Ecological Guidelines and Recommendations For Mula-Mutha Riverfront Development

*Dr. Swati Gole, Revati Gindi, Dhruvang Hingmire, Sneha Ghate, Aditi Deodhar,
Dr. Gurudas Nulkar*

The Mula and Mutha rivers that emerge in the Western Ghats and flow through Pune are integral to the evolution and life of the city of Pune. The ecosystem benefits from these rivers are linked to the physical form of the river and its watershed. For more than 300 years, citizens of Pune have a close spiritual, cultural, recreational, educational relationship with the rivers. In the last few decades natural ecosystem functions of the rivers have diminished considerably because of increasing anthropogenic pressures.

Public deliberation is critical in the decision and choice of improvements, and the best strategies for achieving the desired outcomes. The upcoming riverfront development program of the twin rivers of Mula and Mutha is intended to beautify the rivers and is expected to offer citizens a place to relax and rejuvenate. Such deliberation must be informed by sound public information and multi-disciplinary knowledge. It is this concern for knowledge-based environmental governance that led Centre for Environment Education to partner with the Ecological Society to bring out this study.

The Ecological Society conducted this research between June 2017 to December 2017. The aim was to review ecological state of river Mutha and while developing river front what could be the ecological "Does" and "Don't's". It especially focused on the diversity of habitats, and sites of geological and historic interest.

Past studies and reports were reviewed. The experts on river ecosystems were invited for the brainstorming workshop by the Ecological Society. Dr. Himanshu Kulkarni expressed his views regarding ground water situation along the Mutha river, Dr. Priyadarshani Karve about social repercussions of riverfront development proposed by Pune Municipality, Dr. Hemant Ghate about fauna of the river, Dr. Vinaya Ghate about flora of the river and Dr. S. N. Rajguru, eminent geologist and archaeologist regarding conservation of paleo-deposits along the river.

Geological records reveal that the Mula and Mutha rivers are nearly 200,000 years old. Their continuous ecological functions and processes have crafted the neighbouring landscape.

Ecological survey was conducted over a stretch of approx. 22 kms along Mula-Mutha rivers flowing through the Municipal boundaries of the city. The stretch was divided into 5 zones, based on the nature of the river and cross section of the channel.

For each zone a quantitative and qualitative assessment of habitat was carried out in which ecological and cultural hotspots were recorded, interventions and threats were identified and opportunities were examined. Twelve types of culturally and ecologically important spots were identified and marked them on the zone maps. Special ecological features like Rocky banks, Mouths of Feeder streams, Alluvial surfaces, Grassy patches, Riparian habitats, Faunal hotspots, and cultural feature like Ghats, Places of worship, Memorials and Heritage structures were recorded. Based on this analysis, we classified the zones into three grades and broad strategies for each grade were recommended.

Grade 1 : Zone 5 (Babasaheb Ambedkar Bridge to Aga Khan Bridge) and Zone 4 (Mula-Mutha Sangam to Ambedkar Bridge (Bund Garden)) are classified as the relatively best zones. Here the flow and character of the river are good, there are hotspots and these zones have minimum interventions. The overall strategy for this zone should be one of no intervention and benign neglect.

Grade 2 : Zone 1.1 (1Warje Bridge on Pune-Mumbai Highway to Rajaram Bridge) and Zone 1.2 (Rajaram Bridge to Mhatre Bridge) have a relatively moderate ecological and cultural value. The broad strategy for this grade is one of partial intervention.

Grade 3 : Zone 3 (Baba Bhide Bridge to Mula-Mutha Sangam) and Zone 2 (Mhatre bridge to Baba Bhide Bridge) have the least ecological value and severe interventions. For this grade we recommend

substantial interventions and monitoring.

Inundating the river fully will submerge several of the important features in the river bed. Physical modifications of the river bed, such as excavations for laying pipes, building of bunds, retaining walls, conversion of natural banks into manicured gardens, expansion of ghats etc. would destroy not only these features but may completely stop the functioning of the river as a living ecosystem resulting in permanent loss of a healthy natural system to society. Proposals to create manicured gardens while seeming benign are also destructive of natural biodiversity.

These findings must be considered in the Environmental Impact Assessments of any of the river related projects being planned. These findings also contribute to developing a deeper understanding of the ecosystem values and benefits of the Mutha to the city and how they can be restored.

Any complex decisions about how the river ecosystem can be improved must be done with the participation of the public. Both ecosystem values as well as democratic values must be integrated into decisions about these precious assets of our city.

The vision plan for a holistic improvement in the river rejuvenation must address :

- A. Conservation of the river as a natural entity.
- B. Restoration of natural zones along the river
- C. Maintaining environmental flow and carrying capacity
- D. Decentralized approach to river rejuvenation

E. Restoration for utility and aesthetic value

Some key recommendations include those about :

- Selection of plant (native) species for plantation in riparian and upland area and management of alien and invasive plant species
- Restoration of in-stream habitats and riparian zone and protection of existing riparian zone vegetation.
- Retention of The natural topography and drainage patterns of the river banks and river bed during construction.
- Minimum use of cement.
- Water quality of the river to be maintained as per international / tropical standards
- Removing channelization of the river ecosystem to facilitate restoration
- Conservation of natural springs in the catchment of the river and removal of obstruction in their flow.
- Creation of retention / detention basins along the river wherever sufficient space is available.
- Preservation of geologically important areas such as alluvial filled surfaces
- Management of biotic pressures such as grazing, fishing, Dhobi ghats, places for ritual, eateries and recreational areas
- Restoration of Heritage structures along the river and creating places for environmental education.

The full report is available at the Ecological Society, Pune office.