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Urban Forestry in Chandigarh

- City Forest
- Shivalik Arboretum
- Butterfly Park
- Peacock Park
- City Bird Sanctuaries
- Nature Interpretation Centre
- Botanical Garden
- Sukhna Wildlife Sanctuary

Greening
Chandigarh
Action Plan
2019-20

NAGAR VAN (CITY FORESTS)

Established under Nagar Van Udyan Yojana

“एक कदम हरियाली की ओर”

- Total Area : 100 Hectare
- Location of Project Area : Lake Road, Chandigarh Range, UT Chandigarh
- Implementing Organization : Department of Forests & Wildlife, UT Chandigarh

Nagar Van Udyan Yojana is an Urban Forestry Scheme of Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi, which aims at creating at least one city forest in each city having Municipal Corporation/ Class I Cities for providing wholesome healthy living environment and contribution to growth of smart, clean, green and healthy city. Under this scheme, Department of Forests & Wildlife, UT Chandigarh has created City Forest (Nagar Van) in and around Lake Reserve Forest Area. It spreads over an area of 100 hectare with following objectives:-

OBJECTIVES

- To create awareness on green and sustainability
- To enhance visitors & society towards the conservation of natural resources
- To provide education on importance of forest and trees in the Chandigarh region
- To provide greenery in cities as vital component, better landscaping and reduction of city temperature
- To protect forest and natural resource associated with the region
- To enhance sports, food and leisure

FACILITIES

- Walkways / jogging tracks / Mountain Trails
- Restroom / Water Drinking
- Children's / Elderly / Handicapped
- Meditation Hall
- Knowledge Encyclopedia / Green Art Gallery
- Children's Park
- Public Compositions



CHAPTER 6

URBAN FORESTRY IN CHANDIGARH



Chandigarh is a modern city and forestry in Chandigarh is different from traditional practices of Forestry in many ways. Urban forestry is an integral part of city planning and development. Urban forestry advocates the role of trees as a critical part of urban infrastructure. There is no direct dependency of people on Forest for their livelihood. From management point of view, the Forests in Chandigarh may be categorized in Wildlife Sanctuary Area and City Reserved & Unclassed Forests Areas. The objective of management of Forests in Sanctuary area is to conserve the Soil & Moisture in the Catchment of Sukhna Lake and to improve the Wildlife habitat inside Wildlife Sanctuary (WLS), while the objectives of management of Reserved & Unclassed Forests of Chandigarh are to maintain and improve the greenery in the city, providing Ex-Situ Plant Research Areas and providing various recreational avenues to the citizens, such as Nagar Van, Shivalik Arboretum, Butterfly Park, Peacock Park, City Bird Sanctuary, Botanical Garden etc. The details of these creations are as follows :-

NAGAR VAN- CITY FOREST

Adding more serenity to Chandigarh, the city forest also called as Nagar Van is opened for public last year by Chandigarh Administration. Nagar Van is spreading over a sprawling 100 hectares and situated near the Heart of City Beautiful i.e. Sukhna Lake. City Forests has been established under Nagar Van Udyan Yojana, which is an urban forestry scheme of Ministry of Environment, Forests and Climate Change. It was inaugurated on 24th April, 2018 by the Administrator of U.T. Chandigarh

Sh. V.P. Singh Badnore. Maximum efforts have been made to keep this area natural without disturbing the natural habitat of existing fauna. The forest department has made a lot of efforts in order to develop the Nagar Van which is indeed commendable and deserve appreciation.

Before the development of City Forests, this part of lake forest was considered as degraded forest. Maximum area of forest was submerged in the sewage water coming from village kansal. Due to sewage water stagnation valuable tree species were dried up. Stagnated sewage water was posing threat to the valuable flora and fauna of this region. To protect the flora and fauna, Forest department decided to treat the sewage water through the traditional method. Department surveyed the area and channelized the stagnated sewage water into shallow water bodies. Natural cleaning materials like iron ores, rice straw, gravel etc has been put inside the channel constructed to channelize the water. After passing through the cleaning process, bio-purified water stores in



(Before)



(After)



(Before)



(After)



(Before)



(After)

shallow water bodies further which is use to irrigate the area. Now aquatic life is flourishing in these shallow water bodies. CPCC also tested the water samples and results shows that there is appreciable reduction in the BOD and COD levels in treated water as compare to untreated water near the inlet point.

