

BIODIVERSITY ASSESSMENT STUDIES IN SIPCOT, PERUNDURAI For MARICO LTD.



DECEMBER 2025

Submitted by



M/s TerraNero Projects Pvt. Ltd.

1304, B3, Varun Gardens, Manpada, Thane (W), 400610

Executive Summary

A Biodiversity survey was conducted near the premises of Marico Ltd. in SIPCOT, located in Perundurai, Erode, to assess the baseline biodiversity of the site post an afforestation activity. The study was carried out during December, 2025 with a team consisting of two zoologists and three botanists, under sunny and mild conditions.

For trees, secondary data provided by Marico Ltd was studied, with primary survey to substantiate the same. Quadrat method was used (1m x 1m) for herbs and shrubs (5m x 5m), and qualitative and quantitative analysis of the same was conducted. For faunal survey, transects were laid and faunal species along transects were noted. Vantage Point survey was conducted near two freshwater sources.

Zoology data was collected by the direct method in which visually encountered fauna species were noted. Indirect method was also used in which evidences such as calls, nests, scats, feathers, skin molts, etc. were noted and analysed. Strictly no biological specimen collection was done and there was no laying of baits/traps, except light trap for moths.

Secondary data was collected from peer-reviewed research papers pertaining to the study area. Also, Birds of the Indian Sub-continent, Indian Mammals- A field guide, Indian snakes-A field guide, and Book of Indian reptiles and Amphibians were referred to confirm species ID. Secondary data was collated from published EIA reports and peer-reviewed scientific publications.

The study area is spread across approximate **22** acres, divided into two patches of **12** acres and **10** acres, where plantation of 95,000 saplings has been conducted from September 2022 onwards.

Total **124** flora species were observed, of which **61** trees, **8** species of shrubs, **45** species of herbs, and **10** species of climbers were recorded in the study area. Common trees such as *Tectona grandis*, *Azadirachta indica*, *Monoon longifolium* and *Thespesia populanea* were commonly observed. Shrub species were less common as the site currently has short-sized trees planted within the last two years. Also, dominant herb species as per the Importance Value Index (IVI) were *Tridax procumbens*, followed by *Alternanthera ficoides* and *Parthenium hysterophorus*.

79% of the observed species were found to be native to the Indian subcontinent. Slightly more than three-quarter of the tree species were native (**75.4%** native species). Most importantly, **84.4 %** native herbs and **77.8%** native shrubs & climbers were observed, indicating positive ecological potential and regeneration benefits of the afforestation activity.

Faunal survey revealed presence of **4** mammal species through direct observation. As many as **56** bird species were observed. **3** reptilian and **3** amphibian species were also observed. Among insects, **43**

species of butterflies, **12** dragonflies, **3** moths, **2** spiders and **10** various other insects were observed, belonging to diverse orders.

For birds, the Shannon's index value varied from **2.919647 to 3.114111**, whereas Simpson's index value varied from **0.922254 to 0.940701**. For butterflies, Shannon's index value varied from **3.078614 to 3.36814**, whereas Simpson's indices value varied from **0.946337 to 0.963594**. Both indices indicate rich biodiversity at the site.

As per Habitat Quality Index of InVEST, score is **4.3 out of 5**.

Identified risk to biodiversity is the plantation of few exotic tree species and the observance of invasive weeds among herbs.

1. Introduction:

1.1 Study Area

Marico Limited, a major Indian consumer goods company with brands such as Parachute, Saffola, and Hair & Care, operates one of its key manufacturing plants at State Industries Promotion Corporation of Tamil Nadu Limited (SIPCOT) Industrial Growth Centre, Perundurai, Tamil Nadu, which forms part of its network of seven major production units across India alongside sites in Pondicherry, Jalgaon, Guwahati, and others. The Perundurai facility is a significant production hub for edible oils and personal care products within Marico's national manufacturing footprint and has been recognized for its sustainability measures. Within the plant premises, Marico has established a Miyawaki forest, an afforestation zone planted with native tree species that acts as a natural carbon sink and enhances local ecological health. In addition, a beautiful butterfly garden plays host to a large number of lepidopterans.

State Industries Promotion Corporation of Tamilnadu (SIPCOT) owns the parcels of land measuring approximately 12 and 10 acres, which have been leased to Marico Ltd for plantation of one lakh saplings and their maintenance. Of these, 95000 saplings have already been planted since September 2022.



Figure 1: Study Area

1.2 Objectives

To study baseline biodiversity in the SIPCOT, Perundurai plot where the afforestation activity was carried out by Marico Ltd.

- To study various habitats and micro-habitats in the study area
- To enlist floral and faunal species in the study area,
- To assess ecological significance of the observed species
- To propose biodiversity enhancement plan for the site.

1.2.1 Floral assessment

Enlisting the various flora species, segregating them as per their growth habits, analyzing their family level diversity and ascertaining their IUCN, 3.1 redlist category (if significant) and their origin (native/exotic to India). Also, assessing their phytosociology indices.

1.2.2 Faunal assessment

Enlisting the various fauna species and ascertaining their IUCN, 3.1 category as well as their enlisting in the schedules of Wild Life Protection Act, 1972

2. Methodology

2.1. Desktop Review & Secondary Data Collection

Secondary data was collected from Environmental Impact Assessment (EIA) reports prepared in the SIPCOT area and from the Environmental, Social & Governance (ESG) reports of other companies located in Perundurai. In addition, peer-reviewed scientific publications were also checked. All reports and publications were within last five years.

Books such as Birds of the Indian Subcontinent- Book by Carol Inskipp, Richard Grimmett, and Tim Inskipp; A field guide to Indian mammals -Book by Vivek Menon; Indian Snakes: A Field Guide by Neelimkumar Khaire; The Book of Indian Reptiles and Amphibians, Book by J. C. Daniel; Freshwater Fishes of Peninsular India: R J Ranjit and Daniels.

2.2 Baseline & Primary Survey

The approach taken was that of stratified random sampling. A reconnaissance survey was conducted to assess the major habitat types in the study area. The study area was classified into strata of the major habitats, and then transects were laid in each habitat type, along various habitat gradients, and as per site accessibility.

2.2.1 Floral Survey methodology

For assessment of floral diversity, we divided the study area into grids and then randomly chose the grids to lay the quadrats. Nested quadrats (**Fig. 2**) were laid at the same location, with 5m x 5m for shrubs and 1m x 1m for herbs. List of the quadrat locations has been presented in **Fig. 3**.

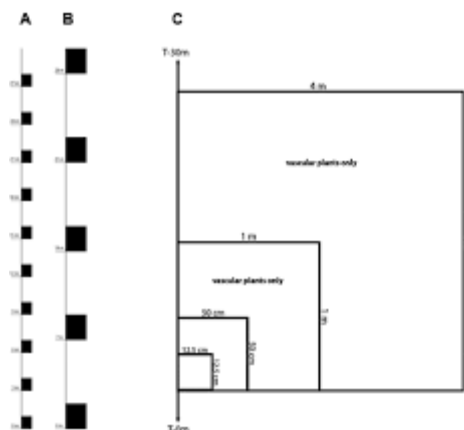


Figure 2: Visual Representation of Nested Quadrats



Figure 3: Geographic Location of the Quadrats

2.2.1.1. Phyto-sociological Analysis

Importance value index (IVI) is used to determine the overall importance/ dominance of each species in the community structure. It is used to know the dominance of any given species in the study area which helps in getting an overall importance of any given species in the community by statistical analysis. It can be calculated by summing the values of Relative Frequency (RF), Relative Density (RD) and Relative Dominance (RD).

Frequency, density and dominance were calculated following Mishra (1968) and dos Santos et al. (2015) according to the formulae –

$$\text{Frequency} = \frac{\text{Number of quadrats of occurrence of species A}}{\text{Total number of quadrats studied}}$$

$$\text{Density} = \frac{\text{Number of individuals of species A}}{\text{Total area studied}}$$

$$\text{Basal area of a tree} = \frac{\text{Total basal area of the species A}}{\text{Total area studied}}$$

$$\text{Relative Frequency (RF)} = \frac{\text{Number of quadrats in which species occurred}}{\text{Total number of quadrats studied}} \times 100$$

$$\text{Relative Density (RD)} = \frac{\text{Total number of individuals of the species}}{\text{Sum of all individuals of all species}} \times 100$$

$$\text{Relative dominance(RD)} = \frac{\text{Dominance of given species}}{\text{Total dominance of all species}} \times 100$$

The sum of the IVI of all the species in an ecosystem composed of several species should equal 300.

$$\text{IVI} = \text{Relative frequency (RF)} + \text{Relative Density(RD)} + \text{Relative Dominance(RD)}$$

The rationale behind the number of transect and quadrats laid was to ensure thorough and proportionate coverage of all the habitat types observed in the study area.

2.2.2 Faunal survey Methodology

Fauna was surveyed in the greenery patches through direct observation/visual encounter techniques and also through observation of indirect signs such as calls, scat, pug marks and road kills. 1 vantage point was carried out near the freshwater pond near the Miyawaki plantation. Photography was done with NIKON P900 83X.

Direct observation (Visual Encounter): In this method, the species of animals observed visually were noted. Also, a count of each species observed was recorded.

Indirect observation (Searching for signs): Signs such as scat, feeding signs, pug marks, burrows and dens were recorded as evidence of the presence of mammals. For accuracy, the burrows and dens were checked to confirm whether they were active or abandoned. Notable behaviors of the bird such as calls, feeding, nesting, or breeding and the associated habits were also observed and accordingly the records were made.

Field identification was done on the basis of experience and professional judgement of the skilled field personnel, and wherever required, standard field guides and identification keys were made use of (a list of these field guides has been provided under the heading of References).

Field Bio-acoustics Setup: It is a compact, high-precision system engineered for capturing, monitoring, and logging bird vocalizations in real-world field conditions. It consists of:

Directional Microphone - A focused, high-gain microphone (shotgun or parabolic) used to isolate distant bird calls and suppress surrounding environmental noise. Tripod-mounted for stability and consistent aim.

Monitoring Headphones - Headphones that give the operator immediate feedback on recording quality, background interference, and mic direction accuracy.

Tablet (Recording & Data Terminal) - Serves as the mobile command screen for storing audio, tagging field metadata, reviewing recordings, and running spectrogram or analysis apps.

Tripod System - A stable mounting solution that eliminates handling noise and keeps the microphone precisely aligned toward the target species.



