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Role of Community in Conservation of Biodiversity: a Case Study in Khasi Hills of Meghalaya, India

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Abstract. The Sacred grove of Mawphlang in the East Khasi Hills district of Meghalaya, India forming an integral part of the Shillong plateau is a unique example testifying the role played by the local Khasi community in biodiversity conservation. In this context this sacred grove offers a very interesting study on the genetic resources, ecological status and the level of interaction between man and his environment. Sacred grooves are repositories of rich biodiversity and most often represents the climax vegetation of the area. For the purpose of this study it is conceived that this sacred grove offer an ecological advantage as a control site. A report on the flora and fauna of this sacred grove and the threats prevailing presently are presented in this paper.

Keywords: Flora, fauna, sacred grove, management, Mawphlang, Meghalaya

Introduction

The sacred groves of Meghalaya are located in the public lands set aside for religious purpose under the traditional land tenure system. It is an unpardonable crime to cut down trees or even pick flowers and fruits from these sacred groves except for cremation and religious purposes, that too, with the permission of the 'Lyngdoh' (Priest). These sacred groves are divided into three categories, depending on the places where they are located. In places ruled by the Lyngdoh (Priest) the sacred groves were called Law Lyngdoh. In place where the traditional religion (Niam trai) plays a major role, the sacred groves were called 'Law Niam' and in places where the village is ruled by a village Headman, the sacred groves were called 'Law kyntang'. All these sacred groves have the same status although their names are different. These sacred groves are closely related to the social and cultural life of the people and a number of rites, rituals and religious ceremonies have been associated with them.

Since there is minimal exploitation of these groves, they are a home to a number of flora and fauna, which are endangered and as such are very high in biodiversity. Therefore they are the best habitats for the reproduction of species and serve as propagates required for colonization of wastelands and fallow land. They also serve as important control sites for any ecological study. Although sacred groves have played a vital role in environmental and biodiversity

conservation, many research workers of the region have not acknowledged their importance. However, only the Mawphlang and Cherrapunjee sacred groves have attracted the attention of researchers and tourist alike.

Rationale of the Study

Sacred groves represent a long tradition of environmental conservation based on ecological principles practiced by the indigenous people of Meghalaya since time immemorial. Since it was very difficult to make the common man understand the importance of the environment and ecology, our forefathers and the heads of these tribes probably devised a simple way for their conservation and perpetuation by attaching various religious beliefs and taboos with them. As time passed, sacred groves became part of the cultural life of the people in the entire Khasi and Jaintia Hills. In this context, sacred groves offer very important information on their genetic resources on site, within the natural or original ecosystems in which they occur, their ecological status and the level of interaction between life forms (Mc. Neely, 1994; UNEP, 1995 and Edwards et al. 1998). Sacred groves are repositories of rich biodiversity and most often represent climax vegetation of the area (Ramakhrishnan, 1985; Tripathi et al. 1995; Jeeva et al. 2005). For the purpose of this study, it is conceived that sacred groves offer an ecological advantage as a control site while others are taken as experimental sites. In the hills of Meghalaya, sacred groves reflect and epitomise a tradition, lifestyle and belief which is intrinsically linked to nature and its conservation (Myers, 1988; Shiva, 1992). This indigenous practice is very old among the Khasis, as it is conceived, developed and perpetuated by them since time immemorial and is closely linked to their religious rituals, beliefs and socio-cultural activities (WRI, 1992; Kothari, 1995).

Status of Sacred Groves in Meghalaya

The sacred groves are scattered all over the districts of the Khasi and Jaintia Hills. Although there is a legal provision for registering all the sacred groves, private plantations, private forests etc. with the concerned authorities of the Autonomous District Councils, yet, there is no complete and comprehensive list of sacred groves available with the state government or the Autonomous District Council. However, the Botany Department of the North Eastern University has documented 79 sacred groves in the state of Meghalaya during the year 1975. The individual areas of the Groves vary from approximately 1 to 550 hectares. Out of the 79 sacred groves, only 7 belong to the undisturbed category. The rest have been exploited by man both for his need and greed. The sacred grove at Mawphlang is still free from human interference or any ecological disturbance.

Improvement of the Environment

The sacred groves in the state cover an estimated area of about 10,000 hectares. Most of the major sacred groves are located on the catchment areas of important rivers and streams of the state. About 60 of them, with an area of about 6,500 hectares are located at the source of perennial streams. For example, the Lum Shyllong Sacred Grove is the source of as many as 10 streams. Since the time the city of Shillong came into being, the water supply for human habitation solely depends upon the source from the Lum Shyllong Sacred Grove, till man's need and greed disturbed the beautiful pine forest on the Shillong plateau.

