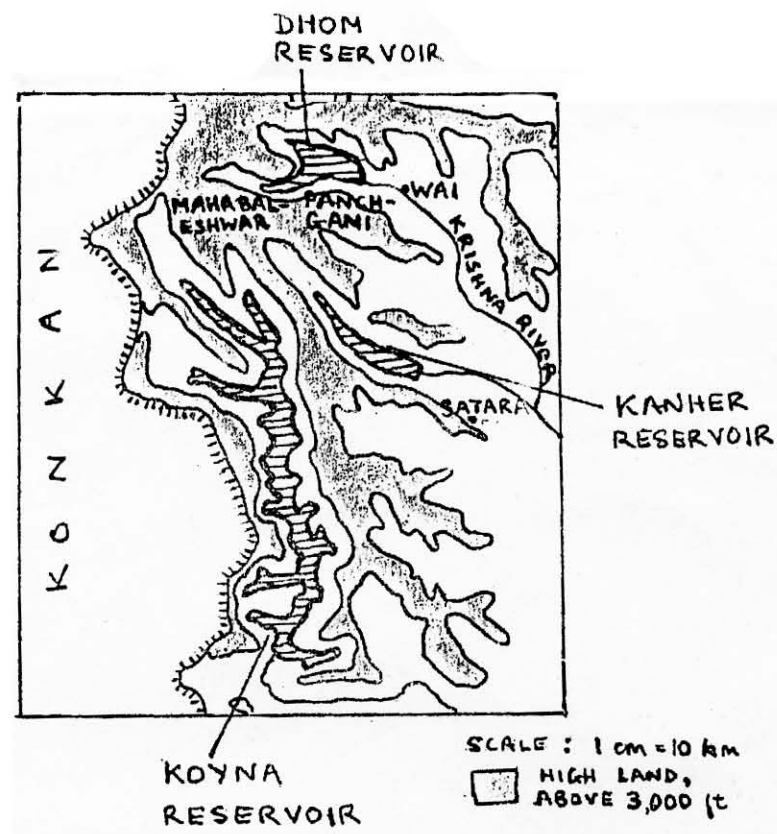


ECO-DEVELOPMENT OF THE
MAHABALESHWAR-KOYNA WATERSHED REGION



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The Watershed Function

Mahabaleshwar and Panchgani are not merely pretty tourist spots. They are also the centre of a major watershed, which catches rainwater for three large reservoirs : the Koyna, the Dhom and the Kanher. The Koyna reservoir is best known as a major source of Maharashtra's electric supply, but it is also a source of irrigation water and it regulates the flow of water in the Koyna river, which joins the Krishna river at Karad. Together, the Dhom, Kanher and Koyna reservoirs supply much of the river and irrigation water which enables human life and agriculture in the dry lands of Satara and Sangli districts.

So, when we talk of the environment of Mahabaleshwar and Panchgani, there is something more at stake than tourist holidays and the local economy of a few tens of thousands of inhabitants. From the relatively small Mahabaleshwar-Koyna mountain region, with its extraordinarily high monsoon rainfall, comes water and electricity for many millions of people, in the Konkan, in Satara and Sangli districts, and beyond.

And further, if we realise that the Mahabaleshwar-Koyna region is a fairly typical example of the North Sahyadri watershed, which runs from Goa to Gujarat, then we are talking about an issue of national importance; because the North Sahyadri watershed feeds a great part of the Krishna and Godavari river basins, including major parts of Andhra Pradesh and Karnataka as well as Maharashtra.

A Vital Ecosystem

During the four months of the monsoon, the North Sahyadris get some of the heaviest rainfall in the world. But, in the remaining part of the year, there is a long dry period, without any rain. These alternating extremes of wet and dry weather require a very special kind of ecosystem, with special kinds of plant and animal life.

In order to withstand the onslaught of tremendous monsoon rain, the vegetation has to be very thick and strong, to prevent the rain from tearing all the soil away. Trees and plants catch the raindrops on their leaves, and much of the rainwater runs along trunks and roots into the ground. So, a suitable forest cover helps rainwater to soak into the ground, where it gradually percolates into underground reservoirs and feeds underground streams, thus providing water in wells and keeping springs and rivers flowing in the dry season. By soaking up rainwater, instead of letting it tear down the hillsides, mountain forests control siltation, drought and flooding, in a vast area of river valleys and plains below.