Photo Plate: Field Bio-acoustics Set-up

2.2.2.1. Diversity Indices

Quantitative analysis of biodiversity (with respect to flora) was done by calculating Simpson's and Shannon's index.

Simpson's index (D): Simpson's Diversity Index is a measure of diversity which takes into account the number of species present, as well as the relative abundance of each species. As species richness and evenness increase, so diversity increases. The Simpson index is a dominance index because it gives more weight to common or dominant species.

$$D = 1 - \sum_{i=1}^s n_i \frac{n_i - 1}{N(N - 1)}$$

Shannon's index (H'): The Shannon index is a quantitative measure that reflects how many different types of species are there in an ecosystem, and simultaneously takes into account how evenly the species are distributed in a system. The Shannon index increases as both the richness and the evenness of the community increase.

$$H' = - \sum_{i=1}^s \frac{n_i}{N} \ln \frac{n_i}{N}$$

3. Findings

Legal Framework

Environment Protection Act, 1986 (EPA) is the umbrella act for environmental protection in India. The Act gives the Central Government broad powers to regulate air, water, soil, hazardous substances, and industrial activities and enables the government to set environmental standards, restrict certain operations in ecologically sensitive areas, and issue directions to any person, industry, or authority in the interest of environmental safety.

Under the EPA, a wide range of environmental rules have been created, covering pollution control, hazardous chemicals, waste management, and laboratory safety. Key rules include the Biomedical Waste Management Rules, Hazardous Waste Rules, MSIH Rules, Solid Waste Management Rules, and Plastic Waste Rules. Every industrial or research facility must obtain necessary environmental approvals, follow safe handling and disposal of chemicals and waste, report accidents, and meet emission/discharge standards. Under this ACT also comes the **EIA Notification, 2006**, which requires manufacturing and infrastructure projects to conduct ecological impact assessments, secure environmental clearances, and implement mitigation and monitoring plans.

Overall, the EPA functions as the backbone of India's environmental regulatory system, ensuring that industries operate responsibly and minimize harm to people and ecosystems.

As per the EPA,

- Companies must obtain Consent to Establish (CTE) and Consent to Operate (CTO).
- Ensure that air emissions, water discharge, noise limits, hazardous waste handling are as per standards set in the EPA.
- Conduct regular environmental monitoring and ensure annual compliance reporting.
- Check Eco-sensitive buffer zones around protected areas (typically 0–10 km).

Wildlife Protection Act, 1972 (WLPA)

The WPA is India's primary law for the protection of wild animals, birds and plants, and for the management of protected areas. It creates legal categories such as national parks, wildlife sanctuaries, conservation reserves and community reserves, and empowers central and state authorities to regulate activities that could harm wildlife or their habitats. The Act prohibits hunting of species listed in its schedules, controls trade in wildlife and their derivatives, and prescribes stringent penalties for offences. It also requires project proponents whose activities may affect protected areas or scheduled species to obtain clearances from the appropriate authorities (State Wildlife Boards and/or the

National Board for Wildlife), and permits for otherwise restricted uses (e.g., scientific research, captive breeding or translocation) are issued only under strict conditions.

Schedules under the WPA — meaning & representative examples

- **Schedule I — *Highest protection; maximum penalties***
Species listed here receive the strongest legal protection. Offences involving these species attract the most severe penalties (heavier fines and longer imprisonment).
For instance, tiger, elephant, Indian rhinoceros, Asiatic lion, pangolin, gharial and peacock.
- **Schedule II — *High protection***
Schedule II species are afforded strong protection; historically Schedule II (Part II) had penalties similar to Schedule I for certain species. These animals are also given major protection measures.
Representative examples: several large mammals and other species of conservation concern.
- **Schedules III & IV — *Protection with comparatively lower penalties***
These schedules list species that are protected from hunting and trade, but offences attract comparatively lower penalties than Schedules I/II. They typically include many birds, mammals, reptiles and amphibians of conservation importance but not in the highest-threat bracket.
Representative examples: a variety of native birds, reptiles and smaller mammals.
- **Schedule V — *Vermin (permitted to be hunted/controlled)***
Species declared as vermin may be hunted or controlled; they are excluded from the strict protections that apply to scheduled protected species. State governments can declare certain species as vermin for control measures.
Representative examples: commonly listed vermin include some rodent species and other pests.
- **Schedule VI — *Protected plants / prohibition on cultivation/collection***
Lists of plant species that are protected and whose cultivation, collection, or commercial exploitation is prohibited or strictly regulated. This schedule is intended to conserve rare, endemic or threatened plant species.
Representative examples: certain orchids, cycads and other rare native plant species.

Biological Diversity Act, 2002 (BDA) regulates access to biological resources and traditional knowledge, mandates approvals from the National Biodiversity Authority (NBA) or State Biodiversity

Boards (SBBs), and requires companies to share benefits with local communities when using biological materials. The BDA:

- Regulates access to India's biological resources.
- Requires prior approval from NBA (for foreign entities) or SBB (for Indian companies) before using biological resources commercially.
- Mandates Access and Benefit Sharing (ABS) with local communities.
- Protects traditional knowledge and prevents biopiracy.
- Establishes Biodiversity Management Committees (BMCs) and People's Biodiversity Registers (PBRs).

Eco-spatial Analysis

At the sub-continental level, the site, like the rest of India, lies within the 'Central Asian Flyway.' The Central Asian Flyway (CAF) covers a large continental area of Eurasia between the Arctic and Indian Oceans and the associated island chains. The Flyway comprises several important migration routes of waterbirds, most of which extend from the northernmost breeding grounds in the Russian Federation (Siberia) to the southernmost non-breeding (wintering) grounds in West and South Asia, the Maldives and the British Indian Ocean Territory. The birds on their annual migration cross the borders of several countries. Geographically the flyway region covers 30 countries of North, Central and South Asia and Trans-Caucasus. This signifies the potential of the site to host migratory birds during the winter months (Nov-end to Feb).

At the regional level, the city is located on the Deccan Plateau, located in the Kongu Nadu region of western Tamil Nadu and sits at an elevation of around 290–300 m above sea level on gently undulating plains. It lies in the region of Tropical Dry Deciduous Forest (5A/C3) as per Champion and Seth's classification (1968), supporting three layers of vegetation. This indicates that natural pre-disturbance vegetation in the site might have included trees such as *Tectona grandis*, *Terminalia tomentosa*, *T. arjuna*, *T. bellerica*, *Syzygium cumini*, *Pongamia pinnata*, *Ficus religiosa*, *F. benghalensis*, *Cassia fistula*, *Artocarpus heterophyllus*, etc.

At the local level, River Kaveri flows about 26km to the northeast of the site. In addition, the Vellode Bird Sanctuary lies about 10km from the site, towards east. Vellode Bird Sanctuary, located near Vadamugam Vellode village in Perundurai Taluk of Erode District, Tamil Nadu, is a small but ecologically significant protected wetland covering about 77.2 hectares centered on the Periyakulam lake. It was officially declared a bird sanctuary under the Wildlife (Protection) Act, 1972 in 2000, and in April 2022 it was designated as a Ramsar site (Site No. 2475). The sanctuary's landscape is primarily a human-made tank with adjacent marshy fringes and semi-arid vegetation including *Acacia nilotica*,

Azadirachta indica, *Borassus* and *Prosopis juliflora*, providing important foraging, nesting and resting habitat for both resident and migratory bird species. Over 20,000–30,000 birds from more than 140 species — including waterfowl such as spot-billed pelicans, Eurasian teals, painted storks, black-naped orioles and western marsh harriers — visit the sanctuary between October and March each year, making it a key site for birdwatching and biodiversity conservation in western Tamil Nadu.

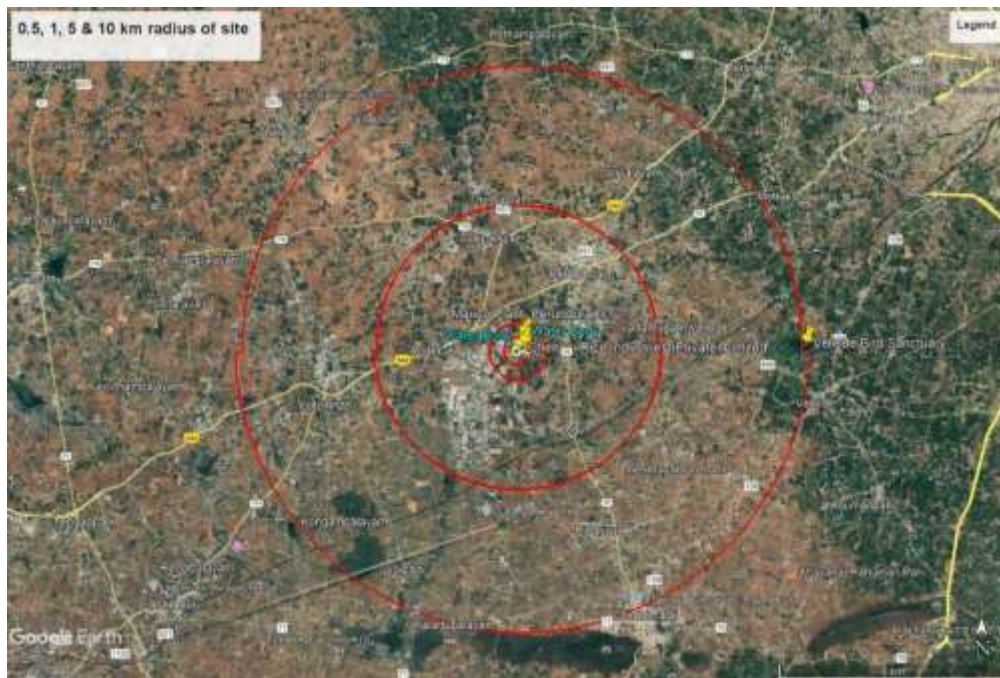


Figure 4: 10 km radius of the site

At the sub-local level, that is, within the 0.5 km and 5km radius of the SIPCOT site, lies the Perundurai town and several villages such as Thuduppathi, Thoppupalayam, Ingur, Kasipilampalayan, Olapalayam, Sullipalayam etc. with acres of agricultural fields.

