8.
LAKE
MANAGEMENT
The environment belongs to all people so there are always multiple constituencies involving matters dealing with the earth’s land - water ecosystem. Policy generation stems from a variety of concerns and motives. Policy matter are designed to set the tone of action and to provide a suitable framework that will concern and preserve water resources (Khadri and Dev, 1993).

The two years studies conducted on Chatri lake reveals that, implementation of programme for restoration and management of water body is today’s need. Chatri lake was built in 1889 by the Britishers to fulfill the water demand of the city, with well established filtration system and was used for water supply to the city till 1991. The lake when initially built was having water holding capacity to meet water demand of 25 thousand people. At that time it was more than 15 feet deep and spread in 3.66 sq. miles catchment area. This lake was an important water source of the city.

But since last 4-6 years this lake is neglected now the water of this lake is not supplied to any part of the city, so the whole water supply pipes and filtration tanks are not of any use. The surrounding hillocks and its catchment area due to peoples activity has turned nearly barren. And slowly this has resulted in due course of time in reduction of water holding capacity and water spread area. The over activities of invaders like human & cattles are responsible for the deteriorating water quality of lake. This deterioration of lake tempted author to give plans for its restoration.

RESTORATION OF LAKE

Plan of restoration if properly implemented can regain Chatri lake to its previous glory. The lake which was famous as ‘Jal Devata’ of the city should have a potential to supply water to adjacent part of the city.

Presently, the city receives drinking water from Upper Wardha dam. Inspite of this every year in summer the city faces scarcity of water due to increased load on the present water distribution system. The city is a big trade centre for clothes and a rich educational centre having colleges for every field. So, it attracts a big population every year. The fastly growing city demands for more water in future will increase more pressure on present system. Instead of awaiting for adverse situation, stern measures are to be taken for lake restoration. In stead of creating or constructing compensatory water source old source ‘Chatri lake’ which is well equipped with filtration system and pipe lines must be brought into practise. For this the supply system is to be checked for leaks and errors as they were not in use since last 6-8 years and also the filtration system for its proper function.
DESiLTATION

The depth of the lake is now reduced, so water holding capacity is also decreased. The water spread area has also deducted. To over come this situation a long term management programme is to be implemented. So, that the lake and its catchment area can be better managed.

The disuse of the water body by the local people may be disastrous for lake. The coming in silt reduces the depth, quality and also influences biota of the ecosystem. This in turn reduces the ability of the lake to recharge groundwater aquifers. The dumping of waste like idols, flowers, reduces its water quality and ground water table. If such trend of siltation is allowed to continue, the water body will soon be highly contaminated.

To over come this situation the lake must be desilted. During drastic summer the water spread area reduces. The silt from the area should be dugged out. This soil is quite fertile and hence farmers can use it for their fields. Also the area near the lake which is always invaded by cattles, human and vehicles. Hence it should be fenced and planted with suitable trees.

PLANTATION

Plants are man’s freind in survival giving him food, fuel, shelter and medicine. The ever increasing need of the growing human civilisation is taking a heavy cost of plant life. It is now high time to learn a lesson before it is too late. The present position of Chatri lake is depleting fastly. The hillocks showed sparse plantation, while the land near lake is devoid of trees, water shed area is also with meagre greenery. Hence, plantation plan in the catchment area for the lake is given below on considering the climatic condition of the region and soil type of the area.

LIST OF PLANTS TO BE PAINTED AROUND CHATRI LAKE

<table>
<thead>
<tr>
<th>BOTANICAL</th>
<th>ENGLISH</th>
<th>COMMON</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Astonia schloaris</em></td>
<td>Devil’s tree</td>
<td>सलगाँवी</td>
</tr>
<tr>
<td><em>Barringtonia acutangula</em></td>
<td>Small Indian Oak</td>
<td>करेंवागा</td>
</tr>
<tr>
<td><em>Bauhinia purpurea</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>B. variegata</em></td>
<td>Pink cassia</td>
<td>गुलमोहर</td>
</tr>
<tr>
<td><em>Cassia nodosa</em></td>
<td>Peacock flower</td>
<td></td>
</tr>
<tr>
<td><em>Delonix regia</em></td>
<td>flame tree</td>
<td></td>
</tr>
<tr>
<td><em>Lagerstroemia parviflora</em></td>
<td>Pride of India</td>
<td></td>
</tr>
</tbody>
</table>

-119-
Peltophorum plerocarpum  
Samanea saman  
Polyalthia longifolia  
Pongamia pinnata  
Putranjiva roxburghii  
Terminalia arjuna  
Tamarindus indica

Rudy shield bearer  
Rain tree  
Monkey pod  
Mast tree  

Trees suitable for Marshy area (Near lake)

Hibiscus lobatus  
Tamarix troupiai

Yellow mellow tree  
Tamarisk

Tree suitable for dry area (Hillocks)

