anantpura
6	Siltation by sediment	Kheda Ganesh ji Rangabari

Mentioning the decline of traditional water management system called the *ahar-pyne* system in Bihar, Pant (1998) provides reasons why the system is deteriorating. First, before the abolition of *zamindari* system, the *zamindars* used to maintain these systems for they had the capital resources and a vested interest. Tenants were required to pay *gilandazi* (improvement of irrigation works) charges. "Gilandazi is an excellent form of investment as the capital spent on it returns a dividend of 40 to 50 percent in the first year itself, in some cases 100 percent if the landlord even received only half of the produce of the land irrigated by these works, they would get a very good return on their capital outlay" (O'Malley, 1919; quoted by Pant, 1998). But after the *zamindari* abolition there remains the paucity of recurring funds for the repair except during drought period when some relief schemes such as food for work programme etc. are started by the governments in the name of renovation of these systems. Secondly, a large number of alternatives have now become available to the farmers in the post-independence period such as canals and tube wells.

Commenting on the catastrophe that is destroying the tanks, Gadgil and Guha (1992) provide interesting explanation. While promoting the construction of the large dams, the sate apparatus has overlooked the collapse of traditional systems of smaller village tanks. During. the British rule these community management systems survived because they were efficient and made possible collection of land revenue at higher levels. After independence agricultural land was not seen as important source of revenue. Instead, state's policy to enhance the control over the resources resulted in the takeover of the tanks by the Minor Irrigation Department. This led to breakdown of the community control and management practices that were so vital for the sustainability of the system. A substantial number of tanks so acquired by the state have fallen into disrepair because on the one hand village communities have stopped contributing the voluntary labour for desilting, and upkeep of the tanks, and on the other state is not able to perform or pay for the functions earlier executed by the people. State has on the other hand shown, by design or default, that it is better to construct the new large dams rather that revive the efficient network of the village tanks across India (Shankari, 1991; Sengupta, 1991 & 1996; Singh, 1994; Von Oppen and Subba Rao, 1980).

There is yet another interesting reason for the decline of the tanks. The subsidised availability of inputs for agriculture has taken its toll (Gadgil and Guha, 1992). This has happened in several ways:

(1) Subsidised electrical power from large dams reduced the dependence on the village tanks over large parts of India as water could be drawn either from tube wells or from the canals at a distance using the power of electricity.

(2) Subsidised supply of fertilizers reduced the dependence of farmers on the tank silt that was used as an excellent source of productivity enhancing material.

(3) Subsidised availability of water from large dams reduced the dependence on village tanks for irrigation water.

(4) Distribution of subsidised diesel pump-sets (that run on subsidised fuel) too reduced the dependence on the water from the village tanks earlier taken to the field with the help of gravity-flow.

6.4.4 Shifting cultivation: Shifting cultivation is practiced in 20 states of the country. According to Kaith (1956) over 109 tribes in 12 states (now 15 states) comprising a population of about 2,644,200 depended on shifting cultivation. Nearly 439,918 acres were being annually cleared by these tribes. The *jhum* cycle (fallow period in years) varied in 1950s from 5 years among the Khasis of Meghalaya to 20-30 years among the Rengma Nagas of Nagaland. However the average *jhum* cycle across the states was about 10 years (Sachchidananda, 1989). However, several studies have shown the cycle in recent years everywhere in the country has considerably reduced primarily because of increase in population and massive deforestation.

This reduction in *jhum* cycle has rendered this traditional land use pattern in hilly areas to a great extent unsustainable.

Box 22. Present status of *podu* in Koraput district

Recently I visited Koraput district in Orissa and observed that the *jhum* cycle in large tracts of the districts has reduced from earlier 5-10 years to now 1-2 years. Vast tracts of the district are totally barren without a single tree. Interaction with villagers particularly belonging to the tribe Paroja in many places revealed that the productivity levels from *podu* cultivation have reduced drastically and the practice has become totally uneconomical. Many farmers have given up this practice and more and more would gradually abandon this (Kailash C. Malhotra, personal communication, 2002).

In short, the drastic reduction in the *jhum* cycle has not only rendered traditional shifting cultivation unsustainable but has also resulted in loss of natural biodiversity in vast tracts of our country.

Box 23. Jhum Farming destroyes forest cover in north east India:

For the first time a government sponsored study used space technology like satellite remote sensing and geographic information system for the purpose of bio prospecting and conservation.

This study found that about 0.45 million families in northeast India annually cultivate 10,000 square kilometres of forests. With the phenomenal increase in human population, the cycle of shifting or *jhum* cultivation has decreased from 20-30 years to about 5 years and even up to 3 years in many areas. The total area already affected by this method of cultivation is around 44,000 square kilometres. These are the gloomy results of this study on biodiversity characterization at the landscape level, jointly conducted by the department of space and the department of biotechnology in 1997.

The study aimed to create an information base for conservation by mapping land use, vegetation cover, and biological richness for the long term maintenance of biodiversity. Bio-diversity it understood as the totality of genes, species, ecosystems and habitats in a region and the amazing web of connections between them. For example, the seeds that an elephants eats, which pass through its digestive system, tend to germinate better than ordinary seeds. Thus elephants do their bit to maintain biodiversity.

The study encompassed India's most biologically rich sites in forested landscape viz, North eastern region, Western Ghats, Western Himalayas and Andaman and Nicobar Islands. These areas constitute 8.73 per cent of the total forest cover of the country. Of this, the north-eastern region comprises 5 percent of the total forest cover. The recently published report focuses on biodiversity in Northeastern India.

Known as the bowl of diversity, Northeast India comprises the state of Sikkim and the seven sister states of Assam, Arunachal, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. This region has a broad range of ecological habitats from grassy meadows to dense humid evergreen forest, disturbed secondary formations to almost virgin natural forest. Of the 16 major forest types in India, 13 types are observed here. Of the 8000 reported species of flowering plants from the Himalaya, 5000 are found in this region. These states also boast of 54 ecologically stable formations, out of the 221 identified in other parts of the country.

Sadly, however, the study found that forests here were threatened with uncontrolled degradation and conversion to other forms of land uses. The report states. "The tropical vegetation of this region typically occurring at elevations of up to 900 meters including the evergreen, semi-evergreen and moist deciduous forests, is facing maximum pressure due to human intervention. The evergreen rain forests in the Assam valley, the foothills of the eastern Himalayas and the lower parts of the Naga Hills. Meghalaya, Mizoram and Manipur, where rainfall exceeds 2,300 mm per annum have been extensively fragmented".

The report notes that a higher level of fragmentation allows for low biodiversity. Fragmented forests mean fewer plant species. Fragmentation also reduces the density of forest cover and therefore the species diversity.

The primary cause of this fragmentation is shifting cultivation. Also, human pressure on land , encroachments of forest lands, illicit felling, lopping for fuel wood and fodder and even industrialisation in the form of saw mills and plywood factories have led to deforestation. The absence of a scientific forest management strategy and weak government policies have also contributed to this degradation.

This has resulted in the loss of biological diversity, damage to wild habitats, soil erosion and degradation of watershed areas. Today, over-exploitation, habitat loss and fragmentation are the three threats to the biodiversity of this region.

The study also found that the tropical semi-evergreen forest has higher diversity in Arunachal Pradesh followed by Meghalaya, Assam, Nagaland, Manipur and Mizoram. But this forest too was highly fragmented. Tropical evergreen forests have highest diversity in arunachal Pradesh, followed by Mizoram, Assamm Nagaland and Tripura.

Temperate mixed forests possessed higher species diversity value. These forests were least disturbed in many states as they occur at higher altitude usually away from the human interference zone. Other vegetation classes, pine, rhododendron, fir, hollock, hollong, bamboo, sal and teak possessed low diversity. The reverine forests had average

species diversity. The jhum lands and degraded forest possessed medium species richness and mostly mixed and cosmopolitan species were observed in these forest vegetation types.

On the positive side, the report states that human population density in this region has not yet reached levels that would be detrimental to biodiversity. However, population is most likely to increase and cross the level of disturbance threshold. It therefore suggests that to avert this situation, it is important to develop alternate sources of livelihood for the local people, including tree-based occupations like horticulture on already degraded forest slopes.

The report also suggests development of corridors between patches of forest, which would increase species diversity. It also recommends development of ecotones between adjacent communities. The report warns that fragmentation of large patches of natural vegetation must be avoided and isolation of patches should be minimised. An environment rich in biological diversity offers the broadest options for sustaining human welfare.

(*Down to Earth*, May15, 2002, pp. 40-41)

6.4.5 Fishing in Sunderbans

Since 1986, I have been working in the Sundarbans area particularly in the eastern (Gosaba, Manmathanagar, Sajnekhali etc.) and western parts (Lothian and Bhagabatpur area) in connection with my research work in ecology of nangroves and introduction of coconut and oil palm. During this last 16 years of association with Sunderbans, I noticed some peculiar change in livelihood pattern of the poor villagers.

In the early years, the villagers used to do their daily agricultural work, and during their leisure time, they would catch fishes mainly for their own consumption. Gradually a change occurred. Now the villagers instead of catching of different types of fishes for their own consumption or selling in the marker, they catchonly the spawns of tiger prawn. not only the male members of the family but also the female members and their children used to catch tiger prawn spawns using a rectangular net made up of a split bamboo frame fitted with nylon mosquito net. A person draws it along the edges of the creeks and rovers. This net catches the spawns of tiger prawn but also spawns of many other fishes, crabs and mollusks. The spawn collectors remove each catch with a little water into a earthen or aluminiumpot from the net. After such several catches, the collectors then pour some portion of the water containing spawns into a flat aluminium plate. the spawns of tiger prawns float on the surface. Each tiger prawn spawn is about a cm long, like a small thin piece of thread. the trained eyes of the collector can easily distinguish them. These spawns are then separated with the help of a split bivalve shell and are removed into another smaller earthen pot. After separating the tiger prawn spawns, the all other spawns are thrown away on the ground , which contains spawns of large number of other fishes, crabs and mollusks. This practicecauses freat danger to the biodiversity of the water bodies of the Sunderbans. The collected spawns are sold to the middle men present there itself near the bank of the rivers. the middlemen then sells the spawns to the owners of prawn culture farms at a much higher price.

The spawns are sold in numbers. The price per 1000 spawns varies from Rs. 500 to Rs. 700 according to the season and availability. The spawn collection season starts from the last week of September to the second week of April, with the peak collection occur during dull season and 60 to 100 during peak period. Each collector can earn Rs. 7.50 to Rs. 70.00 per day according to the deason. Besides the poor villagers, some rich villagers used to catch tiger prawn spawns by using country boats and large size nylon nets. during high tide they anchor their boats in the mid stream and spread the nets. Since they use large nets, theior spawn catch is also large. They can earn Rs. 150 to Rs. 350 during dull season and Rs. 350 to Rs. 700 per day in the peak period (A. Chakraborty, per. Comm).

About 85% of people living in Sundarbans area are dependent on agriculture of mostly single crop of paddy. 50% of agricultural labourers are landless. 44% of total population belongs to Schedule Caste and Schedule Tribes. The level of literacy and per capita income is much lower in Sunderbans area than in other parts of West Bengal, and hence most of the people fall bellow poverty line. In view of this, large scale catching of tiger prawn spawns is a major source of earning of the poor people for their livelihood. But there is an ardent danger of large scale catching of tiger prawn spawns and destruction of much other spawn of fishes, crabs and mollusk etc. which will certainly disturb the eco-system (Manoranjan Ghosh, personal communication, 2002).

7. INITIATIVES TO REVIVE AND / OR STRENGTHEN POSITIVE LINKS BETWEEN CULTURE AND BIODIVERSITY

In section 5, we have described the traditional cultural practices and in section 6 the present status of those practices. In this section we shall provide an overview of the initiatives undertaken to revive and / or strengthen the practices that had and still have strong positive links with biodiversity.

7.1 Sacred Groves

Despite all the threats described in section 6.4.1 SGs are still alive in many parts of the country. There are numerous examples spread wide across the country where initiative have been undertaken to strengthen this institution. It is not possible to describe or document all of them here, instead we present a few illustrative examples from different parts of the country.

- Jharkahand: `Sarnas' in Chhotanagpur Plateau of Bihar

`Sarna' is a popular name for the sacred groves in Chhotanagpur Plateau of Bihar State. Various tribes like Oraon, Munda, Korwa, Birjia, Kherwar, etc dominate the plateau.

Each village has more than one sarna each having specific function e.g. Sarhul Sarna for celebrating `Sarhul' festival, `Duvaria' sarna for worshipping at the entrance of village, etc. It is a history of the area that villages have been shifted from place to place in search of livelihood basis as well as many other reasons like conflicts, etc. The villages shifted to new place are bound to identify new sarna, since it is a requirement to fulfill their religious needs. Thus with the change in place, people also continue the tradition to new place.

Kui village in Garu block of Palamau district is a new habitation separated from the neighbouring village. The village did not have `Duvaria' sarna, which consists of mainly bamboo. The local priest identified the place for `Duvaria sarna'. The new place was not having bamboo. But the priest planted a bamboo sapling at new place now considered as `Duvaria sarna' (Gokhale, Y. 1998, unpublished).

- Mizoram: Safety Forests in Manipur and Mizoram

Some of the most interesting cases of such revival come from northeastern states like Manipur and Mizoram where the once extensive network of sacred groves was largely destroyed in 1950's on development of a transport network and a lucrative market for timber coupled to conversion to Christianity. But in this tract where shifting cultivation prevailed, some of the sacred groves encircling the settlements served as firebreaks during the slash and burn operations. In several villages inhabited by Gangte tribals of Churchandpur district of Manipur such revival of sacred groves encircling habitation has taken place. Since now the community has embraced Christianity, the groves are no longer being viewed as abodes of deities. In communication with outsiders they are called "forest reserves", or as Malhotra (1990) reports for Mizoram "safety forests". The term used for the grove in their own language however remains as before 'Gamkhal'. Protection to these gamkhals continues to be organized through monitoring by local community members and implemented through sanctions for violation imposed by the community leaders. This is possible because in the more remote Gangte villages traditional community level organization is still functional.

There is however a clear pattern in the spatial distribution of villages where such revival has occurred. In villages close to the market town of Churchandpur the whole landuse pattern has changed with all land now belonging to individuals; terraced and bought under permanent cultivation of commercial crops like pineapple. In these villages the function of sacred grovesas a firebreak is irrelevant, nor do these villages retain the community level organization capable of monitoring and enforcing protection. In such villages there has been no revival. The cases of revival become more frequent as one moves to the interior, away from the market town and roads, to settlements which continue the practice of shifting cultivation and retain more traditional forms of community organization.

Similarly in Mizoram, Mizo tribes had a system of keeping safety reserves around the habitation to prevent intrusion of fire while burning for shifting cultivation. Before Christianisation of the area, a worship of deity was associated with these safety reserves. But the practice could continue in remote areas of Mizoram without sacred belief mainly due to the need. At the same time the state government order to maintain safety and supply reserves after regrouping of about 450 villages in 1960 (pers.comm. Roy Burman) also might have helped the revival (Gokhale, Y., unpublished).

- Meghalaya: Ki Law Lyngdoh sacred grove

In case of Meghalaya, the chieftains and local priests were having a control over sacred forest called as `Ki Law Kyntang' and `Ki Law Lyngdoh' respectively. But Christianity wiped out the sacred beliefs and so to say the community protection. But at Cherrapunji the `Siem' i.e. chieftain and his ministry is maintaining the `Ki Law Kyntang' forest because of biodiversity and ecological concerns (Gokhale, Y., unpublished).

Many of the sacred groves have lost their religious significance (Tiwari et al., 1998). However, in many villages, the headman with the concurrence of the village council has protected patches of forests and declared them as protected groves. Many such reserve

forests exist in the region. Limited extraction of timber is permitted. Further, all the families in the village share the extracted timber. However, removal of dead biomass from these reserve forests is still strictly prohibited. Such a traditional restriction of removal of litter would help in maintaining soil fertility through nutrients released from it. Therefore, this practice has a conservatory role.

The trees cut down often are very old ones so that regeneration in these gaps helps in maintaining the stability of these forests. After removal of the older trees, revegetation using seeds from the forest is done intentionally by the villagers (Khiewtam & Ramakrishnan, 1989).

7.2 Emergence Of Sacred Groves

There are interesting lessons to be learnt from emergence of new sacred groves in places where none existed earlier.

- Rajasthan: *Kesar chirkav*

A case study carried out by Sevamandir of Udaipur, Rajasthan discusses the process of establishing a sacred protected area in 1994. The practice is called as *Kesar Chirkav* (sprinkling of saffron). It is based on traditional system of forest protection, wherein saffron is sprinkled on boundary of the forests and the felling of green wood is prohibited in the area. This tradition finds it origin from the temple of "Kesariyaji" a place of worship for the local communities living in Udaipur District. Kesariyaji is worshipped by offerings of saffron and when that saffron is sprinkled, it is believed that God has now come to reside in the trees and he would punish anyone indulging in cutting of green wood.

The villages Shyampura and Bada Bhilwara in Bichiwara Panchayat of Jhadol block in Udaipur district were having Forest Protection Committees (FPCs) under Joint Forest Management Programme. Inspite of having rules and regulations framed by Forest

Protection Committees of both the villages, the forest was getting degraded day by day. Hence, they ultimately decided to sprinkle saffron after learning about it (Gandhi, 1994).

Villagers for the first time learnt about *Kesar Chirkav* when they interacted with workers and other village groups of Sevamandir working in this area. They had heard about Sagwara village where local people had sprinkled Kesar and protected their forests for about 40 years while the other forests in the vicinity became degraded. Sagwara village being situated nearer to Kesariyaji, the tradition has stayed alive and has been used by the villagers to protect their forests (Gandhi, 1994).

Villagers framed certain regulations for *Kesar Chirkav* which were to be strictly maintained. They decided that -

1. The forests will be closed for a period of five years.
2. Taking an axe or any spiky tool to the forest is forbidden.
3. Collection of gum and *musli* (medicinal plant) is prohibited.
4. Collection of fruits, flowers, seeds, honey, grass, medicinal plants, leaves, dry wood is allowed.
5. The dry wood collected as fuelwood should be tied into a bundle using a rope, instead of the bark of a tree.
6. Open grazing is permitted in the forests, except in the Joint Forest Management area.
7. Four villagers will patrol the forest everyday; the duty will be rotated among all the households in the village. Those who fail to carry out their duty will have to pay fine as decided by the FPC.