To attract the visitors many facilities like earthen tracks, shallow water bodies, open air gym, kids play section, Meditation Hut, public convenience etc. has been provided. Interpretive signages showing

information about the local flora and fauna installed along the tracks to sensitize the visitors about the environment. Natural looking wooden benches has been made by using dead and dry trees and placed along the tracks. This place is heaven for bird watchers due to the presence of more than 65 species of birds. Department also holds various events in this park with the collaboration of NGO's/Eco-clubs in which efforts have been made to create awareness about the conservation of natural resources in school/college students.

Nagar Van is part of Lake Forest which provides ideal habitat to the vast variety of flora and fauna. Visitors can easily spot Sambhar (*Rusa unicolor*), Chittal (*Axis axis*), Neelgai (*Blue bull*), Wild Boar etc. moving along the walking trails. Animals like Jackal, Indian civet, Porcupine, Common mongoose etc. also found in this forest area. Vegetation mainly includes Khair (*Acacia catechu*), Dhaak (*Butea monosperma*), Kikar (*Acacia nilotica*), Musquit (*Prosopis juliflora*), Amaltash (*Cassia fistula*), Mango (*Mangifera indica*), Semal (*Bombax ceiba*), Shahtoat (*Morus alba*), Peepal (*Ficus religiosa*) etc. Reptiles including snakes like Cobra, Rat snake, Common Krait, Russell's viper, Indian python and common monitor (*Gho*) also present in this area.





CITY FOREST NEAR I.T. PARK

A total area of 125 acres of Manimajra Village was acquired by the erstwhile Punjab Government prior to 1966 for establishing Brick Kilns for preparation of bricks required for development work.

After the creation of Chandigarh, as per Punjab Reorganization Act, 1966, this area was transferred to Union Territory of Chandigarh. Chandigarh Administration closed the brick Kilns, in late 1980's and area was kept as land bank to be used in lieu of Forest Land Diverted for Non-Forestry purposes. Possession of 12.35 acres of this area, near I.T park was handed over to the Forest Department during the year 2000-2001 in lieu of diversion of forest land elsewhere in the city, with a mandate to do afforestation.

When Forest Department took possession of this land, it was completely a barren land, as the top soil was used for a long period for preparation of bricks. A challenging and cumbersome task was endowed to the Forest Department, to create a green belt in this barren area. Forest Department took this challenge with high spirit and motivation.



Extra efforts were put by the officials and variety of plants suitable to this site was planted during 2000-01 & onwards.

As a result of dedicated and sincere endeavour of the Forest Officials once a barren land, is now a Green Belt which has been named as City Forests. More than 40 species of trees are growing in this area. This forest is a paradise for morning & evening walkers & Storehouse of fresh oxygen & relaxing place for the I.T. professionals.

FACILITIES AVAILABLE IN CITY FOREST

- Nature Trail
- Sitting Benches
- Interpretative signages
- Rain Shelters
- Meditation Huts





SHIVALIK ARBORETUM

Shivalik Arboretum is situated near the Transport Light in Sector-26, Chandigarh. This beautiful place is spreading over an area of 11.115 acres. Before the development of Shivalik Arboretum, this site was full of industrial waste without any vegetation. It was challenge for the Administration how to use this valuable land for the benefit of society. In 1993-94, the Forest Department took up the challenging task of converting this barren land into vegetative land. Due to the sincere efforts of the department, green belt has been developed. Today Shivalik Arboretum has got a collection prominent species of plants found in the Shivalik region like Bael, Siris, Khair, Kachnar, Kikar, Amaltash, Kadam, Neem, Amla etc. Boundary of Shivalik Arboretum is totally fenced. Department had developed earthen tracks on which local people can walk and enjoy the healthy environment. Flowering plants planted along the tracks gives beautiful look to the Shivalik Arboretum. Interpretive boards showing information about the flora are installed all along the track to create awareness among the visitors.



BUTTERFLY PARK



Butterfly Park
Sector-26, Chandigarh
Inaugurated by
Shri K.K. Sharma, IAS
Minister to Administration, G.T. Chandigarh
On 21st March, 2012

Welcome

Butterfly Park is a beautiful garden of over 1000 species of butterflies and flowers. It is a great place to spend time with your family and friends. The park is located in Sector-26, Chandigarh, and is open to the public. The butterflies are of various colors and sizes, and the flowers are in full bloom. The park is a great place to learn about butterflies and their life cycle. The park is also a great place to enjoy the beautiful scenery and the fresh air. The park is a great place to spend time with your family and friends. The park is located in Sector-26, Chandigarh, and is open to the public. The butterflies are of various colors and sizes, and the flowers are in full bloom. The park is a great place to learn about butterflies and their life cycle. The park is also a great place to enjoy the beautiful scenery and the fresh air. The park is a great place to spend time with your family and friends.

