Aravali Biodiversity Park:

A model for ecological restoration in urban area.

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1724

Acknowledgement

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Yours Sincerely
Charu Kaur Arora

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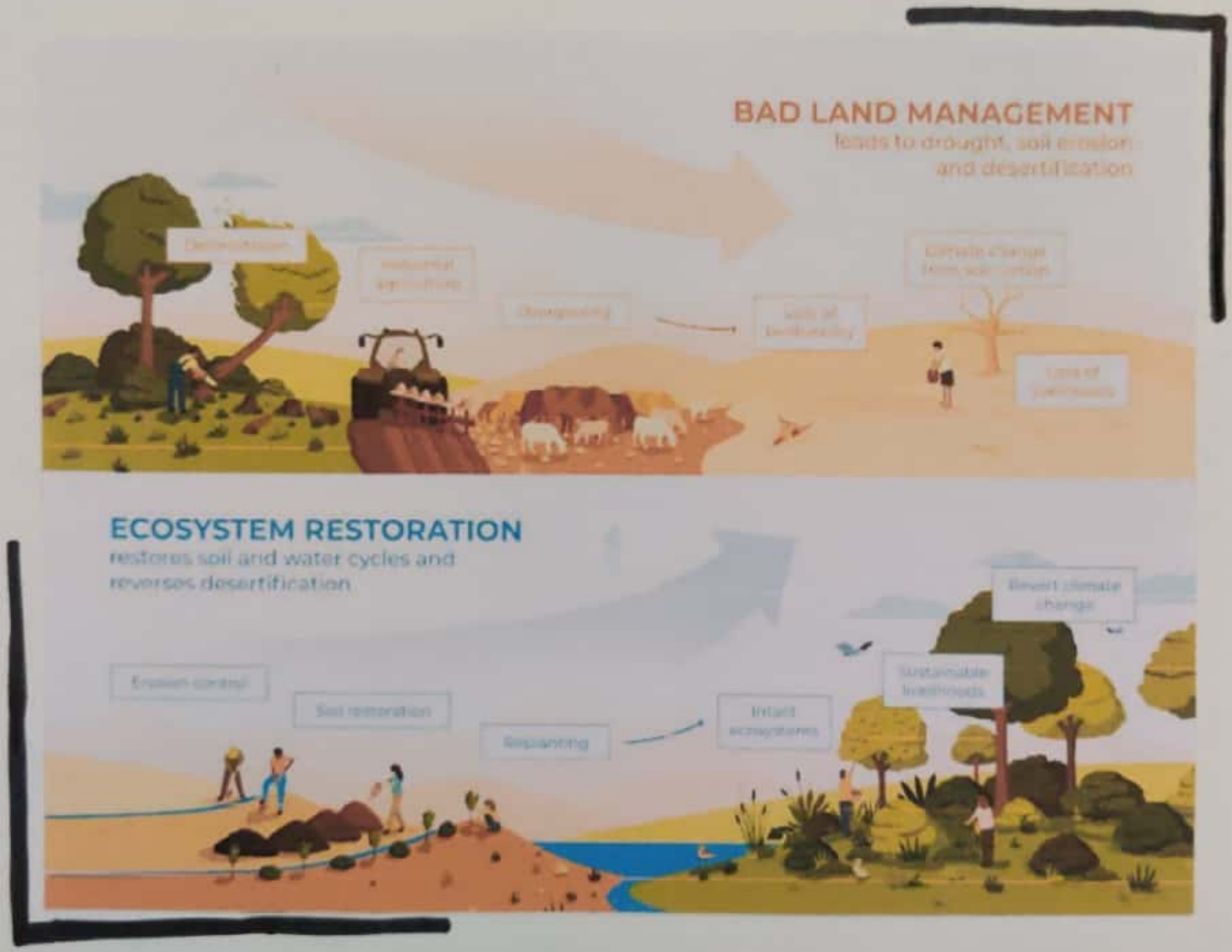
ECOLOGICAL RESTORATION

Ecological Restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed. Ecosystems are dynamic communities of plants, animals and microorganisms interacting with their physical environment as a functional unit. These communities can be damaged, degraded or destroyed by human activity. Damage refers to an ~~actual~~ acute and obvious harmful impact upon an ecosystem such as selective logging, road building, poaching, or invasion of non-native species. Degradation refers to chronic human impacts resulting in the loss of biodiversity and the disruption of an ecosystem's structure, composition and functionality. Destruction is the most severe level of impact, when degradation or damage removes all macroscopic life and commonly ruins the physical environment.