On the flattened crests of the North Sahyadris, as for example at Mahabaleshwar, trees and plants are short and stunted, because of the shallow, lateritic soil. Moreover, vegetation grows very slowly, in these poor, acidic soils whose nutrients keep being washed down into the valleys. Individual plants are particularly dependent on living in thick profusion with other plants, in specially established ecosystems which have developed over a very long period, so as to recycle scarce nutrients and to afford mutual protection against mountain-top extremes of high wind, heavy monsoon rain and a long, harsh dry season. Most ordinary kinds of trees found elsewhere do not survive these climatic extremes, and once the natural forest is cut or seriously disturbed, it takes very long time to grow back.

On the lower slopes of the North Sahyadris, as for example on the west bank of the Koyna reservoir, forest trees are tall and they grow faster and more easily, resulting in a massive growth of forest whose plant and animal life is very different from the crest forests of the mountain tops.

These dense crest forests and the tall slope forests form very rich natural ecosystems that are vital to the watershed function of the North Sahyadris. Unfortunately, nearly all of this natural vegetation has been progressively destroyed, and only a few pockets of forest are left. The result is that our reservoirs are silting up and will soon be useless, and we suffer more and more from floods and droughts on the Deccan plateau and in the Konkan coastal plain.

In order to restore the watershed function of the North Sahyadris, we simply must protect the remaining pockets of natural forest; and we must study and use these remaining pockets, with their specially adapted forms of life, to reforest this nationally important watershed. It will require a well planned and sustained investment, not only of money but also of scientific and administrative effort. If such an investment is properly made, the benefits will far outweigh the costs.

The Effect of Tourism

Until a few years ago in Mahabaleshwar and Panchgani, tourism did more good than harm to the environment. Because of the public interest created by tourism, the local forests were protected and the municipal areas were well maintained. As a result, Mahabaleshwar's forests have survived, as one of the precious few green pockets in the generally deforested wasteland than the North Sahyadris have become today.

However, in the last few years, over-crowding and over-exploitation have been seriously damaging the very environment that draws the crowds. Traditionally, Mahabaleshwar has been a place where people have come in a spirit of respect for the environment, to worship the sacred rivers at

their source and to appreciate the natural beauty of the mountains. Today, most effort goes into making people indulge themselves and spend their money, with little thought for the environment itself. Hotels, shops and stalls are flourishing, because they have taken the trouble to attract and interest people; but the forest and honey museums have not been publicized effectively, and thus they do little to encourage any interest in the environment.

There is an urgent need to develop the kind of tourism that encourages awareness of the environment. First, we must set an example by properly maintaining our hill stations and other tourist places; and second, we must develop ways of interesting tourists in the environments which they visit. On both these counts, there has been a miserable failure in the past few years in Mahabaleshwar and Panchgani, on the part of government authorities, non-government organisations and private individuals alike.

Political and Administrative Neglect

The deforestation of the North Sahyadris has not resulted from any powerful commercial interests or from any very difficult problems. Quite simply, it has resulted from political and administrative neglect of this sparsely populated region, because the watershed function of the region and its environmental importance have not been properly taken into account.

The major cause of deforestation was shifting cultivation, in which huge areas of forests were burned down for a few miserable kilos of hill millet, or 'nachni' as it is called. Of course, the firewood and timber value of the forests was far, far more than the nachni obtained from shifting cultivation. But, where there were no roads for trucks, there was no way of transporting large quantities of wood, and so the forests were just burned where they stood as the easiest way of clearing them, for an absurdly meagre return. These forests could have been saved by supplying the locals with just a few kilos of cereal, together with some organized education and policing. But not enough people bothered, because these were out of the way places with sparse and backward populations, to which little attention could be paid by busy officials under the prevailing priorities and constraints of public policy.

Today, the same sort of public and political neglect goes on, despite some new stirrings of interest. In the Koyna valley, sufficient care was not taken to properly resettle those who were displaced by the dam, and most of these people returned to the shores of the Koyna lake. Shifting cultivation continues to be practised in the privately controlled lands which extend all along the east bank and along the northern quarter of the west bank, so that no forest is allowed to grow back in most of the catchment area.