Thank You

FOREST & WILDLIFE DEPTT. CHD. (U.T.)



BUTTERFLY PARK

Mother Nature holds in herself the abundant beauty and art. In an ocean of creations, butterflies are small yet beautiful creatures that steal hearts. In cities, it is now difficult to see these beautiful winged creatures due to loss of habitat. But due to the fruitful efforts of Forest Department sighting of different butterflies within the city has become possible. Department of Forests & Wildlife had developed Butterfly Park in Sector-26, Chandigarh which is spreading over an area of 7 acres. It was inaugurated on 21st March, 2012 by Sh. K.K Sharma, IAS, Adviser to the Administrator, Chandigarh. The park has been designed to facilitate an ideal environment for the breeding of butterflies. This beautiful park attracts lots of visitors. To make ideal habitat for the butterflies special care is taken. This park is full of plants and vegetation. Host and Nectar plants have been planted inside the park to attract butterflies and also for the breeding of specific butterflies species. Host plants like Mango, Salix, Citrus spps., Amla, Ashoka, camphor, etc. are planted for the breeding of Butterflies and Nectar plants (Seasonal) like Dahlia, Pansy,

Marigold, Sweet peas, Antrinium, Cosmos, Zinnia etc. are planted to fulfil the nectar requirement of butterflies. In addition to nectar plants butterflies also derive nourishment from pollen, tree sap, rotten fruits, dun and dissolved minerals in wet sand or dirt. Rotten fruits are placed at different locations to attract the butterflies. Department in collaboration with various NGO's and Eco Clubs organizes visits of school students in which efforts are made to sensitize them about the environment. Butterflies can be seen throughout the year in this park. The sighting is very good during the warmer months-February to October. During the extreme winter period December and January sighting is less but not impossible.

FACILITIES AVAILABLE

- Nature Trail
- Butterfly Conservatory
- Interpretation Centre
- Interpretive Boards
- Interpretive signages
- Host/Nectar Plant Boards
- Waterfall structure





