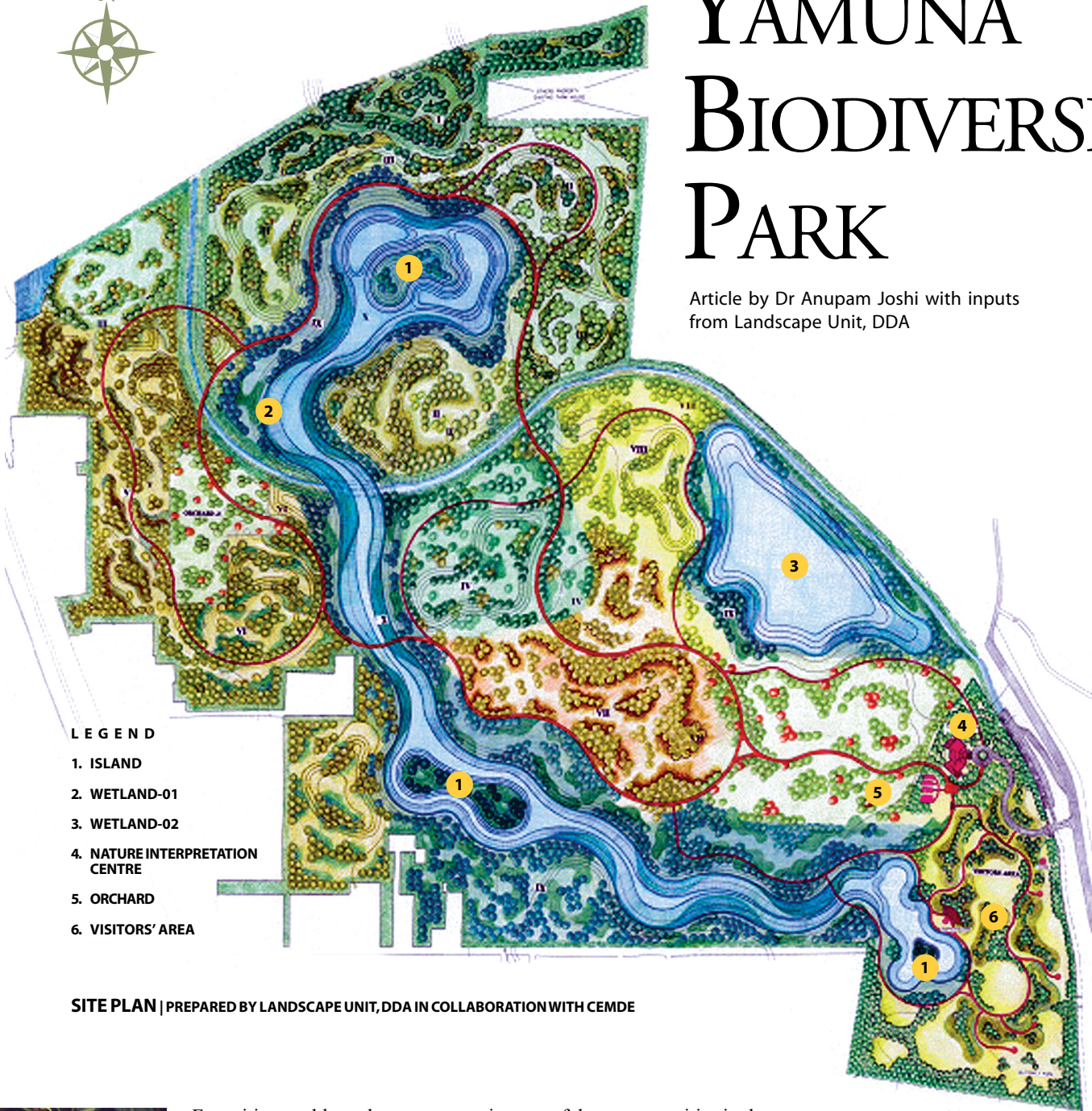




# YAMUNA BIODIVERSITY PARK

Article by Dr Anupam Joshi with inputs from Landscape Unit, DDA



**SITE PLAN** | PREPARED BY LANDSCAPE UNIT, DDA IN COLLABORATION WITH CEMDE



Few cities are blessed with natural assets such as the city of Delhi. Since ages, the city has been a witness to various ecological changes due to human activities and urban development. In the process, the city had to sacrifice some of its green cover to accommodate cosmopolitan growth. Nevertheless, Delhi still

remains one of the greenest cities in the country ensuring quality life to its residents.