Agricultural fields located within and around industrial areas play an important ecological role by acting as green buffers and semi-natural habitats in otherwise heavily modified landscapes. These fields support local biodiversity, including birds, pollinators, reptiles and small mammals, by providing food resources, nesting sites and movement corridors between fragmented natural habitats. Paddy fields, sugarcane fields and mixed cropping systems also contribute to groundwater recharge, micro-climate regulation and soil carbon sequestration, helping to moderate heat-island effects commonly associated with large industrial estates. In addition, agricultural landscapes serve as ecological sinks that absorb dust and gaseous emissions, thereby partially mitigating industrial environmental impacts, while maintaining ecosystem services that benefit both rural livelihoods and industrial sustainability.



Figure 5: 0.5 and 1km radius of site

Terrestrial Ecosystem

A terrestrial ecosystem is an ecosystem that exists on land, rather than on water. Such ecosystem is a community of organisms existing and living together on the land. “*Terrus*” is a Latin word for land. The four prime terrestrial biomes include the forest ecosystem, grassland ecosystem and desert ecosystem, these all ecosystems can be further divided depending on the tropical or temperate zone, or on basis of specific vegetation or any other characteristic specific to any plant community.

Modified Habitats/Managed Open Spaces

The study area is a young plantation site where tree height varies from very small to 8-10 feet on an average. In an attempt to develop the area as a ‘controlled jungle,’ the saplings have mostly been planted in a random manner. Also, natural regeneration of shrubs, climbers and herbs has largely not been interfered with. Hence, the site currently looks like an open scrub or grassland.

Drip irrigation facility has been provided, apart from the presence of two small freshwater ponds.

3.1 Floral Diversity

Species Recorded in the Study Area

A list of floral species observed in the study area during primary survey is given in **Table 3 (Trees)**, **Table 4 (Shrubs & Climbers)**, **Table 5 (Herbs)**, respectively. Detailed quadrat-wise list of flora has been provided in **Annexure I**.

3.1.1 Trees:

Based on primary observation and secondary data obtained from the plantation team, a total of **61** tree species were observed in the study area. Species belonging to Fabaceae family showed higher diversity, followed by Moraceae, Malvaceae, Annonaceae, Bignoniaceae, Combretaceae and Simaroubaceae. Common species such as *Tectona grandis*, *Azadirachta indica*, *Monoon longifolium* and *Thespesia populanea* were commonly observed in the study area.

Table 3: List of Trees in the Study Area

Sr No.	Scientific Name	Common Name	Family	Origin
1	<i>Acacia holosericea</i>	Silver wattle	Fabaceae	Exotic
2	<i>Ailanthus excelsa</i>	Peymaram	Simaroubaceae	Native
3	<i>Alangium salviifolium</i>	Ankolam	Cornaceae	Native
4	<i>Annona reticulata</i>	Red custard apple	Annonaceae	Exotic
5	<i>Annona squamosa</i>	Custard apple / Seethapazham	Annonaceae	Exotic
6	<i>Artocarpus heterophyllus</i>	Jackfruit / Palamaram	Moraceae	Native
7	<i>Azadirachta indica</i>	Neem / Vembu	Meliaceae	Native
8	<i>Bauhinia racemosa</i>	Aathi	Fabaceae	Native
9	<i>Bridelia retusa</i>	Mulluvengai	Phyllanthaceae	Native
10	<i>Caesalpinia coriaria</i>	Divi-divi	Fabaceae	Exotic
11	<i>Calophyllum inophyllum</i>	Punnai	Calophyllaceae	Native
12	<i>Cassia fistula</i>	Kondrai	Fabaceae	Native
13	<i>Cordia dichotoma</i>	Naruvili	Boraginaceae	Native
14	<i>Dalbergia sissoo</i>	Sissoo	Fabaceae	Native
15	<i>Ficus carica</i>	Fig	Moraceae	Exotic
16	<i>Ficus racemosa</i>	Athi	Moraceae	Native
17	<i>Ficus religiosa</i>	Arasu	Moraceae	Native
18	<i>Lagerstroemia speciosa</i>	Kadambam (orn.)	Lythraceae	Native
19	<i>Leucaena leucocephala</i>	Subabul	Fabaceae	Exotic
20	<i>Macaranga peltata</i>	Vattakanni	Euphorbiaceae	Native
21	<i>Madhuca longifolia</i>	Illuppai	Sapotaceae	Native
22	<i>Mangifera indica</i>	Mango	Anacardiaceae	Native
23	<i>Mimusops elengi</i>	Magizham	Sapotaceae	Native
24	<i>Monoon longifolium</i>	Devadaru	Annonaceae	Native
25	<i>Muntingia calabura</i>	Singapore cherry	Muntingiaceae	Exotic
26	<i>Murraya koenigii</i>	Kariveppilai	Rutaceae	Native
27	<i>Neolamarckia cadamba</i>	Kadambu	Rubiaceae	Native
28	<i>Persea macrantha</i>	Wild avocado	Lauraceae	Native
29	<i>Phyllanthus emblica</i>	Nellikai	Phyllanthaceae	Native
30	<i>Plumeria rubra</i>	Arali	Apocynaceae	Exotic
31	<i>Pongamia pinnata</i>	Pungai	Fabaceae	Native
32	<i>Prosopis juliflora</i>	Seemai karuvelam	Fabaceae	Exotic

33	<i>Pterocarpus marsupium</i>	Malai vengai	Fabaceae	Native
34	<i>Pterocarpus santalinus</i>	Red sandalwood	Fabaceae	Native
35	<i>Putranjiva roxburghii</i>	Putranjiva	Putranjivaceae	Native
36	<i>Quassia indica</i>	Quassia	Simaroubaceae	Native
37	<i>Radermachera xylocarpa</i>	Ghost tree	Bignoniaceae	Native
38	<i>Reinwardtiodendron anamalaiense</i>	Anamalai tree	Meliaceae	Native
39	<i>Rhopaloblaste singaporensis</i>	Singapore palm	Areaceae	Exotic
40	<i>Rubia cordifolia</i>	Manjith	Rubiaceae	Native
41	<i>Salix tetrasperma</i>	Atrupalai	Salicaceae	Native
42	<i>Samanea saman</i>	Rain tree	Fabaceae	Exotic
43	<i>Sapindus trifoliatus</i>	Poondikottai	Sapindaceae	Native
44	<i>Saraca asoca</i>	Asogam	Fabaceae	Native
45	<i>Schleichera oleosa</i>	Puvam	Sapindaceae	Native
46	<i>Shirakiopsis indica</i>	Indian tallow	Euphorbiaceae	Native
47	<i>Simarouba glauca</i>	Paradise tree	Simaroubaceae	Exotic
48	<i>Spathodea campanulata</i>	African tulip	Bignoniaceae	Exotic
49	<i>Spondias pinnata</i>	Amra	Anacardiaceae	Native
50	<i>Sterculia balanghas</i>	Kattumaram	Malvaceae	Native
51	<i>Sterculia urens</i>	Gum karaya	Malvaceae	Native
52	<i>Symplocos cochinchinensis</i>	Lodh	Symplocaceae	Native
53	<i>Syzygium cumini</i>	Naval	Myrtaceae	Native
54	<i>Syzygium occidentale</i>	Western syzygium	Myrtaceae	Native
55	<i>Tabebuia rosea</i>	Pink trumpet	Bignoniaceae	Exotic
56	<i>Tamarindus indica</i>	Puli	Fabaceae	Native
57	<i>Tectona grandis</i>	Thekku	Lamiaceae	Native
58	<i>Terminalia arjuna</i>	Maruthu	Combretaceae	Native
59	<i>Terminalia catappa</i>	Nattu badam	Combretaceae	Native
60	<i>Terminalia mantaly</i>	Madagascar almond	Combretaceae	Exotic
61	<i>Thespesia populnea</i>	Poovarasu	Malvaceae	Native

N. B. Small saplings were not included in the study as they were too small and too few to be significant

As many as 75.4% of the trees were native to the Indian subcontinent. The red highlighted species, viz., *Leucaena leucocephala*, *Muntingia calabura* and *Prosopis juliflora* are not only of exotic origin but also do not form positive ecological linkages with other flora and fauna. *Leucaena leucocephala* is one of the most commonly uprooted trees in city areas, during storms and heavy rain events, which is why it is unsuitable as a nesting or roosting site. Birds are known to avoid such trees. Besides, along with *Muntingia calabura* and *Prosopis juliflora*, it is an invasive species that can colonize disturbed areas and displace native species.

In the present area, these trees may not displace natives and behave as invasives because the area has a rich native flora diversity and is well-irrigated and undisturbed by human activities. However, these exotic species are definitely taking up space that could have been occupied by more ecologically beneficial native flora species.

It is currently NOT recommended to cut or displace these trees – however, in the event that they are naturally uprooted or diseased, they must be replaced by native species options provided in the Recommendations section below. Also, new plantation drives must necessarily NOT include these species.

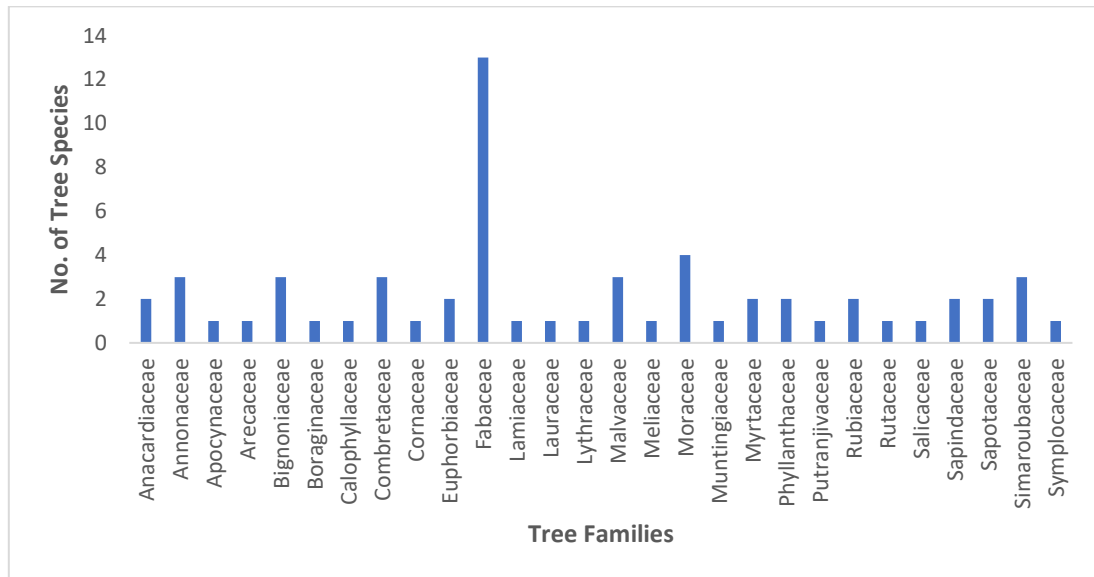


Figure 6: Botanical Family Diversity Among Trees

The higher representation of Fabaceae families during botanical surveys, especially among woody flora, has been commonly observed by us and others (Xu & Deng 2017).