Legal Status

Sacred groves enjoy adequate legal support as they are covered by the United Khasi and Jaintia Hills Autonomous District (Management and Control of Forests) Act, 1958. These acts were passed in pursuance of paragraph 11 of the Sixth Schedule of the Constitution of India and were extended to all the forest land except for the areas which are under the direct control of the state Forest Department.

As per the above stated Act, sacred groves are to be managed and controlled by the Lyngdoh (priest or religious head) or other person(s) to whom the religious ceremonies for the particular locality or village are entrusted and in accordance with the

customary practices and rules framed by the Executive Committee of the concerned Autonomous District Council from time to time. As per section 7 of the above stated Act, no tree(s) shall be felled in these sacred groves without the sanction of the concerned Chief Forest Officer or any other officers duly authorised by him in writing. Section 9 of the act states that "no tree/trees shall be felled or removed from the Law Lyngdoh, Law niam and Law Kyntang (Sacred groves) except for purpose connected with the religious function or ceremonies recognized and sanctioned by the Lyngdoh (priest) or other persons in accordance with section 4 (b)". Provision for registration of Law Lyngdoh, Law niam and Law kyntang with the concerned Autonomous District Council has been provided in the United Khasi Jaintia Hills Autonomous District (Management and Control of forests) Rules, 1960.

Description of the Study Site

Mawphlang was a small village, when the British established their head quarters at Cherrapunjee or Sohra in the erstwhile Khasi and Jaintia Hills. The Mawphlang sacred grove covers an area of about 75 hectares and is situated at an altitude of 1842 meters MSL and located at 250 34' N Latitude and 910 56' E Longitude. It is at a distance of about 25 kms away from the state capital of Meghalaya, Shillong. The grove is a thick forest patch surrounded by a degraded rocky landscape covered by grasses.

Soil

The soils of Khasi Hills in general are derived from the parent rock material which is composed of mainly gneiss, schist and granite. The soil of this grove is sandy loam in texture and it is acidic in nature (P^H 4.5-5.3). The mean organic matter and the total nitrogen contents are 6.25% and 0.31% respectively.

Climate

The study area experiences a temperate type of climate with an average annual rainfall of about 2200mm with maximum rainfall occurring during the months of May-September. The mean maximum temperature ranges between 15-25 0C and mean minimum temperature ranges between 5-180 C. Relative humidity ranges from 25% during the winter to 88% during the summer season.

Forest Types

The forest type of this area is of an evergreen type.

Floristic Composition

Trees - *Taxus baccata, Rhododendron arboreum, Myrica esculenta, M. nagi, Schima khasiana, Quercus griffithi, Q. dealbata, Q. glauca, Pyrus pashia, Castanopsis kurzii, Prunus undulata, Corylopsis himalayana, Engelhardtia spicata, Ficus nerifolia, Camellia caduca, Exbucklandia populnea, Litsea* spp.

Shrubs - *Berberis wallichiana, Mohonia pycnophylla, Lyonia ovalifolia, Agapetes obovata, Sarcandra glabra, Daphne bholua, Sarcococca saligna, Elaegnus conferta, Osbeckia stellata, Eupatorium adenophorum, Lantana camara, Eurya japonica*.

Herbs - *Corylopsis himalayana, Manglietia insignis, Centella asiatica, Hypocharis spp, Taraxacum, Pieris ovalifolia, Sonchus asper, Houtuynia cordata, Cyperus rotundus*.

Epiphytic orchids - *Pleione praecox, Cymbidium elegans, Ottochilus fusca*.

Ground orchids - *Phaius tankervilliae, Spathoglottis pubescens, Paphiopedilum insigne*

Parasitic plants - *Balanophora dioica, Monotropa uniflora, Mitrastemon yamamotei*.

Rare plants - *Taxus baccata, Botrychium lanuginosum, Gnetum scandens, Rauvolfia densiflora, Anoectochilus sikkimensis, Sarcandra glabra*.

Faunal Diversity

Mammals - Among mammals the common species are, the Large Indian civet - *Viverra zibetha* (Linn), the Binturong or Bear cat -

Arctictis binturong (Rafles), the Civet cat - *Viverra megaspila*, the Pangolin - *Manis pentadactyla*, Porcupines - *Hystrix* spp, Flying foxes - *Pteropus giganteus* Brunnich, Flying squirrels, Microchiroptera, Foxes- *Vulpes* and other small mammals.