Great Eggfly

Indian Fritillary



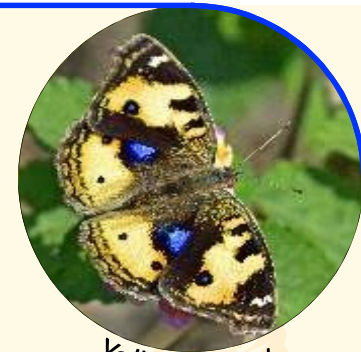
Blue Tiger



Bright Babul Blue



Yellow Pansy



Common Pierrot



Baronet

Chestnut Tiger



Striped Blue Crow



Common Map



Common Mormon



Clear Sailor



Rustic

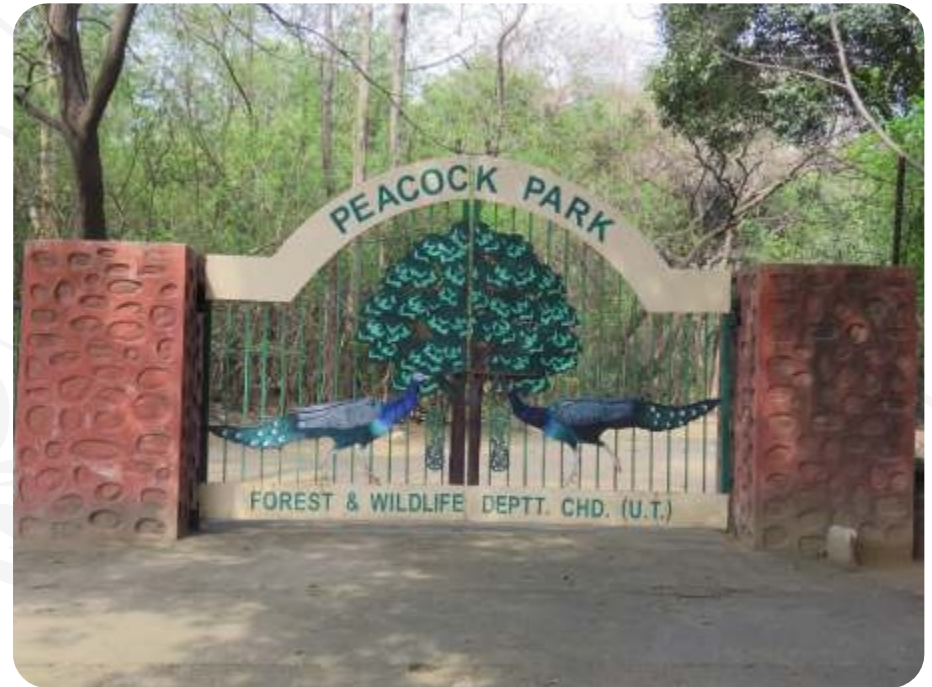


Some of the Butterflies of Chandigarh



PEACOCK PARK

Department of Forests & Wildlife has developed a 5.7 acre green area in Sector-39 as Peacock Park. This area is full of vegetation and a promising habitat for peafowls. Come evening and you can hear the loud cries of these magnificent birds that often pay locals a visit, especially during the rains. The area has been fenced from all sides to provide a secluded place for resting and breeding of our National Bird. Adequate arrangement has been made for provision of water for the birds inside the park in the form of artificial ponds. The objective of management in this park is to provide safe resting place to peafowls which does not have any human disturbance. Today, the park is having presence of good number of peafowls, who have made it their preferred shelter.





CITY BIRD SANCTUARY

In 1975, Shri S.K. Sharma, Secretary, Environment Society Chandigarh observed that Green Parakeets were flying over old Ropar – Ambala road in an East – West corridor which happens to be passing over sector -21 park, have found a new home there for roosting i.e. spending night there. It was estimated that there were as many as 25000 green parakeets. Increased urbanization/heavy construction activities in adjoining Chandimandir, Manimajra & Panchkula creating disturbing conditions for their ecology had urged the parakeets to find Sector-21 park as a new home. He proposed to the Government to create a wildlife sanctuary in that park.

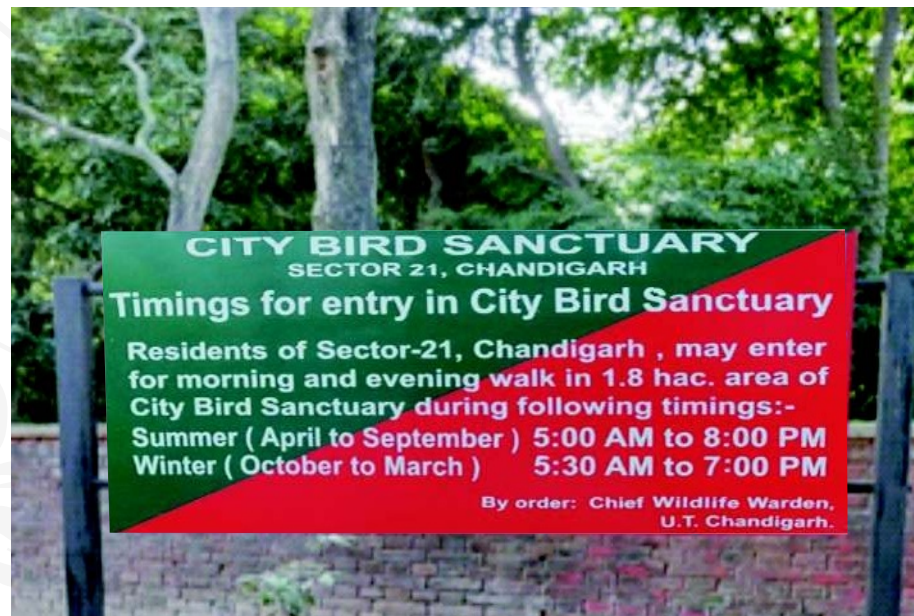
This led the Chandigarh Administration to initiate a process to create first of its kind in the country, a 3 hectare –urban wildlife sanctuary (2.9 Ha. to be precise) in the heart of the city, which is surrounded by the buildings all around. Manifestation of this change led to the changing the nature of park from ornamental to the environmental, requiring natural surroundings. Thus, it was decided that the park be shifted from UT Horticulture Department to the Forest Department.

Continuing efforts on the part of Environment Society finally led UT Administration to declare much cherished urban wildlife sanctuary as a second wildlife spot in city Chandigarh, a sequel to earlier declaration of Sukhna wetland. It was anticipated that this sanctuary would promote and inculcate love for birds in general; especially amongst the children.

In common parlance, this has come to be known as Parrot Garden or “Tota Park”.