3.1.2 Shrub:

Total 8 shrub species were observed in the study area, of which 5 were native to India. 10 climbers were also observed, most of which were native.

Table 4: List of Shrubs & Climbers in the Study Area

Sr. No.	Scientific Name	Common Name	Family	Origin
1	<i>Lantana camara</i>	Unnicchedi	Verbenaceae	Exotic/Weed
2	<i>Calotropis gigantea</i>	Erukku	Apocyanaceae	Native
3	<i>Chromolaena odorata</i>	Siam Weed	Asteraceae	Exotic/Weed
4	<i>Senna auriculata</i>	Aavaram	Fabaceae	Native
5	<i>Justicia tranquebariensis</i>	Mutaliyar	Acanthaceae	Native
6	<i>Indigofera hirsuta</i>	Tattaikkarunkollu	Fabaceae	Native
7	<i>Ruellia patula</i>	Grandhi Nayakam	Acanthaceae	Native
8	<i>Croton bonplandianus</i>	Railway Weed	Euphorbiaceae	Exotic
9	<i>Ipomoea pes-tigridis</i>	Pulichovadi	Convolvulaceae	Native
10	<i>Rhynchosia minima</i>	Kattukkoli	Fabaceae	Native
11	<i>Trichosanthes cucumeroides</i>	Kattuppeyputal	Cucurbitaceae	Native
12	<i>Vigna trilobata</i>	Panipayir	Fabaceae	Native

13	<i>Cissus quadrangularis</i>	Arukani	Vitaceae	Native
14	<i>Gloriosa superba</i>	Chenkantal	Colchicaceae	Native
15	<i>Tinospora cordifolia</i>	Seenthil	Menispermaceae	Native
16	<i>Cardiospermum halicacabum</i>	Korravan	Sapindaceae	Native
17	<i>Clitoria ternatea</i>	Kannikkodi	Fabaceae	Native
18	<i>Distimake quinquefolius</i>	Snake Vine	Convolvulaceae	Exotic

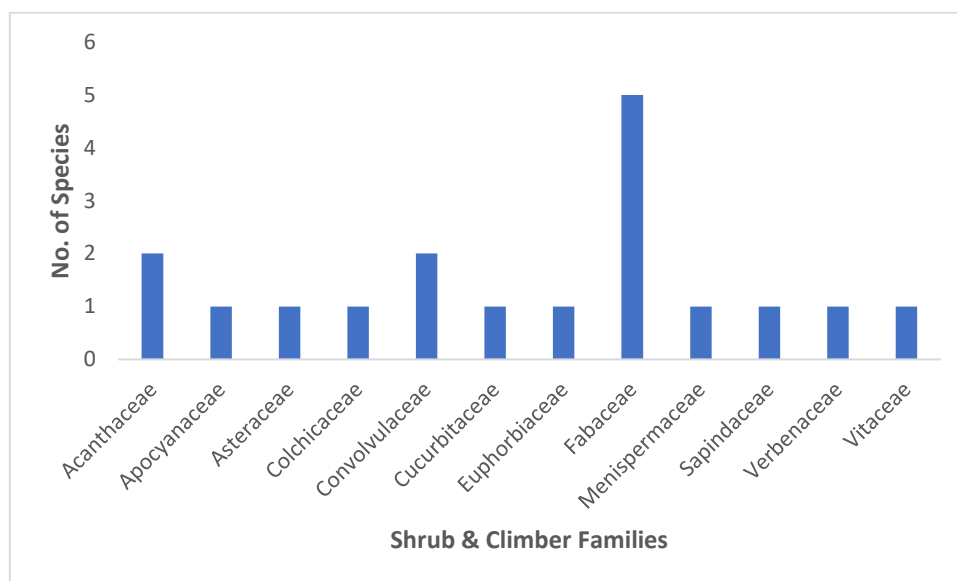


Figure 7: Botanical Family Diversity Among Shrubs & Climbers

3.1.3 Herbs:

Total **45** herb species were observed in the study area. Species belonging to Poaceae, Malvaceae, Lamiaceae and Asteraceae showed high diversity, followed by Fabaceae and Amaranthaceae. Species such as *Tridax procumbens*, *Parthenium hysterophorus*, *Alternanthera ficoidea*, *Sida cordifolia* and *Indigofera linnaei* were commonly observed in the study area. Overall, the naturally generated native herb diversity was rich (84.4%), indicating the high ecological worth of the plantation activity.

Table 5: List of Herbs in the Study Area

Sr. No.	Scientific Name	Common Name	Family	Origin
1	<i>Abutilon hirtum</i>	Vadattuti	Malvaceae	Native
2	<i>Acalypha indica</i>	Kuppameni	Euphorbiaceae	Native
3	<i>Achyranthes aspera</i>	Akatam	Amaranthaceae	Native
4	<i>Alternanthera ficoidea</i>	Seemai ponnankanni	Amaranthaceae	Exotic
5	<i>Blepharis integrifolia</i>	Elumbotti	Acanthaceae	Native
6	<i>Boerhavia diffusa</i>	Mukarattai	Nyctaginaceae	Native
7	<i>Calyptocarpus vialis</i>	Straggler Daisy	Asteraceae	Exotic
8	<i>Chloris barbata</i>	Chevvarakupul	Poaceae	Native
9	<i>Corchorus capsularis</i>	Naru-valli	Malvaceae	Native

10	<i>Corchorus aestuans</i>	Kattu Nala Keerai	Malvaceae	Native
11	<i>Chrysopogon fulvus</i>	Anashovadi	Poaceae	Native
12	<i>Commelina benghalensis</i>	Kanan-valai	Commelinaceae	Native
13	<i>Crotalaria evolvuloides</i>	Siru Kilukiluppai	Fabaceae	Native
14	<i>Cyanthillium cinereum</i>	Puvamkuruntal	Asteraceae	Native
15	<i>Dactyloctenium aegyptium</i>	Mattañkāyppul	Poaceae	Native
16	<i>Dicliptera paniculata</i>	Karakkanchiram	Acanthaceae	Native
17	<i>Elephantopus scaber</i>	Anashovadi	Asteraceae	Native
18	<i>Euhorbia hirta</i>	Ammam Paccharisi	Euphorbiaceae	Native
19	<i>Evolvulus alsinoides</i>	Vishnukranthi	Convolvulaceae	Native
20	<i>Evolvulus nummularis</i>	Kaasippul	Convolvulaceae	Native
21	<i>Indigofera linnaei</i>	Cilapeci	Fabaceae	Native
22	<i>Heteropogon contortus</i>	Uccipul	Poaceae	Native
23	<i>Leucas aspera</i>	Thumbai	Lamiaceae	Native
24	<i>Leucas martinicensis</i>	Peruthumbai	Lamiaceae	Native
25	<i>Leucas stricta</i>	Thumbai	Lamiaceae	Native
26	<i>Melinis repens</i>	Vatraatha pul	Poaceae	Exotic
27	<i>Mesosphaerum suaveolens</i>	Vilatti thulasi	Lamiaceae	Exotic
28	<i>Ocimum americanum</i>	Nai Thulasi	Lamiaceae	Native
29	<i>Ouret lanata</i>	Ciru pulai	Amaranthaceae	Native
30	<i>Parthenium hysterophorus</i>	Carrot Grass	Asteraceae	Exotic Weed
31	<i>Phyllanthus amarus</i>	Keelanelli	Phyllanthaceae	Native
32	<i>Phyllanthus maderaspatensis</i>	Nilanelli	Phyllanthaceae	Native
33	<i>Polycarpaea corymbosa</i>	Nilaisedachi	Caryophyllaceae	Native
34	<i>Senna occidentalis</i>	Nattam Takarai	Fabaceae	Native
35	<i>Setaria viridis</i>	Thinai	Poaceae	Native
36	<i>Sida acuta</i>	Arivalmanaip puñtu	Malvaceae	Native
37	<i>Sida cordifolia</i>	Kurunthotti	Malvaceae	Native
38	<i>Solanum violaceum</i>	Kandankathiri	Solanaceae	Native
39	<i>Spermacoce pusilla</i>	Sirunattaichuri	Rubiaceae	Native
40	<i>Spermacoce articularis</i>	Nattaichuri	Rubiaceae	Native
41	<i>Striga angustifolia</i>	Pallipoondu	Orobanchaceae	Native
42	<i>Tephrosia purpurea</i>	Kavali/Kawati	Fabaceae	Native
43	<i>Tribulus terrestris</i>	Akkilu	Zygophyllaceae	Native
44	<i>Tridax procumbens</i>	Kinarruppacan	Asteraceae	Naturalized
45	<i>Waltheria indica</i>	Sengalipoondu	Malvaceae	Naturalized

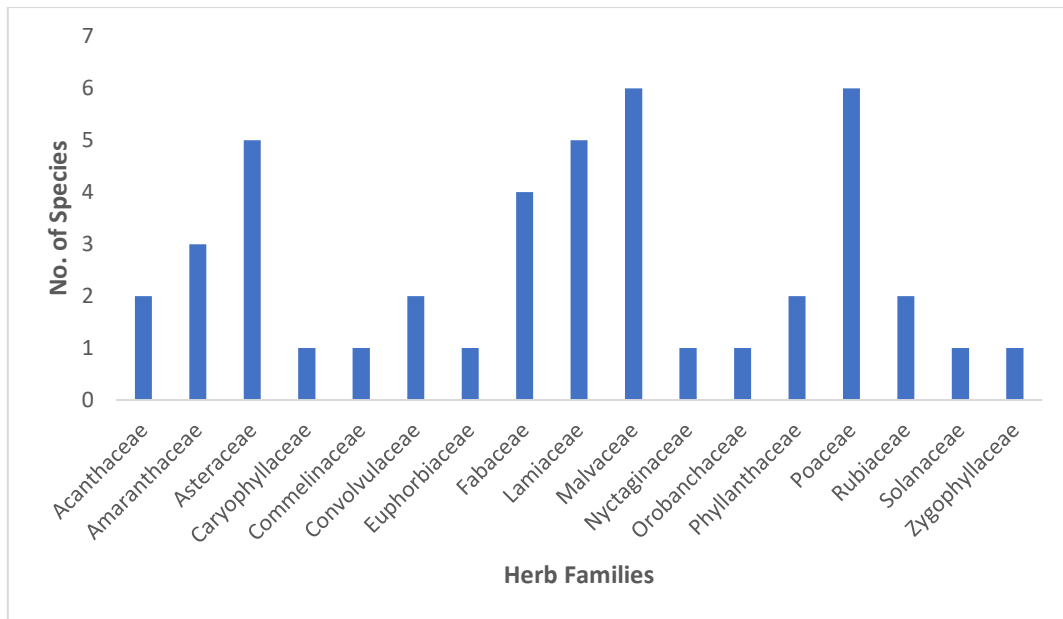


Figure 8: Botanical Family Diversity Among Herbs

3.1.3.1 Phytosociological Analysis

The Importance Value Index shows that while 2-3 species do tend to show dominance (*Tridax procumbens*, *Alternanthera ficoides*, *Parthenium hysterophorus*), over-all the herb species are evenly numbered. These species exhibit higher IVI scores due to their greater relative frequency, density, and basal cover, reflecting their competitive advantage under prevailing disturbance regimes. However, despite this localized dominance, the herb layer as a whole displays a relatively even distribution of species abundance, with most taxa occurring at comparable frequencies and none achieving overwhelming numerical or spatial monopoly.