The concept of biodiversity parks has emerged out of the strong need of conserving the native biodiversity and make public aware of the varied natural heritage. The two natural physical features and life supporting systems of Delhi are the Ridge and the River

Yamuna, both of which support a variety of life forms.

Biodiversity forms the basis of human survival on earth. Living resources (plants, animals and microbes) and their habitats form an integral component of the biodiversity. Their mutual interaction

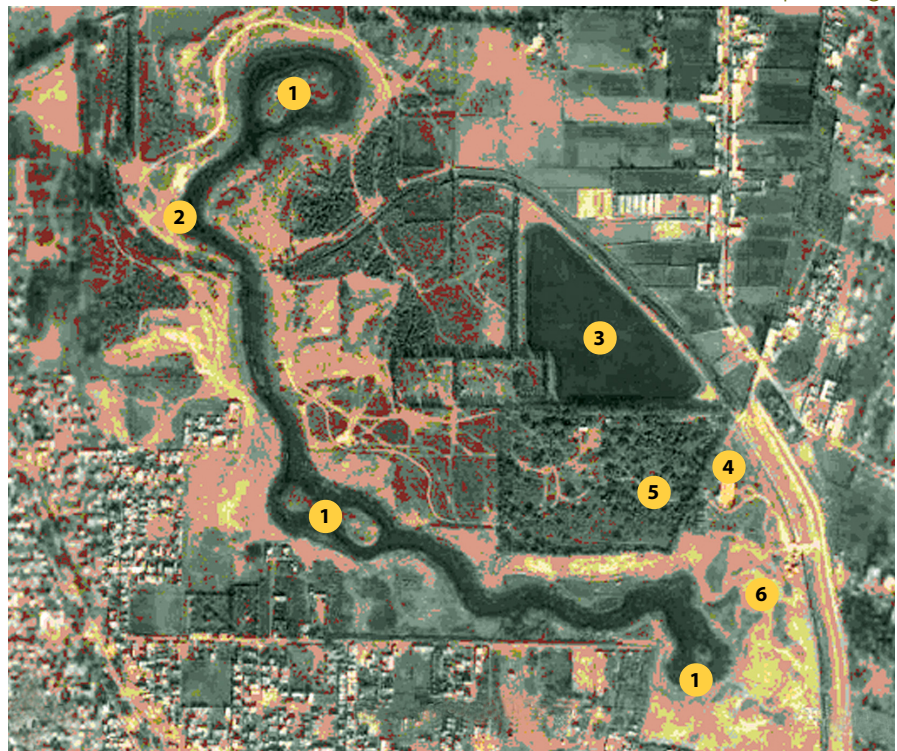
provides a stream of tangible and intangible benefits to the human society. Living resources, land, air and water are the natural capital that is utilized for economic development. Unscientific use of these resources would lead to unsustainable economic growth. Thus, conservation of biodiversity is of prime importance for the sustainable development of human societies.

The life supporting ecological systems that are integrated in any natural landscape are increasingly pressurized and altered. Delhi Ridge has been fragmented and invaded by alien invasive species and Yamuna is highly polluted and has lost most of its aquatic floral and faunal species.

Realizing the fact that while economic development is rising unabated but natural wealth is fast depleting, Delhi Development Authority (DDA), in collaboration with Center for Environmental Management of Degraded Ecosystems (CEMDE) launched a initiative of developing the Yamuna Biodiversity Park (YBP) to add to the natural wealth of the city to ensure that ecological goods and services continue to flow to people and are available for posterity.

The Park besides sheltering natural heritage would also serve as a tool in creating mass awareness in the importance and utility of biodiversity. The river Yamuna and Aravali ranges being important heritage of Delhi, two bio diversity parks – Yamuna bio diversity park and Aravali bio diversity park are being established as joint effort between DDA and CEMDE.

Originating from the Yamunotri glacier high up in the Himalayas, River Yamuna travels almost 1400kms, while passing



SATELLITE IMAGE OF BIODIVERSITY PARK

through the cities of Delhi, Mathura and Agra before merging with River Ganga at Allahabad. 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 reestablished along with pristine wetlands in Yamuna Biodiversity Park.