Status of the Park:

Chandigarh Administration declared 2.9 hectare area of sector



21 park as Chandigarh City Bird Sanctuary on 29th September, 1988.

Flora & Fauna

Following other species of avi-fauna have been noted in the CCBS in addition to the green parakeets at the time of its creation:

Common Myna, Brahminy Myna, Seven sisters, Grey Wagtail, Grey Hornbill, Blue Rock Pigeon, Indian Robbin, Red vented Bulbul, House Sparrow, Bush Chat, Starling Hoopoe, Ring Dove, Green Bee Eater, Spotted Owlet, Flower pecker, Purple Sun bird.

Now, it is known that three species of the parrots roost in this park. In addition to Green Alexandrin Parakeets (*Psittacula eupatria*), rose-ringed parakeets (*Psittacula krameri*) and peach headed parakeets (*Psittacula cyanocephala*) are also seen in this park.

Flora: Amongst flora, following trees, shrubs or herbs are seen in the sanctuary:



Trees: *Ficus infectoria*, *Syzygium cumini*, *Schleichera oleosa*, *Morus nigra*, *Terminalia arjuna*, *Sesuvium portulacastrum*, *Terminalia bellerica*, *Dalbergia sissoo*, *Thuja compacta*, *Cinnamomum camphora*, *Ficus religiosa*, *Psidium guajava*, *Mangifera indica*, *Casuarina equisetifolia*.

Bushes: *Bougainvillea*, *Gardenia*, *Jasminum oleosum*, *Ixora*, *Malvaviscus*, *Hibiscus rosa-sinensis*

Ground Flora: It mainly consists of grasses such as *Cynodon dactylon*, *Dicanthium annulatum*, *Bothriochloa*, *Echinochloa colonum*, *E. spicigera*, *Digitaria*, *Paspalum*, *Paspalum*, *Dactyloctenium aegyptium*, etc. others such as *Sida cordifolia*, *S. rhombifolia*, *Launea*, *Tridax*, *Tribulus terrestris*, *Rivina humilis*, *Justicia simplex*, *Peristrophe bicalculata* etc.

Main species which provide shelter to Parakeets are deeply foliage trees such as *Ficus infectoria*, *Syzygium cumini*, *Morus alba* and *Schleichera oleosa*. Former three definitely provide a conducive niche for the parakeet by way of providing fruits for nibbling to the parrots.

The sanctuary occupies an area of 1.8 Ha and is surrounded by a wall separating it from the Park. The sanctuary has a water pump of MCHP at one end on western side. The area has a cutcha undefined path in the sanctuary covering about half the area. The remaining area is inaccessible due to overgrowth of the ground vegetation as also in the remaining part. A 30-year closure of the area has converted this part as a natural forest. Competition among the trees have really grown them into tall trees with also complete shade on the ground. Most of the tall trees have large canopies, thus enclosing large volume there. This appears to be a conducive factor for parrots to roost there and a kind of protection afforded from the predators such as vultures requiring large

or clear space for the hunting of smaller birds. On the other hand, tall trees with large canopies have led to suppression of light demanding rejuvenation. Even planting of saplings in the under canopy has led to stunted growth of such trees such as *Psidium guajava*, *Mangifera saplings* etc.

There is a shallow water point created and fed with a rubber pipe from the pump. There are 3 to 4 benches placed at various locations in the sanctuary but in the dilapidated shape. The kutcha path is half way sunken into a shallow pond created by the excessive water inflow from the small gate opening in the park which appears to be draining south-westward into the sanctuary due to natural slope and in the eventuality of rainfall.

Movement of Parakeets

While returning to the roost, parakeets follow a pattern of movement within the park area which has been depicted diagrammatically over the GE imagery.





Mahatma
Interpretation Centre
Jalandhar
महात्मा विचार केंद्र
जलंधर



NATURE INTERPRETATION CENTRE

Nature Interpretation Centre is developed for giving boost to eco-tourism in the city and also to sensitize the visitors about the importance of conserving the natural resources. This centre is divided into two sections having different themes, one section has three dimensional pictorial display panel of migratory birds, resident birds and other rare species with the highlights of their habitat whereas other section displays life size diorama of animal species found in Sukhna Wildlife Sanctuary like Pangolin, Sambhar, Jungle cat, jackal and reptiles etc. To sensitize the visitors about the necessity to conserve nature, interactive voice modules of birds, touch screen kiosk, mural, indoor and outdoor signages has also been installed at the centre. Attractive interpretive signages showing information about the importance of wetlands and impact of climate change, flora and fauna of Sukhna