A villager from Bada Bhilwara went and collected saffron from Kesariyaji. Villagers contributed money to bring saffron. The part of the offered saffron was brought back to the village. Meanwhile, the local priest - Bhopa was contacted who went from house to house asking people to come for a ritual "Ratri Jagaran", a method of worship followed by the local people where all the villagers gather at one place at night and sing songs about the forests and their forefathers. While the singing is going on the spirit of goddess

`Mataji' enters the priest and people then ask questions about their problems. That night at Ratri Jagran, when the spirit of goddess Mataji entered the body of the priest, gave blessing and said that the villagers were doing a good deed by sprinkling saffron and closing the forests for 5 years. Mataji, also said that she would punish anyone who would destroy the forest. After this, the villagers watched the picture made on Sagwara *Kesar Chirkav* (Gandhi, 1994).

Next day morning villagers took the saffron to the Gopeshwar Mahadev temple located in Bichiwara and the priest offered the same to God. Then they mixed saffron in water and carried it in an earthen pot (*kalash*) to the meeting place.

Both the FPCs organized a big programme in Bichiwara with help from Sevamandir. People from both the villages i.e. Shyampura and Bada Bhilwara and few from Sevamandir attended this function. Speaking on this occasion the President of Shyampura FPC said that Kesar Chirkav is a belief of the tribals. It is now upto the people of the two villages to uphold this belief. He narrated an incident happened in Sagwara where a woman who had collected green wood as fuelwood wandered in the forests the entire day. It was only when she left the fuelwood that she found her way back to the village (Gandhi, 1994).

The priest of Gopeshwar Mahadev temple said that Kesar, which had been offered to God, would now be sprinkled in the forests which will hence be the sacred abode of God and anyone damaging forests would be punished by Him. Chief Executive of Sevamandir while addressing the people called this a historical day. The villagers had taken a step in accordance with their culture and religion. The most significant thing was that they were willing to practice self discipline in order to protect their forests. It was decided that 6th April i.e. the day of *Kesar Chirkav* would be celebrated every year as forest day and a fair would be held in Bichiwara (Gandhi, 1994).

Then came the sacred moment when the sound of beating drums the villagers moved towards the forests. Before starting Kesar Chirkav they paid homage to the idol of Mataji.

The Bhopa who had accompanied the villagers went into a trance (the spirit of Mataji entered his body) and said that the forest would be closed for 7 years, thereby increasing the time period earlier decided by the people. Also before deciding to reopen the forests, they would have to consult her. The villagers then formed 4 groups and to the sound of beating drums and chanting of slogans, sprinkled saffron water along the boundaries of the forest. Thus, 700 hectares of forests came under the protection of Kesar (Gandhi, 1994).

- ***Pavitra Vanas* In Karnataka**

Karnataka Forest Department (KFD), which in early 1970's, clearfelled large sacred groves, such as one at Mensi of 21 ha. to supply softwood to plywood industry, is having programs of establishment of sacred groves called '*Pavitravanas*'. In 1988, KFD established a *Pavitravana* called as 'Sridhar van' in village Salkani of Sirsi Tahsil of district Uttara Kannada. The youth organization in the village took initiative in the process. They planted species used for ritual performances like yajnas on 1 ha land on the hilltop. Now in the same village people are demanding for afforestation of other barren hill tops with useful species for NTFP, fuel, fodder etc. The later proposal is getting support from villagers because the plantation will serve as wind break and the areca and coconut gardens will be saved from heavy winds.

In another experiment in the village Bakkal in Sirsi taluka of Uttara Kannada district, KFD has established a *Pavitravana* spread over 28 ha. Earlier KFD was planning to have an Acacia plantation on that area. But people opposed it; hence the *Pavitravana* was established with local support.

This *Pavitravana* is based on Hindu scriptures. As a result we find in this garden grown together *Acacia catechu* (Mrigashira star) and *Calotropis gigantea* (Shravana star) from dry open on rocky habitats in the company of evergreens *Artocarpus heterophylla* (Uttarashada star) and *Mesua ferrea* (Ashlesha star) and *Pinus longifolia* (Jyestha star). They are intermingled with various deciduous tree species like *Butea monosperma* (Hubba star) and *Spondias mangifera* (Hastha star). This synthetic sacred forest is then no substitute for natural vegetation. Nevertheless these groves can be of educative value as well as re-emphasize man's bonds with plants (Gokhale et al., 1998).

- Kerala: The young and active members among the owners of the SN Puram Kavu have formed a committee to protect the sacred grove. In 1997 they organized a workshop involving local people and resource persons from out side for creating awareness about the functional role and importance of SGs. Local youth clubs, schools, forest departments, municipality and panchayats are now actively involved in the protection and management of the grove (Chandrashekhara and Sankar, 1998).

- Maharashtra: In Sagameshwar taluk of Ratnagiri district, Maharashtra, through the efforts of an NGO Applied Environmental Research Foundation, Pune, a network among the functionaries of a large number of SGs has been formed to protect the groves (Godbole et al., 1998).
- Chhattisgarh: Divisional Forest Officer of the Forest Department of the erstwhile Madhya Pradesh in the Jaspur Forest Division of Raigad district in Chhattisgarh, in response to local people and in collaboration with them has fenced 24 SGs to protect them from illegal felling of trees in the groves from outsiders (pers. comm. S. Patnaik, IIFM, Bhopal).
- Orissa: *Struggle to protect Deomali - The Sacred Hill*

  Deomali Hill, the highest peak in the state of Orissa is located near the village of Barakotni, which is under Dudhari Gram Panchayat of Semiliguda Block, in Koraput District of Orissa. The height of the Hill is 5585 feet above sea level. Since time immemorial this hill was revered as sacred by the indigenous communities particularly, the Kondh Adivasis.

  The Adivasi Goddess called "Nisani Munda" lives on the top of the hill. Most of the Adivasis festivals have been celebrated in this hill by the inhabitants, living far and near. The entire belt of the hill serve as a source of livelihood for the indigenous people. Besides, the forest products, the perennial streams serve as a source of irrigation for their agricultural fields.

  The Government of Orissa recently declared the place to be developed as a tourist resort without consulting the people. The announcement was made in the month of October 2000' by the local Member of Legislative Assembly (MLA). The first visit to the area by the concern authorities took place on 22nd October 2000'.

Later, after the survey was completed, it was followed by road construction covering a distance of 4 kilometers, starting from Arlimula ghati towards the hill. An amount of Rs. 2 crores (20 millions) was allocated at the initial stage. More is to flow, yet. Also, they try to convince the people by promising employment for 500 persons from the area.

On the other hand, the indigenous communities are not ready to easily succumb to this kind of intrusion in their soil without a cause. As the first step to resist to such kind of illegal intrusion of the State the Adivasis called an emergency meeting in the month of November 2000. All together 6000 people from 60 villages participated in the meeting.

The meeting took place at Barakotni village. During the meeting the consequences and implications that are likely to befall on the people as a result of the proposed of tourist resort were discussed.

The details are given as follows:

1. Ecology of the region will be disturbed.
2. Loss valuable bio-diversity species.
3. Cattle grazing and NTFP collection in the area will be prohibited.
4. Their economic sustenance will be at stake.
5. Their culture will be hampered.
6. Their socio-religion practices will be precarious.
7. The flow perennial streams would be affected due to water mining for the resort
8. Some villages will be displaced.

Meanwhile, a committee known as "Deomali Banabasi Prakruti Surakshya Kuvi Jatu", was unanimously formed by the participants. From each village five persons consisting of 3 females and 2 males were nominated as members of the committee. Subsequently, the committee adopted resolutions, which are given below:

1. To oppose any kind of development works that are against Adivasis interest implemented in the schedule area if the people are not consulted.
2. Not to sell off even a single piece of land, not withstanding any compensation of any kind including the common lands
3. They will preserve their existing culture at any cost, no matter what may happen.
4. They will try any means to protect their land, water and forest.

Till to date, the committee has taken a number of agitation to express their disapproval against the proposed plan of the government.

Firstly, an awareness meeting was organized to strengthen the unity among the people, protection of natural resources, rights on land, water, forest, and fight against injustice.

Secondly, Adivasi Rally Central Team meeting was held to review the survey conducted on the matter.

Thirdly, the construction of road was stopped indefinitely by the people. Another agitation is yet to follow if the government do not heed to their problems. One of the action that is likely to be taken is a public rally covering a distances of 30 Kms.

It is high time that every concern individual takes note of their ceaseless sufferings. If we want humanity to prevail in this part of the world, one ought to speak up instead of being a mere spectator. A robust effort needs to be emphasized immediately if justice is to be achieved as granted under the Indian Constitution.

Finally in the words of people:-

Tikai Disari with innocence shares that, " we get everything what we need for our livelihood from the Deomali, Deomali is where our brother and sister lives".

Komuti Khillo says that,*" Deomali is like a source of light, our ancestors lived, we live now and our children and the generations to come will live, we may come and go but Deomali will live for ever providing life and hope for every one, why should we disturb our sacred hill, what ever may happen, we will see that Deomali is not murdered".*

An Old man from Barakotni says, *" These Deomali is a source not only for people but for animals, birds, and different species of plants take abode here, how can I see and keep quiet while Deomali is invaded ".*

Lodda Disari a young man with anger expresses, *" Koraput a hill country was invaded by the Kings of other communities, the White rulers, the non-adivasis after the independence and now in the name of Adivasi Development the State and the invisible enemies. Deomali is our life, our land, our water, our forests, our air, it is we who have to protect Deomali our mother Goddess. He continues to say that, after independence the Adivasis lost their right to their livelihood resources. Deomali does not belong to us but we belong to Deomali."*

In conclusion, it is necessary to respect and understand the relationship between the Nature all in it and the Adivasis cannot be separated. Adivasis in Koraput have already experienced and suffer by the aggressive development for decades, it is the hope for the future is that the Adivasis are the Communities of Hope, they may look under developed and not developed but that is how they have kept the natural resources for not only for them but also for the future generation – a lesson to learn is how we can live with less and not more and more! (Willian Stanley, pers. communication, 2002).

- Kodagu, district , Karnataka: A Sacred Forest Festival (Devarakadu Habba) was organized to protect the sacred groves in Kodagu district of Karnataka in October, 2000. We produce here salient features of the festival. This festival and subsequent developments have great bearing on the management of SGs in Kodagu and perhaps elsewhere in the country.

The Sacred Forest Festival (*Devarakadu habba*) was held in October, 2000 at Kodava Samaj, Virajpet, Kodag district, Karnataka. It was organised jointly by:

1. Forestry College, Ponnampet;
2. Center for Environmental Education, Coorg Field Office, Virajpet
3. Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal
4. Coorg Foundation, Pollibetta
5. Kodava Samaj, Virajpet and
6. Karnataka Forest Department, Kodagu Circle.

The festival was attended by over 630 persons: 348 from 85 Devarakadu committees, 38 scientists, 12 government officials, 22 community leaders, 67 students, 109 artisans and 34 media persons.

Summary of Recommendations of the sacred forest festival.

1. Devarakadu should not be considered as a means for generating revenue, but should be conserved as an important element in the bio-cultural landscape.
2. Existing temple committees and community leaders will initiate the process of forming a federation of the committees with the support of the working group on Devarakadu for conservation of the Devarakadu tradition.
3. The community leaders will ensure the furtherance of cultural traditions of the respective communities with respect to Devarakadus.
4. Forest department in consultation with temple committees will devise a mechanism for the joint management of Devarakadus.
5. Forestry College Ponnampet will take an initiative in establishing a working group involving the government, NGOs, community leaders, researchers, academicians and media.

6. NGOs need to play an active role in creating awareness regarding conservation of Devarakadus in Kodagu.
7. Local colleges with participation of teachers and students should facilitate documentation of information on Devarakadus and actively participate in awareness generation programmes.
8. Media should highlight the success stories, issues on conservation policies as well as flaws in the management and conservation of Devarakadus in Kodagu.
9. The illegal release of Devarakadus by Revenue Department and all encroachment should be evicted by the Forest Department with the assistance of the temple committees. The legal committee may file PIL for wrong release of Devarakadus.

The follow up of the festival by the working group constituted resulted in a major policy change in the management of SGs in Kodagu. Now the devarakadus will be managed as Joint Forest Protection and Management in the context of Devarakadus (JFPM-D). For details see appendix III in this volume.

- **Initiatives taken by Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal.**

. Realizing the cultural, biological and ecological importance of the SGs in our country and the threats faced by this ancient institution, the Indira Gandhi Rashtriya Manav Sangrahalaya (IGRMS) Bhopal has undertaken a number of activities in collaboration with many academic institutions and NGOs like the Indian Statistical Institute, Calcutta; Centre for Interdisciplinary Studies, Barrackpore; Dept. of Anthropology, University of Pune; Indian Institute of Science, Bangalore; Kerala Institute for Research and Training in Anthropology and Development Studies, Kozhikode; St. Joseph's College, Thiruchirapalli; Applied Environmental Research Foundation, Pune; Indian Institute of Forest Management, Bhopal; North Eastern Hill University, Shillong; World Wide Fund for Nature-India and many others.. The museum has installed in 1999, on its 200-acre campus at Bhopal, **replicas of SGs** from Arunachal

Pradesh, Chhattisgarh, Kerala, Maharashtra, Manipur, Meghalaya, Rajasthan, Tamil Nadu and West Bengal. Plants from groves of these States were planted in their respected replicas on IGRMS campus, after a very careful selection, taking into consideration the geo-climatic condition of Bhopal. These groves were ritually established, accompanied by dances and ceremonies performed by the local communities of the respective States. These SG replicas are meant to serve as living nurseries of ancestral and community identity, purity and longevity in the community habitats.

An indoor exhibition has been developed on SGs, using photographs, maps and charts etc. depicting various aspects of SGs. **A travelling exhibition** has also been created during 1999-2000, using 67 panels of photographs and maps (Malhotra et al., 2000). The objective of this travelling exhibition is to interact with local people and different organizations to learn more about SGs of the country, and to strengthen the diverse SG-related local management practices and knowledge systems.

A three-day Sacred Grove Festival was organized in January 2000, involving 185 participants from 15 States. The Festival provided, for the first time, a platform to different stakeholders like grass-roots level functionaries associated with SGs, foresters, scientists and media people to discuss various aspects of the SGs including formation of a network of stakeholders, developing region/grove specific field based activities, publication of workshop proceedings, etc.

This initiative is a part of the IGRMS effort to put in place an ecological history exhibition at the museum in Bhopal; to demonstrate an important dimension of the natural resource management strategies adapted by different communities.

- **Establishment of Nature club at Tokpa village, Manipur**

It was in the year 1998 that I was assigned afforestation work in Tokpa Village. At the beginning, I had a traumatic experience of outright rejection of plantation programme by the youths. They were preoccupied with many apprehensions e.g. repeated deception by the Governmen. converting the community land into reserved forests in the

name of social forestry, and exploitation by other non-government agencies in the name of development. To start with I held meetings with Village Authority and the community. In the meetings I kept one thing in my mind that my approach should not interfere with the equilibrium that was there in their traditional and cultural norms. That way, I could gradually establish good rapport with the villagers. Village participation by contributing their land and labour and its management by themselves was agreed upon. I did not go beyond the boundary of technology, supply of input materials and cash flow.

My beginning was perhaps a bit abrupt. The people were still very innocent and ignorant about the idea of the protection and conservation of wildlife and natural resources. Their traditional way of livelihood was so deeply woven that to catch a single bird they could burn an entire forest.

It so happened during the same year after the completion of first plantation programme that a large part of the plantation area was destroyed completely by burning during their hunting operation for catching a single bird locally known as "***Urembi***" without realising the value of plantation as compared to the price of a small bird. This particular episode gave me the sufficient stimulus to do something very soon to educate the villagers on conservation, protection of wildlife and management of natural resources. After interaction for one and half year with the village youth I was able to convince them regarding the value of conservation of biodiversity.

I proposed to establish a Nature Club in the village. I explained them the underlining idea of nature conservation, its value and benefit, which I knew was in their interest. The village elders gave the youths suitable spots for pisciculture and the locally protected forests in the vicinity was also given to them to look after. I took the youth for a study tour to the state managed orchidarium and to State Zoological Park.

Following are some of the salient features of the Tokpa Nature Club:

1. The club has 70 boys and girls as members.

2. Indiscriminate hunting and poaching has been stopped. The boys stopped using sling and guns.
3. The population of local birds and animals including predators of agricultural pests is increasing .
4. The pisciculture has started giving economic benefits. Last year the club earned around Rs. 25000 by selling harvested fish.
5. The money earned was used in the following activities:
   a) Expenditure in stocking of fish.
   b) Construction of weaving shed for women.
   c) Supply of yarn for weaving.
   d) Games and sports.
   e) Cash award of Rs. 2000 to a member of who would pass pass High School Leaving Certificate in first division.

Future activities to be taken up by the Club:

1. Making awareness programme for the neighbouring villages to contain them in similar Nature Clubs.
2. Hoardings to make people eco-awareness.

(Assan Bidyabusan Singh, pers. communication, 2003)

7.3 The Religious Base of Conservation Ethics: Some Examples

As the previous section 4 on Biophilia elaborates, there is a biophilous ethic inherent in the Indian cultural-religious traditions. These traditions, governed by both scriptural religions and local/subaltern myths and belief systems, tend to foster a pervasive love and respect for nature. Myths and auguries, dissociated from religious rites, are often steeped in a multitude of meanings related to biophilia. Thus, regardless of the original function, different institutions and ritualistic behaviours have important conservation consequences (Deb and Malhotra, 2001).

The continuation of the tradition of biophilia, intertwined with religious ethics, seems to pose a unique opportunity of taking pro-active measures of biodiversity

conservation. As Vivekananda once put it, people of India tend to go a long way to do something if that is associated with religion. This social trait is indeed apt to be considered a weakness in a democratic, secular, civil society; by exploiting this very trait, politicians have stoked the flames of religious fundamentalism and communal riots. However, this same trait may also be *co-opted* or enlisted for orchestrating a conservation movement. The strength of religious belief systems in forging environmental movements is instanced by recent social movements in Sri Lanka, Thailand, USA, and Brazil, among other countries, where Buddhists are becoming environmental activists and applying the principles of Buddhist ethics and ecology (Sponsel, 1991). The "Ecology Monks" of Thailand, for example, are preaching nature conservation as an important principle of Buddhism, and are spearheading a social movement to promote nature conservation and provide sustainable livelihood for local people (Darlington, 1997).