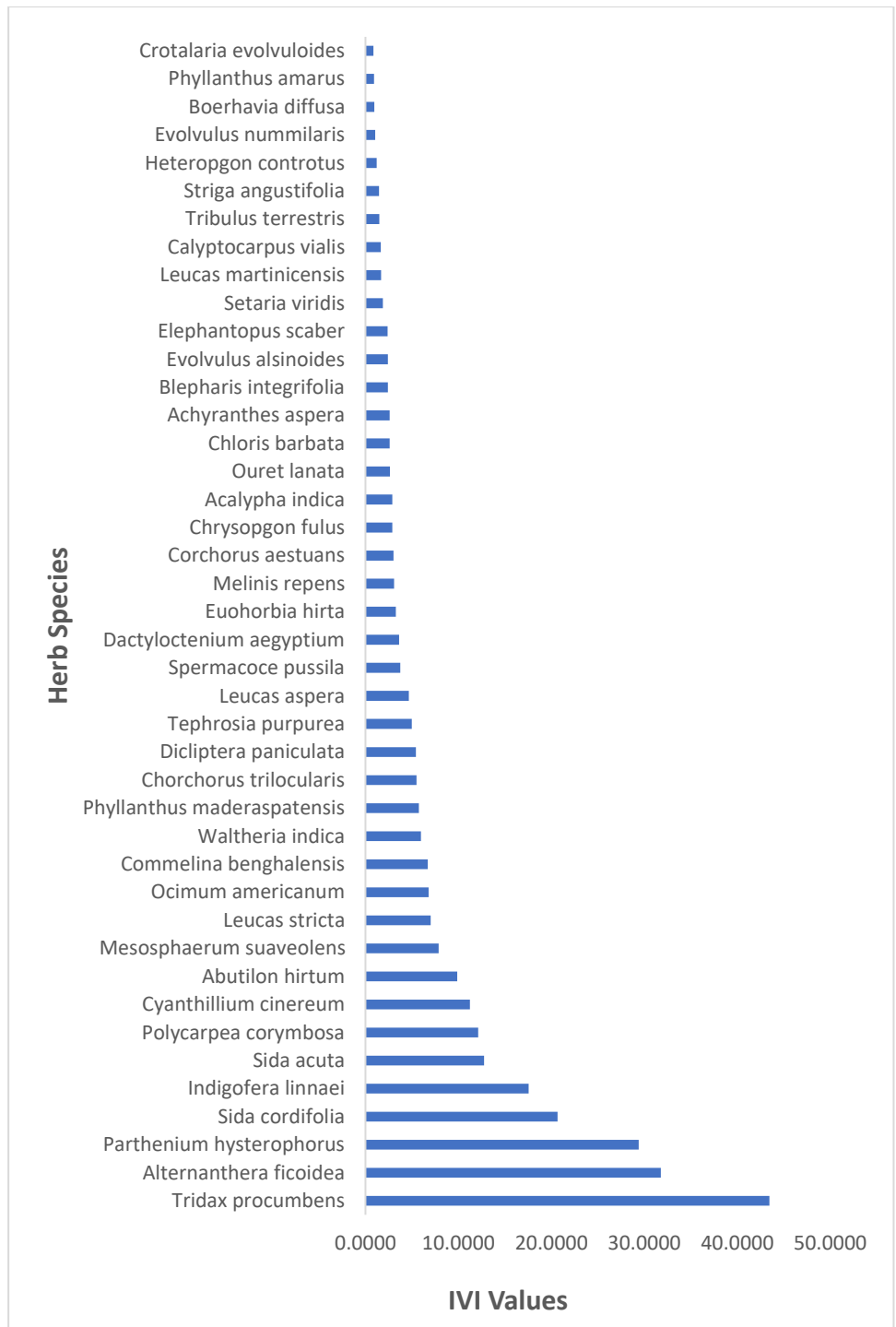


Figure 9: IVI Of Herb Species



Photo Plate – *Tridax procumbens* was the herb species with highest Importance Value Index

3.2 Faunal Diversity

Faunal diversity of the area was found to be rich, with **56** birds, **3** amphibians, **3** reptiles and **4** mammals were sighted during primary survey. Details of the findings are described in each section below. Also, transect-wise data of fauna has been provided in Annexures below.

3.2.1 Mammals

In the study area, primary survey showed presence of four mammals, i.e., Three-striped Palm squirrel (*Funambulus palmarum*), Indian flying fox (*Pteropus giganteus*), Indian Grey Mongoose (*Urva edwardsii*) and Black-naped Hare (*Lepus nigricollis*). No indirect sign of any species was observed during primary survey. Details of the mammals are given in Annexures below.



Photo Plate: Shikara and Three-striped Palm Squirrel - possibly a predator-prey interaction

3.2.2 Avifauna

Total 56 species of birds, from 32 families, were reported in the study area, all of which are classified as Least Concern as per IUCN, while Indian peafowl, Shikra and Black Kite are three species from Wildlife Protection Act Schedule I, which are granted maximum legal protection from hunting and trade. Detailed list of avifauna species observed in the study area is given in **Table 6**.

Table 6: List of Avifauna Species observed in the Study Area

Sr. No.	Scientific Name	Common Name	Family	IUCN Status	WPA Sch.
1	<i>Accipiter badius</i>	Shikra	Accipitridae	LC	Sch I
2	<i>Acridotheres tristis</i>	Common Myna	Sturnidae	LC	Sch II
3	<i>Acrocephalus dumetorum</i>	Blyth's Reed Warbler	Acrocephalidae	LC	Sch II
4	<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	Acrocephalidae	LC	Sch II
5	<i>Actitis hypoleucos</i>	Common Sandpiper	Scolopacidae	LC	Sch II
6	<i>Ardea coromanda</i>	Eastern Cattle-Egret	Ardeidae	LC	Sch II
7	<i>Ardea intermedia</i>	Medium Egret	Ardeidae	LC	Sch II
8	<i>Ardeola grayii</i>	Indian Pond Heron	Ardeidae	LC	Sch II
9	<i>Argya affinis</i>	Yellow-billed Babbler	Leiothrichidae	LC	Sch II
10	<i>Athene brama</i>	Spotted Owlet	Strigidae	LC	Sch II
11	<i>Bubo bengalensis</i>	Rock Eagle Owl	Strigidae	LC	Sch II
12	<i>Caprimulgus affinis</i>	Savanna Nightjar	Caprimulgidae	LC	Sch II
13	<i>Cecropis daurica</i>	Eastern Red-rumped Swallow	Hirundinidae	LC	Sch II
14	<i>Centropus sinensis</i>	Greater Coucal	Cuculidae	LC	Sch II
15	<i>Cinnyris asiaticus</i>	Purple Sunbird	Nectariniidae	LC	Sch II
16	<i>Cinnyris lotenius</i>	Loten's Sunbird	Nectariniidae	LC	Sch II
17	<i>Clamator jacobinus</i>	Pied Cuckoo	Cuculidae	LC	Sch II
18	<i>Columba livia</i>	Rock Pigeon (Feral Pigeon)	Columbidae	LC	Sch II
19	<i>Corvus macrorhynchos</i>	Large-billed Crow	Corvidae	LC	Sch II
20	<i>Corvus splendens</i>	House Crow	Corvidae	LC	Sch V
21	<i>Cypsiurus balasiensis</i>	Asian Palm Swift	Apodidae	LC	Sch II
22	<i>Dendrocitta vagabunda</i>	Rufous Treepie	Corvidae	LC	Sch II
23	<i>Dicaeum erythrorhynchos</i>	Pale-billed Flowerpecker	Dicaeidae	LC	Sch II
24	<i>Dicrurus leucophaeus</i>	Ashy Drongo	Dicruridae	LC	Sch II
25	<i>Dicrurus macrocercus</i>	Black Drongo	Dicruridae	LC	Sch II
26	<i>Egretta garzetta</i>	Little Egret	Ardeidae	LC	Sch II
27	<i>Eudynamys scolopacea</i>	Asian Koel	Cuculidae	LC	Sch II
28	<i>Gallinula chloropus</i>	Eurasian Moorhen	Rallidae	LC	Sch II
29	<i>Galloperdix spadicea</i>	Red Spurfowl	Phasianidae	LC	Sch II
30	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	Alcedinidae	LC	Sch II