Wildlife Sanctuary and conservation measures, aquatic ecosystem of the world, measures taken to control the siltation problem of Sukhna lake, Avifauna of Sukhna Lake etc also installed inside the centre to create awareness among the visitors. Furthermore, the information on the flora and fauna of the Sukhna Wildlife Sanctuary as well as of the Sukhna Lake have been displayed in the form of 15 way sides signages installed all along the track of Sukhna Lake so that visitor can simply walk by and get to know about the bio-diversity of the area. Recently, centre was updated with some interactive 3d images of migratory birds to enhance the experience of bird lovers as well as other visitors. The images are linked to a mobile application 'Digiwings'. This application not only displays 3D images of the birds but one can also listen to the voice of birds as well as get to know more details about the avian species.





BOTANICAL GARDEN

A botanical garden is a place where plants are grown and displayed for the purposes of research and education. Chandigarh, the 'City Beautiful' situated in the foothills of Shivaliks is blessed with a climate that is suitable to accommodate number of species of flora of different climatic regions. It was worthwhile setting up a Botanical Garden here with a purpose to conserve the flora of the region as well as those exotic and near extinct species. With this background, Chandigarh Administration has established a Botanical Garden near village Sarangpur. This garden spreads over 176 acres of land. It was inaugurated by Gen. (Retd) S.F Rodrigues, former Governor of Punjab and Administrator of U.T. Chandigarh.

Every day more than thousand persons visit the garden. Besides these Botany students also visits this garden for updating their knowledge and to get information about the flora. Botanical Garden offers many facilities for the visitors. It has Energy Park building, Information Kiosk, Battery Operated Vehicles, ample parking space, lawns for recreation, benches, shelters, Meditation huts, cycle track, pedestal path and public amenities etc. In addition to above facilities work for the setting up of Interpretation Centre is also under progress. Department also committed to sensitize the villagers of surrounding areas. Many workshops/training programmes has been conducted in Botanical Garden for the benefit of society. Recently Fern House has been established inside the Botanical Garden for the conservation of Ferns.

This garden is divided into different sections. Some of them are:-

Medicinal Plants Section:- More than 100 species of medicinal & herbal plants have been planted in medicinal plants nursery & in various plants specific plots

Aquatic plants Section:- Built in the form of Lotus with 25 sub compartment, the aquatic section spreads over an area of 0.30 acres. More than 15 exotic as well as rare aquatic plants species have been planted in this section

Cactus section :- This section has a collection of around 100 cacti species. This section is spreading over an area of 10 acres. A poly-carbonate house has been made in which various cactus varieties collected from the Regional Plant Resource Centre have been planted.

Pinetum:- Spreading over an area of 25 acres this section has a collection of around 14 pine species or related conifer species. Though most of the conifer species prefer temperate conditions but an attempt has been made to familiarise the visitors with a few conifers species by growing them in this tropical region.

Sacre Grove Section:- In our country there are various forests which are presumed to be protected by some Deity or Local God. Sacred Grove Section developed in the form of a Cosmic Tree-' the Sarva Dharma Variksha'. This cosmic tree has 11 branches & each branch represents a specific religious vatika.

Bambusetum:- Planted along two seasonal nallahs passing through the garden with more than 22 species of Bamboos.

Palmatum:- Spreading over an area of 7 acres, this section has a collection of 20 species of palms & Cycads.

Japanese Garden:- Spreading over an area of 5 acres of land. Various features of Japanese Garden such as dry river, bridges, lawns etc. have been developed.

Nutrition Section:- This section spreads over an area of 3 acres. As the name suggests, this section has a collection of more than 20 tree species, fruit of which are fit for human consumption.



Ficus Grove:- This section spreads over an area of 9 acres. In this section Ficus Genus, ranging from wild varieties to the cultivars have been planted

Arboretum:- Arboretum is a place where an extensive variety of woody plants are grown for scientific, educational and ornamental purposes. Spreading over an area of 16 acres, this area has 128 woody tree species.

Bulbous Garden:- This section is developed over 2 acres of land. It consists variety of Bulbous plants of this region like –Gladiolus, Dafodil, Nargis, Lillium, Iris etc

Tropical Rain Forest Section: A number of tree species specific to rain-forest have been planted in this section. This section will be enriched further with more such species and also matching features.

Rare Plants Section: An area of about 3 acres has been allocated to this section. The Collection includes rare plants from India & abroad.