In India, such local movements inspired by religious beliefs have taken place, albeit seldom recorded. However, examples given below may suffice to indicate that there is an immense potential of enlisting support from religious institutions in local movements for nature conservation in India.

- **Eco-restoration of Vrindavan:** After centuries of negligence of the municipal authority, the route of the pilgrims' *parikrama* at Vrindavan was denuded of greens, and was strewn with garbage. A WWF-India project initiated in the 1990's a campaign of cleaning up the garbage and planting of thousands of saplings of traditional trees. These saplings were raised and distributed among the local inhabitants, who also expressed a desire for developing tree groves within the city and on the *parikrama* route. A strategy of taking recourse to the ancient tradition and myths of Krishna and his green valley of Vrindavan proved successful. For the first time in the town's history, the municipal authorities and temple priests joined hands to form the an advisory group to help and advise WWF-India's project staff. People's enthusiasm towards the project was contagious. This particular project started by WWF-India a decade ago has encouraged many other organizations taking up similar work in the town of Vrindavan.

- **Conservation of traditional crop genetic diversity:** Against the tide of the Green Revolution, it has been difficult to maintain a viable *in situ* stock of traditional seed varieties, because of the on-going chemicalisation and industrialization of agriculture. However, in 2000, Navdanya enlisted support of local priests, along with other influential people, to promote the message of conservation in 2000. The message of the erosion of the region's cultural heritage took its roots, and the priests launched a unique campaign of their own accord: each priest asked their yajmans to save and exchange crop seeds of folk varieties on every religious and social ceremonies they were to perform. Thus, in every household ceremony where relatives and neighbours are invited to attend, people ritually exchange different local varieties of crop seeds, which they also grow in their farms. These seeds are now widespread in the district.

- **Brindavan programme at Badrinath Dham:** An innovative model for restoration of degraded lands and biodiversity conservation. An innovative programme under the name of "Brindavan (ancient sacred forest of Badrinath) restoration programme": It was launched at Badrinath, Chamoli, Garhwal (Uttaranchal) in 1993. The methodology developed and tested and the demonstration model established at Garhwal Scouts Camp and Parmarthalok have successfully inspired the pilgrims and the local people from all walks of life to restore the degraded lands in and around Badrinath Dham, the major Hindu pilgrimage shrine. The successful tree planting by organising ritual distribution of tee seedling and plantation ceremonies and plant distribution ceremonies at Badrinath for revival of Brindavan demonstrates cultural and religious approaches for reforesting degraded lands. This model for restoration of degraded lands and biodiversity conservation needs to be replicated not only in the Himalayas but also in other parts of the country. (P. Dhayani, pers. communication, 2002).

7.4 Annual Ritual Hunting

We are not aware of any major initiative that has been undertaken either to document the nature and extent of animals hunted during these annual ritual hunting expeditions, nor or we aware of any initiative that has been undertaken to modify these practices in context

of the present day concerns about biodiversity conservation in the country among the tribal populations of Central India.

However, as noted earlier in section 5.5 that analogous practice of such annual ritual hunts also exists in other parts of the country and also among the non-tribal populations. We present here an example of an initiative undertaken by The Institute of Natural Resources Conservation, Education, Research and Training (INCERT), Bangalore in collaboration with Karnataka Forest Department and 7 other organizations based in Tumkur and Bangalore for the prevention of ritual hunting of wild animals in Hasan and Bangalore districts in Karnataka.

Due to the relentless efforts of INCERT spearheaded by Mr. S. Sridhar, jackals earlier considered vermines in the Wild Life Protection Act of 1972 have now been treated as protected animals and included in part 2 of Schedule II (for details see appendix IV, in this volume).

8. THE TROLE OF FOLK MUSIC AND DRAMA, ORAL LEGENDS AND PHOTOGRAPHY IN BIODIVERSITY CONSERVATION

This section is based on the background paper prepared by Feisal Alkazi (in this report, see Appendix II.5, Volume II). It attempts to describe the role of folk music and drama, oral legends and photography and published literature in conserving biodiversity.

FOLK MUSIC

> Do not consume leafy vegetables in the month of *Savan* and curd in *Bhadab*
> Keep away from the dewdrops in *Aswin* and avoid eating buttermilk in *Kartik*
> Avoid the use of cumin-seed in *Agahan* and coriander in *Puss*
> Avoid sugar candy in *Magh* and gram in
> *Phalgun*
> Do not consume raw-sugar in *Chait* and rub
> mustard oil in *Baishakh*
> Keep away from the direct sun-heat in *Jeshtha* and
> avoid eating wood-apple in *Asadha*
>
> (Maithali folksong)

In folk and tribal communities, music is not just a form of entertainment but is an essential element in many activities of daily life and plays a prominent role in several rituals. Birth, initiation, marriage and even death are just some of the

lifestyle events celebrated by song. In the agricultural cycle — events such as planting, transplanting, harvesting, winnowing, threshing, grinding etc., are all marked by songs and music.
Many key concepts such as seasonal diet; agricultural practice, cleaning and conservation of water bodies form the lyrics of these songs. This oral tradition lives on. even when the surrounding environment reality has changed. The songs also serve a ritual purpose — a harvest song may give thanks to God for a beautiful harvest, but it also is sung with the belief that this traditional song, if sung, will ensure that the following harvest will also be fruitful. These songs are sung by all those in the activity, and are not sung for an audience.

If one keeps the entire country in view, one can see how the language of the region and its natural environment, but also more significantly by its activities or the nature of its labour determines the musical structure of a particular region. A good example lies in the songs of the river boatmen, or of the peasants as they wield their sickles, the workers with their spades, the shepherds grazing their flocks, or the rhythmic songs of the workers beating the roofs. This is an international experience, that often reveals strange similarities between songs in different countries from similar types of ecosystems. Songs from the hills, from the deserts, and the grass plains show similarities in tunes, with the difference only in the sounds. Each regional language throws up a distinctive musical structure. it is this background that goes to define the more regional identities of expressing the emotions and attitudes.

There is an example form the Koyas, a Dravidian speaking tribe living in South Orlssa (Koraput district). They are largely agricultunsts, still practising shifting cultivation. This song accompanies the Koyas ceremonial hunting - WIja Pandu. This is also the moment for the ritual conservation of seeds of various cereals and pulses which are sown when the monsoon sets in.

O God you the spirit in the hills
Bring out the herds of *kutra* (a dwarf jungle deer)
Bring out the herds of wild pigs
Bring out herds of *sambhar*
Bring out herds of wild buffaloes
Herds of *rabbits*
Herds of wild goats

(translated by Sitakant Mahapatra)

Such songs fulfill the need for roots, foster a sense of community, and are locale specific in their description of customs, lifestyle and in their selection of words and imagery. Woven into the lives of the people, folk music becomes a powerful means of communication and expression. There is a continuity of tradition here, as each generation teaches these gongs to the next generation through a word to mouth transmission. Scholars believe that there are over 300 folk music styles in India.

Today, also the culture of the folk(tribal is being battered constantly by the film song and the vast outreach of TV. The smaller, locale specific vocabularies and instruments have been replaced by the *Bambaiya tapon* speech and the casio. In most villages the earthen

ghada has been replaced by theS plastic one.

In such a scenario, it would be naive to imagine that the mere learning of such songs, or keeping them alive in the local community would fulfill all the needs of environment education. Alter all environmental education is also about enhancing a critical stance towards the world and towards oneself by providing discourse, debate and reflection. While the world surrounding the learner changes at the rapid pace, what relevance would singing a song such as this one have?

On the other hand the wisdom contained in folk songs could bring us closer to the depth of that existed at a point in time, and still continues to exist, in several pockets of our country. They can help sensitize the individual to the linkages between man and nature and put forward a world view of what once was.

When such content is married to a more open - ended questioning content as in the next song from the Chipko Andolan, it is possible for some of the goals of environmental education to be met. The song recognises the political aspect of environmental awareness and the collective strength needed to bring about any real change.

At the same time it is important to recognise that no culture stands frozen at a point of time, and folk songs across India change with the changes in reality. As in the *tappas* from Punjab, which are sung at the sangeet preceding the marriage ceremony, and now include objects like sofa-sets, high heels and TV sets as part of their imagery!

Among the few authors who have collected and collated folk and tribal music in book form are:

Verrier Elwyn's Folk Songs of Chattisgarh, Folksongs of Maikal Hills, Songs of the Forest; *Sitakant Mahapaha's* The Empty Distance Carries, The Wooden Sword, Forgive the Words and many others.

Among the many institutions that have systematically recorded, transcribed, translated, coded and organised such material, the following could be considered:

1) Sangeet Natak Akademi, Delhi
2) Komal Kothari's collection, Jodhpur
3) American Institute of Ethnomusicology, Gurgaon
4) Folklore Dept. University of Mysore
5) Indira Gandhi National Centre for the Arts, New Delhi

As part of NBSAP it would be an extremely worthwhile exercise to create a data base of all such material from existing libraries and cuffed from individual research. Ideally such a project should be decentralized and possibly many university departments of sociology and social anthropology could involve their students in researching and collecting such materials.

It is also probable that much of this has already been researched and recorded in the Ph.D thesis of various students over the years. NBSAP could initiate an exercise of collecting such material and making it available.

An interesting experiment in collecting and publishing folksongs on the environment is the publication by the Vivekananda Mission Schools, entitled "Echoes of Eco'. Here in the form of a book and a cassette — 18 folksongs from different Indian languages have been compiled. They deal with different aspects of the environment. They are published in their original , transliterated into English and translated in English and are by musical notation. This is a worthwhile example that could be replicated as part of NBSAP.

FOLK DRAMA

Every corner of India has its own, unique form of folk theatre - the lively *Nautanki* of Uttar Pradesh often draws on romantic Persian literature for its themes, the raw vigour and bawdy humour that characterizes the *Tamasha* of Maharashtra or the *Bhavai of* Gujarat, the blood and thunder of the *Jatras,* melodramas of Bengal that are in great demand during Puja (Dussehra festivities), or the dance-drama form of *Yakshagana* from Kamataka, to name just a few.

Jatra was the first of these forms to be used to spread nationalist messages as early as the beginning of the 19th century. However it was only 100 years later that the Freedom Movement actively used folk dance to spread the message of liberation from colonialism. During the 1920's, the *tamasha* form was used to raise issues of untouchability by both the Satya Shodhak movement and the movement headed by Babasaheb Ambedkar. The setting up of the India Peoples Theatre Association (IPTA) in 1942 focussed on re-examining the folk tradition of music, dance and drama to revitalize and use it.

Since Independence, many attempts have been made to use these forms as mediums for the transmission of relevant messages. The street theatre movement of the 1980s-t990s in both urban and rural India brought together a philosophy of the Theatre of the Oppressed from South America, with our own folk theatre forms. However it was during the Bharat Gyan Vigyan Jatha that several important experiments were tried to harness folk forms to create a climate for the total literacy campaign.

Today in many parts of our country several theatre practitioners, activists are using these form for transmitting message as varied as maternal morbidity, gender and discrimination (Aditi Desai in Gujrat or Sanjoy Ganguly in 24 Parganas) to AIDS & Polio (Naladana in Tamil Nadu). In a similar fashion folk forms could be used to spread messages of biodiversity as in the recent extremely successful 'rath yatra' of local seeds through 70 villages in Andhra Pradesh, organised by the Deccan Development Society.

However it is essential to safeguard that such use of the folk doesn't become mere tokenism. Lifting a folk tune or putting or progressive lyrics to it or presenting a simplistic environment message through a form such as *Tamasha /Bhavai* can only have a limited appeal. Folk culture is a culture emanating from the people, not being given to them by a middle class intelligensia. Discourse and dialogue therefore become critical. NBSAP must guard against handing out centralized, didactic messages to generate awareness and (hopefully) induce behavioural change, rather than engage in a process that starts from the peoples perception, values and concerns and facilitates the process of empowerment so that there is education for sustainability, rather than only education

about sustainability.

ORAL LEGENDS

The 'oral' form of storytelling or grandmother's 'kitchen kathas' are another aspect of our culture that has largely gone unnoticed. Other than Ramanujan, there have been very few compilations of these traditions, largely by colonial administrators, missionaries and their wives and a few Indologists. In a country with so many languages which are only spoken, and do not have a written tradition, the wealth of oral literature that exists is tremendous. Such an old tradition has interesting dimensions: what is the social context of such interaction between narrator and listener? How does one translate the multiplicity of meanings of a single word, or the hidden structure of repetition or irony? Or how does one interpret specific cultural symbols (the male snake as opposed to the female snake)? How does one explain how the same story is 'gendered' if it is told by a male or female narrator?

Keeping in mind that NBSAP has a strong 'gender' component it would be worthwhile to examine folktales as part of our Strategic Action Plans. The clear and established links between women, earth, the life force, generation etc have been reemphasized by many scholars in the field.

PHOTOGRAPHY

Photography is a tool, a way of looking in a trained fashion. Recent initiatives in training people from diverse backgrounds, such as slum dwellers and village women, to use this tool has yielded fascinating results. Using this idea photography could be used as a strong tool in NBSAP process.

This now extinct aspect of our composite culture could be produced in the form of a small publication to spread the message of conservation of biodiversity. and form part of a series of booklets on the varied traditions of different tribal communities. Similarly as part of NBSAP, other photographers (e.g. T.S. Nagarajan on TamiI Nadu, Rem Rahman on Chau traditions in Orissa, Bihar and Bengal, Ian Lockwood on the Western Ghats etc) could be located who have done excellent work on such documentation. Commissioning further work in this area, could result in a series of small publications simply detailing the interface of culture and biodiversity in different pockets.

Another possibility is the creation of a series of small mobile exhibitions on themes related to biodiversity. Each theme could be dealt with in panels which would work as a 'stand-alone' exhibit. These exhibitions could therefore either be used individually, or put together in the form of a large display. They could circulate in schools/colleges, or in large public spaces, or even be displayed in office complexes.

PRINTED LITERATURE

For Adults

Though excellent academic studies by Madhav Gadgil, Ramachandra Guha, Salim All,

Valmik Thapar, Mahesh Rangarajan, Anil Agarwal and Sunita Narain, Anupam Mishra among others have been published in recent years, their reach is limited to the already converted.

On the whole there does seem to be a tremendous paucity of published material — both fiction and non-fiction — for the adult reader, written in a popular format. We need to remember the tremendous impact of Rachel Carson's *Silent Spring* or Schumacher's *Small is Beautiful* in bringing the issue of biodiversity home to the average American.

For Children

In a limited way some printed material for children relating broadly to the theme of 'biodiversity and culture' has been created and disseminated in the last decade. Most of this has been produced only in English, and therefore its reach has only been to urban areas, and that too in limited numbers. Translation of this material, after a process of review, would be worthwhile - and perhaps a national publishing agency such as the National Book Trust could be approached, which has in place a wide dissemination and marketing network.

9. RECOMMENDATIONS

A number of traditional cultural practices wide spread across the country and among different communities have been described in the preceding part of the report. It is evident from the description and the various examples cited that a number of traditional practices indeed have a very positive impact on the conservation of faunal and floral species and habitats rich in biodiversity. It is also evident that some of these practices show signs of weakening under the current scenario of modernisaiton, development and market forces. Broadly speaking, the weakening of the institutions could be attributed to two main reasons:

a) The belief systems associated with some of the practices have eroded due to internal shifts in the belief systems; and
b) Although the belief systems that sustain some of the practices are still among the practitioners but now face threats from external forces.

A few examples of cultural practices in which wild biodiversity is harvested have also been given earlier, but due to lack of sufficient data it is not possible to evaluate their impact, either positive or negative, on the biodiversity.

In this section we suggest strategies and action plan for reviving and / or strengthening cultural practices that have (had) positive links with biodiversity as ell those practices whose positive or negative impact is not fully understood. Along with each recommendation, we also suggest possible actions that may be undertaken.

1.1 Sacred Groves

9.1.1 It is recommend that an inventory of sacred groves should be prepared urgently for all the states in the country. The inventory among other aspects should include location, area under the grove, ownership and management, cultural and biological dimensions, nature and extent of degradation and nature and extent of threats.

Action: The MoEF is best suited to undertake this task. All State forest departments should be advised to prepare such inventories in their respective states. In view of the multi-dimensional nature of SGs, a multidisciplinary team needs to be set up. The institutions that could contribute significantly are Anthropological, Botanical and Zoological surveys of Government of India. Besides state level NGOs, lead colleges/ schols and Panchayati Raj Institutions may also be involved in this process.

9.1.2 It is recommended that efforts should be made to map the nature and extent of vegetation cover in the SGs through out the country.

Action: The Forest Survey of India should be advised to develop suitable methodologies for mapping the vegetation cover in the SGs. For ground truthing support from a number of institutes, NGOs and communities currently working on biodiversity related issues could be elicited.

9.1.3 In absence of a policy on SGs, it is recommended that the MoEF develop a policy document on SGs. In this context it may be noted that in the document – National Policy and Macro-level Strategy on biodiversity – The MoEF, GOI, 1999 under section 1.4

Approach, item vii (pg. 13) writes "Sacred groves are the rich heritage of India. occuring in various parts of the country sacred groves harbour ecosystems at pristine level. These would be treated as special areas deserving full protection and conservation".

Action: MoEF may constitute a Working Group for this purpose involving forest departments, environmental lawyers, anthropologists, ecologists and representatives of Panchayati Raj institutions and communities. Experience learnt in Kodagu (see appendix III in this report) will be of immense help in this regard.

9.1.4 There are many groves that face threats, internal as well as external. It is recommended that in such cases campaigns should be undertaken to strengthen the SGs. The campaign could be in the form of yatras, exhibitions, workshops, printed literature, etc. (for details see Alkazi in this report, appendix II.5 in Volume II), especially aimed at people who live in the vicinity of the SGs who may be made aware of the ecological functions performed by the SG and motivated to protect them.

Action: The existing networks of NGOs, functionaries of SGs and academicians could be entrusted with this responsibility. The travelling exhibition on SGs and several publication on SGs prepared by Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal (IGRMS) could be used effectively for this purpose. The experience learnt in Kodagu, given in appendix III, could be widely shared with such networks, institutions and individuals.