Located in the flood plains area in Jharoda Mazra, YBP is spread over an area of 157 acres. An additional 300 acres are expected to be added soon taking the total area to about 457 acres. Once the Park is fully developed, there would be net gain in Delhi's forest cover as well as additional habitat for a variety

### Plant Communities under various stages of development in YBP

1. Mixed deciduous with bamboo
2. Mixed deciduous without bamboo
3. Sal dominated mixed evergreen
4. Teak dominated mixed deciduous
5. Sal dominated mixed deciduous
6. Acacia woodlands
7. Grasslands
8. Thorn-scrub forests
9. Shallow wetland communities
10. Deep wetland Communities
11. Semi-evergreen low-lying forest
12. Broad-leaved mixed communities
13. Marshy communities
14. Riparian communities
15. Peripheral plantations
16. Island communities (*Acacia nilotica* - grasses)
17. Sacred grove
18. Herbal garden
19. Fruit orchard
20. Field gene bank

**Yamuna Biodiversity Park** A repository of 30-35 ecosystems | Home for hundreds of migratory as well as the native bird species | Will provide flood relief; prevention of siltation of reservoir; water purification; and enhancement of ground water recharge | Will buffer the ambient temperature | Provide security for endangered species | An ideal place for imparting education on environment, sustainable development and conservation | A Nature Reserve and Field Laboratory for research on ecosystems, conservation and ecology.

## >landscape design

of locally extinct floral and fauna species. Already within a short span of over two years, the number of bird species has gone up from 27 (in 2002) to 160 (2005) and plant species have increased from about 90 to over 450 within the same timeframe. All this has been made possible due to the creation of habitats that support wild communities

biodiversity features that can be experienced in their natural forms.

The site has a gently undulating topography, but the majority of the area is flat. Mounds created in some places give an appearance of rolling hills with shallow valleys. Two wetlands simulate the water body. One of them is 1.8km long and

the natural landscape.

It is aimed to eventually make the landscape of the Yamuna Biodiversity Park resemble a natural forest with different forest types composed of a wide range of species with varying habitat preferences.



and allow species to thrive.

It has been designed in a way to replicate a number of ecosystems right from the lowest storey to the highest storey level. In the process both the flora and fauna are encouraged to grow in their natural form and habitat.

As part of the landscape scheme, various ecosystems were located in different parts of the site by providing the required natural landforms as per the species requirements of a particular ecosystem like grasslands, thorn scrub forest, wetlands, Sal tree dominated areas etc. The idea was to make the visitor aware of the richness and character of these various ecosystems while allowing them to grow in their natural habitat. The circulation system is so devised that a visitor can be taken around either in a battery-operated vehicle, or by foot on the main trails. For the visitors, this enables an interesting and informative experience of the various ecosystems with their unique flora and fauna character.

An interpretation center and the visitors' area introduce the public about the unique

narrow and simulates the river. The second one is more open and deep and is spread over an area of 2 hectares. These have been created after digging and removing the soil from an otherwise saline and barren land that adds to the habitat diversity. These wetlands perform the much-needed ecological functions of water purification, ground water recharge, storage of rainwater etc. These also provided the necessary soil for raising the ground level to avoid flooding in the post monsoon period, so that development of terrestrial ecosystems and plant communities can go ahead unhindered.

Though the Park does not offer much in terms of artificial landscapes, but in an excellent example of replication of natural landscapes. Artificial development of functional ecosystems with similarity in natural ecosystems has been attempted for the first time in India. These have been designed keeping in mind that the Park will be a home for almost 2000 to 3000 species. Therefore, two guiding principles in designing the landscape were requirements of various floral and faunal species and recreating

Name of the Project

**Yamuna Biodiversity Park**

Location

**Jharoda Mazra, Delhi**

Total Area

**157 acres &  
expected to be 457 acres**

Client | Developer

**Central Government**

Landscape Design Team

**Landscape Unit, DDA**

**Delhi Development Authority**

**Savita Bhandari**

**Poonam Diwan**

**Smita Saxena**

Consultants

**Centre for Environmental  
Management of Degraded  
Ecosystems, CEMDE**

**Dr C. R. Babu**

**Dr Anupam Joshi**

Landscape Civil Contractor

**DDA**

Landscape Horticulture Works

Contractor

**CEMDE**

Year of Commencement

& Completion

**2003**

**Total project time : 10 years**



All images courtesy the authors.