

YAMUNA BIODIVERSITY PARK

LANDSCAPE AND ENVIRONMENTAL PLANNING DEPARTMENT
DELHI DEVELOPMENT AUTHORITY



“A journey of RECLAMATION from waste land into GREEN LAND”

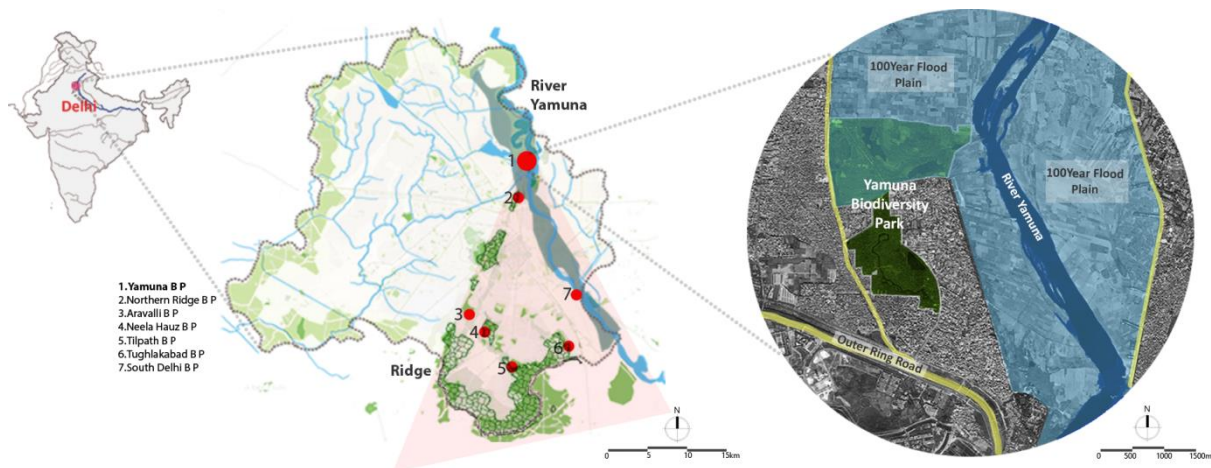
INTRODUCTION

Jewels in Delhi's Green Treasure

Delhi is one of the oldest inhabited cities in the world and was the seat of power of many dynasties and rulers since the 6th century BCE. As a result of the rise and fall of mighty empires and powerful kingdoms, Delhi is well-known for its past glories, cultural heritage and archeological splendors but has lost much of its natural heritage. After India's Independence, Delhi has become a mega metropolis with massive urbanization. It is expected to be the most populated capital city in the world by 2030. The period of 73 years of development led to further loss of natural heritage and is threatening the life supporting potentials of two major landforms, the Ridge and the River. These life-supporting ecosystems have deteriorated to such an extent that the quality of life is threatened.

To bring back the natural heritage lost in the urban matrix of Delhi; DDA has been developing a network of Biodiversity Parks – A new concept evolved and implemented for the first time in the world by DDA in joint collaboration with Centre for Management of Degraded Ecosystems, University of Delhi. Presently seven Biodiversity Parks, viz., Yamuna, Aravalli, Neela Hauz, Northern Ridge, Tilpath Valley, Tughlaqabad and South Delhi Biodiversity Parks have been created by DDA.

The network of Biodiversity Parks in Delhi are unique landscapes that harbour a diversity of plants, animals and microbes living in ecologically sustainable biotic communities and rendering multiple ecological services including carbon sequestration and recharge of ground water aquifers and educational and recreational benefits to the urban society.



Location Map

NEED FOR BIODIVERSITY PARKS IN DELHI



YAMUNA BIODIVERSITY PARK



Wetlands Of Yamuna Biodiversity Park

The Yamuna Biodiversity Park spreads over an area of 148 Hectares on the flat alluvial floodplains of the River Yamuna.