1.2 Sacred Ponds

9.2.1 In view of aquatic conservation value and the dearth of data available on sacred ponds in the country it is recommended that Statewise inventories of the sacred ponds should be made throughout the country.

Action: MoEF could involve its institutions like Salim Ali Centre for Ornithology and Natural History (SACON), Wildlife Institute of India (WII), Indian Institute of Forest

Management (IIFM), and State Irrigation Departments, academic institutions and NGOs for preparing such an inventory.

9.2.2 It is recommended that in view of the importance of sacred ponds in conservation of aquatic biodiversity, MoEF should prepare a policy document on sacred ponds.

Action: MoEF may constitute a task force for this purpose involving fisheries departments, irrigation departments, forest departments, environmental lawyers, anthropologists, ecologists and representatives of Panchayati Raj institutions for developing a policy document.

1.3 Tanks and Trees

9.3.1 It is evident from the materials presented in section 3.2.3 that the cultural tradition of planting trees and other vegetation on tank embankments plays an important role in conservation of biodiversity. And in view of the considerable decline in number of tanks, *it is recommended that a multidisciplinary research should be initiated to document the cultural and biological dimensions of tanks and trees in the country.*

Action: MoEF could entrust this responsibility to IIFM, Bhopal, Gandhi Peace Foundation, New Delhi, Centre for Science and Environment, New Delhi and other relevant institutions.

1.4 Role of Religion In Conservation

9.4.1 From section 4, it is evident that religious ethics in all religions of the country have to a varying degree a strong positive bearing on biodiversity conservation from species, to habitats, to landscapes. *It is recommended that this religious ethos could be effectively used in declaring bare mountain tops and other degraded lands as sacred sites. Such sites could be designated variously depending on the religious faith.*

Action: MoEF could initiate on an experimental basis in some parts of the country this approach and evaluate the response of the people. Such a responsibility could be assigned to G. B. Pant Institute of Himalayan Environment and Development; the institute has rich experience and expertise in this kind of work. For details on this topic see the note prepared by S. P. Singh given in appendix II.10 in Volume II.

1.5 Annual Ritual Hunt, And Other Hunt In the Country

9.5.1 It is evident from section 5.2 that the practice of annual ritual hunt is wide spread in the country among tribals as well as non tribal communities. It is also evident that a number of animals indeed are hunted every year. However, qualitative or quantitative data in terms of people involved, the quantum of animals and species hunted is not known at all. *It is therefore recommended that systematic studies in different parts of the country should be initiated immediately to understand fully the nature and extent of impact of these practices on faunal biodiversity.*

Action: MoEF could interest this task to Anthropological Survey of India, GOI. Anthropology and Zoology departments in the universities and colleges could also be involved in this task. Besides the State Tribal Welfare Departments could also contribute significantly. NGOs like Wildlife Trust of India and others could also be involved.

1.6 Shifting Cultivation

9.6.1 As noted in section 5.3, in many parts of the country, the jhum cycle has reduced drastically, and therefore has become unsustainable. This has resulted in loss of biodiversity. Although strictly speaking, this practice belongs to domesticated biodiversity, but in view of its impact on wild biodiversity, we thought it appropriate to flag it here.

Action: The above concerns of the group should be shared with the Thematic Working Group dealing with domesticated biodiversity, and they be requested to develop a set of appropriate recommendations.

1.7 Seasonal Restrains In Hunting

9.7.1 From section 6.2, it is evident that the traditional seasonal restrictions / taboos on hunting have been relaxed among many communities, and in many regions of the country like Bastar, Nagaland, etc. *It is recommended that awareness campaigns should be undertaken among identified communities / areas in the country emphasizing the conservation concerns.*

Action: Centre for Environment Education, Ahemdabad may be requested to develop suitable campaign material.

1.8 Role of folk music and drama and oral legends

9.8.1 From section 8 it is evident that rich folk music and drama and oral legends having profound impact on biodiversity conservation exists in all parts of the country. However, this rich material is scattered and often very difficult to access. *It is recommended that such materials from libraries and other places should be retrieved and a database be created.*

Action: MoEF may request any one or more of the Institutes like: Sangeet Natak Akademi, Delhi, Komal Kothari's collection, Jodhpur, American Institute of Ethnomusicology, Gurgaon, Folklore Dept. University of Mysore, Indira Gandhi National Centre for the Arts, New Delhi, etc. to create a database as mentioned above.

Acknowledgements

I and the members of the Thematic Working Group on Culture And Biodiversity thank the Ministry of Environment and Forests, Government of India for giving us this opportunity and necessary financial support for preparing this report.

We are extremely grateful to Mr. Ashish Kothari, Co-ordinator, National Biodiversity Strategy and Action Plan for his constant guidance and encouragement. Our sincere thanks are due to Dr. Vibha Ahuja, BCIL, New Delhi for providing logistic and other support. Our special thanks are due to Ms. Seema Bhatt, TPCG member attached to our group for keeping us on the right tract and in good humour.

It would have been impossible to have completed this report but for the logistic support provided by Centre for Ecological Sciences, IISc, Bangalore, Indian Statistical Institute, Delhi Centre, IIFM, Bhopal, and Centre for Technology Development, New Delhi.

My special thanks are due to all the members of the group. They not only contributed materials presented in full in Volume II of this report but also for their all out inputs and support.

I am indeed highly grateful to Mr. Yogesh Gokhale, but for his intellectual inputs and logistic support this report would not have seen the light of the day.

I would like to thank Mr. Raghunandan Velankar, Mr. Utkarsh Ghate, Dr. Rajender Dobhal, Prof. S. P Singh, Dr. Abhik Gupta, Dr. Pitambar Dhyani, Dr. C. G. Kushalappa, Mr. S. Sridhar, Mr. W. Stanely, Shonil Bhagwat, Sudipto Chatterjee, Prof. Mohan Reddy, Dr. T. S. Vasulu, Dr. Rauf Ali, Dr. P. Bhattacharya, Ms. Bharati Joshi, Dr. Vijay Kumar, Prof. P. K. Das, Dr. Amitabh Pandey, Dr. Nandini Sundar, Dr. N. H. Ravindranath, Dr. K. S. Murali, Dr. S. K. Barik, Prof. B. K. Tiwari, Prof. R. S. Tripathi, Prof. Manoranjan Ghosh, Mr. Ritesh Kumar, Mr. A. Bidyabhushan Singh, Dr. R. C. Sharma, Ms. Archana Sharma, Dr. Ram Prasad, Mr. Qaiser H. Baqri and Ad. V. Uthappa for responding to our request to contribute on specific topics in this report.

Last but not the least I express my deep appreciation and gratitude to Prof. Madhav Gadgil for his encouragement and useful comments on an earlier draft of this report.

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Bhuwaneshwar,
May, 2003.

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Appendix I

Composition of Thematic Working Group on Culture and Biodiversity

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Appendix II

Thematic Concept Note: Modified Version

CULTURE AND BIODIVERSITY

Culture is understood as a way of thinking and acting, consisting of sets of codified and unspoken rules/norms/practices, which give a society cohesiveness and which simultaneously reflect changes in the material and spiritual milieu of a society. Religious and spiritual beliefs, gender roles and relations, educational practices and values, themes in folklore and the classical arts, and recurring themes in the day-to-day life and language of people are some elements of culture that are visible and possible to document. Other parts of culture could be a general ethic which informs daily practices, such as a culture of re-use that pervades day
to day life in India.

Elements of biological diversity have formed one critical basis of all civilisations.India is no exception. In fact, the direct link between biological diversity and cultures is more apparent in India today than in many other parts of the world. The culturally defined gender division of roles and responsibilities also endows women and men within different cultures with different realms of biodiversity related knowledge acquired through their respective experience built through the ages. Women in most cultures rooted in subsistence economies have traditionally borne primary responsibility for household food security through domestication of wild cultivars, seed selection and storage and collection of a wide variety of foods, herbs, fibres and other subsistence goods from communal lands and forests. Due to this, they are the repositors of specialized biodiversity related knowledge of their respective ecosystems.

Given this understanding, the thematic working group would identify the inter-relationships between wild biodiversity (terrestrial and aquatic) and the different aspects of culture, including their gender dimensions detailed above. It would then proceed to

assess the current status of this relationship, and how it can be strengthened/revived in the current context.

Specifically, the Working Group would look into the following:

1. Identify the two-way positive links between cultural and biological diversity, how the former has arisen in response or amidst the latter, and has in turn nurtured/maintained/enhanced it through beliefs and traditions of conservation and sustainable/equitable use (it would be important to look at various strands of spiritual/religious systems in India) and the differing roles and knowledge bases of women & men;
2. Identify the two-way negative links between cultural and biological diversity, how certain cultural practices (e.g. of mass hunts) have resulted in biodiversity loss, and how state sponsored methods of conservation (e.g. official protected areas) have resulted in cultural erosion (e.g. through alienation of communities from their natural surrounds with differing impacts and implications for women and men);
3. Assess how different forms of culture (classical/mainstream, folk/non-mainstream, and popular/emerging) together with changing gender relations and often increasing gender based conflicts relate to biodiversity. Scale would also be an important consideration, e.g., how biodiversity and culture interact at a site-specific level, regional level, and national level);
4. Assess how and why the positive links between culture and biodiversity have been eroded in recent times, and the implications of this for conservation and sustainable/gender sensitive and equitable use;
5.Identify and assess the ways in which elements of cultural expression have been and can be used to carry the message of conservation and sustainable/equitable use. This would involve estimating what formats (i.e. length, style, mode of presentation) are the most effective in relaying the message of conservation, and which media/formats have the maximum outreach. The review could also assess whether dissemination of messages is a major problem and how this can be dealt with;

6. Identify initiatives to re-establish or strengthen the positive links between cultural elements and biodiversity and the potentially critical role of women in this, including some concrete case studies;

7. Identify, review and analyse alternative culture and gender sensitive biodiversity conservation institutional arrangements which are community led which have been tried elsewhere and their potential for replicability.

8.Recommend measures (short and long-term) to strengthen such initiatives and start new ones elsewhere;

9.Prioritise these measures in terms of their importance, gender sensitivity and immediacy; and

10.Identify resources (human, institutional, economic) needed for carrying out these measures.

Appendix III

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Joint Forest Planning and Management with regard to Devarakadus and other Protected Forests of Kodagu District, Karnataka (JFPM – D)

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JOINT FOREST PLANNING AND MANAGEMENT (JFPM- D) SCHEME

with regard to

DEVARAKADUS OF KODAGU DISTRICT

1. Preamble

Devarakadus *(Forests of Gods)* are Sacred Forests of Kodagu. They are of a very special significance to the society, nation and environment. They are nature's gift to mankind to maintain the ecological balance, the eco-system and to maintain the equilibrium of nature and are treasure houses of Bio-Cultural diversity of invaluable wealth and great assets in maintaining the health of the environment. They house diverse plants specific to the area, animals, birds and fungi which have very distinct roles to play in the eco-system, in helping conservation of nature, maintaining equilibrium in nature and minimise the effects of pollution, increasing local rainfall, prevention of soil erosion, etc.

Having realised the importance of Devarakadus to the society and for the very existence of humans, animals, etc. the original inhabitants of Kodagu revered these Devarakadus, seeing in them a source of divinity for the better of mankind. Hence each of the Devarakadus was identified with one or more deity so as to maintain the serenity of the land. The people of the village where the Devarakadu was situate, took on the moral responsibility of preserving the nature's gift in its untouched form. Only exception to the rule of non interference with the natures work in the said Devarakadus, are the special festivals at the deity's abode in the Devarakadus for which, the produce from the Devarakadus to very minimal extent was utilised. All native communities in Kodagu have a role in maintaining Devarakadus and have unique tradition of worship, dance and music associated with the worship, which are part of the tradition and culture.

Devarakadus also served as areas where members of the communities who are the original inhabitants of Kodagu namely, Kodava, Ammakodava, Airi, Heggade, Koyava, Kumbaara, Kudiya, Maleya, Golla, Kaniya, Panika, Banna,

Kaapaala, Kembati, Hajaama, Madivaala, Maeda, Adiya, Jamma Mapilla, Koleya, Vakkaliga Gowda, Jammada Gowda, Lingayatha, Kuruba, Yerava, Brahmin, AadhiKarnaataka and Haalumatha in the village who are associated traditionally with such Devarakadus and Temples within such Devarakadus from time immemorial, got together during festivals promoting communal harmony. Each family in a Village has a definite responsibility to the Devarakadu and the deity and a member of one specific family in the Village is recognised as the Thakka or the Head of the Village with regard to the Temple in the Devarakadu. This tradition is being followed very religiously by all such families who owe allegiance to the Deity and Devarakadu. The custom, culture and traditions with regard to the Devarakadus and the deities are many a times identical throughout Kodagu and are a part of the tradition of Kodagu from time immemorial.

(Devarakadus help in preservation of water sources, they are sources of inspiration for the people of the village and of local religious beliefs, and are pillars of support in cultivation aspects.)

Realising the importance of Devarakadus in Kodagu, the erstwhile Rajas, the British Rulers during pre Independence era, and later the successive Governments at the Centre and State have enacted various laws to preserve and protect these forest wealth in the country. Devarakadus which were termed as Protected Forests under the Indian forest Act of 1878 have been continuously enjoying the said status to this date through the Indian forest Act, 1927 and Karnataka forest Act, 1963. Hence under the various notifications issued under the Forest Acts, the Devarakadus are "Protected forests" and are the property of the Government under the forest department only, with limited privileges to the natives by custom, culture and tradition.

It has been the experience that, damage to these protected forests due to biotic interference namely illicit cuttings, planting with exotic species not suitable to the place, grazing, fire and encroachment has increased over the years. In spite of several measures like increase in staff communication network and increased intensive patrolling, etc. the desired results have not been achieved. Keeping this in view, the State Government desires that the people living in the villages adjoining these forests who are traditionally bound to these forests are more actively involved in the conservation /planning /protection /regeneration /development of these protected sacred forests and also to help save the age old traditions.

The Government has come to the conclusion that the above objectives can be achieved through a system of Joint Forest Planning and Management, with the villagers who are traditionally bound to these sacred forests in the villages and Non-Governmental organizations helping catalyse this movement.

As such a consultative process was undertaken by the Forest Department with the active association of the Forestry college at Ponnampet. The Forestry College at Ponnempet was the hub of research action. Its survey has brought out many interesting features regarding Devarakadus and their characteristics, their role towards the environment, their present utilisation, etc. It has also conducted the Devarakadu festival at Virajpet, Kodagu on 15th & 16thOctober 2000 wherein, several committees were formed to feel the pulse of the persons concerned with Devarakadus and it has been noted that the people are very much in favour of preserving the Sacred Protected Forests. The recommendation of the committee formed at the Devarakadu Festival also emphasises on these factors. The consultative process has seen several workshops of interested persons from the Forest Department, Forestry College, Ponnampet, Eco-Consultants, NGOs, Persons interested in Environment Activities, persons affiliated to Devarakadu Temples and legal experts.

After thorough deliberations by the working group constituted for the purpose, the following proposal has evolved, which are based on the National Forest Policy 1988 (*which envisages people's*

involvement in the development and protection of forests), and the existing Joint Forest Planning and Management Scheme applicable to the Village forests vide G.O.Nos. FFD 75 FAP 83 dated 23.01.1986, AHFF 232 FAP 86 dated 12.04.1993 and FEE 94 FAP 93 dated 16.12.1996 (*where the Government desires that Forest management programs need to be re-oriented in such a manner that, the village communities are motivated to identify themselves with the development and protection of forests*). The following proposal which, has so evolved, was placed at a meeting before the all persons of the District, involved with the Devarakadus (*namely the Officers of the Forest Department, Survey Department, Researchers of Forestry College, Ponnampet, Thakka mukyastharu of various Devarakadus, Community Leaders, Eco consultants, Journalists, Legal experts, representitives of N.G.Os involved in forest conservation and environment*) held on 17.3.2001at Madikeri, Kodagu, wherein it was unanimously accepted and approved by the persons. This shall be known as **J.F.P.M. – D.**

2. **Object**

With a view to involve villagers towards the planning, protection, regeneration, development and management of these Protected Forest areas and also such areas degraded due to biotic pressure and to perform other similar duties, it is proposed that villagers who are traditionally bound to these forests in each village constitute themselves into body known as "**Devakad Thakkamukkyasthara Vedhike"**. The formation, the composition, duties and responsibilities, the mechanism of sharing of produce and other modalities of "**Devakad Thakkamukkyasthara Vedhike" and "Federation of Devakad Thakkamukkyastharu of Kodagu District "** are proposed.

3. **Area Covered under JFPM – D**

Joint forest planning and management shall, subject to issue of notification by the forest department for each class or category of land in respect of each village or group village shall be introduced in the following classes of lands in the District of Kodagu without restriction with regard to the area or the density.

(a) Devarakadu, (b) Uruduve , (c) Mandu, (d) Ambala and (e) Ooruguppe.

(4. **Composition of "Federation of Devakad Thakkamukkyastharu of Kodagu District "**

1. There shall be a **Federation** by name **"Federation of Devakad Thakkamukkyastharu of Kodagu District"**. It is hereinafter referred as "**Federation** " and shall have jurisdiction over Devarakadus, Uruduves, Mandus and Ambalas all over Kodagu District.

2. The membership of the "**Federation**" shall consist of :

(a) The Conservator of Forests for Kodagu,

(b) Deputy Conservator of Forests of Virajpet and Madikeri Divisions,

(c) Assistant Conservator of Forests / Range Forest Officers of the subdivisions / ranges within Kodagu District,

(d) Two members each (one male and one female) from the communities classified as original inhabitants of Kodagu who are traditionally associated with the temples at the Devarakadus namely, Kodava, Ammakodava, Airi, Heggade, Koyava, Kumbaara, Kudiya, Maleya, Golla, Kaniya, Panika, Banna, Kaapaala, Kembati, Hajaama, Madivaala, Maeda, Adiya, Jamma Mapilla, Koleya, Vakkaliga Gowda, Jammada Gawda, Lingayatha, Kuruba, Yerava, Brahmin, AadhiKarnaataka and Haalumatha in the village who are associated traditionally with such Devarakadus and Temples within such Devarakadus from time immemorial,

(e) One member each from every Devakad Thakkamukkyasthara Vedhike to be delegated by such Devakad Thakkamukkyasthara Vedhike,

(f) Three members from the Forestry College, Ponnampet

(g) One member from the Centre for Environmental Education and

(h) Three members each from the local NGOs if any involved actively in conservation of Devarakadu sacred forests, to be nominated by the Conservator of Forests from each Taluk.