Ecological restoration aims to re-establish a self-organising ecosystem on a trajectory to reach full recovery.

Restoration Ecology is a relatively new science that provides the knowledge and helps guide the development of tools and technology needed to return an ecosystem to health. In many cases, restoration works to enhance the process of ecological succession. For restoration to be successful, it is essential to have an understanding of the dynamics of the ecosystem being restored and to ensure the genetic integrity of its plants by using locally propagated species.

Restoration projects differ in their objectives and their methods of achieving these goals. Many restoration projects aim to establish ecosystems composed of native species; other projects attempt to restore, improve or create particular ecosystem functions such as pollination or erosion control. Some examples of different kinds of restoration include Revigetation, Habitat Enhancement and Remidiations.

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IMPORTANCE OF BIODIVERSITY PARKS IN URBAN AREAS

Multi-storey office buildings and large apartment blocks are common reminders of the lack of available space in cities around the world. In the past 20 years, the built area in India's largest 100 cities alone has increased by almost 2.5 times or over 5000 km^2. The national network of highways and roads connecting these urban centres has also grown considerably, resulting in mosiac landscapes of cities, towns and farmland customised to service the needs of urban populations, invictably transforming ecosystems and displacing wildlife species from their natural habitats. Different types of urban growth result in different impacts on ecosystems and biodiversity. For instance, in Delhi, the trees in the old city reflect a British colonial legacy, with the arrangement and choice of tree species planted (mainly Keekar). As human activities create more fragmented environment, it becomes increasingly important to create linkages between natural areas, such as preserved forests, to maintain populations and their biodiversity.

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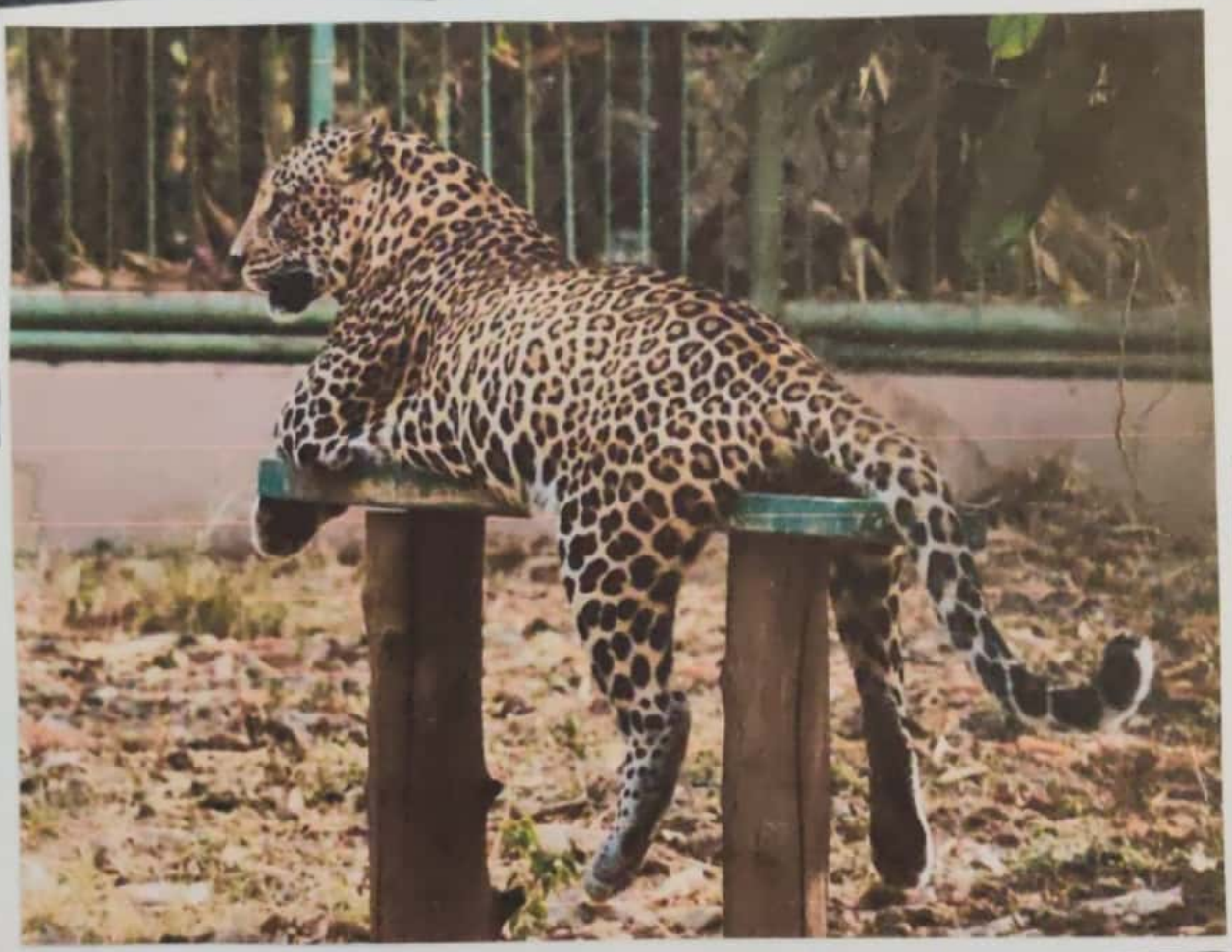
BIODIVERSITY PARKS IN DELHI