The park is divided into two phases: Phase I spreading across an area of 63.5 Hectares and Phase II spreading across an area of 121 Hectares, located on the active floodplain of river Yamuna and consists of mosaic of wetlands together with the grasslands and floodplain forest communities.

The restored wetlands serve as nurseries by storing a diversity of life forms. A wetland of 100 acres not only impounds substantial amount of flood waters and recharge the ground water but also provides ideal habitat for the rich aquatic communities including resident and migratory birds.

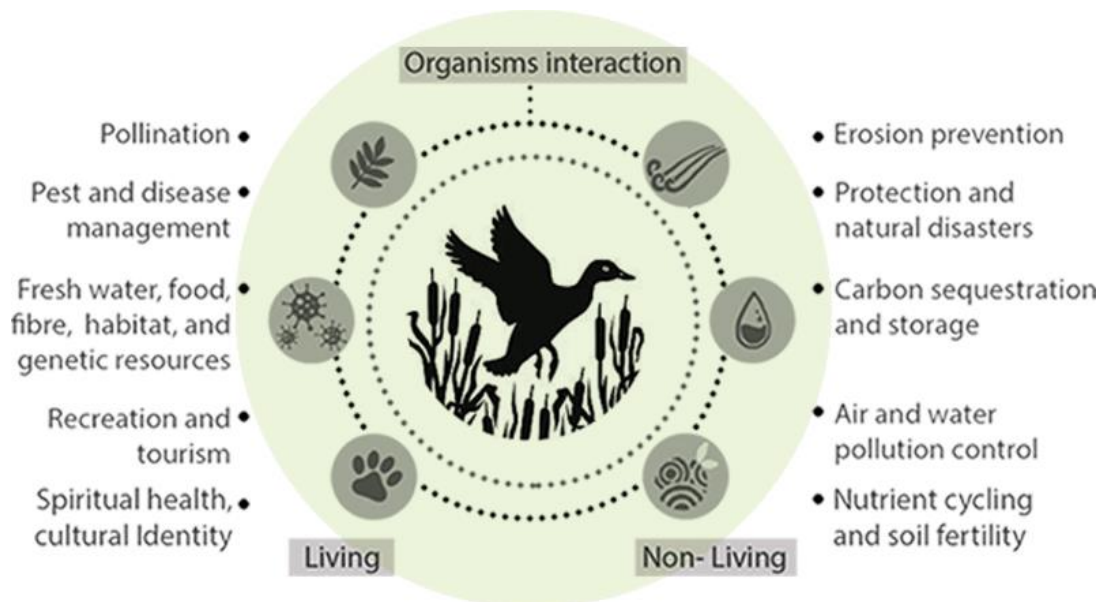
PROJECT VISION

The project envisions evoking environmental security through ecosystem building. In the process the projects aims at groundwater recharge and improvement of microclimate of the region. As a process of connecting to the people of Delhi, the project targets at being an abode for environmental education, research and eco-tourism.



CONCEPT

The concept of Yamuna Biodiversity Park developed from the idea of replicating various ecosystems thriving along the river right from the inception till its merging with river Ganga. All along its path the river supports diverse forest systems and rich natural heritage that have helped human development in the region. Some of these forest systems are being re-established along with pristine wetlands in Yamuna Biodiversity Park. It has been designed in a way to replicate a number of ecosystems right from the lowest storey to the highest storey of plantations.



Parameters for ecosystem building

THE JOURNEY

With an objective to establish historically representative natural ecosystems within a defined space to achieve ecological integrity, and to repair habitats that have been damaged by human activities, the restoration work in Phase I of Yamuna Biodiversity Park was started in 2002.

The area was highly alkaline with extremely saline underground water (electrical conductivity 1500-5000 mS cm⁻¹). The region harbored only a few species of halophytes (Salt loving bushes) and common weeds.

To restore the pristine glory of Yamuna river basin, various restoration strategies and principles for reconstruction of ecosystems and ecological succession were utilized. Different forest types, wetlands, grasslands and marshes were developed.