31	<i>Hierococcyx varius</i>	Common Hawk-Cuckoo	Cuculidae	LC	Sch II
32	<i>Hirundo rustica</i>	Barn Swallow	Hirundinidae	LC	Sch II
33	<i>Leptocoma zeylonica</i>	Purple-rumped Sunbird	Nectariniidae	LC	Sch II
34	<i>Lonchura punctulata</i>	Scaly-breasted Munia	Estrildidae	LC	Sch II
35	<i>Merops orientalis</i>	Asian Green Bee Eater	Meropidae	LC	Sch II
36	<i>Merops philippinus</i>	Blue-tailed Bee Eater	Meropidae	LC	Sch II
37	<i>Milvus migrans</i>	Black Kite	Accipitridae	LC	Sch I
38	<i>Motacilla flava</i>	Western Yellow Wagtail	Motacillidae	LC	Sch II
39	<i>Motacilla maderaspatensis</i>	White-browed Wagtail	Motacillidae	LC	Sch II
40	<i>Oriolus kundoo</i>	Indian Golden Oriole	Oriolidae	LC	Sch II
41	<i>Orthotomus sutorius</i>	Common Tailorbird	Cisticolidae	LC	Sch II
42	<i>Ortygornis pondicerianus</i>	Gray Francolin	Phasianidae	LC	Sch II
43	<i>Passer domesticus</i>	House Sparrow	Passeridae	LC	Sch II
44	<i>Pavo cristatus</i>	Indian Peafowl	Phasianidae	LC	Sch I
45	<i>Plegadis falcinellus</i>	Glossy Ibis	Threskiornithidae	LC	Sch II
46	<i>Plocealauda affinis</i>	Jerdon's Bushlark	Alaudidae	LC	Sch II
47	<i>Prinia inornata</i>	Plain Prinia	Cisticolidae	LC	Sch II
48	<i>Prinia socialis</i>	Ashy Prinia	Cisticolidae	LC	Sch II
49	<i>Prinia sylvatica</i>	Jungle Prinia	Cisticolidae	LC	Sch II
50	<i>Psilopogon haemacephalus</i>	Coppersmith Barbet	Megalaimidae	LC	Sch II
51	<i>Psittacula krameri</i>	Rose-ringed Parakeet	Psittaculidae	LC	Sch II
52	<i>Pycnonotus cafer</i>	Red-vented Bulbul	Pycnonotidae	LC	Sch II
53	<i>Saxicola caprata</i>	Pied Bushchat	Muscicapidae	LC	Sch II
54	<i>Spilopelia chinensis</i>	Spotted Dove	Columbidae	LC	Sch II
55	<i>Streptopelia decaocto</i>	Eurassian Collared Dove	Columbidae	LC	Sch II
56	<i>Vanellus indicus</i>	Red wattled Lapwing	Charadriidae	LC	Sch II

Ref: Grimmet et al (2013)



Photo Plate – The Indian Peafowl was the commonest bird sighted

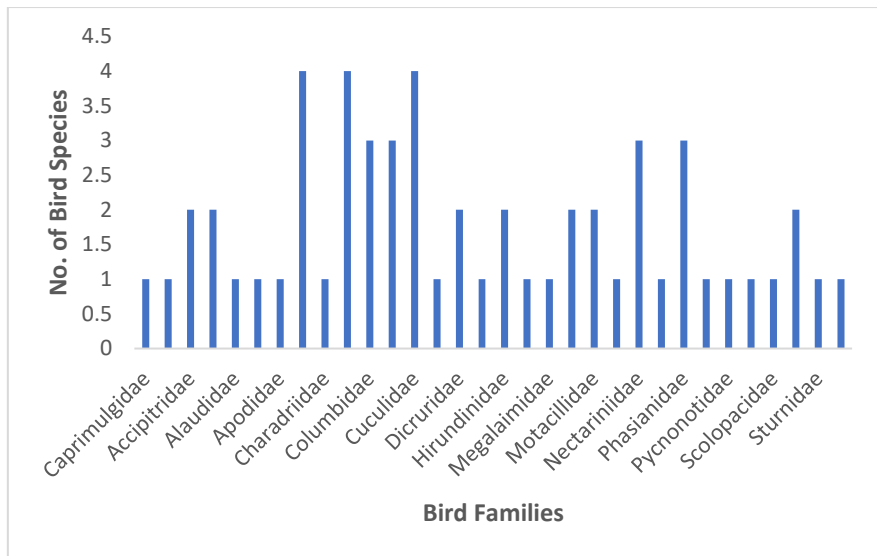


Figure 10.: Diversity of Avifauna Families

3.2.3 Reptiles

2 reptile species were visually recorded, viz., Oriental Garden Lizard (*Calotes versicolor*) and red sand boa (*Eryx johnii*). Discussions with local workers revealed the presence of Indian Cobra (*Naja naja*), Oriental rat snake (*Ptyas mucosa*) and Checkered Keelback (*Fowlea piscator*).

While all other species are designated as Least Concern as per International Union of Conservation (IUCN), red sand boa is a 'Near Threatened' species. The Red Sand Boa (*Eryx johnii*) is a fossorial snake of arid and semi-arid habitats, playing an important ecological role by regulating populations of small mammals and reptiles. Although still locally encountered, it is currently listed as Near Threatened on the IUCN Red List due to habitat loss, road mortality, and persistent illegal collection driven by superstition and wildlife trade. The Near Threatened category signifies that a species does not yet meet the thresholds for a threatened category, but is close to qualifying or is likely to do so in the near future if existing pressures continue.



Photo Plate: The Red Sand Boa is a relatively uncommon sighting. This Near-threatened species is sometimes referred to as 'do-muha' or 'two-headed' because of its blunt and rounded tail

3.2.4. Amphibians

3 amphibian species were visually recorded, viz., Asian Common Toad (*Duttaphrynus melanostictus*), Common Indian Cricket Frog (*Minervarya agricola*) and Ornate Narrow-mouthed Frog (*Microhyla ornata*).

3.2.5 Insects

Detailed checklist of butterflies observed in the study area is given in **Table 7**. **70** distinct species were observed, belonging to different orders of moths & butterflies, dragonflies, ants, spiders etc.

Table 7: List of Insect Species in the Study Area

Sr. No.	Scientific Name	Common Name
Class Insect: Order Lepidoptera (Butterflies)		
1	<i>Junonia orithya</i>	Blue Pansy
2	<i>Acraea terpsicore</i>	Tawny Coster
3	<i>Appias albina</i>	Common Albatross
4	<i>Appias libythea</i>	Striped Albatross
5	<i>Arhopala amantes</i>	Large Oakblue
6	<i>Ariadne merione</i>	Common Castor
7	<i>Castalius rosimon</i>	Common Pierrot
8	<i>Catochrysops strabo</i>	Forget me not
9	<i>Catopsilia pomona</i>	Lemon Emigrant
10	<i>Catopsilia pyranthe</i>	Mottled Emigrant
11	<i>Chilades lajus</i>	Lime Blue
12	<i>Cigaritis vulcanus</i>	Common Silverline
13	<i>Danaus chrysippus</i>	Plain Tiger
14	<i>Danaus genutia</i>	Striped Tiger
15	<i>Delias eucharis</i>	Common Jezebel
16	<i>Euchrysops cnejus</i>	Gram Blue
17	<i>Euploea core</i>	Common Crow
18	<i>Eurema blanda</i>	Three spotted Grass Yellow
19	<i>Eurema hecabe</i>	Common Grass Yellow
20	<i>Freyeria trochylus</i>	Jewelled Grass Blue
21	<i>Hypolimnas misippus</i>	Danaid Eggfly
22	<i>Ixias marianne</i>	White Orange Tip
23	<i>Jamides celeno</i>	Common Cerulean
24	<i>Junonia iphita</i>	Chocolate Pansy
25	<i>Junonia lemonias</i>	Lemon Pansy
26	<i>Junonia orithya</i>	Blue Pansy
27	<i>Leptotes plinius</i>	Zebra Blue
28	<i>Luthrodes pandav</i>	Plains Cupid
29	<i>Mycalesis perseus</i>	Dingy Bushbrown
30	<i>Pachliopta aristolochiae</i>	Common Rose

31	<i>Pachliopta hector</i>	Crimson Rose
32	<i>Papilio polytes</i>	Common Mormon
33	<i>Tarucus nara</i>	Striped Pierrot
34	<i>Tirumala septentrionis</i>	Dark Blue Tiger
35	<i>Tirumala limniace</i>	Blue Tiger
36	<i>Tirumala septentrionis</i>	Dark Blue Tiger
37	<i>Tirumala septentrionis</i>	Blue Tiger
38	<i>Ypthima asterope</i>	Common Three Ring
39	<i>Ypthima ceylonica</i>	White Four Ring
40	<i>Ypthima huebneri</i>	Common Four Ring
41	<i>Zizeeria karsandra</i>	Dark Grass Blue
42	<i>Zizina otis</i>	Lesser Grass Blue
43	<i>Zizula hylax</i>	Tiny Grass Blue
Class Insect: Order Lepidoptera (Moths)		
1	<i>Cyana Peregrina</i>	Cyana Peregrina
2	<i>Chiasma sp.</i>	Chiasma sp.
3	<i>Ancylolomia japonica</i>	Ancylolomia japonica
Class Insect: Order Odonata (Dragonflies)		
1	<i>Brachythemis contaminata</i>	Ditch Jewel
2	<i>Crocothemis servilia</i>	Scarlet Skimmer
3	<i>Diplacodes trivialis</i>	Chalky Percher
4	<i>Orthetrum sabina</i>	Slender Skimmer
5	<i>Pantala flavescens</i>	Wandering Glider
6	<i>Tholymis tillarga</i>	Twister
7	<i>Potamarcha congener</i>	Swampwatcher
8	<i>Tramea limbata</i>	Ferruginous Glider
9	<i>Trithemis pallidinervis</i>	Dancing Dropwing
10	<i>Agriocnemis pygmaea</i>	Wandering Midget
11	<i>Copera marginipes</i>	Yellow Featherlegs
12	<i>Lestes praemorsus</i>	Scalloped Speadwing
Class Insect: Misc. Orders		
1	<i>Probergrothius sanguinolens</i>	Indian Red Bug
2	<i>Polistinae sp.</i>	Paper Wasp
3	<i>Apis sp.</i>	Honey Bees
4	<i>Heteracris pulchra</i>	Heteracris pulchra
5	<i>Flata stellaris</i>	Flata stellaris
6	<i>Harpagophoridae sp.</i>	Millipede
7	<i>Hycleus biundulatus</i>	Beetle
8	<i>Stegodyphus sarasinorum</i>	Indian Cooperative Spider
9	<i>Thyene imperialis</i>	Thyene imperialis Spider
10	<i>Anoplodesmus saussurii</i>	Millipede
11	<i>Camponotus compressus</i>	Indian Black Ant
12	<i>Harpagophoridae sp.</i>	Millipede