Botanical Garden Nursery



Aquatic Section & Fernarium



Cactus Section



SUKHNA WILDLIFE SANCTUARY

In Chandigarh, Sukhna Lake was constructed in 1958 across the Sukhna Choe, a seasonal Stream flowing down the Sivalik hills, to enhance the aesthetic appeal of the city and as a major tourist attraction. The creation of the lake was an integral part of the master plan of Chandigarh prepared by famous French Architect Le-Corbusier. The total catchment area, hilly and agriculture land, of this manmade lake is 4,207 Hac. The Shivalik hills in the Sukhna catchment are ecologically sensitive and geographically unstable and are highly prone to erosion during rains. Therefore, after the initial year of the construction of lake the siltation rate was very high due to soil run off from the hilly catchment area.

The alarming rate of soil erosion and fast siltation of the lake forced the erstwhile Punjab Government acquire the hilly catchment area of

the lake. During 1960's 26 Sq kms of the land was acquired for the soil and moisture conservation measure. In order to minimize & control soil erosion from hilly catchment area, various vegetative and engineering methods were adopted by Forest Department. These soil & water conservation measures under-taken on sustained basis yielded very good results and the rate of siltation of the lake has reduced significantly from 150 ton/hac/year to 3-5 ton/hac/year. Soil conservation measure supplemented with massive afforestation led to the development of very good forest in hilly catchment area which is now an ideal habitat for wide variety of fauna. This area (26 sq. kms) due to Ecological Faunal, Floral, Geomorphological, Natural and Zoological significance for the purpose of protecting, propagating and development wildlife and its environment was declared as Wildlife Sanctuary vide Chandigarh Administration Notification No. 694-HII(4)-98/4519 dated 6th March, 1998.



Kansal Gate - Entry to Sukhna Wildlife Sanctuary



Nepli Gate - Entry to Sukhna Wildlife Sanctuary



Chital of Sukhna Wildlife Sanctuary



STRATEGY

The effort to save Sukhna Lake started with the acquisition of the present 26 Sq kms of the land area in phases and taking up intensive tree plantation on this land. In the early seventies, soil conservation measures at a rather modest scale were taken up in the catchment. But even the well planned plantation schemes could not yield the desired results because it was a formidable task to achieve a reasonable success rate in this most degraded and difficult terrain. There was a network of hundreds of ever deepening and widening gullies with frequent landslides which made it difficult to achieved high rate of success in tree plantation. Therefore it was decided to go for intensive soil conservation measures along with tree plantation.

VEGETATIVE MEASURES

- Plantation of Indigenous species
- Plantation of soil binding grasses (Arundo donax etc.)
- Patch sowing in hilly slopes
- Natural regeneration

ENGINEERING MEASURES

- Silt retention dams
- Gully plugging structures
- Grade stabilizers, spur, revetment etc.
- Desalination of silted up dams

RESULTS ACHIEVED

- “Siltation rate reduced from 150 Ton/Ha/Yr to 3-5 Ton/Ha/Yr”
- Physical and Chemical properties of soil has improved in terms of
 - Lower pH

- Increased Phosphorous and Potash
- Increased Organic matter build up
- Improved root respiration
- Formation & Accumulation of more litter on the forest floor
- Overall Tree & Bush Density improved
- Development of good wildlife habitat
- There is appreciable increase in the population of wild animals like- Sambhar, Chital, Peacock, Red Jungle Fowl, Porcupines and Pangolin etc.

The First wildlife census exercise was carried out in 2010. The census was carried out by the Department of Forest & Wildlife, with the technical assistance of experts from Wildlife Institute of India, Dehradun. Other stakeholders which participated in census exercise were students of Punjab University, NGO's and Birding experts. As per census report:

- 1) The forest of Sukhna Wildlife Sanctuary is healthy, with good ecological diversity and least disturbance. During the two days survey, teams encountered 9 species of mammals and 63 species of birds.
- 2) As per the report, the presence of all these Mammalian species suggest the potential of Sukhna Wildlife Sanctuary as one of the important wildlife and biodiversity conservation area.
- 3) The total abundance estimation of Sambhar in Sukhna Wildlife Sanctuary is between 1000 to 1200.
- 4) The total abundance estimation of Peafowl in Sukhna Wildlife Sanctuary is between 900 to 1100.



