

Social and Economic Linkages of Biodiversity Conservation: A Case Study of Ajeevali Sacred Grove

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Introduction

India harbors a rich diversity of religious and cultural practices. One such significant tradition is that of providing protection to patches of forests, termed as “sacred groves” (SGs) that are dedicated to deities or ancestral spirits (Malhotra *et al.*, 2001). SGs are managed by local communities through a wide range of management practices. Various taboos and restrictions for resource use on religious ground have prevented destruction of these forest patches. Some of these therefore support climax vegetation in near-virgin condition. SGs are biologically diverse ecosystems and serve many ecological functions.

One such Sacred Grove harboring a good dense stand of forest is in Ajeevali village, located in the Pune -Mumbai urban belt approximately 65 km from Pune city in Maval taluk. It lies in the catchments of Pavana dam. The forest consists of tall and large woody plants forming more than 90 % canopy. The collection of leaf litter, fuel wood and timber extraction, hunting and grazing in the grove has been banned traditionally. As a result the grove supports a diverse flora and fauna including some rare and endangered species.

Ajeevali Sacred Grove has been protected for “*Waghja*” a tiger goddess. The grove has a natural cave in which is situated the idol of the deity. The dominant species in the grove is *C. urens*. This palm species is commercially used for extraction of *maadi* (traditional local liquor prepared by fermenting phloem sap), which is a minor forest produce. The economic value of *maadi* extract from the

grove has been one of the reasons for it being protected against the external commercial pressures. It is therefore important to understand the entire management system through which the resource use from the grove is governed.

Study Area:

1. Physical Settings:

The grove- known as “*Ajeevali*”- lies between Pune -Mumbai urban belt (Figure 1), in the northern periphery of the Western Ghats - one of the 25 global biodiversity hotspots. The terrain in and around the village is undulating. A part of the village boundary overlaps with the Taluka boundary of Maval and Mulshi. The village is on a sloping hillside, one side being flanked by a steep cliff. The highest point is about 3000 feet AMSL. Average annual rainfall received by the region is approximately 4300mm.

The village lies in the catchment of river Pavana and is situated on the banks of backwaters of Pavana dam. The flatten areas of the village have been converted into paddy fields. Rice and Ragi are the two main crops in the village. Rice is grown in the flat planes while Ragi (*Eleusine coracana*) is cultivated by the cyclic *raab* (mature and dried *Strobilanthes callosus* on selected hill slopes is slashed and burnt every seven years and Ragi is cultivated) on the hill slopes. A Number of streams flow down the hill slopes forming the source of water for agriculture.

2. The Community:

The village consists of a single community of the Marathas and other communities like Katkari and Thakar are associated with it for their livelihood. Marathas have agriculture as the chief source of subsistence as almost all the land in the village is owned by them. Some people with larger land holdings hire tribals as agricultural laborers. Other sources of livelihood include sale of milk and *Maadi* extraction. A few of the individuals from certain families have migrated to neighboring town and cities in search of better income. They are employed as semiskilled, skilled workers various jobs such as vegetable market, transport,

factories, hotels etc. This trend of shifting to the cities for earning is commonly seen in the nearby villages as well and is increasing.

Katkari is a hunting gathering tribe who doesn't stay at one place for long. This tribe is very shy and does not usually mix up with outsiders. The Katkari settlement (*pada*) at adjacent village Shilim is approximately 40 years old. Katkaris spend most of their time in forest for hunting and gathering food. They are landless and practice shifting cultivation by leasing a piece of land. They also collect fuelwood from the hills for selling.

Forest Ecology of the grove:

The SG is situated at an altitude of approximately 800-840 m a.m.s.l. Approximately 8 ha patch of the grove where the goddess' idol is located is a good semi evergreen forest. The area surrounding the grove is a degraded secondary type of forest. The grove exhibits evergreen species like *Caryota urens*, *Mangifera indica*, *Syzigium cumini*, *Pongamia pinnata* indicating relatively less disturbance. Here the density is seen to be considerable with good canopy cover. A gradual change in the forest is seen from the village up to the grove, where sharp difference in the habitat is seen with sudden increase in the canopy and height of the forest. The forest consists of tall and large woody plants forming more than 90 % canopy. The collection of leaf litter, fuelwood, timber extraction, hunting and grazing in the grove has been banned traditionally. However extraction of *Maadi* from *Caryota urens* is allowed. *Maadi* is a popular local drink that is extracted commercially. *Maadi* extractors stay in a small hut constructed in the grove. The village has a temple trust managing the activities related to the grove. This grove is also facing some of the threats mentioned above such as decreasing religious belief, increasing commercial pressure from contractors for felling of trees, increasing monetary rewards for villagers to sell their land to outsiders etc.