3.2.6 Secondary Data

Table 8: Secondary Data

Sr. No.	Taxon	Species	Source
1.	Trees	<i>Azadirachta indica, Acacia nilotica, Delonix regia, Albizia amara, Eucalyptus sp., Aegle marmelos, Annona squamosa, Bauhinia purpurea, Anacardium occidentale, Polyalthia longifolia, Casuarina equisetifolia, Albizia lebbeck, Butea monosperma, Bauhinia racemosa, Albizia procera, Butea superba, Acacia leucophloea, Bambusa bambos, Mangifera indica, Tamarindus indica, Adina cordifolia, Cocos nucifera, Cassia fistula, Simarouba glauca, Bombax ceiba, Borassus flabellifer, Ceiba pentandra, Bridelia retusa, Citrus medica, Calotropis gigantea, Dalbergia latifolia, Phoenix sylvestris, Ficus benghalensis, Terminalia catappa, Terminalia chebula, Terminalia tomentosa, Phoenix acaulis, Tectona grandis, Ficus hispida, Ficus religiosa, Ficus amplissima, Pongamia pinnata, Syzygium cumini, Cassia siamea, Musa paradisiaca, Ziziphus mauritiana, Emblica officinalis, Plumeria rubra, Vitex negundo</i>	Final EIA Report for proposed expansion of foundry unit at SIPCOT, Perundurai, Erode (Nov 2021)
	Shrubs	<i>Jasminum sessiliflorum, Morinda pubescens, Solanum pubescens, Euphorbia geniculata, Datura fastuosa, Datura alba, Phyllanthus reticulatus, Bougainvillea spectabilis, Hibiscus rosa-sinensis, Datura metel, Calotropis procera, Sida cordifolia, Citrullus colocynthis, Cassia auriculata, Ixora arborea, , Plumbago zeylanica,</i>	
	Herbs	<i>Aerva lanata, Ageratum conyzoides, Dinebra retroflexa, Euphorbia hirta, Ipomoea turbinata, Euphorbia tirucalli, Hyptis suaveolens, Mimosa hamata, Evolvulus nummularius, Panicum miliare, Panicum notatum, Ipomoea dissecta, Cynodon dactylon, Heliotropium indicum, Sporobolus fertilis, Evolvulus alsinoides, Tridax procumbens, Ocimum americanum, Ocimum sanctum, Heteropogon contortus, Digitaria stricta Mimosa pudica, Commelina benghalensis</i>	
	Mammals	<i>Herpestes edwardsii, Felis catus, Macaca radiata, Bandicota bengalensis, Cynopterus sphinx, Felis chaus, Vulpes bengalensis, Lepus nigricollis, Mus musculus, Viverricula indica, Hystrix indica, Funambulus pennanti, Presbytis entellus, Bandicota indica</i>	
	Avifauna	<i>Corvus splendens, Milvus migrans, Passer domesticus, Acridotheres tristis, Terpsiphone paradisi, Tephrodornis pondicerianus, Dicrurus paradiseus, Oriolus oriolus, Acridotheres tristis, Corvus splendens, Cuculus canorus, Cinnerys asiaticus, Eudynamys scolopaceus, Psittacula krameri, Merops orientalis, Alcedo atthis, Copsychus saularis, Halcyon smyrnensis, Haliastur indus, Apus nipalensis, Milvus migrans, Vanellus indicus, Vanellus malabaricus, Bubulcus ibis, Egretta garzetta, Ardeola grayii, Anas acuta, Sterna aurifrons, Galerida malabarica, Accipiter badius, Elanus caeruleus, Phalacrocorax niger, Columba livia, Streptopelia chinensis,</i>	

		<i>Gallus gallus, Chalcophaps indica, Pycnonotus cafer, Saxicoloides fulvicata, Dicrurus macrocercus, Turdoides striata.</i>	
	Amphibians	<i>Rana tigrina, Bufo melanostictus</i>	
	Reptiles	<i>Vipera russellii, Naja naja, Bungarus caeruleus, Lycodon spp., Ptyas mucosus, Eutropis macularia, Hemidactylus sp., Calotes versicolor</i>	
	Mammals	<i>Mus booduga, Funambulus palmarum, Rattus norwegicus, Herpestes javanicus, Lepus nigricollis</i>	DRAFT ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENT MANAGEMENT PLAN for THIRU. P. VELMANI MULTI COLOUR GRANITE QUARRY, in Pandiyampalayam village (2024)
	Birds	<i>Psittacula krameria, Acridotheres tristis, Ardeola grayii Eudynamys scolopacea, Dicrurus macrocercus, Corvus splendens, Turdoides striata, Saxicoloides fulvicatus, Bubulcus ibis, Columba livia, Pycnonotus cafer, Merops orientalis, Cinnerys asiaticus, Hierococcyx varius, Passer domesticus, Alcedo atthis, Psittacula krameria, Rose-ringed parakeet, Cypsiurus balasiensis, Coturnix coturnix, Ploceus Philippines, Dicrurus longicaudatus, Francolinus pondicerianus, Tringa glareola, Merops philippinus, Coracias benghalensis, Hirundo rustica</i>	
	Reptiles	<i>Calotes versicolor, Ahaetulla nasuta, Hemidactylus flaviviridis, Ptyas mucosa, Bungarus caeruleus, Mabuya carinatus, Nerodia piscator, Groemyda bijuga</i>	DRAFT ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENT MANAGEMENT PLAN for THIRU. P. VELMANI MULTI COLOUR GRANITE QUARRY, in Pandiyampalayam village (2024)
	Insects	<i>Danaus genutia, Sympetrum fonscolombii, Musca domestica, Agrian sp, Danaus Plexippus, Apis cerana, Hamitermes silvestri, Hieroglyphus sp, Camponotus vicinus, Ceratogomphus pictus, Suastus gremius, Papilio polytes, Pachliopta aristolochiaeae, Eurema laeta, Danaus genutia, Catopsilia Pomona, Colotis danae, Euploea core, Papilio demoleus, Junonia hierta, Junonia iphita</i>	
	Birds	<i>Pelecanus philippensis, Mycteria leucocephala, Anhinga melanogaster, Threskiornis melanocephalus, Sterna aurantia, Anser indicus, Limosa limosa, Platalea leucorodia, Circus aeruginosus, Halcyon leucocephala, Aquila fasciata, Hirundo rustica, Merops philippinus, Motacilla flava, Calidris minuta, Porphyrio porphyrio, Phalacrocorax spp., Anas crecca, Anas acuta, Anas querquedula, Fulica atra, Centropus sinensis, Gallinula chloropus, Amaurornis phoenicurus, Streptopelia chinensis, Corvus splendens.</i>	Krishnamoorthi S, M.K. Shivaa, K. Baranidharan & M. Prasanthrajan. <i>Study on seasonal variations of wetland birds in Vellode Bird Sanctuary, Erode, Tamil Nadu, India.</i> JEZS (Journal of Entomology and Zoology Studies), Vol. 8(4): pp. 333–337, 2020.

3.2.7 Biodiversity Indices

The diversity measurement reflect as to how many diverse species are present, the density measurement indicate number of individuals of aspecies in the study area. Species diversity is the best measure of community structure and it is sensitive to various environmental stresses. Smaller value of Simpson’s Diversity Index shows healthy ecosystem and the higher value shows that an ecosystem is under environmental stress.

For birds, the Shannon's index value varied from **2.919647 to 3.114111**, whereas Simpson's index value varied from **0.922254 to 0.940701**. For butterflies, Shannon's index value varied from **3.078614 to 3.36814**, whereas Simpson's indices value varied from **0.946337 to 0.963594**.

In both cases, the biodiversity is high with respect to species richness as well as evenness as indicated by values above 3 (for Shannon's index) and close to 1 (for Simpson's index).

3.4. Habitat Quality Index

The *Habitat Quality Index (HQI)* within the InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) model provides a flexible, spatially explicit method for assessing the condition of habitats based on land-cover characteristics and the presence of ecological stressors. Designed by the Natural Capital Project at Stanford University, the HQI framework evaluates habitat quality as a function of both the intrinsic suitability of land-cover types and their exposure to threats such as human disturbance, encroachment, or incompatible land uses. This makes the model suitable not only for regional-scale biodiversity assessments but also for evaluating individual industrial or institutional sites where local management practices strongly influence ecological outcomes.

Because InVEST allows users to define their own threats, weights, and habitat sensitivities, it is well-suited for customized, site-specific assessments—including settings like a chemical manufacturing campus with high green cover but risks associated with exotic plant dominance and recurring human activity. By quantifying habitat quality on a continuous scale, the HQI provides a baseline score that can be used to track changes over time, evaluate management interventions, and support long-term ecological planning at the plot level.

3.4.1 Explanation of the Evaluation Categories

- **Vegetation Structure** – the presence of different layers in the ecosystem – canopy/emergent trees, mid-canopy trees, understory shrubs & climbers, ground cover herbs. Depending on the climactic, edaphic and managerial aspects, different habitats, the feasible number of layers of vegetation can differ – for example, a desert ecosystem can barely have some ground cover, whereas a tropical evergreen forest will have all four. The study area being a well-managed, drip-irrigated open space near Perundurai, all four vegetation layers can be feasibly maintained, and the scoring has been done accordingly.
- **Native Species Richness** – native flora species are significant for the ecosystem as they have formed evolutionarily stable ecological linkages with each other and with fauna species. A habitat rich in native species is, therefore, rich in biodiversity, resilient and healthy.

- Invasive Species Pressure – lower the pressure of invasive species, higher will be the biodiversity and more resilient will be the ecosystem.
- Soil Condition – Characteristics of good soil are – loamy texture, well-drained, rich in nutrients like nitrogen, phosphorus, potassium and organic carbon, optimal pH and having a biologically active layer thriving with earthworms etc.
- Water availability/Quality – Availability of unpolluted water in adequate quantity is crucial for habitat health.
- Canopy Cover/Ground Cover – Depending on the type of ecosystem, canopy cover and ground cover should be high, indicating rich biodiversity.
- Habitat Connectivity – If habitats remain disconnected with each other, it causes gene pool isolation and chances of unstable population. Contiguity of habitats or the presence of linear corridors or at least ‘stepping stones’ between habitats is, therefore, crucial. The absence of such habitat connectivity is the most significant challenge to urban biodiversity, as there are either no corridors, or existing ones are disturbed. Also, different taxonomic groups will have different corridor requirements – for instance small mammals may find it difficult to cross a rail or road intrusion between their habitat patches but birds may fly over it. Alternately, birds and bats may get trapped in wires when flying across habitat patches. Snakes and amphibians often use drains to navigate safely in urban areas. Presence of at least one corridor catering to all taxonomic groups is crucial to biodiversity health and richness.