3. The Conservator of Forests for Kodagu shall be the ex-officio honorary chairman of the **Federation.**

4. One of the members from the Forestry College, Ponnampet shall be the Secretary of this **Federation**.

5. The general meetings of the **Federation** shall be held once a year, which shall be chaired by the chairman or in his absence the senior most DCF of Forest Divisions of Kodagu. *The other provisions with regard to the meetings shall be similar to the meetings mentioned below for Devarakadu committees.*

6. The office of the **Federation** shall be situated at the complex where the Office of the Conservator of Forests of Kodagu is situate.

5. **Managing committee of the Federation and its tenure**

1. There shall be a committee to manage the affairs of the "**Federation**", consisting of a President, Secretary and other members who shall be the members of the forum.

2. The Chairman of the **Federation** shall be the President of the committee.

3. The Secretary of the **Federation** shall be the Secretary of the committee.

4. The members shall consist of, DCFs of divisions within Kodagu, two members from the NGOs if any, Nine members (three from each Taluk of which one shall be a women) belonging to the communities.

5. The members, belonging to the communities and NGOs if any, shall be elected by the general body of the forum.

6. The tenure of the committee shall be for a period of three years.

6. Functions of the managing committee of the "Federation"

1. The Committee shall meet at least once in three (3) months. The Secretary of the Committee shall convene the meeting.

2. The quorum for the meeting shall not be less than 1/3rd of the total number of members.

3. The audit of the accounts of the "**Federation**" and **" Devakad Federation Fund "** shall be audited annually. The audit report shall be placed before the general body of the "**Federation**" and a copy of the same shall be sent to Principal Chief Conservator of Forests.

4.Member secretary shall be responsible for maintaining all records together with the cash book and other accounts of the "**Federation**" and **"Devakad Federation Fund"**. To assist the member-secretary, maintain the records, Cash book and other accounts properly, and for other errands, the "**Federation**" may provide assistance of a Clerk and a Dalayat if necessary and may be paid such honorarium as may be fixed.

5. The Member-Secretary shall be fully responsible for preparing and maintaining accounts of the "**Federation**" and **Devarakadu Federation fund"**. The accounts after approval by the managing Committee and placed before the General body of the "**Federation**" once a year.

6. Other modalities for the functioning of the Managing Committee with regard to Devarakadus (*and not with regard to temples within such Devarakadus*) and the "**Federation**" shall be governed by rules/directions framed/issued by the State Government or the Principal Chief Conservator of Forests / Chief Conservator of Forests in this behalf from time to time.

7. No such rules or regulations shall be in derogation to the traditional customary rights, duties and privileges.

7. **Termination of membership and filling of vacancy**

(*With regard to the affairs of the Devarakadu only and not with regard to the temples, deities in the Devarakadu*)

1.If any person who is a member of the Managing Committee fails to attend three consecutive meetings of the Committee, he may be removed from the membership of the committee by the Chairman after giving the member concerned an opportunity to being heard.

2.The Chairman is empowered to remove/suspend any person who is a member of the Committee permanently or for a specified period, on the recommendations of the Members of the committee, if it is found necessary to do so in the interest of functioning of the Committee.

3. If a person who is a member of the Managing Committee is found guilty of any forest offense by a competent authority, such person shall automatically cease to be a member of the **Federation** and managing Committee for life.

4. If any vacancy is created due to the reasons stated above or due to the death of any member, the same shall be filled up at the earliest by a person belonging to the community to which such member belongs or belonged.

8. Maintenance of records

1.The managing committee of the **Federation** shall maintain a minutes book. The proceeding of the meetings of the Committee and that of General Body Meetings shall be recorded in that book. At the start of the meeting, the agenda shall be written and signatures of the members present shall be obtained. Thereafter the proceedings of the meeting shall be recorded under the signatures of the Chairman and the Member-Secretary of the Managing Committee.

2.Complete physical account of all works taken up and all expenditure incurred including the details of Forest produce permitted to be collected free by the Devakad Thakkamukkyasthara Vedhike, with regard to all Devarakadus shall be maintained by the Committee in the relevant books to be maintained for the purpose.

9. **Powers of the committee of "Federation"**

1. The committee has powers to supervise the working (*With regard to the affairs of the Devarakadu only and not with regard to the temples, deities in the Devarakadus*) of the Devakad

Thakkamukkyasthara Vedhike and their managing committees for the proper implementation of the objects of this scheme.

2. The committee also has powers to verify the accounts pertaining to Devarakadu Fund and its utilisation. If the committee finds that the funds are not being utilised for the purpose of the scheme or the utilisation is improper, it can take such remedial measures including appointment of an authority as a temporary measure to carry out the functions as contemplated after giving reasonable opportunity to the concerned Devakad Committee to submit their case.

10. **Fund of the "Federation"**

1.**A fund shall be created for the purpose of** " Federation " **and shall be known as** "Devakad Federation Fund " (DFF). **The initial seed money shall be met from the funds provided by the Forest Department. The fund could be enlarged by contributions from institutions, philanthropists, etc.**

2.This fund shall be operated by the Federation as per the rules to be framed for this purpose by the Government from time to time. Funds from the State Government or the Central Government and all moneys receivable / received by the Federation through other sources shall be credited to this fund. The fund shall be used only for the developmental activities of Forum and shall not be used for the benefits of the members personally or shall not be shared as profit among the members.

3.The operation of " **Devakad Federation Fund** " shall be in joint account system in the name of the Chairman of Managing Committee and the Member Secretary of the Forum.

11. Composition of Devakad Thakkamukkyasthara Vedhike (DTV)

1. **A Devakad Thakkamukkyasthara Vedhike shall be formed with regard to every Revenue Village (if there exists any Devarakadu, uruduve, Mandu , Ambala or Oooruguppe in such village). The name of such Devakad Thakkamukkyasthara Vedhike shall incorporate the name of the respective revenue village. The Devakad Thakkamukkyasthara Vedhike shall consist of such original inhabitants of Kodagu who are persons from families connected all the Devarakadus in the respective revenue village and the temples therein by tradition and such Ex officio members as mentioned below.**

2. Any person belonging to such a family and is also a native of the respective village and interested in forest development and conservation shall be eligible to become a member of the Devakad Thakkamukkyasthara Vedhike. Such persons may become the members of Devakad Thakkamukkyasthara Vedhike by registering his/her name with the secretary of the Devakad committee upon payment of such sum as annual subscription as may be fixed by the " **Federation** ".

3. The Devakad Thakkamukkyasthara Vedhike shall be affiliated and registered as local chapters with the "**Federation**" and shall be a body under the governance of the **Federation** (With regard to the affairs of the Devarakadu forests only and not with regard to the temples or the rituals in the Devarakadu). They shall subscribe to the bye laws provided by the **Federation** for the functioning of such Devakad Thakkamukkyasthara Vedhike,which would detail the duties, responsibilities, powers and jurisdiction of the Devakad Thakkamukkyasthara Vedhike before they can participate in the JFPM- D.

4. No member shall be entitled to any personal benefit under this scheme.

12. Ex – Officio Members of Devakad Thakkamukkyasthara Vedhike (DTV)

The following persons shall be Ex-Officio members of Devakad Thakkamukkyasthara Vedhike **:**

a) Members of the temple committees with regard to all the Devarakadus, Uruduves, Mandus, Ambalas and Ooruguppes in the respective revenue village. There shall be no dual representation for any person if such person is a member in more than one of these tenures.

b) Jurisdictional Forest Guard.

c) Jurisdictional Village Accountant from the revenue Department.

d) Jurisdictional Grama Panchayath Secretary

e) One representative each from the local non-governmental organizations; if any (to be nominated by the jurisdictional Deputy Conservator of Forests and they shall also not have any voting rights in any manner).

13. Managing Committee of the Devakad Thakkamukkyasthara Vedhike – Devakad Committee and its tenure

There shall be the Managing Committee for each registered Devakad Thakkamukkyasthara Vedhike known as **Devakad Committee**, which shall manage the affairs of the Devakad Thakkamukkyasthara Vedhike. The managing Committee shall also be responsible for due performance of the duties and responsibilities of the Devakad Thakkamukkyasthara Vedhike. The Devakad Committee shall be known by the name of the respective revenue village. The Devakad Committee of each Devakad Thakkamukkyasthara Vedhike shall consists of the following :

1. Takka or Chairman (or by such name as the position is known in the native parlance) to be elected by the members of the committee - belonging to the family (Okka) as per tradition with regard to the Devarakadu (and based on rotation and for equal durations, when there are more than one Devarakadu in a revenue village as determined at the annual general meeting of the said Vedhike).

2. Secretary - to be elected by the members of the committee.

3. (13) Thirteen other members in the village under the Devarakadu by tradition (who would be members belonging to the Okkas selected as per tradition with regard to the respective Devarakadu) which shall include two women.

(Any vacancy arising with regard to any such membership shall be filled by the member of the family of the person whose membership fell vacant for reasons such as death, removal from membership, resignation, etc.)

4. Jurisdictional Forest Guard.

5. Jurisdictional Village Accountant from the revenue Department.

6. Jurisdictional Grama Panchayath Secretary

7. The tenure of the Devakad Committee shall be 3 (three) years.

14. **Functions of Devakad Committee**

(I) The Committee shall meet at least once in three months. The meeting shall be convened by the Secretary of the Committee.

(II) The quorum for the Meeting of the Devakad Committee shall be not less than 1/3rd of the total number of members.

(III) The Devakad Committee shall have powers to check and prevent those indulging in forest encroachment, illicit cutting, smuggling, poaching, etc.,

(IV) The members of the Devakad Committee shall have the powers to apprehend the Forest Offenders who indulge in forest encroachment, illicit cutting, smuggling, poaching, etc., and hand them over to the Forest authorities to take further action against the offenders under the provisions of the relevant Forest Acts and Rules.

(V) The Devakad Committee shall have powers to impound cattle found grazing in the Devarakadu and deal with them as per law.

(VI) The Devakad Committee shall have powers to levy fine for grazing as per rules to be framed and notified in this behalf. The fine so collected shall be credited to the Devarakadu Development Fund.

(VII) The audit of the accounts of Devakad Thakkamukkyasthara Vedhike and Devakad Development Fund shall be conducted by the representative of the Federation. The audit report shall be placed before the general body of Devakad Thakkamukkyasthara Vedhike and a copy of the same shall be sent to "**Federation**" where it shall be incorporated in the annual balance sheet of the **Federation**.

(VIII) Member secretary shall be responsible for preparing, maintaining all records together with the cash book and other accounts of the Devakad Thakkamukkyasthara Vedhike and Devakad Development Fund properly.

(IX) The accounts shall be approved by the Devakad Committee and placed before the General body of the Devakad Thakkamukkyasthara Vedhike once a year.

(X) No rules or regulations shall be in derogation to the traditional customary rights, duties and privileges.

15. **Procedures in case inactive committee or members**

(*With regard to the affairs of the Devarakadus only and not with regard to the temples, deities and rituals in the Devarakadus*)

(I) If any member of the Managing Committee fails to attend three consecutive meetings of the Committee, he shall be removed from the membership of the committee by the Chairman after giving the member concerned an opportunity to being heard.

(II) If a person who is a member of Devakad Thakkamukkyasthara Vedhike and Devakad Committee is found guilty of any forest offence by a competent authority, he/she shall automatically cease to be a member of the Devakad Thakkamukkyasthara Vedhike and Devakad Committee for life.

(III) If a Committee fails to function properly, or if there are instances of financial irregularities, misappropriation or violation of any rules or regulations, the Deputy Conservator of Forests concerned, can supersede the Committee on the recommendations in writing of the managing committee of the " **Federation** ".

(IV) If there is any confusion or deadlock on any issue, the matter shall be referred to the managing committee of the " Federation " whose direction /decision shall be binding on Devakad Thakkamukkyasthara Vedhike and Devakad Committees.

16. **Maintenance of Records**

i) The Devakad Thakkamukkyasthara Vedhike shall maintain a minute book where the proceeding of the meetings of the Devakad Committee as well as annual General Body Meetings shall be recorded under the signatures of the Chairman and the Member-Secretary of the Managing Committee. Copies of all such proceedings of the same shall be sent to concerned Range Forest Officer for record, immediately after the meetings.

ii) Complete physical account of all works taken up and all expenditure incurred including the details of Forest produce permitted to be collected if any by the management plan, shall be maintained by each Devakad Committee. Such details shall be sent to the Range Forest Officer in the prescribed form once in every quarter, and once a year to the " **Federation** " without fail.

iii) The officials of the Forest Department shall inspect the Forest under JFPM-D scheme frequently and suggest necessary action to be taken by the Devakad Committee.

17. **Management Plan**

i) The Deputy Conservator of Forests shall select on priority basis such Devarakadus, where the Devakad Committees are willing to share their co-operation in protection /planning /regeneration. The selected Devakad Thakkamukkyasthara Vedhike shall be entrusted with such responsibilities of protection/planning/regeneration. (as per the management plan duly prepared Range wise and approved by the Central / State Government).

ii) After a critical analysis of the protection/ conservation issues, Forest Department shall prepare a proposal for management of Devarakadu Sacred Forests under Devakad Thakkamukkyasthara Vedhike. The aims of such management plans shall be in conformity with the prescriptions of current working plan for such areas. It shall prescribe in detail conservation measures to be adopted and collection / removal of forest produces, if any. The tenure of this management plan shall be for a period of ten years.

iii) The Deputy Conservator of Forests/ Assistant Conservator of Forest /Range Forest officer or his authorised officer shall submit the management plan proposals before the Devakad committee through the "Federation". This shall be discussed by the Devakad Committee, and shall be submitted to the Federation with proposals for amendments if any.

iv) After the amendment, if any are carried out, the management plan will be put before the General body of the Devakad Thakkamukkyasthara Vedhike for discussion. After obtaining the approval of the Devakad Thakkamukkyasthara Vedhike, the Deputy Conservator of Forest shall give his formal acceptance for the execution of the plan. This plan shall become joint management plan. Once the plan is accepted, it shall replace/supplement the existing, management/ working plans.

v) The pattern of implementation of management plan/working scheme shall follow instructions and guidelines issued from time to time by Government or Principal Chief Conservator of Forests / Chief Conservator of Forests. The funds available under other Government schemes maybe utilised for the purpose of implementation of this Management plan/working schemes, if permitted under the relevant rules or guidelines governing such Government schemes.

vi) The forest Department may utilise the labour provided by the Devakad Thakkamukkyasthara Vedhike who shall be paid as decided by Devakad committee to develop the area of JFPM - D.

vii) The Devakad Thakkamukkyasthara Vedhike shall ensure smooth and timely execution of the various works listed in joint Management plan. The forest Department shall provide necessary technical guidance or assistance to Devakad Thakkamukkyasthara Vedhike.

viii) No agriculture or cultivation of Horticultural crops shall be taken up in the land covered under JFPM - D.

ix) The Devakad Thakkamukkyasthara Vedhike may carry out awareness activities to facilitate the implementation of joint Management plans.

x) A memorandum of understanding (M.O.U) shall be signed by the Deputy Conservator of Forests/ Assistant Conservator of Forests / Range Forest Officer and Devakad Committee of the Devakad Thakkamukkyasthara Vedhike for the performance of the agreed function of the approved management plan.

18. Duties and Responsibilities of Devakad Thakkamukkyasthara Vedhike

i) The Devakad Thakkamukkyasthara Vedhike shall help the Forest Department in preparing the joint management plans for the areas under it.

ii) The Devakad Thakkamukkyasthara Vedhike shall assist the Forest Department in planning, preservation, protection, conservation and development of Forest areas as per the approved management plan.

iii) The Devakad Thakkamukkyasthara Vedhike shall effectively perform its duties and responsibilities as per M.O.U and joint management plans and play an important role in the management of the Forest under its jurisdiction

iv) The Devakad Thakkamukkyasthara Vedhike shall be responsible for the full protection of the Forest.

v) The Devakad Thakkamukkyasthara Vedhike shall play an important role in enriching forests by preventing encroachments, grazing, forest fire and illicit cutting, smuggling of forest produce and poaching and such other functions which are needed to develop forest resources.

19. Other Conditions for JFPM - D

i) In case any regeneration work is taken up by the Forest Department, the cost of such work shall be met initially by the Forest Department for a period of three years. The asset thus created shall

be handed over to the Devakad Thakkamukkyasthara Vedhike for further maintenance from its own resources. Protection, regeneration and development work as per the management plan may also be taken up by the Forest Department using its funds but shall be subject to limitation and availability of such funds for the purpose.

ii) No lease shall be granted or alienation made with regard to Devarakadu Sacred Forest lands to the Devakad Thakkamukkyasthara Vedhike or any person or body since the purpose is limited to conservation of such lands based on the principle of JFPM-D.

iii) In case of default by a member or Devakad Thakkamukkyasthara Vedhike or Devakad committee as a whole, the penal clause prescribed under the scheme shall be enforced.

iv) The word " Devarakadu ", whenever the context permits shall also mean and include Uruduves, Ambalas, Mandus and Ooruguppes. There shall not be different Vedhikes in the names of these tenures.

20. Role of Government Departments and Officers in JFPM - D

i) The Devakad Thakkamukkyasthara Vedhike shall be motivated to become a meaningful partner with communities therein, to manage JFPM-D land.

ii) The problems arising from the interaction between the Devakad Thakkamukkyasthara Vedhike, between members should be arbitrated by the Range Forest Officer/Assistant Conservator of Forests /Deputy Conservator Forests, as early as possible.

iii) Leadership of senior officers of the department to provide clear, coherent and unambiguous guidance and frequent site visits will be crucial for the success of the scheme.

21. Disposal of Forest produce and Sharing

The proceeds arising from the local sale of dead and fallen timber and other minor Forest produce by the Forest Department, in presence of the Devakad Committee, after deducting all the expenditure shall be shared between the Government and the Devakad Committee in the ratios - 10 percent to Government and 90 percent to a special fund to be called the Devarakadu Development fund.