Acacia auriculiformis  
A. arabica  
Buea monosperma  
Bombax ceiba  
Callistemon lanceolatus  
Cassia fistula  
Cochlospermum religiosum  
Erythrina suberosa  
Eucalyptus globulus  
Ficus virens  
F. arnottiana  
Melia azedarach  
Millingtonia hortensis  
Sterculia wrens  
Syzygium cumini

Black babool  
Flame of forest  
Red silk cotton tree  
Bottle brush  
Golden shower  
Yellow silk cotton  
Indian coral tree

The climate of the city is hot and dry from February to May while there is 2-3 months rainfall and remaining months show moderate hot climate. Forest is dry deciduous in nature. Annual rainfall is 100 cm and highest temperature in summer exceeds to 48°C. The soil is black fertile in nature with mixed murrum or hillocks.

WILD LIFE MANAGEMENT

a) Fauna: Habitat improvement is a very important aspect of wild life management because
if the habitat is not suitable. All efforts to protect or stock will go in vain. A habitat may be defined as the natural home or general environment in which an organism lives and it provides shelter food water and breeding site to the organism.

Chatri lake is a home for migratory birds which visits the lake in winter and fly away with the onset of summer. The migrants are Ruddy shellduck, Spoonbills, Grey heron, Stilt, River tern, Black ibis, Openbill stork, Golden oriole etc. But unfortunately these species does not breed here. Some steps should be taken to attract and to create conducive environment for their breeding.

i) Shelter: To provide suitable tree canopy for their shelter, nesting and resting. For this the catchment area must be planted with suitable trees.

ii) Food: The lake should be rich in food for this population of lake inhabitant viz. fishes, mollusks, small snakes, frogs etc. should be increased. So, that they will be attracted every year.

iii) Protection: The disturbances produced by human and animal activites around the lake should be checked.

b) Flora: The herbaceous flora around the lake is rich. The lake is gifted with diversified flora. Out of which Bacopa monnieri (Brahmi) which grows only in marshy habitat and is abundant at the lake site. This herb is medicinally important. It is used as brain tonic. It must be conserved properly. For this distraction by invaders should be stopped which move round the lake daily.

c) Weed control: Since, last two years it is noticed that, the macrophyte like Potamogeton crispus is growing fastly and has become weed of lake. Now, it is high time to remove the weed before it covers the whole lake. For this removal is must from the periphery of the lake and then from the depth and centre of lake. So, that it will remain as a macrophytes rather than a weed.

INLET CONTROL

The two years study concluded that the inlet (Mahadev Khori) which adds water to the lake must be checked. The addition of water through inlet added silt along with nitrogen, phosphours, potassium etc. So, it is expected to have natural control by growing the macrophytes in inlet which have the capacity to absorb or utilize these elements. Thus, the lake will remain pollution free during the course of time.
AQUACULTURE

Aquaculture or fishery is managed and aimed to obtain the maximum production of desirable fish from available water source and developing new one in view of present and future demands. It is introduced selecting fish species which are prolific breeders, hardy, fast growing and occupy low trophic level in food chain and possess high conversion efficiency.

The spawn is nursed and in Managed Nurseries it is raised to fry or fingerling stage (fish seed) fit for the transfer to a lake.

The Chatri lake is recommended for fish culture by the Regional Deputy Director of Fisheries, Amravati. According to them, though this lake has not been used by the fisheries corporation society or Government department since last 4-5 years, however even today the conditions are favourable to take intensive fish culture. As the lake is not stocked regularly by fish seed at present uneconomic fish varieties like Cirrhina reba, Chala bacia, Ophioccephalus punctatus etc are growing luxuriantly. They have less growth rate and are carnivorous in feeding habit and do not have market value.

The fishery department recommended stocking of Indian major carp and Chinese carp varieties like Catla catla, Labeo rohita, Cirrhinus mrigala and Cyprinus carpio. The culture of this fish will provide proteanous diet to people and employment to the fishermen and revenue to owner.

The estimate production and revenue for one year from Chatri lake is as follows

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner ship of lake</td>
<td>Municipal Corporation.</td>
</tr>
<tr>
<td>Optimum fingerling for stocking</td>
<td>1000/ hectare i.e. 65,000.</td>
</tr>
<tr>
<td>Indian major carp prod./year</td>
<td>750 gm to 1 Kg.</td>
</tr>
<tr>
<td>Estimated fish prod./year</td>
<td>300 Kg.</td>
</tr>
<tr>
<td>Estimated fish prod. from</td>
<td></td>
</tr>
<tr>
<td>Chatri lake</td>
<td>65 hectare x 300 kg = 19,500 Kg.</td>
</tr>
<tr>
<td>Estimated cost by fish catch</td>
<td>5.85 lakh Rs.</td>
</tr>
<tr>
<td>Estimated employment to fishermen</td>
<td>32 fishermen of 6-8 months.</td>
</tr>
</tbody>
</table>