In the southern three quarters of the west bank, where there are no human settlements, and where all land is controlled by the Forest Department, the difference is quite spectacular. Some of the land was previously deforested and has partially grown back, quite sufficiently to prevent further soil erosion. A substantial part of the land seems never to have been deforested, for it is covered by a magnificently tall and profuse growth of natural forest, which must once have covered all the slopes of the Koyna valley. The west bank forests have remained as they are because they are protected on one side by the lake itself, and on the other side by a precipitous slope down to the Konkan. But even there it seems that a threat has been emerging in the form of illicit contractors, who ferry illegally cut wood and illegally prepared charcoal across the lake, or who send tree trunks hurtling down natural chutes into the Konkan.

Because of deforestation, the Koyna lake is silting up much faster than anticipated, and its life will correspondingly be shortened. The costs, in terms of capital investment wasted and electricity and irrigation lost, are enormous. Thus, the benefit of forestation and reduced siltation is of a much greater order of magnitude than the cost of stopping a few illicit contractors and of generously educating and compensating a few thousand local inhabitants to grow trees instead of destroying them. But, a full-scale, long-term program still remains to be effectively initiated.

Recent Action

Following an initiative made by officials of the Forest Department, the Koyna west bank forests have been declared a protected sanctuary. And, at the deforested northern end of the Koyna lake, a pilot scheme is in progress to reforest privately owned lands, by leasing them from the owners.

Following a public initiative in Mahabaleshwar, a Regional Plan has been drafted for the region around Mahabaleshwar and Panchgani, and an Additional Collector has been deputed to take special charge of this region. The Regional Plan is designed to control the excessive growth of urban building that has been taking place in and around Mahabaleshwar and Panchgani. Unfortunately, the legal effectiveness of the regional plan is mainly confined to building restrictions, and it cannot fulfil the need for a positive program of environmental development that makes it worthwhile for local inhabitants to grow suitable plants and trees instead of cutting and burning the hillside vegetation.

The Present Situation

Mahabaleshwar's forests are steadily deteriorating, due to persistent cutting of branches and young trees by the local inhabitants. Despite all the public fuss of the past few years, the cutting goes on unabated, and the local authorities are unable to do anything about it, under present government policy and the current administrative system.

Excessive building goes on at a reduced though still dangerous pace, which still greatly overstrains the local capacity for maintaining the environment.

Outside the built up areas, farming and village communities still lack any means of development that is beneficial to the environment. The problem is that present rural development programmes in Maharashtra are mainly designed for the agriculture of relatively fertile valleys and plains, which provide an immediate commercial return. Such programs are unsuited to the North Sahyadri watershed, where slopes are steep and where the soil is poor and very easily washed away. Some sort of commercial return may be possible here, once suitable plantations have been identified and established; but it will require scientific investigation and long term investment, so that the returns will not be immediate. In any case, the primary need in the North Sahyadris is not for direct commercial return, but for watershed protection. Even where direct commercial return is not possible, as it may not be on the exposed crests of the mountains, reforestation and forest protection are an essential long term investment, along with the construction and maintenance of dams and reservoirs. But at present, though there are government programs for wasteland development and watershed protection, these programs have not been effectively implemented, particularly in major watershed areas. The major watersheds of the North Sahyadris continue to be neglected, under the currently established system of government policy and administration.

What Can Be Done Now ?

The Government has already formulated an integrated eco-development plan for the Western Ghats, with a sub-plan for Maharashtra. This plan urgently needs to be put into practical effect in particular districts, by setting up special administrative machinery to co-ordinate the work of different government departments and other agencies. Here are a few suggestions for the Mahabaleshwar-Koyna region in Satara District.

1. The Additional Collector's function in Mahabaleshwar-Panchgani should be extended to include environmental development and protection of the entire North Sahyadri watershed in Satara District, including the Koyna, Dhoni and Kanher catchments. Such watershed reforestation and maintenance will require the co-ordination of many government agencies, in particular the Zilla Parishad, the Forest Department, the Irrigation Department, the Agriculture and Horticulture Departments, the PWD, the Tourism and Urban Development Departments, and so on. Moreover, co-ordination will also be required with scientific research and development institutions, voluntary agencies and private initiatives. Such government and non-government co-ordination would require the full-time administrative work of an Additional Collector, appointed with special powers for the purpose. He should set up a long-term program for watershed

reforestation and protection, including both constructive development and regulatory policing, and he should himself be responsible for administering the execution of this program. And most important, this post should not be subject to frequent transfers.