Phase I before development

Restoration involved habitat improvement, ecological assemblage of species and development of plant communities.

Habitat improvement involved planned and scheduled interventions that were both site- and time-specific. For creation of wetlands and to deal with salinity problem, the terrain at some areas was modified by increasing the ground level and creation of mounds. Soil excavated from dredging the existing silted waterbodies was used to create mounds of different sizes and shapes. The development of mounds served two important purposes. Firstly, it raised the level and allowed leaching of salts, thereby permitting the habitat to regain some fertility. Secondly, it contributed to habitat diversity by positively influencing micro-climatic variables and creating conducive niches. Some areas were ploughed prior to introduction of vegetation. Ploughing allowed good aeration for the growing root system and also helped mixing of biological inputs. It also helped break the hard soil aggregates (formed due to high amount of clay in soils) that otherwise prevent proper growth of lateral roots by offering resistance. Many grass species were used to start the successional processes and to add the nutrient content of the soil. Some nitrogen fixing legume species and some characteristic grass species were used for improving the nitrogen content. A three layered barrier was also made by planting trees to avoid heavy noise from nearby human settlements.

To start the successional processes, grasses of 25 species were planted. Seeds of wild plant species were collected from the natural forest floor and were germinated. Based on the species' life history traits such as seed size and longevity, dispersal syndrome, germination requirements, relative growth rate, shade dependence, ability to tolerate moisture stress, and successional status, strategies for massive plantation were developed.



The forest Ecosystem along with the Wetlands, grassland and Marshes

Wetlands, which simulate natural water bodies, were created in the Yamuna Biodiversity Park.

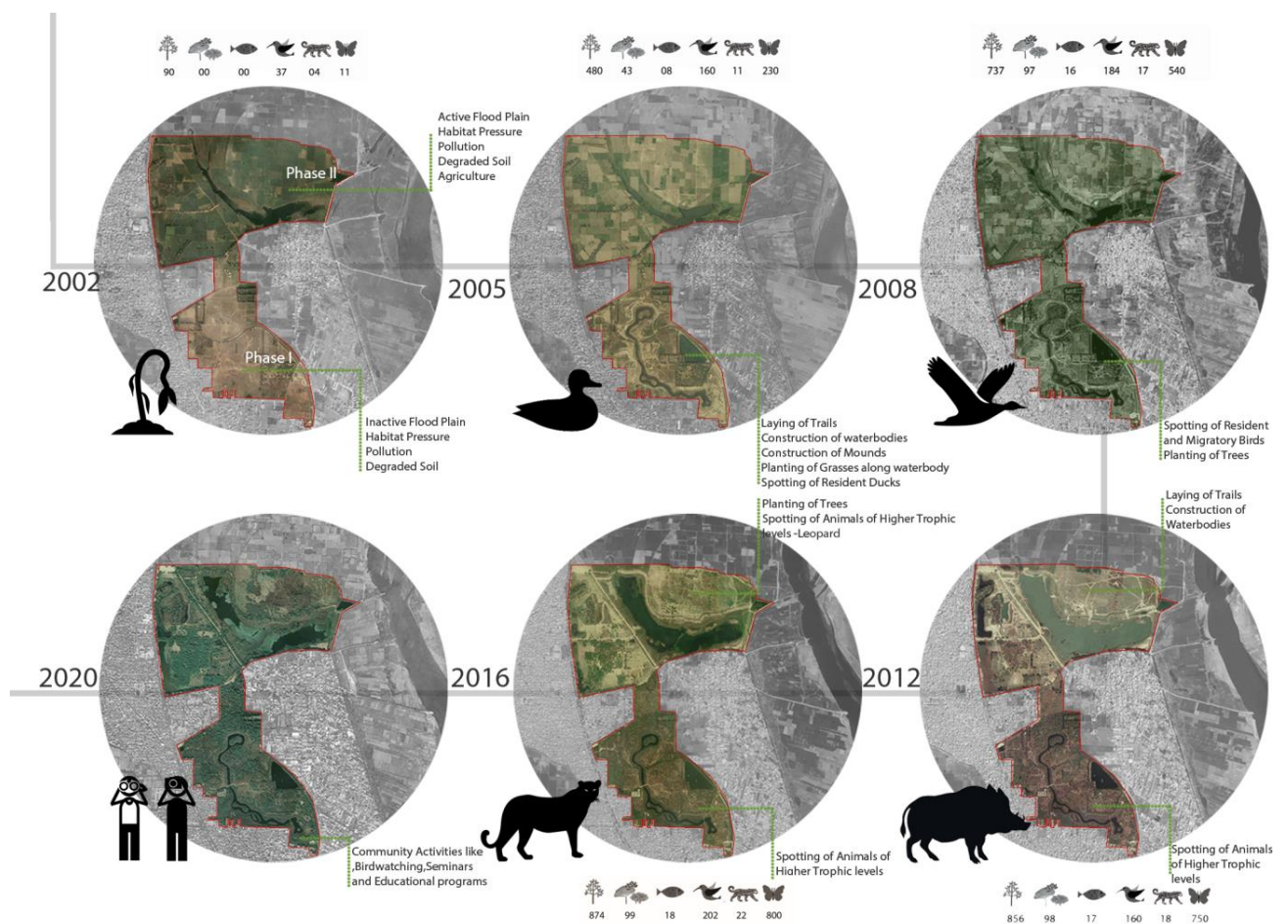
Increase in complexity, diversity and abundance in floral components of various plant communities of Yamuna Biodiversity Park led to enhanced faunal diversity. The habitat processing enabled many bird species to find their suitable niches thereby enhancing the size of food web and trophic structure.