Unplanned Urbanisation has led to the distruction of many wetlands that were once abundant in Delhi. Few pockets of carefully planned nature parks are of utmost importance because these are probably the only sanctuary for birds, reptiles and mammals in a packed city like Delhi. Delhi has seven biodiversity parks.

(1) Yamuna Biodiversity Park

Spread across 9770 hectares on the Yamuna River front, Yamuna Biodiversity Park is one of the most favoured habitats of both migratory and resident birds. The Park also works for the conservation of agricultural crops, groundwater and availability of freshwater. The park has over 200 species of birds, 75 species of butterflies, 10 species of snakes and mammals like porcupine, Indian civet, wild boars and nilgai. The park is located in Jagatpur Khadar, Yamuna floodplains.



Yamuna Bio-Diversity Park

Neela Hauz Bio-Diversity Park

(2) Aravali Biodiversity Park

This park in Gurgaon is spread over 153.7 hectares. It is one of the restored parks, now complete with walking trails, plant nursery, over 300 species of plants, over 185 species of birds and a number of mammals and reptiles.

(3) Neela Haus Biodiversity Park

Located on the South Central Delhi Ridge of Aravali Range, right next to Sanjay Van, Neela Hauz Biodiversity Park is not very vast in terms of area, measuring only upto 8.90 hectares. Nila Hauz, primarily a freshwater lake, is a restored wetland which is now home to over 70 species of migratory as well as resident birds.

(4) Kamla Nehru Biodiversity Park

Also known as Northern Ridge Biodiversity Park, Kamla Nehru Biodiversity Park measures upto 87 hectares and is situated on the Northern Aravali leopard wildlife corridor. The park is located near Delhi University.

Jilpath Valley Bio-Diversity Park

(5) Tilpath Valley Biodiversity Park

The park measures upto 175 acres and falls under the South Delhi Ridge. At present the biodiversity park has tens of thousands of trees of more than 105 species. The park was earlier a barren land, with sand quarries, dead water bodies and no forest cover. Thousands of volunteers and saplings later, the park has become one of the green pockets in Delhi

(6) Tughlakabad Biodiversity Park

The park is spread across an area of over 200 acres and falls under Southern Ridge. It consists of the Tughlakabad fort and the lake area. A lot of sewage water treatment has been done in the park along with the restoration of lake area to attract birds and animals.

(7) South Biodiversity Park

This is going to be the 7th biodiversity park in the city. Plans to redevelop the 115 hectares of sewage are going on at present. The area lies just behind Kalindi Colony on the bank of Yamuna River.

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ARAVALI BIODIVERSITY PARK

Introduction :

Aravali Biodiversity Park has been developed by the Municipal Corporation of Gurgaon (MCG) and IMTGurgaon. The park spreads over an area of 153.7 hectares, near the Guru Dronacharya Metro station in Gurgaon, Haryana. The park contains ecologically restored and semi arid land vegetation. The Aravali Biodiversity Park has slowly transformed from a site of mining quartzite to a burgeoning ecosystem with rich (and increasing) floral and faunal diversity. The 380-odd acres are slowly being restored from the rocky, barren land with little to no soil cover and an infestation of Vilayati Kikar (Prosopis juliflora) to a rich young ecosystem. Taking the help of Vijay Dharmana (an eco-restoration practioner), a systematic approach was taken - identifying forest species native to the Aravalis, drawing up planting plans, and creating a network of drip-irrigation systems.