Box No. 1 Biodiversity in Ajeevali SG

A total of about 250 species of plants, have been recorded from the grove and its surrounds so far (Godbole, 1993 and the present study conducted in 2005). These species are distributed across various habitat types such as semi evergreen forest, moist deciduous and dry deciduous vegetation patches, scrub jungle and grasslands. 75 % of the total recorded plant species have human utility value. Wild edible plants (about 30 species) recorded from the study area supplement tribal diet during rainy season e.g. *Dioscorea pentaphylla*, *Meyna laxiflora*.

This study recorded 8 medicinal plant species that belong to IUCN threatened category (CAMP, 2001) and 4 endemic tree species. *Abutilon ranadei*, which was believed to be extinct from the Western Ghat region, was also rerecorded.

Maadi Extraction:

“*Maadi*”, popular local liquor, is a fermented phloem sap of a palm species *C. urens*, which is abundant in the grove. The sap exudates are collected in earthen pots by cutting off an inflorescence axis of the plant. The *maadi* extraction season usually starts from December to June. The first inflorescence developing in the terminal bud position is spared because if it is cut the rain water enters the hole and the entire plant is degenerated. All other inflorescences are tapped except a few last ones since their yield is very low. Thakars, who are employed for extracting the sap have a good understanding of phenology of the plant species and the yield of *maadi* as per the age of the plant. The inflorescence is cut skillfully near its base at a particular distance with a blade. An earthen pot is then hung to the axis to collect the exudates. The inflorescence and the mouth of the pot are covered with the fine net to protect it from bees and other insects and also from some mammals like Palm Civet. To do this at a height on the tree, a ladder prepared from bamboo by cutting its branches is used. The pots are emptied twice a day at about seven in the morning and around four in the afternoon. While emptying the pots a small amount of *maadi* is kept in the pots which act as inoculum for the next batch to ferment.

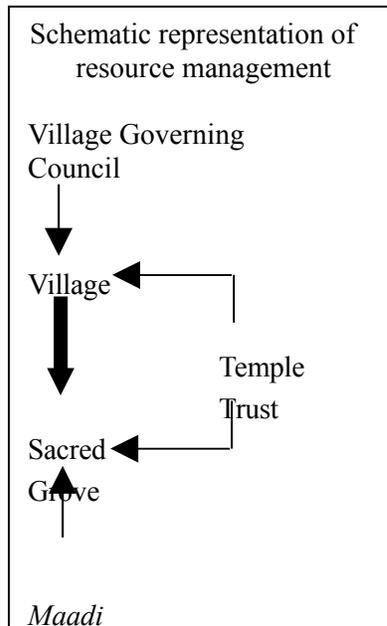
In about 8 ha area of the sacred grove that harbors the semi-evergreen forest, 30 – 40 Palms are tapped yearly. Ajeevali is the only place in the nearby area where *maadi* extraction is practiced commercially. It is famous for *maadi* and people from nearby villages as well as from cities like Pune visit the place especially to relish the drink.

Some villagers owning land adjacent to the grove also practice *maadi* extraction privately. They may or may not employ Thakars for tapping purpose, and may practice it on their own to save the money. Three to four families in the village are engaged in such kind of private *maadi* extraction.

Management regime and lessons learnt:

The most important aspect of the Ajeevali Sacred Grove is its management practice. A few years back the villagers came together to form a temple trust through the initiative of one of the teachers in the village, to protect their grove from being destroyed by the coal contractors. The management structure comprises of a temple

trust, the village governing council and the *maadi* extractor. The decision making body in the village is the Village Governing Council (formed of elected representatives of people) which governs the overall administrative and village welfare activities.



The Temple Trust (a committee of village representatives) has a pivotal role to play in the whole management regime as strong religious taboos are attached to the grove. The trust has the administrative authority regarding management of the grove. Annually, the grove is auctioned by the Temple Trust for the contract of *maadi* extraction. The contract is awarded necessarily to a local person thereby increasing villagers stake in conservation, and assigning the *maadi* extractor the responsibility of protecting the

extractor grove. The revenue thus generated (approximately Rs, 1,50,000 per year) is managed by the trust for village welfare and religious activities. Activities like hunting, grazing, extraction of timber and Non Timber Forest Produce (NTFP) other than *maadi* and leaf litter, have been traditionally banned in the grove. This system which had somewhat broken down about a couple of decades ago is now being revived under the contract system. The revived protection system is helping conserve the floral and faunal wealth of the grove.

Thus rather than making money once by destroying the forest into coal the villagers are getting a good amount of money each year by conserving it. They are also gaining the benefits of other ecosystem services such as aquifer recharge and soil conservation.

This system of economic locally generated incentives for conservation thus evolved in the village itself involving the villagers seems to be a promising institution regarding the conservation and management of the grove.

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***Maadi* extraction**



Vegetation in Ajeevali Sacred Grove



Goddess '*Waghjai*'



Dominance of *Caryota urens* in Ajevali SG