The biologically rich forest, grassland and marshy communities consisting of a variety of plants, animals and microbes in interaction with the chemical and physical features of their environment make a complete ecosystem. The animals living in these ecosystems are interdependent on one another for survival and make a complex trophic structure. Several mammal species have been recorded in Park including Wild Pig, Mongoose, Indian Hare, Hog Deer, Porcupine, Leopard etc.



Spotted Leopard in 2016

The Park is connected to PAS through the Yamuna river corridor, attracted a top carnivore—the Leopard. In the winter months of 2016, a leopard was spotted.



Chronological Development of Yamuna Biodiversity Park

MASTER PLAN

Total Area : 457 Acres

Phase I : 157 Acres

Phase II : 300 Acres



CHRONICLING THE TRANSFORMATION



FOR THE PEOPLE OF DELHI

Nature Education is a major mission of YBP to ignite young minds towards environmental conservation. Starting from the ecological literacy for the common person, the target audience is not only school and college groups but also teachers and trainees coming from various educational courses. The rich flora and fauna of the YBP are ideal instruments for promoting conservation education that will ultimately have positive impacts on environmental quality and conservation ethics.

The Park serves as a learning and orientation Centre not only for students but also for academicians, policy makers and the general public. The parks offers a wide range of opportunities to live, learn and adapt the ways and means by which humans live in harmony with the rest



Celebration of World Environment Day



Students at Nature Interpretation Centre

of the nature. Yamuna Biodiversity Park has emerged as a major center for enriching people's lives through environmental stewardship, education and awareness, especially for schools and colleges of Delhi and adjoining areas. Visitors of all age groups (from school going children to adults) find the nature interpretation centre and the amphitheater excellent learning resources.

CONCLUSION



Yamuna Biodiversity Park was the first of its kind which not only helped revive lost ecosystems restore the ecological system but also has recharged ground water improved microclimate of the area and made public aware of planting trees and benefits of small microbes to vast grasslands. It's an open lab for students to come and study life cycles of small species like butterflies and other such organisms.

Yamuna Biodiversity Park is a pilot project for the development of Biodiversity parks across City. We aspire to extent this ideology across the nation and the world. YBP is a project that dreams at giving back to the Mother Earth by joining hands with the people of the region.



Species spotting in Yamuna Biodiversity Park