CAMERA TRAP

Department of Forests & Wildlife recently started installing trail camera in Sanctuary area to capture the images of wildlife and to monitor the habits of wildlife. This trail camera is helping the department to have idea an about the wildlife activities in the specific zones of Sukhna Wildlife Sanctuary. These traps are allowing us a glimpse into a world humans are rarely privileged to experience. These camera traps are wildlife friendly because while capturing the photos wildlife doesn't get disturb. Even during the night time camera captures images without flash using the latest technology. So Department is keeping an eye on the activities of wild animals without disturbing their routine activities.



Camera Trap in Sanctuary Wildlife Sanctuary to capture the images of wildlife

HABITAT IMPROVEMENT FOR WILDLIFE

Department of Forests & Wildlife is committed to provide ideal habitat to the wildlife in Forests areas of Chandigarh. SWLS is mainly comprises dry and deciduous tree species like Dalbergia sissoo, Accacia nilotica, Accacia catechu, Prosopis juliflora etc. but lacking fruit tree species. So department had decided to plant local fruit tree species in forest areas of Chandigarh. The purpose was to attract the animals and birds. Now there are abundance of natural food material inside the forest for wildlife. Department is also expecting that monkeys will naturally attract to these fruit growing plots which will help to control the monkey menace problem in city areas of Chandigarh



Plantation of Fruit tree species



Campa Plantation

FLORA

There are wide variety of trees, shrubs, herbs, grasses and climbers. The prominent among them are: *Acacia catechu* (Khair), *Acacia modesta* (Phulai), *Acacia arabica* (Kikar), *Acacia leucophloea* (Raeru), *Dalbergia sisoo* (Shisham), *Anogeissus latifolia* (Chhal), *Azadirachta indica* (Neem), *Bombax ceiba* (Semal), *Butea frondosa* (Dhak), *Bauhinia racemosa* (Kachnar), *Emblica officinalis* (Amla), *Morus alba* (Tut), *Lannea grandis* (Jhingan), *Diospyros montana* (Kendu), *Murraya koenigii* (Kari patta), *Prosopis juliflora* (Muskat), *Cassia fistula* (Amaltas), *Zizyphus jujoba* (Ber), *Vitex negundo* (Chinese chaste) etc.

FAUNA

- **Mammals:** Leopard, Sambhar, Spotted Deer (Chital), Pangolin (ant eater), Wild boar, Jackal, small Indian Civet, Jungle Cat, Porcupine, Hanuman Langur, Rhesus Monkey, Indian Hare, Common Mongoose, Common rat, Squirrel etc.
- **Birds:** There are more than 262 varieties of birds including aquatic birds. Prominent among them are Peacock, Red jungle fowl, Grey partridge, Cuckoos, Night jays, Golden Oriole, Kingfisher, Swifts, Hoopoes, Hornbills, Barbets, Woodpeckers, Rollers, Barn owls, Parrots, Doves, Plovers, Coots, Hawks, Geese, Swan, Ducks, etc.

- **Reptiles:** Cobra, Rat snake, Common Krait, Russell's viper, Indian Python and common Monitor (Gho) etc.
- **Insects:** Wide variety of Butterflies, Moth, Honey-bee and other micro-organisms are in abundance.

NATURE TRAIL

To sensitize the citizens about the flora and fauna of Chandigarh, department conducts trekking in Sukhna Wildlife Sanctuary every month except June to September. Anyone can register himself/herself for the trekking. Interested participants either can register online or through manually submitting the registration form in the Office. Recently department had developed new trekking route to conduct monthly trekking so that participants can enjoy the Mother Nature without disturbing the wildlife.

MANAGEMENT PLAN FOR WILDLIFE SANCTUARIES

The management plan for both Sukhna WLS and City Bird WLS was finalized and approved for 10 years (up to 2028-29). It aimed to restore and conserve the biodiversity of the area, systematically. Apart from augmenting the catchment capabilities of the area by reducing soil erosion and Sukhna Wildlife Sanctuary provides clear water to the lake, perennially. It is also proposed to check the vegetation of Leucinia and muscat (*Prosopis juliflora*) which have increased disproportionately (like weed).

The plan has also prescribed for removal of plantations of Eucalyptus & *Prosopis juliflora* in stages and in small patches at one time rejuvenating the patch with desired species before moving ahead. Eucalyptus needs to be removed by cutting and lifting the material from the sanctuary area as the timber, leaf litter may bring in allelopathic effect, suppressing growth of other desired species. The openings in the Eucalyptus has to be essentially smaller without creating bigger openings (which should scatter over a larger area not exceeding 15 stems per Ha) and replaced by taller species.