22. Devakad Development Fund.

1. A fund called Devakad Development Fund (DDF) shall be created for each Devakad Thakkamukkyasthara Vedhike. The initial expenditure required for opening of the account shall be met from membership subscriptions. This fund shall be deposited in a nationalised bank.

2. This fund shall be operated by the Devakad Thakkamukkyasthara Vedhike as per the rules in vogue. Fines and penalties collected by the Devakad Committee as stated under the rules, 90 percent of the revenue from Disposal of Forest produce as mentioned above and all moneys received by Devakad Thakkamukkyasthara Vedhike shall be credited to this fund. This fund shall be used for the developmental activities of respective Sacred Forests as per the approved management plan of the Devakad Thakkamukkyasthara Vedhike and for the development of the temples in the Devarakadus under the Devakad Thakkame. Out of the amount receivable by sale of forest produce (90% mentioned above) at least half the amount, shall be utilised only for the purpose of maintenance the respective Devarakadus. The

remaining half may be utilised, for the purpose of the development work of the temple in the respective Devarakadu if any temple is in existence in the Devarakadu and if the Devakad Thakkamukkyasthara Vedhike permits, 20% of this remaining half may be utilised for the development projects of the village in which the Devarakadu is situated. In no way, this fund shall be used for the benefits of the members personally or shared as profit among the members.

3.The operation of Devakad Development Fund shall be in joint account system in the name of the Chairman of Devakad Committee and the Secretary.

23). <u>Role of Non Government Organizations (N.G.Os)</u>

Voluntary agencies / NGOs with proven track record may be involved for motivation and organisation of Devakad Thakkamukkyasthara Vedhikes for planning / protection / regeneration / development of lands under J.F.P.M. – D. The Forest Department shall take full advantage of the expertise and experience of such organizations. NGOs shall effectively perform their role to fulfill the objects of the scheme.

Legal aspects with regard to protected Forests of Kodagu Namely Devarakadus, Uruduves, Ambalas and Mandus.

By K.G.Uthappa .. Vijay, Advocate, Gonicoppal

Notification No.11 of 1887 of Chief Commissioner of Coorg, brought *Coorg* which was a province, under the provisions of Indian Forest Act, 1878. And through the notification No.13 of 1887 the provision of chapter II of the said Act was made applicable to Ghat forests, which were thereafter classified, as ***"Protected Forests"***.

Thereafter **Uruduves , Paisaris** and **Devarakadus** were included as protected forest under notification No 41 of 1888 and rules with regard to protected forest were issued under notification No.43 of 1888. Subsequently through the notification No 78 of 1901 the lands designated as **Paisaris** were taken out of the purview of protected forests.

Ambalas and **Mandus** were added to Devarakadus and Uruduves as protected forests vide notification No.72 of 1905. Rules to regulate the management of protected forest were issued under notification No.73 of 1905. These notifications canceled the earlier notifications of 1888.

The **Indian Forest Act 1927**, which came in to existence, was made applicable to province of Coorg through notification No. 120 of 1930. Section 29 of the said Act defines **Protected Forest** and Section 32 (g) empowers the State Government to make rules with regard to protected forests. Section 33 (1)(h) provides for penalties for offenses against acts, which are contrary to the provisions of Section 32.

The Karnataka Forest Act 1963 **came into force on 1.6.1969. Section 2 (13) defines Protected Forest. Section 33(2), (ii) and (iii-a) and (4) empower the State Government to make rules for prohibition of unauthorised occupation in protected forests. Section 35 declares that forests, which are designated as protected forests under previous Forest Acts, shall continue to enjoy such status. Section 64-A provides for penalty and procedures with regard to unauthorised possession of protected forest.**

The above-mentioned provisions of Forests Acts and notifications show that Devarakadus, Uruduves, Ambala and Mandus are protected forests under the Karnataka Forest Department. And these notifications and provisions of law never curtailed the privileges that were available to the local communities.

Section 35 of Karnataka Forest Act has kept alive the Notifications No. 72 and 73 of 1905, which hold the floor even to this date. These notifications **prohibit** the breaking up or clearing of any land within a protected forest for cultivation, building, herding cattle or for any other purpose. Any action contrary to the directions in these notifications is an **offense** and any person who commits such an offense is liable to the prosecuted. Therefore, if any person were to be in continuous possession of any part of a protected forest it would amount continuing offense.

After the advent of **Forest (Conservation) Act 1980**, restrictions on conversion of **forest lands into non-forest activities have increased as can be made out from Section 2 of the said Act. Moreover it is necessary for the concurrence of the Central government with the State Government to convert a forest land for non-forest purpose. Any contravention of this provision by any person or authority is punishable as per Section 3 A & B of the said Act. Hence forest conservation has been given the highest priority.**

The **Honorable Supreme Court** as also taken a very firm and positive stand towards conservation of forests as can be seen in a decision rendered in the case of **T.M.Godavarman Thirumalkpad Versus Union of India and others,** reported in **A.I.R 1997 S.C. at page 1228** in which, the word **forest** has also been properly explained.

In another case, filed by **Centre for Environmental Law, World Wild Fund for Nature-India against the Government of Madhya Pradesh**, the Honorable Apex Court of the land, in an interim order (November 2000), has directed all the State Governments and Governments of Union Territories not to denotify any area inside national parks. While giving this direction, the Honorable Court observed that the activities would have severe adverse impact on the bio-diversity and would defeat the very purpose for which these forest areas were termed as protected forest. The same analogy can be drawn with regard to the protected forests of Kodagu also.

Claim of individuals, etc. over these lands

Any person claiming a right by way of adverse possession with regard to protected forest would not succeed, as the claim of adverse possession cannot be put forth through a prohibited act, which is punishable under law. Possession by even a great length of time does not give a person a benefit to claim the right of **adverse possession**. It is also evident from the orders of the Government of Karnataka No RD 104 LGO 79, Bangalore dated 26th October 1985, and also in No.RD 25 LGP 98 dated 22 .9. 1999.

Ambiguity regarding status
(Whether Protected Forest – Paisary Lands - Reserved Forests)

All the above-mentioned notifications have very clearly stated that these areas are protected forests under the Karnataka Forest Department through Kodagu Forest Circle.

Any **ambiguity** with regard to the position may have been due to the fact that the **Jamabandi** pertaining to the said areas mentioned the word *Paisari* at **column 2**. Though the tenure *Paisari* was taken out of the purview of protected forest through the notification 78 of 1901, the word *Paisari* was used and is being used in the Jamabandi as per the directions in the **Coorg Land and Revenue Regulation of 1899 at page 113** which pertain to Jamabandi of unassessed area in Form No.3 which means that the said lands are **owned by the State** and is with the **Forest Department**.

It may also have been because of the orders of the Government of Karnataka in No RD 104 LGO 79, Bangalore dated 26th October 1985, where the preamble states that the lands are with Revenue Department. This is a misconception as there seems to be no notification which has transferred the protected Forest lands from Forest Department to Revenue Department and such notions will not have the force of law if they have no basis. Hence the meaning that they are common Paisary lands cannot be attributed to Devarakadu. They are also not Reserved forests as the procedures contemplated under Sections 4,17 and 26 may have to be followed to change the status as mentioned in the said order.

Therefore, it has to be accepted that these protected forests are under the Forest Department and not under the Revenue Department. Any contrary view would go against the directions of the notifications pertaining to the protected forest and also would be against reality.

At this juncture, it may be proper to remind ourselves about the **foresight and vision of our forefathers** who had put in every effort to preserve these forest lands which are treasure houses of bio diversity as Sacred Groves, when Coorg mainly comprised of forest areas.

Definitions

Devarakadu – Sacred forests or Groves

Uruduves – Village Forests

Ambalas and Mandus greens – Community Village lands (normally open plain with a structure and/or tree) for get together on festivals, for traditional Dances and to hold community meetings

Notifications of Chief Commissioner of Coorg

1. *No. **11 of 1887** - Published in The Coorg Gazette, of June 1, 1887 at page 640 of part I, dated 15th March 1887 and reproduced in " The Coorg Forest Manual " printed at Government Press, Coorg in the year 1957 at page 1.*
2. *No. **13 of 1887** - Published in The Coorg Gazette, of June 1, 1887 at page 644 of part I, dated 15th March 1887.*
3. *No. **41 of 1888** - Published in The Coorg Gazette, of October 1, 1888 at page 94 of part I, dated, 20th September 1888.*
4. *No. **43 of 1888** - Published in The Coorg Gazette, of October 1, 1888 at pages 95 and 96 of part I, dated, 20th September 1888.*
5. *No. **78 of 1901**- Published in The Coorg Gazette, of October 1, 1901 at page 150 of part I, dated 28th September 1901.*
6. *No. **72 of 1905** - Published in The Coorg Gazette, of November 1, 1905 at pages 98 and 99 of part I, dated 24th October 1905 and reproduced in " The Coorg Forest Manual " printed at Government Press, Coorg in the year 1957 at page 48.*
7. *No. **73 of 1905** - Published in The Coorg Gazette, of November 1, 1905 at pages 98 and 99 of part I, dated 24th October 1905 and reproduced in " The Coorg Forest Manual " printed at Government press Coorg in the year 1957 at pages 48, 49 and 50.*
8. *No **120 of 1930** - Published in The Coorg Gazette, of September 1, 1930 at page 94 of part I, the 30th August 1930 and reproduced in " The Coorg Forest Manual " printed at Government Press, Coorg in the year 1957 at page 1.*

Orders of Government of Karnataka

1. *No. RD 104 LGO 79, Bangalore dated 26th October 1985*

2. *No. RD 25 LGP 98 dated 22.9.1999.*

Notifications with regard to protected forests in COORG (Kodagu District) issued by the Chief Commissioner of Coorg and published in
THE COORG DISTRICT GAZETTE

(1) ***Published in The Coorg Gazette, of June 1, 1887 at page 640 of part I. Bangalore, Dated 15th March 1887 and reproduced in " The Coorg Forest Manual " printed at Government press Coorg in the year 1957 at page 1.***

No.11.

Under the provisions of the third clause Section 1 of the Indian Forest Act, 1878, (Act VII of 1878) the Chief Commissioner of Coorg is pleased, with the previous sanction of the Governer General in Council, to extend the said Act to the province of Coorg.

2. By the fourth clause of Section 1 of the aforesaid Act, this extension repeals Act VII of 1865 now in force in Coorg, but all rules made under or validated by the last named enactment and in force at the date of such repeal shall, so far as they may be considered with Act VII of 1878, be deemed to have been made and published thereunder.

"By Order"
D.ROBERTSON,
Secretary.

(2) ***Published in The Coorg Gazette, of June 1, 1887 at page 644 of part I. Bangalore, Dated 15th March 1887***

No.13.

Under Section 28 of the Indian Forest Act, 1878, the Chief Commissioner is pleased to declare that the provisions of Chapter II of the said Act shall be applicable to the whole of the demarcated Ghat Forests as defined below, which shall hereafter be classed as Protected Forests provided that this declaration shall not be taken to abridge or affect any existing rights of individuals or communities in the said tracts.

BOUNDARIES OF THE PROTECTED FORESTS ABOVE ALLUDED TO:

West and South.	The boundary of the South Canara and Malabar Districts except in places where another line has been fixed by the Ghat Forest demarcation Survey, in which case that line shall be the boundary.
East.	The line fixed by the Ghat Forest demarcation Survey, and, in the South of the Kiggatnad Taluk, the boundary of the Nalkery Reserved Forest.
North.	The boundary of the Mysore Territory in the Nanjarayapatna Taluk, and the line fixed by the Ghat Forest demarcation Survey in the Kiggatnad Taluk.

"By Order"
D.ROBERTSON,
Secretary.

(3) ***Published in The Coorg Gazette, of October 1, 1888 at page 94 of part I. Dated Bangalore, 20th September 1888***

No.41. –

Under Section 28 of the Indian Forest Act, 1878, and in continuation of Notification No. 13 dated the 15th March 1887 declaring that the ghat forests shall be classed as protected forests, the Officiating Chief Commissioner of Coorg is pleased to declare that the provisions of chapter IV of the said Act shall be applicable to the forest lands as defined below which shall hereafter be classed as protected forests, provided that this declaration shall not be taken to abridge or affect any existing right of individuals or communities in the said lands.

All forest land or waste land which is not included in a reserved forest, but which is the property of Government, or over the Government has proprietary rights, and locally known as *Uruduves, Paisaris and Devarakadus*.

(4) ***Published in The Coorg Gazette, of October 1, 1888 at pages 95 and 96 of part I. Dated Bangalore, 20th September 1888***

Forest Rules for Coorg under Section 31 of the Indian Forest Act, VII of 1878.

No.43. –

The following Rules, which have been made by the Officiating Chief Commissioner of Coorg in exercise of the powers Conferred by Section 31of theIndian Forest Act, 1878, and are published with the previous sanction of the Governor General in Council under Section 77 at that Act, shall come into force on and from the 1st October 1888:-

Preliminary.

The Protected Forests in Coorg consist at present of the following classes :-

(1) The Ghat Forests.
(2) Paisaris (State forests other than Reserved and Ghat forests, including waste lands).
(3) Urudves (Village Forests).
(4) Devara Kadus (sacred forests or groves)

Rules for Protected Forests generally.

I – Subject to existing rights, trees and timber shall be felled, sawn, converted, or collected only under such orders as the Deputy Conservator may issue.

II – No trees, timber, or other forest produce shall be removed from the forests without a pass in such form as the Chief Commissioner may, from time to time, prescribe.

III – Passes for the removal of trees, timber, or other forest produce shall be granted by the Deputy Conservator, or by subordinate officers of the Department specially empowered in writing by the Deputy Conservator to issue such passes. No license, however, to cut timber or other forest produce in a Paisari shall be granted without the previous sanction of the Commissioner of Coorg.

IV – Grass may be cut and removed by contractors under passes, or under any other system approved by the Chief Commissioner.

V – Passes for the cutting and removal of trees, timber, grass, or other forest produce shall be issued at such rates, and under such regulations regarding time and place, as may from time to time be prescribed by the Chief Commissioner.

VI – The pasturage or grazing of cattle shall be allowed only on passes granted under the written orders of the Deputy Conservator, who may limit the number of cattle to be grazed, and may declare within what areas and to what seasons grazing shall be restricted, and may make such other conditions as he deems necessary. Such orders shall in the case of Paisari forests be confirmed by the Chief Commissioner.

VII – Stone or *moorum* may be quarried, cutch boiled, and lime or charcoal burned only under the written orders of the Deputy Conservator, and on such conditions as he may prescribe.

VIII – The Deputy Conservator may, at his discretion, authorize, by a written pass, any person to hunt, shoot, fish, or set traps or snares in the forests under his control.

IX – The passes mentioned in the foregoing Rule will contain conditions regarding close seasons for game, and relative to the protection of the forests.

Of the cultivation of cardamom in Protected Forests.

X – Cardamom *malles* may, at the discretion of the Commissioner, be leased under such conditions as may be sanctioned, from time to time, by the Chief Commissioner.

Of Devara Kadus.

XI – All Devara Kadus shall be recognized as sacred, and shall be so maintained throughout the whole area which is entered in the register as belonging to *Devara Kadus*.

XII – All felling, lopping, clearing, pruning, or burning of trees within the limits of *Devara Kadus* is prohibited.

XIII – No timber, wood, branches, grass, or any other produce shall be removed from the *Devara Kadus* on any pretext whatever, except on special permits which may be granted by the Commissioner:

Provided that the villagers shall continue to enjoy such prescriptive rights as they may now possess with respect to gathering leaves and creepers, and to taking fallen branches which may be needed for use in the temple;

Provided, also that public officers may, with the permission of the Commissioner, remove such stone or gravel as may be required for a public purpose.

XIV – No cultivation of any kind shall be allowed in any *Devara Kadu*.

Of Urudves.

XV – Ryots may cut unreserved trees for firewood and agricultural purpose only, without a permit and free of any charge.

XVI – Ryots wishing to obtain timber or bamboos for building or other purposes not included in the preceding rule shall submit their application to the Subedar, who, after inquiry as to whether it is really needed and when the last grant was made, shall forward the application, with a report, to the Commissioner, who, if he approves of the grant, will make a requisition upon the Deputy Conservator for a free permit.

XVII.- As a rule, no application should be entertained by the Subedar unless a period of seven years has elapsed since the last grant.

The value of the timber or other forest produce that may be granted in any individual case shall not exceed Rs.20. No free grant of teak shall be made.

General

XVIII- All timber and other forest produce passing out of the Protected Forests may be stopped for examination by any Forest or Police Officer, and all persons in charge of such timber or other forest produce shall be bound to produce any pass or license which may have been granted to them under these Rules, when called upon to do so by such Forest or Police Officer. If a pass or license be lost, a duplicate may be obtained under payment of a fee of eight annas.

XIX – Under the general orders of the Chief Commissioner, timber and other forest produce may be sold either by auction or by contract or may be disposed of at rates not exceeding a maximum scale of fees, royalties, or payments fixed, from time to time, by the Chief Commissioner, to be levied at such stations as may have established under Section 41(e) of the Forest Act.

XX – The rates to be levied under the aforesaid scale in each forest may be fixed within the maximum therein prescribed by the Deputy Conservator, in communication with the Commissioner of Coorg, and shall be duly notified in the villages adjoining such forests. But no alteration in the rates shall have force until after the lapse of six months from the date of the said notification.

XXI – All timber and forest produce which have been sold by auction or by contract will be paid for, as the Deputy Conservator may determine, either (a) in cash before removal, for which a special pass will be issued, or (b) at the stations which may have been established under Section 41 (e) of the Forest Act.

(5) Published in The Coorg Gazette, of October 1, 1901 at page 150 of part I. Dated 28th September 1901

No.78.

Notification No.41, dated the 20th September 1888 declaring, under Section 28 of the Indian Forest Act, 1878, certain forests in Coorg to be protected forests, and Notification No.43, dated the 20th September 1888 making under Section 31 of the same Act, certain rules for the management of protected forest, are cancelled so far as concerns the forest lands therein designated as *paisaris*.

(6) Published in The Coorg Gazette, of November 1, 1905 at pages 98 and 99 of part I. Bangalore, 24th October 1905 and reproduced in " The Coorg Forest Manual " printed at Government press Coorg in the year 1957 at page 48.

No.72.