2. For the purposes of long-term planning, an in-depth study should be made of the local economy and society, not merely by compiling statistics but by competent social scientists who would spend considerable time with the local people, interviewing them and observing their way of life. In particular, the study should ask how people can be educated and compensated to develop and protect the environment, or, alternatively, how people can be successfully and humanely settled elsewhere if they so wish.

Given the current lack of knowledge about suitable plantations for the North Sahyadri region, a scientific research program will be required to identify and develop suitable plant species and techniques of cultivation. First, existing data will have to be collected from current research stations and pilot plantations in the Koyna valley and on the Mahabaleshwar-Panchgani plateau. Second, available knowledge will have to be put together to provide an overall picture of the local climatic and soil conditions and of how the natural ecosystems of slope and crest have adapted to these conditions. Third, a co-ordinated program of further research and pilot projects will have to be planned and put into time-bound effect. So far, pilot plantations have mainly been eucalyptus, silver oak, acacia and casurina. These are ecologically unsuitable and have thus been failures in the exposed areas of the Mahabaleshwar plateau top, with its high winds and extremely heavy monsoon rain. On the less exposed Panchgani side of the Mahabaleshwar plateau, and in the Koyna Valley, eucalyptus and similar plantations have been more successful, but their soil protecting ability and suitability is a matter of controversy, and the matter needs further study before more plantations are tried on a large scale. So, for both the crests and the slopes of the North Sahyadris, further scientific research is essential to any serious program of plantation and reforestation.

Given the extreme scarcity of the last few remaining pockets of natural forest in the North Sahyadris, these precious few pockets should be preserved with the greatest of care and should not be cut at all, either for commercial exploitation or for providing land for pilot projects. Fuel and timber should be brought from commercial plantations and other sources outside the sensitive watershed area; and pilot plantations should use already deforested land, of which surely there is no lack.

5. In Mahabaleshwar's forests in particular, all collection of forest wood should be totally banned, and the ban should be seriously enforced. To compensate the local inhabitants for this ban, a generous allowance of firewood or other fuel should be provided to each household free of cost, and those who have licenses to collect dead wood for sale should be further compensated by alternative work or by generous cash payments. There are only a few hundred such licensees. The pretense of collecting dead wood has long been used as a cover for wholesale forest cutting; and the government has so far allowed the situation to continue, for lack of political will to prevent the cutting and to provide the local inhabitants with alternative fuel. There will be some vociferous local opposition to a strictly enforced ban on forest cutting and collection, but if the government shows that it really means business and compensates the local inhabitants adequately, the opposition will soon die down. To help enforce a ban on forest cutting, the government should take over all local distribution of firewood and should ban the transit of lorries carrying recently cut wood through Mahabaleshwar. Such through transportation of wood is quite unnecessary, because there are perfectly feasible alternative routes; and the pretense of through transportation is regularly used as a cover for smuggling out wood that has been illicitly cut from protected forests.
6. There should be a sustained follow up on the establishment of the Koyna forest sanctuary, and any tourist use of the sanctuary should be carefully controlled so as not to disturb the forests or the wildlife.
7. Hill stations and holiday places alternative to Mahabaleshwar and Panchgani should be established and developed in a highly controlled fashion, with a co-ordinated, long-term plan in view for the entire watershed region. Now that readily motorable roads are making the Koyna valley more and more accessible, its natural beauty is likely to start attracting tourists over the coming years; and any such tourism needs to be properly organised and regulated from the beginning, in order to make it beneficial rather than destructive to the environment. In particular, only a strictly regulated number of hotels and restaurants should be allowed in each particular place, and other facilities for tourism should be carefully controlled, well organized, and regularly monitored and maintained.

A tourist information and education service should be developed, in order to encourage awareness and appreciation of the environment. Such a service could well include many educative facilities that

are totally lacking today. In particular, it should not be too difficult to produce useful maps and interesting literature, to set up tourist information centres, to train and license adequate guides, to arrange nature trails and hiking trips, and to display educative exhibits in an interesting way in environmental showrooms and museums. Such facilities are quite common-place in the developed world, and in this matter of environmental awareness we in India cannot afford to be backward any longer.

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