Birds - The avifauna of the area is quite rich and is represented by, Hoopoe - *Upupa epopa epopos longirostris* (Jerdon), Longtailed broad bill - *Psarisomus dalhousie dalhousie* (Jamieson), Scarlet minivet - *Pericrocotus flammcus speciosus* (Latham), Roller - *Coracias bengalensis affinis* (Horsefield), Blue throated barbet- *Megalima asiatica* (Latham), Red vented bulbul- *Pycnonotus cafer bengalensis* (Blyth), Himalaya black bul bul- *Hypsipetes madagasariensis pscoroides* (Vigors), Whistling thrush- *Myiphorneus cearuseus temminick* (Vigors), Drongo- *Dicrurus hotentotus* (Linn), Spotted fork tail - *Enicurcus maculatus* (Vigors), Thick-billed green pigeon- *Treron corcicrost nepalensis* (Hodgson), Red fowl- *Gallus gallus* (Linn), Turtle dove- *Streptophilia orientalis* (Latham), Red- yellow legged falcon- *Falco vespertinus* and other smaller species.

Reptiles - The common reptilian fauna are, Viper - *Trimerasurus manticola* syn *T. jerdoni* (Gunther), Python- *Python molurus* (Linn), Blind snake- *Typhlops* spp., Copperheads - *Elaphe prasiana* (Bylth), Red necked kulbak - *Rhadophis himalayana* (Gunther), and other species.

Fishes - The common ichthyofaunas are *Neolissocheilus hexagonolepis*, *Channa orientalis*, *C. punctatus*, *C. channa, C. murulius*, *Danio dangila, Garra lissorhynchus*, introduced fishes like *Cyprinus carpio communis* and other species.

Amphibians - The common amphibian fauna are, *Rana cyanophlictis* syn *Limnonectes cyanohlictis*, *Rana limnocharis* syn *Limnonectes limnocharis*, *Rana mawphlangensis*, *Hyla* spp, *Bufo melanostictus*, *Racophorus* sp. Ceacilians or Blindworms and other species.

Insects - A large number of sub-terranean, acquatic and terrestrial insects representing Coleoptera, Lepidoptera, Diptera, Hemiptera, Homopetra, Ephemeroptera, Odonata, Plecoptera, Orthoptera, Isoptera and other orders are yet to be listed in the future.

Management and Conservation

The sacred grove is maintained by the clan known as Lyngdoh Mawphlang and is under the overall care of the Lyngdoh or the priest of this clan who stays nearby this grove. The rituals are performed inside the sanctum sanctorum of the grove but now the frequency of such rituals is reduced. The village folk use the dead, dry and canker timber as fuel for cremation of the dead as well as for burning inside the grove but not for domestic consumption. The water source in the periphery of the groves is extensively used by the villagers for drinking and washing. This spring water is also the source of the Umiam-Mawphlang River, which flows to the southern plain of the Khasi Hills up to Shella area. There are very strict regulations for entry to this grove and permission will be only to tourists, local and students but with a strong warning not to pluck leaves, flowers, shrubs or any damage to be done to the grove. At present the clans are protecting the grove without any assistance from the government or any such agencies. Therefore, attempts should be made to help the present management authority to overcome financial constraint in terms of labour, watch and ward staff, fire-watchers, etc who can help in proper maintenance of the virgin grove.

Threats

The major ecological threats are socio-political changes, villagers migration to urban areas, shift from traditional and orthodox belief to other beliefs, lack of stringent and strict laws on administration and management of such areas, unregulated extraction of fuel wood by villagers from the nearby areas, free access by the villagers into the water sources located in the buffer area of the grove for washing purposes and lack of modern forestry management practices for such groves.

Future Plans

This grove can be easily placed or declared as Restricted area or Protected area, thus restricting all human activity in and around

the grove. To achieve this, the Lyngdoh or the caretaker and the local dorbar of this area should be properly empowered to enable them to protect this heritage site. Financial assistance may be provided for such protection works performed by authorized local bodies/organizations under the overall supervision of the local dorbar and the Lyngdoh.

1. Increasing of the buffer area by planting indigenous species, to act as biological fence for the Sanctum Sanctorum and minimum extraction should be allowed from the periphery of such an area.

2. Extraction, as is observed at present should be controlled, which can come by way of providing incentives in the form of subsidized rates for fuel, power, gas etc. by the State Government.

3. In line with the new concepts of Eco-tourism, entry fees be levied on all tourists, including scientist and researchers. It may be mentioned that prior permission be sought from the appropriate local authority, for researchers from outside (national and international) as part of the drive to control bio-piracy. Local guides may be required for accompanying the tourists visiting the Sacred Groves. These local guides may be initially trained and acquainted with the concept of Biodiversity Conservation.

Conclusion

Towards this end, the NEBRC, NEHU has already initiated discussion with local traditional institutions, durbars, youth organizations, State forest Department and Planning Board as part of the Cell's programme for mass awareness on Biodiversity Conservation.

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