HISTORY

What is interesting about the park is how the process of forest formation can be seen to be taking place slowly over the course of a generation. In 2004, the soil cover was too poor to support too much vegetation, while the Vilayati Keekar flourished, not much else could, starved for nutrients in the denuded land and muscled out by the more invasive species. Water, too, was a problem - while the area receives rainfall during monsoon, the denuded and rocky surface from which the water quickly drains off, prevented the growth of saplings which would have sprouted during the rains from being able to survive the blistering summers. In order to address the issues, a grid-work of drip irrigation pipes were laid, which would artificially supply trickling amounts of water to the plants during hot summer months. The planting was carefully planned, and saplings grown in the in-house nurseries were transplanted in organised drives involving schools, corporates and citizens - many thousands of saplings have been planted over the years. Manuring and mulching were routinely done.

As can be expected, the grasses were the first to take root and set in motion the process of slowly re-vitalizing the ecosystem. Insects, rodents and birds began making their homes, eating seeds, saplings and each other. Following suit were their predators - snakes, civets and jackals.

It turns out that the park is now slowly transitioning from a grassy ecosystem to a shrubby one. The trees are still young, and do not provide dense cover, leaving the tracts of land open and exposed. The bird populations are thus similar to those seen in gardens, with open-country birds, which prefer open woodlands and shrublands currently dominating. As the forest matures, however, the population composition changes. The change is reflective of two different processes happening in tandem - ecological succession - where the species composition changes gradually over time as the growing and changing flora and fauna provide hospitable territory and colonization - a relatively faster process where species from nearby forests migrate to occupy the new habitat. Consequently, species which would be otherwise rare for NCR such as the Sirkeer Malkoha are slowly becoming more common.

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FLORA AND FAUNA

The park has over 400 species of plants (with over one lakh trees thriving in its boundaries), 200 of which are endangered or rare. They are host to over 183 species of birds, 38 species of butterflies, and now are slowly becoming home to innumerable species of insects, spiders, beetles, aphids as well as larger animals such as jackals, porcupine, civets, hares, snakes, mongai. The park attracts over 120 species of birds including Oriental Magpie Robin, Rabus-fronted Prinia, Purple Sunbird, Common Tailorbird, Rufous Treepie, long-tailed Shrike, Jungle Prinia, Common Babbler, etc. Pointing to the growing trees, it has been described that as the forest matures to resemble the nearby forests of the Mangarbani and other mature Aravali forests more closely, they expect the bird populations to shift in response as well, and hope to welcome hornbills, woodpeckers, fly catchers, fantails, barbets and other dense-foliage birds.

LESSONS FROM GREEN SUCCESS

Spread over
692 acres
in south-central ridge

Started 13 years ago in a mined area, it was devoid of any species but vilayati kikar

5 different types of forest patches

- Now has 25 different types of animal species and over 80 kinds of birds
- Different types of trees and shrubs planted to create those native to the Aravalis
- Waterbodies created to improve groundwater recharge
- Natural restoration brought a number of animals and reptiles back. These include civet cats, golden jackals, mongoose and 26 reptile species

Then

Now

Then

Now

BUT WHY ARE ARAVALIS SO CRUCIAL?

- Catchments for rivers and streams
- Help in groundwater recharge
- Home to hundreds of native plant and animal species
- Define the climate of the region, particularly rain
- Act as a green barrier against desertification

ALMOST-IRREVERSIBLE DAMAGE DONE

- A study found 12 gaps in the range because of absence of adequate forest cover and degradation of hills
- Continued mining has led to irreparable damage to natural environment

WHAT IT MEANS FOR YOU Frequent dust and sand storms in UP, Punjab and Delhi to add to pollution. Desert sand drifting towards fertile Gangetic plains

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THREATS ON THE PARK

The NHAI is planning to build a six-lane expressway cutting through the park, with the aim of decongesting traffic between Delhi and Gurgaon. The planned route will destroy anywhere from one-half to one-third of the park, eroding both the years of effort as well as the money which has been invested. Many worthier articles have been written about how the Aravali's serve as the green lungs in an over-polluted cityscape and how the water table, which would have slowly inched upwards with the park and other ventures of reforestation and restoration, will now be further degraded. For over two months, activists, runners, school children and regular citizens campaigned against the NHAI's plan. The end result of the weeks-long campaign was that the authorities relented! The NHAI maintains that the plans they will come up with are an improvement on what was being proposed earlier. However, activists argue that any impact on the green area, no matter how small, is undesirable.

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Thankyou