In supersession of Notification, No. 13, dated 15th March 1887, and No. 41 dated 20th September 1888, which are hereby cancelled, the Chief Commissioner is pleased under section 28 of the Indian Forest Act, 1878, (VII of 1878) to declare that the provision of Chapter IV of the said Act shall be applicable to all areas, not being included within the limits of reserved forests, which are locally known as *Devarakadus, Uruduves, Amabalas or Mandus*, and in respect of which the record of rights contemplated by the said section has been drawn up and received his approval.

(7) Published in The Coorg Gazette, of November 1, 1905 at pages 98 and 99 of part I. Bangalore, 24th October 1905 and reproduced in " The Coorg Forest Manual " printed at Government press Coorg in the year 1957 at pages 48, 49 and 50.

NO. 73.

In exercise of the powers conferred by section 31 of the Indian Forest Act, 1878, (VII of 1978), and with the previous sanction of the Governor General in Council, the Chief Commissioner is pleased

(1) to cancel Notification No.43 dated 20th September,1888;

(2) to direct that in Notification No.54 dated 8th December, 1893, after the word "Reserved", the words "and protected" and also the words " with the exception of village *paisaries* and *uruduves*" shall be omitted;

(3) to make the following rules to regulate the management of the protected forests of Coorg as defined in Notification No 72, dated 24th October, 1905.

Preliminary

I. In these rules, the expression "recorded right" means any right or privilege recorded in the course of the inquiry held under section 28 of the Act; and, for the purposes of section 33 of the Act, the expression "Forest officer" shall be deemed to include the Commissioner or any subordinate revenue official appointed by the Commissioner in writing in that behalf.

General

II. The breaking up or clearing of any land within a protected forest for cultivation, building, herding cattle or any other purpose is prohibited.

III. Whenever it is proved to the satisfaction of the commissioner that regulation is necessary in order to prevent the deterioration of any protected area to such an extent as to render it unfit for any purpose for which it was originally granted or confirmed, the Commissioner, subject to the control of the Chief Commissioner, may, notwithstanding the existence of any recorded rights of grazing, limit and define the number and description of the cattle to be grazed, declare within what areas and to what seasons grazing shall be restricted, and prescribe such other conditions for the exercise of such rights as he may deem necessary.

IV. Save in the exercise of recorded rights, hunting, shooting, fishing, snaring and trapping are prohibited except under a written license granted by or by order of the Commissioner, and embodying such conditions as he may deem necessary.

V. The exercise of recorded rights of hunting, shooting, fishing, snaring and trapping shall be subject to regulation on the conditions and in the manner prescribed by Rule III.

VI. Save as provided in these rules or in the exercise of recorded rights, no timber or other forest-produce shall be felled, sawn, cut, converted, collected or removed in or from any protected forest without a license granted by the Commissioner of Coorg or some officer empowered by him in writing in that behalf. No such licenses shall be issued in contravention of these rules or except on payment of the rates payable for passes issued under Revenue Rule 315 or such other rates as the Chief Commissioner may prescribe.

VII. All timber or other forest- produce removed from a protected forest may be stopped in transit by any Forest, Revenue or Police officer and all persons in charge of such timber or other forest product shall be bound to produce any license which may have been granted to them under these rules when called upon to do so by such officer.

Devarkadus

VIII. Save in the exercise of recorded rights no timber, wood branches, grass or other forest-produce shall be removed from any Devarakadu:

Provided that public officers may, with the permission of the Commissioner, remove such stone or gravel as may be required for the repair of public roads or for other public purposes.

IX. In the exercise of recorded rights, firewood and materials required for the election of temporary pandas may be taken from any Devarakadu without previous permission, but timber shall not be felled except under a license granted free of charge by or by order of the Commissioner.

Uruduves

X. In uruduves, the exercise of recorded rights to remove the branchwood of unreserved trees for firewood, or other forest produce for *bona fide* domestic or agricultural purposes shall, in the circumstances stated in Rule III, be subject to conditions to be prescribed by the Commissioner, with the previous permission of the Chief Commissioner.

XI. The removal from Uruduves of timber or bamboos for building purposes is prohibited except under a written license granted by or by order of the Commissioner, Who may make free grants up to the limit of (a) Rs. 20 in value to individual ryots and (b) Rs. 100 in value and subject to an aggregate of Rs. 1000 per annum where the grant is required for public purposes by the village community or a section thereof ;

Provided (1) that he is satisfied that such a grant is really needed and that a reasonable period of time has elapsed since the applicant has received a similar grant ; (2) that sandal, teak, biti, poon, and ebony shall in no case be granted except on payment seigniorage at the rates from time to time fixed for the sale of forest-produce from reserved areas under the control of the Deputy Conservator of Forests.

(8) ***Published in The Coorg Gazette, of September 1, 1930 at page 94 of part I. Bangalore, the 30th August 1930 and reproduced in " The Coorg Forest Manual " printed at Government press Coorg in the year 1957 at page 1.***

No.120.

In exercise of the power conferred on him by Sub Section (3) of Section 1 of the Indian Forest Act, 1927,(XVI of 1927) the Chief Commissioner is pleased to extend the said Act to the Province of Coorg.

G.LOCH, Major,
Secretary to the Chief Commissioner.

Orders of Government of Karnataka

PROCEEDINGS OF THE GOVERNMENT OF KARNATAKA.

Sub : Transfer of Devarakadu Lands in Kodagu District from Revenue Department to the Forest Department Orders regarding.

Preamble:

Devarakadu lands in the Kodagu District are sacred Forest usually assigned to some particular deity or temple. The privileges and rights, such as (extraction of firewood for temple worship, materials for the construction of pendals and with special permission, timber for repairing the temple, are allowed to the temple authorities while the villagers generally have the rights of way and water and also the facilities of grazing and of hunting especially during the 'Kail Muhurt and Hutri' Festival. No grants of Devarakadu lands are being made to the persons as is being done in the case of common paisary lands. These Devarakadu lands in Kodagu District vest in Government in the Revenue Department.

It has now come to the notice of Government that these Devarakadu lands have become susceptible for encroachment which would result in the defeat of the very purpose for which these Devarakadu lands were originally assigned. Therefore, it has become necessary to maintain these lands as Reserve Forest by transferring them to the Forest Department so that the Forest Department can develop and maintain these lands as Reserve Forest scientifically subject to preservation of the privileges and the rights of the concerned temples and the villagers.

ORDER NO. RD 104 LGO 79, BANGALORE, DATED: 26TH OCT. 1985.

After careful consideration of all aspects the matter Government in exercise of the powers under section 71 of the Karnataka Land Revenue Act 1964 and all other enabling powers in this behalf are pleased to order the transfer of All the Devarakadu Lands in Kodagu District from the Revenue Department to the Forest Department to maintain them as Reserve Forests under sections 4, 17 and 26 of the Karnataka Forest Act, 1963. This will be without prejudice to the traditional privileges and the rights of the temples and the villagers, referred to in the preamble.

2. The Deputy Commissioner, Kodagu District is directed to take further action to transfer the Devarakadu lands in Kodagu District to the Forest Department immediately so that the Forest Department can take further action as stated above.

3. This order issues with the concurrence of the Food and Forest Department and the Department of Law and Parliamentary Affairs vide their U.O. Note Nos. FFD 143 FAD 81, dt: 4-1-1982 and LAW 607 OPN 1/82, dt: 17-6-1983 respectively.

By Order and in the name of the
Governor of Karnataka

Sd/-
(K. KARUNKAR RAI)
Under Secretary to Government
Revenue Department.

Chronology of events on activities with regard to Sacred Groves

(1) Research activities undertaken by College of Forestry.

March 1997 - Initiation of work on sacred groves of Kodagu under the leadership of Dr. K.A. Kushalappa, I.F.S. (Rtd.) Chief Conservator of Forest through financial assistance from Department of Ecology, Environment and Forest Govt. of Karnataka.

January 1998 - Initiation of collaborative research work with Oxford Forestry Institute U.K. and College of Forestry, Ponnampet on "Role of Sacred Groves as Conservation Sites". This project aims at looking at tree, bird and fungal diversity in sacred groves and comparing it with adjoining coffee estates and reserve forests.

October 1998 - Preliminary report of the project submitted highlighting the distribution, size class, present status of sacred groves in Kodagu. Growing stock and regeneration studies undertaken in 35 sacred groves which are more than 10 acres in extent

October 1999 - Visit of Dr. K. C. Malhotra and Yogesh Gokhale, members working group of sacred groves of Indira Gandhi Rashtriya Manav Sangralay, Bhopal.

January 2000 - Participation in the National Workshop on Community strategies on the management of natural resources held at IGRMS, Bhopal. Presentation of the paper on sacred groves and participation of 13 member temple committee from Heggala and Mr. I. K. Kalappa, A.C.F. Virajpet in the workshop.

March 2000 - Visit of Dr. Chakravarthy, I.A.S. Director IGRMS, Bhopal to Kodagu. Discussions held with Mr. Ashwath I.A.S. Deputy Commissioner, Kodagu regarding proposed sacred grove festival.

May 2000 - IGRMS, Bhopal approves the proposal of funding sacred grove festival. Coorg Foundation, Kodava Samaja, Virajpet, Karnataka Forest Department, Kodagu Circle, Centre for Environmental Education join the College as co-sponsorers of the festival.

July 2000 - Various committees constituted for the festival. Preliminary meetings held to discuss the various issues.

August 2000 - The organising committee decides to involve legal expert who should prepare the ground work for the various legal issues related to sacred groves.

October 10-14 - Documentation teams from IGRMS and Paraichay document the different issues related to sacred groves of Kodagu. Local media highlight the event as curtain raiser.

(2) October 15th and 16th "Sacred Forests Festival (Devarakadu Habba)"

Venue: Kodava Samaj, Virajpet, Kodagu District, Karnataka.

Organisers:

7. **Forestry College, Ponnampet;**
8. **Center for Environmental Education, Coorg Field Office, Virajpet**
9. **Indira Gandhi Rastriya Manav Sangrahalaya, Bhopal**
10. **Coorg Foundation, Pollibetta**
11. **Kodava Samaj, Virajpet and**
12. **Karnataka Forest Department, Kodagu Circle.**

Participants :

a) **348 members of 85 temple committees of sacred forests from three Taluks of Kodagu**

b) **38 scientists and researchers from various national and international institutions namely**

1. **Indian Statistical Institute, Calcutta**
2. **Centre for Ecological Studies, Bangalore**
3. **Oxford Forestry Institute, UK; ATREE, Bangalore**
4. **French Institute, Pondicherry**
5. **University of Madras, Chennai**
6. **University of Agricultural Science, Bangalore**
7. **University of Agricultural Sciences, Dharwad**

c) **12 government officials**

d) **22 community leaders**

e) **67 students from various local colleges**

f) **109 artisans associated with the tradition and**

g) **34 representatives of the media**

Inaugural session : (15th)

1. **Ms.Shyamala Krishna, coordinator,CEE Delhi - inauguration of traveling exhibition 'Devovan" by IGRMS, Bhopal.**
2. **Sri.Vasu Nanjappa – President, Kodava Samaja, Virajpet – inauguration of festival**
3. **Sri.K.P.Uthappa, of Coorg Foundation - Chaired**

4. **Dr.N.A.Prakash Director of Instructions (IC), Forestry College, Ponnampet – Co chaired**
5. **Sri. Anur Reddy, I.F.S. Conservator of Forests, Kodagu – Keynote address**
6. **Dr.K.C.Malhothra, Indian Statistical Institute, Calcutta – addressed**

Technical Session: (15th) **The inaugural was followed by a technical session wherein researchers working in the field of sacred forests presented their research findings. There were six presentations.**

Prof. K.C. Malhotra, **Anthropologist, Indian Statistical Institute, Calcutta, presented a paper "An overview of scared traditions in India".**

Mr. Yogesh Gokhale, **Research Scholar, CES, Bangalore, presented a paper on his ongoing research work in Uttara Kannada district; Karnataka State titled "Sacred Forests of Western Ghats of India with special reference to Uttara Kannada".**

Dr. C.G. Kushalappa, **Associate Professor, College of Forestry, Ponnampet, presented his work of sacred forests in Kodagu district titled "An overview of sacred forests of Kodagu district".**

Mr. Shonil Bhagawat, **Research Scholar, Oxford Forestry Institute, UK, presented a research paper on the "Biodiversity and conservation of Cultural Landscapes in Coorg".**

A research paper titled "Devarakadus: Conservation for posterity or confiscation as property?" was presented by Dr. M.A. Kalam, **Professor, Department of Anthropology, University of Madras.**

"Sacred Forests of Kodagu: Social and Cultural Issues" was presented by Mr.M.G.Nagaraj **and** Dr. M.G. Chandrakant, **Professor and Head, Department of Agricultural Economics, UAS, Bangalore.**

Afternoon Session : (15th)

Documentation of information from all the members of the temple committees chaired by Dr.K.A.Kushalappa , I.F.S. Retd. Chief Conservator of Forests.

Morning Session : (16th)

1. **Discussions of Community Sub Committee – Chaired by Sri.Mathanda Monnappa, President , Akhila Kodava Samaja**
2. **Discussions of Resource Sharing Sub Committee – Chaired by Sri.I.K.Kalappa, ACF, Virajpet**

3. Discussions of Legal Sub Committee – Chaired by Sri.K.G.Uthappa, Advocate.

Afternoon Session : (16th) **Interaction Session**

Dr.K.A.Kushalappa, I.F.S. Rtd. CCF - - Chaired

Sri.R.K.Srivastava, I.F.S., DCF, Virajpet , Sri.Shekar I.F.S., DCF, Madikeri and

Sri.I.K.Kalappa, ACF, Virajpet - interacted with members

Summary of Recommendations of the sacred forest festival.

10. Devarakadu should not be considered as a means for generating revenue, but should be conserved as an important element in the bio-cultural landscape.
11. Existing temple committees and community leaders will initiate the process of forming a federation of the committees with the support of the working group on Devarakadu for conservation of the Devarakadu tradition.
12. The community leaders will ensure the furtherance of cultural traditions of the respective communities with respect to Devarakadus.
13. Forest department in consultation with temple committees will devise a mechanism for the joint management of Devarakadus.
14. Forestry College Ponnampet will take an initiative in establishing a working group involving the government, NGOs, community leaders, researchers, academicians and media.
15. NGOs need to play an active role in creating awareness regarding conservation of Devarakadus in Kodagu.
16. Local colleges with participation of teachers and students should facilitate documentation of information on Devarakadus and actively participate in awareness generation programmes.
17. Media should highlight the success stories, issues on conservation policies as well as flaws in the management and conservation of Devarakadus in Kodagu.
18. The illegal release of Devarakadus by Revenue Department and all encroachment should be evicted by the Forest Department with the assistance of the temple committees. The legal committee may file PIL for wrong release of Devarakadus.

(3) Drafting of the JFPM – D

A working group consisting of the following persons was formed for the work of preparing a scheme with regard to Devarakadus and other protected forests of Kodagu District, on the lines of Joint Forest Planning and Management pertaining to Village forests, which is in existence.

Sri.Anur Reddy, I.F.S., Conservator of Forests, Kodagu

Dr.N.Swami Rao, D.I., Forestry College, Ponnampet

Dr.K.A.Kushalappa, I.F.S. Rtd.C.C.F

Sri.Raj Kumar Srivastava, I.F.S. Deputy Conservator of Forests, Virajpet

Sri.Shekar, I.F.S.,Deputy Conservator of Forests, Madikeri

Dr.C.S.P.Patil, Professor, Forestry College, Ponnampet

Dr.C.G.Kushalappa, Associate Professor, Forestry College, Ponnampet

Dr.K.T.Prasanna, Associate Professor, Forestry College, Ponnampet

Dr.Ramakrishna Hegde, Assistant Professor, Forestry College, Ponnampet

Sri.I.K.Kalappa, Assistant Conservator of Forests, Virajpet

Sri.Ganapathy, Assistant Conservator of Forests, Madikeri

Sri. Vijay Ranjan Singh, I.F.S. Assistant Conservator of Forests, Thithimathi

Sri.K.R. Babu, Centre for Environment Education, Virajpet

Sri.Shonil Bhagawath, Research Scholar, Oxford Forestry Institute, U.K

Sri.Claude Garcia, Reasearch Scholar, French Institute, Pondicherry

Sri.K.G.Uthappa, Advocate, Gonicoppal.

1. **2.11.2000** - I meeting - at the Office of the assistant Conservator of Forest, Thithimathi chaired by Sri.Anur Reddy, I.F.S. Conservator of Forests, Kodagu where the modalities with regard to the scheme were discussed.

2. **15.12.2000** – II meeting at the Forestry College, Ponnampet presided by Dr.N.Swami Rao, D.I., Forestry College, Ponnampet when the first draft of the scheme JFPM – D was presented by Sri.K.G.Uthappa, Advocate.

3. **18.12.2000** – III meeting at the Office of Deputy Conservator of Forests, Virajpet presided by Sri.Raj Kumar Srivastava,I.F.S. Deputy Conservator of Forests, Virajpet, when the second draft was scrutinised.

4. **6.1.2001** - IV meeting at the Forestry College, Ponnampet presided by Dr.C.S.P.Patil, Professor, Forestry College, Ponnampet when the second draft was again scrutinised.

5. **8.3.2001** – V meeting at the Office of Conservator of Forests, Madikeri presided by Sri.Anur Reddy,I.F.S. Conservator of Forests, Kodagu, when the third draft was scrutinised and approved for presentation before the community leaders, Temple Committee Members at the meeting on 17.3.2001.

6. **21.3.2001** - VI meeting at the Office of Conservator of Forests, Madikeri presided by Sri.Anur Reddy, I.F.S. Conservator of Forests, Kodagu, when the final draft after the amendments suggested at the meeting dated 17.3. 2001 was incorporated, scrutinised and approved.

7. **2.4.2001** – VII meeting at the Office of Deputy Conservator of Forests, Virajpet presided by Sri.Raj Kumar Srivastava,I.F.S. Deputy Conservator of Forests, Virajpet, when the mode of final presentation of the draft was discussed.

8. VII meeting at the Office of Deputy Conservator of Forests, Virajpet presided by Sri. Raj Kumar Srivastava, I.F.S. Deputy Conservator of Forests, Virajpet, when the final draft of the scheme JFPM – D is got ready for presentation.

(4) Meeting of the Leaders of the Communities, Office bearers of various Temple Committees within Devarakadus, Environment Experts, NGOs, Members of the media on 17.3.2001.

Venue : Kodagu Gowda Samaja, Madikeri
Organisers:

1. **Karnataka Forest Department, Kodagu Circle.**
2. **Forestry College, Ponnampet;**
3. **Center for Environmental Education, Coorg Field Office, Virajpet**
4. **Indira Gandhi Rastriya Manav Sangralaya, Bhopal**
5. **Coorg Foundation, Pollibetta and**
6. **Kodagu Gowda Samaja, Madikeri**

Inaugural Session :

1. Air Marshall K.M.Cariappa, **President Coorg WildLife Society, - inauguration of exhibition by CEE, Virajpet.**
2. Sri.T.M.Nanaiah **– President, Kodagu Gowda Samaja, Madikeri – inauguration of programme.**
3. Sri. Anur Reddy, **I.F.S. Conservator of Forests, Kodagu – Presided**
4. Sri.A.K.Monnappa, **I.A.S., Director, Land Survey and Settlement, Government of Karnataka – Released provisional lists of Sacred Groves of Kodagu in Virajpet and Madikeri Divisions prepared by Forest Department**
5. Dr.N.Swami Rao, **D.I., Forestry College, Ponnampet – Addressed**
6. Sri.Raj Kumar Srivastava, **I.F.S. DCF, Virajpet,** Sri.Shekar, **I.F.S. DCF, Madikeri and** Dr.C.G.Kushalappa, **Associate Professor, Forestry College, Ponnampet – Compeered**

Technical Session : - Presentation of Joint Forest Planning and Management Scheme pertaining to Devarakadus and other protected forests of Kodagu : JFPM – D

1. Sri.K.G.Uthappa, Advocate and legal adviser, working group on sacred groves - **Presented JFPM – D,** proposed scheme to save the Sacred Groves of Kodagu and explained its provisions in detail.
2. Dr.C.S.P.Patil, Professor, Forestry College, Ponnampet – Chaired
3. Sri.K.R. Babu, Centre for Environment Education, Virajpet & Sri.Ganapathy, ACF, Madikeri - Raporteers

Afternoon Session : Interaction Session

1. **Sri. Anur Reddy, I.F.S. Conservator of Forests, Kodagu - - Chaired**
2. **Sri.K.G.Uthappa, Advocate, Sri.I.P.Kalappa, ACF, Virajpet and Dr.Ramakrishna Hegde, Assistant Professor, Forestry College, Ponnampet - interacted with members**

and the JFPM – D draft was discussed, deliberated and passed unanimously with minor amendments and Sri. Anur Reddy, **I.F.S. Conservator of Forests, Kodagu was requested to kindly submit the same after effecting proposed amendments to the Government of Karnataka for further needful action.**

Appendix IV

EFFORTS TO PREVENT THE ANNUAL RITUAL HUNTING OF WILD ANIMALS AND BIRDS IN THE OUTSKIRTS OF BANGALORE

A Priliminary Report by s. Sridliar U.K Paresh & S. Sudheendra

Institute for Natural Resources Conservation,'
Education, Research & Training (INCERT)
No. 10, Sirur parkaik, B Street, Seshadripurarn, Bangalore -560020

We submit the folio wing first-hand report on the annual ritual killing of wild animals and birds in some villages situated in Bangalore and the efforts taken by the NGO's in preventing the same.

Last year we learnt about an annual, well organised large scale ritual hunting of wild animals and birds in Bharge Bettahalli, Hulikunte, Soladevanahalli & Voddarahalli and reported the same in the media,

Rituals at Voddarahalli:

The ritual hunting was held on 8th January 1998 at Voddarahalli and Machohalli villages, which are located around 18 kms. South West of Bangalore, off Magadi Road. Armed with a Video camera and two still cameras we went on the 8th January 1998 to witness and record the brutal killings, procession of the hunted animals and birds, the ritualistic appeasement of the local deity and the auctioning of the slain animals and birds.

The hunting rituals began early in the morning and by afternoon, small groups armed with scores of shot guns and country made rifles (unlicensed **?**) started returning in processions, to the accompaniment of music and drums with their respective quarries, neatly tied to the poles. The first group had succeeded in hunting a Jungle cat (*Felis chaus)* with a peppered shot aimed at its belly, with numerous pellets piercing its vital organs. This Jungle cat was brought in a procession with its hind legs tied to a pole by

making a hole in the right leg between the tibia and fibula and forcing the left leg through the hole thus created, whilst the hapless animal was still moaning in agony. This Jungle cat was brought along with a just slain Grey Partridge, also tied to the same pole, to the Betaraya Temple of Voddarahalli village in a ritualistic manner.

Soon other groups arrived with their respective hunted animals and birds tied to poles and sticks with much funfare, music and dance. The animals included - a pair of Jackals, which were hounded out of their dens and cruelly shot on their flanks with shot guns, scores of wild Blacknaped hares with broken fore-legs; some still alive and pregnant with several Mongooses, scores of Fruit bats, several Wild birds such as the Europian Marsh Harrier, Blackwinged Kites, Herons, Coucals, Doves, Tree Pies etc., All together around 100 animals and birds were killed on that day.

The most poignant scene was that of a pair of Egrets which were very much alive but their wings were broken and dangling. The legs of the egrets were impaled on a long stick and were painfully danced to death by shaking the pole violently from side to side to the feverish accompaniment of the music and drums.

Participating Villages:

On 8.1.98 hunters from the following villages participated in the hunting rituals of Kolu Bete at Voddarahalli.

a. **Voddarahalli** villagers organised this ritual hunting and they brought Blacknaped Hares to the temple.

b. **Ravutanahalli** villagers were most successful since they had bagged maximum number of animals and birds, they hunted a pair of Jackals, Marsh Harrier, Blackwinged Kite, three Mongooses, six Blacknaped Hares, four Fruit Bats, four Egrets, two Pond Heroi one Tree Pie, one Little Brown Dove, Coucal or Crow Pheasant etc.,

c, The hunters of **Hulegowdanahalli,** from Nelamangala Region
~ brought one Jungle Cat and a Grey Partridge.

d. The **K.G. Lakkenahalli,** villagers brought five Hares, a couple of Egrets and a Wild

Cat.

e. Ganagondanahalli hunters, specialise in hunting hares. They brought seven Blacknaped Hares, and one Shikra, a bird of prey. These hares are hunted by vertically fixing the net which is about 200 meters long and 4 feet high, in a strategic point and the hunters form a semi circle and start chasing the hares towards the net by beating drums, and firing in the air. The startled Hares run away from the hunters and towards the net and get entangled in the net. Then the hunters at the other end awaiting with sticks, charge on the hares and break their forelimbs.

We have videographed the above narrated sequence which has a duration of 23 mts. in our cassette. We are exploring ways of building pressure to put an end to this barbaric, act in the near future.

The Calendar of Events:

Every year hundreds of wild animals and birds are hunted in a ritualistic manner on pre-designated dates of December (22nd and 29th) and January (1st and 8th) in four villages on the outskirts of Bangalore

1) The first hunting is popularly called as the **"Hoge Bete" or "Smoke** Hunting" which takes place at a village called as **Bharge** Bettahalli, near Tumkur Road after Marenayakana Halli. This is perhaps the biggest ritual hunting festivity of all the four huntings. A large number of wild animals and birds were killed which included a couple of Wild Boars and a Porcupine. (this ritual hunting was held on **22nd Dec. 1997).**

2) The second hunting was held at a village called Hulkunte on 29th December 1997. This hunting is called as **Hulikunte Bete Jatre** *(Hulkunte Hunting Festival).* This village is off Magadi Road around 20 km. Southwest of Bangalore.

3) The third hunting was held at **Soladevanahalli** on 1st Jan 1998, which is about 7 km. from Oddarahalli after Sonte Koppa near Nelamangala. Many wild animals were sacrificed.

4) Kolubete is the hunting of wild animals using sticks and poles.

This was videographed by us at **Voddarahalli** (Held on 8th **Jan. 1998),** which is around 18 km. Southwest of Bangalore off Magadi Road.

Promotion of Hunting:

This ritual is being promoted by vested interests to encourage and enlist more persons to take up poaching as a lucrative profession. Infact the promoters paid Rs. *4,2001=* to the poachers for the pair of Jackals.

The concerned forest officials who are duty bound, have done precious little to stop this evil practice.

There is no effort whatsoever by the Forest Department officials to. protect the animals and birds listed under various schedules of the Wildlife Act of 1972. Infact there has been a quantum leap & spurt in poaching and smuggling of animal skins etc., of late in the State. Most. instances of violation of the acts are hushed up and those that are reported are not persued to their logical end.

The Jackals were earlier treated as Vermins. in the Wildlife Protection Act of 1972. However after much persuation the Jackal has now been treated as a protected animal and is shifted to Part 2 of Schedule II along with Panther.

Efforts to prevent the ritual hunting for the season December 1998 – January 1999

Field Campaign

A team of animal welfare NGOs led by INCERT, appraised the Principal Chief Conservator of Forests (Wildlife) and the Inspector General of Police (Food & Forests) about the practice of ritual hunting of wild animals and birds in Bangalore District and the need to take appropriate measures to prevent the ritual huntings planned during December - 1998 and January - 1999.

Accordingly, the PCCF (Wildlife) convened a meeting on 4.11.98 at Aranya Bhavan and appointed a team which included authorities from' the Forest Department, Police

Department, and representatives from INCERT, CUPA, PFA, BWC, SPCA and KPDS, to visit the fifty odd villages which are practising the ritual hunting and to speak to the concerned villagers, their leaders and promoters of ritual hunting, the priests of the temples, the gram panchayat members and school teachers.

The team comprising of fifty members under the leadership of Sri. M.C. Narayan Gpwda, Superintendent of Police, Bangalore Rural; Sri. Nagaraj Hampole, DCF, Bangalore Rural; Sri. K.S. Anand, DCF, Task Force, Circle Inspectors of the respective areas and the NGOs have started visiting the villages. The team visited the villages in Susalu Hobli on 17th November, and the villages situated around, Hulikunte on 18th November and the villages surrounding Jaknahalli & Soldevanahalli on 19th November 1998.

The villages around Voddarahalli on Magadi Road were covered by the team during the second phase of the field campaign which started on 26th November 1998.

The Forest Department had printed pamphlets for hand distribution and posters for pasting at vantage points around these villages. The pamphlets contained the information that the ritual hunting of animals, and birds is illegal and against law and would entail punishment upto 6 (six) years if convicted or fine upto Rs. 25,000/- or both. The' pamphlet

also contained the information about the ecological and the beneficial roles of these wild animals and birds in biocontrol of rodents, insect' pests, pollination, seed dispersal etc., and how depletion of wildlife has aggravated the problems. The pamphlets arid posters dearly mentioned that there is no opposition to the celebration of the Jatra as such, but hunting of animals and birds is illegal. The response to this field' campaign was overwhelming.

Hurdles at Hulikunte:

One of the biggest hunting rituals is being held every year at Hulikunte village, on Doddaballpur Dobspet road (l6kms. from Dobspet). Every year, wild animals and birds are hunted in large numbers and brought by the hunters belonging to fifty villages, to the temple at Hulikunte. The rituals were planned for 24th December 1998. The team visited

this village and addressed a large gathering of villagers and pleaded with them to desist from killing the wild animals and birds. A leader of the village also addressed the villagers. He said that the hunters are all committed to go ahead with the ritual hunting on the designated day to please God, come what may. The villagers greeted his speech with cheers and applause. This'development was viewed with grave concern. But the authorities assured of adequate measures to ensure that the animals are not hunted or brought to the temples on the day of the Jatra.

It was hoped that wisdom would prevail among the ritual hunters and the practice would come to an end sooner than later.

The hunting Jatras — December 1998 & January 1999

Apakanahalli - Hoge Bete:

The field campaign was ended with a final visit to Apakanahalli on 16th December 1998, with the local villagers getting ready for the Jatra on 17th December 1999.

The Jatra started early in the morning and the diety was taken in a procession to the forest temple. The Jatra was on a much lower key ,compared to other years and only three groups of hunters came to the temple with their hunting sticks and swords. No armaments such as rifles and shotguns were brought. Mr. Sudheendra and Mr. Sanjay were the observers. Intriguingly the priest went to the edge of the forest with the holy water on one occasion. Police and forest guards were present in good numbers.

It was overheard by the observers that a few hunters had indulged in hunting and taken the animals directly to their respective villages.

Hulikunte Bete Jatre:

The biggest hunting Jatre for the season was held on 24th Dec. 1998 at Hulikunte, amid tight security. There were some anxious moments when, Mr. Sudheendra and Mr. Sanjay suspected some hunting activity near Kattihosahalli. Some of the hunters approaching the temple were apparently incensed at the turn of the events. Only four groups of hunters came in good numbers to offer their prayers but there was tangible evidence of some hunting having taken place. Security was provided by both the police and the Forest

Department.

Jakkannahalli Jatre:

Was held on 27th December 1998. The hunters split themselves and visited the adjacent village Minnapura' also. On account of strike by govt. employees their was a slender attendance of forest guards. There was no direct evidence of any hunting at Jakkannahalli.

Soladevanaha1Ii Bete Jatre:

The Jatra was held on 31st December 1998. Due to some confusion apparently about the jurisdiction the police personnel were not deployed at Soladevanahalli. The hunters were apparently livid and were seen criticising the forest guards for preventing the hunting rituals.

One hunter with a rifle escaped leaving behind a boy with a spotted dove which he had shot, and lot of ammunition, which were confiscated by the officials of Forest Department.

One group of hunters from Yertala village had brought one jungle cat and a black naped hare to the temple as witnessed by the observer, Mr. Uttam Chand Kataria of KPDS. A politician was also seen vehimently endorsing the hunter's views and said that the practice of ritual hunting of wild animals and birds will resume in the coming years. Some hunters were seen carrying their rifles in the forests adjoining Soladevanahalli.

Voddarahalli Jatre:

On 7th January 1999 the Jatra was held at Voddarahalli. The hunters were afraid of openly defying the Wildlife (Protection) Act of 1972, and the campaign seemed to have its effects here. There was hardly any activity near the temple compared to last year. However, Ravutanahalli villagers celebrated the ritual in their own village by hunting down two black naped hare and the K.G. Lokkanahalli villagers had brought a black naped hare to their village as witnessed by Mr. P. Sanjay and Mr. G. Surya Prakash of CUPA.

Some of the hunters were apparently drunk and were seen criticising the NGOs for stopping this age old practice.

Appendix V

List of the Persons to whom the Draft Report on Culture and Biodiversity was sent

1 Nandini Sundar, New Delhi
2 P . Bhattacharya, IIFM, Bhopal
3 D.Debnath, IIFM, Bhopal
4 P.C.Kotwal, IIFM, Bhopal
5 V. Vijay Kumar, IIFM, Bhopal
6 Amithab Pandey, IIFM, Bhopal
7 Bharathi Joshi, IIFM, Bhopal
8 B. K. Tewari, NEHU Shillong
9 R. S. Tripathi, NEHU, Shillong
10 S. K. Bassik, NEHU, Shillong
11 Rauf Ali, Andamans
12 Madhav Gadgil, CES, IISC, Bangalore
13 N. H. Ravindranath, CES, IISC, Bangalore
14 K. S. Murali, CES, IISC, Bangalore
15 Utkarsh Ghate, FRHLT, Bangalore
16 P. K. Das, Utkal University, Bhubaneshwar
17 Anindo Chatterjee, Development-Alliance, N.Delhi
18 Farhad Vania, Development-Alliance, N.Delhi
19 Sreejeeta Dutta, ERM, New Delhi
20 Neena Singh, ERM, New Delhi
21 T. K. Moulik, ERM, New Delhi
22 Sujit Som, IGRMS, Bhopal
23 Ranjan Panda, MASS, Orissa (NGO) .
24 W. Stanley, WIDA, Orissa (NGO)
25 Nafisa, Laya, Vishakhapatnara (NGO)
26 Orissa Development Action Fourum (ODAF), NGO, Bhubaneshwar
27-36 ODAF has sent copies to its partners
37 V. K. Bahuguna, MoEF, New Delhi
38 A. Ahmedulla, MoEF, New Delhi
39 B. Mohan Reddy, ISI, Calcutta
40 T. S. Vasulu, ISI, Calcutta
41 Manoranjan Ghosh, ISI, Calcutta
42 Anurab Gowami, ISI, Calcutta
43 Doris Capistrano, Ford Foundation, N. Delhi
44 Girija Godbole, Jeevan Sanstha, Pune (NGO)
45 Abhik Gupta, Silchar, Assam
46 Ashish Kothari, NBSAP, Pune
47 Seema Bhatt, NBSAP, Delhi
48 Ajay S Mehta, New Delhi
49 K. G. Uthappa, Advocate, Coorg, Karnataka
50 C. G. Kushalappa, Forestry College, Coorg, Karnataka
51 Sudipto Chatterjee, WWF, N. Delhi

52 Ritesh Kumar, WISA, New Delhi
53 R. L. Trisal, WISA, New Delhi
54 Th. Manoharan, LDA, Manipur
55 A. Bidyabusan Singh, LDA, Manipur
56 Smithu Kothari, New Delhi
57 Ram Wangkheirakpam, New Delhi
58 K. Sudhakar, World Bank, New Delhi
59 Shonil Bhagwat, Oxford, U.K.
60 Bob Hayden, Pittsburg Univ. Pisstburg, USA
61 R. Brook Thomas , Univ. of Massachusts, USA
62 G. Gabriel, ICIMOD, Nepal
63-69 All members of the Thematic working Group on Culture and Biodiversity.
70 Sandeep Sabharval, NDDB, Ananel
71 MPVS, Bhopal
72 Asghar Ali Engineer, CESS, Mumbai
73 Ramesh C Sharma, Garhwal University, Srinagar
74 Sanjeev Ghotge, Pune
75 Pramod Medele, IRDWSI, Semilignda
76 P. Kumar Khora, IRDWSI, Semilignda
77 Mohan Hontal, IRDWSI, Semilignda
78 Hemalatha Hontal, IRDWSI, Semilignda
79 B.R. Bagh, IRDWSI, Semilignda
80 Gideon Soren, IRDWSI, Semilignda
81 Rajendra Dhobal, MAPCOST, Bhopal