In the present study, habitat patches within the premises were found to be well-connected.

- Human Disturbance Level – This is a crucial deciding factor, assessing the level of disturbance biodiversity faces at human hands, ranging from actual physical killing or deforestation and hazardous waste dumping, to an ideal habitat where no species are at risk and there is no pollution discharge. Air and water pollution are considered bigger threats to biodiversity than noise pollution, and the scoring system has been arranged accordingly. Also, large-scale solid waste dumping, even if the discarded material is non-toxic, disturbs habitats – hence, scoring has been done considering this.
- Regeneration Status – For an ecosystem to be resilient against stressors, its inherent regeneration capacity is of importance. This is measured by the biodiversity richness of the seedlings and the saplings, their density, and the different age-classes of these seedlings and saplings.

- Microhabitat Availability – Different ecosystems have different types of micro-habitats. In the present site of, examples of microhabitats include – leaf litter, understory shrubs, fallen tree logs, tree holes, root buttresses, tree branches, tree trunk, mud puddles, reed roots, naturally stabilized slopes of water body, etc.

Table 13: Habitat Quality Index

Category	Score (0–5)	Weight	Weighted Score	Notes
Vegetation Structure	5	15%	0.75	All 3 vegetation layers present
Native Species Richness	3.5	10%	0.35	High (79%)
Invasive Species Pressure	3	10%	0.3	Medium
Soil Condition	4	15%	0.6	Good
Water Availability/Quality	4	10%	0.4	Good
Canopy Cover / Ground Cover	5	5%	0.25	Good
Habitat Connectivity	5	5%	0.25	Good
Human Disturbance Level	5	10%	0.5	Low
Regeneration Status	4	10%	0.4	Good
Microhabitat Availability	5	10%	0.5	High
		100%		
Total Weighted Score			4.3	
Maximum Possible Score			5	

4. Discussion

The afforestation project, initiated three years ago, has demonstrated strong ecological outcomes and reflects sound planning and execution. In addition to the successful establishment of the planted trees, the site has facilitated natural regeneration, with native tree, shrub, and herbaceous species colonizing the area without active intervention. This indicates the development of favorable microhabitats and improving soil and ecological conditions. The plantation has also supported a noticeable increase in faunal diversity, with regular sightings of a wide range of bird species, butterflies, and other insect taxa. The presence of these indicator species suggests the gradual restoration of ecological functions and highlights the plantation's role in enhancing local biodiversity within a relatively short time frame.

4.1 Significance of Species Observed

4.1.1 Exotic & Invasive Flora Species

Native herbs and shrubs play a critical role in maintaining ecological balance, making them far more valuable than exotic species in most landscapes. Native herbs and shrubs have evolved over thousands of years within a region's unique climate, soils, and seasonal rhythms, allowing them to support local food webs in ways that exotics cannot. They provide nectar, pollen, foliage, and habitat for native pollinators, butterflies, insects, and soil microfauna that depend on very specific plant–insect relationships. Their root systems are better adapted to local hydrology, improving soil structure and promoting natural nutrient cycling. In contrast, exotic herbs and shrubs often fail to support native biodiversity, may attract few pollinators, and in some cases can become invasive, replacing diverse native undergrowth with monocultures. Prioritizing native herb and shrub species therefore strengthens ecosystem resilience, enhances biodiversity, conserves genetic heritage, and supports more sustainable long-term landscape function compared with relying on non-native ornamentals.

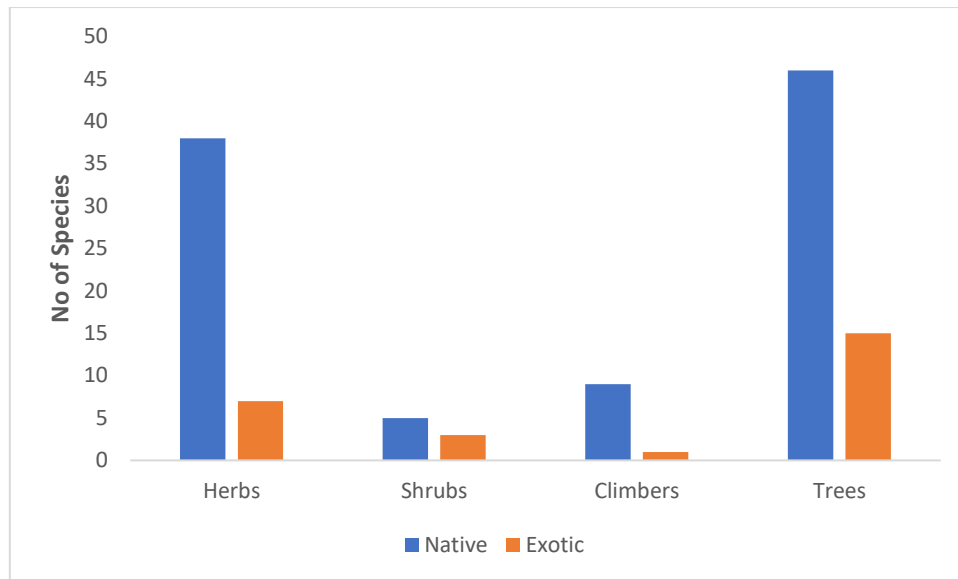


Figure 10: Distribution of Native and Exotic Flora Species

4.1.2 Bio-indicators

Amphibians are widely recognized as excellent biological indicators of environmental health because of their high sensitivity to pollutants. One key reason is their highly permeable (semipermeable) skin, which allows them to absorb chemicals from both water and air. Presence of Common Indian Cricket Frog, and Ornate Narrow-mouthed Frog, along with Asian Toad, in the area around the water bodies, indicates a pollution-free environment.

Dragonflies are widely regarded as reliable bio-indicators of ecosystem health because their life cycle depends on clean, well-oxygenated water and intact surrounding vegetation. A rich diversity of dragonfly species reflects low levels of chemical pollution, stable hydrology, and good habitat heterogeneity, as both aquatic larvae and terrestrial adults are sensitive to environmental degradation. High dragonfly diversity therefore indicates an unpolluted ecosystem with functional food webs, balanced predator–prey relationships, and sustained ecological integrity across aquatic and adjoining terrestrial habitats.

4.1.4 Aggressive & Invasive Fauna Species

The Shikra (*Accipiter badius*) is known to exhibit territorial and aggressive behaviors, particularly around its nest. For example, field observations in India have documented both male and female Shikras vigorously chasing crows (*Corvus* spp.) that approached within 10–15 m of their nest, and in one case a Shikra was reported to defend its prey from crows for over 10 minutes, driving them away. We also observed the Shikra in the study area in an aggressive mode, chasing away other birds.




Among others, *Acridotheres tristis* (Common Myna), *Corvus spp.* (house/jungle crow), and *Psittacula krameri* (Rose-ringed Parakeet) have multiple studies/reports showing competitive aggression, displacement of nesters, kleptoparasitism or invasive impacts.







The Rock Pigeon (*Columba livia*) observed in the study area is widespread across Indian cities, where it has adapted extremely well to urban environments. Originally cliff-nesting, these birds now exploit ledges, balconies, and high-rise structures in metropolitan areas, mimicking their natural habitat. Their numbers have surged in recent decades — some reports suggest more than a 150 % increase since the early 2000s. Beyond being a mere nuisance, their proliferation raises public health and ecological concerns. They are known to carry zoonotic pathogens and can contribute to hypersensitivity pneumonitis (bird-fancier’s lung) in humans via their droppings. Their presence in dense numbers also imposes potential competition and disturbance to other urban bird species, and some city biodiversity plans even classify them as invasive.

4.2 Biodiversity Enhancement Measures.

- Plantation of native trees, shrubs and climbers







Since few non-native trees were observed in the plantation, we recommend few native species options below:

		
<p><i>Bombax ceiba</i>/ Silk Cotton Tree/Sittan</p>	<p><i>Vachellia nilotica</i> /Gum Arabic Tree/Karuvelai</p>	<p><i>Ziziphus mauritiana</i>/Ilantai/ Indian Jujube</p>




		
<p><i>Grewia asiatica</i> /Indian Summer Berry/Unnu</p>	<p><i>Trema orientalis</i>/ Indian Charcoal Tree/Yerralai</p>	<p><i>Soymida febrifuga</i> /Indian Mahogany/Cataputpinai</p>
		
<p><i>Filicium decipiens</i>/Fern Tree/Ningal</p>	<p><i>Cordia dichotoma</i>/Indian Cherry/Naruvili</p>	<p><i>Erythrina variegata</i>/Indian Coral Tree/Kalyana murungai</p>




Following are a few options of native herbs:

		
<p><i>Withania somnifera</i> Ashwagandha / Angara beru/gadde</p>	<p><i>Bacopa monnieri</i> Brahmi /Niru Brahmi</p>	<p><i>Centella asiatica</i> Brahmi Soppu</p>

		
<i>Eclipta alba</i> Ajagara	<i>Boerhavia diffusa</i> Adakaputta	<i>Swertia chirata</i> Kiraata, Nelabevu
		
<i>Justicia adhatoda</i> Aadusoge/Addasara	<i>Valeriana wallichii</i> Jatale, Naati jatamaansi	<i>Nardostachys jatamansi</i> Ganigalamusthe/Jatamansi







Following are few of the native shrub options that may be utilized:








		
<i>Carissa carandas</i> Kalakkai	<i>Plumbago zeylanica</i> Chittiramoolam karimai	<i>Flacourtia indica</i> Cottaikkala

		
<i>Dodonaea viscosa</i> Virali	<i>Clerodendrum infortunatum</i> Perukilai	<i>Crossandra infundibuliformis</i> Kanakamparam

***Pictures are obtained from free sources of Internet**

Native climber options include:

		
<i>Bauhinia scandens</i> /Climbing Bauhinia/ Kattu mandarai	<i>Quisqualis indica</i> /Rangoon Creeper/ Irangun malli	<i>Ipomoea nil</i> / Morning Glory/Kakkattan
		
<i>Thunbergia fragrans</i> /White Clock Vine/Intirapushpi	<i>Thunbergia mysorensis</i> /Mysore Trumpet Vine/Pen Kaalani	<i>Hiptage benghalensis</i> / Helicopter Flower/Vasantakaala malligai

		
<p><i>Clematis heynei</i>/Deccan Clematis/Muruvali</p>	<p><i>Passiflora foetida</i>/Wild Passionflower /Siruppunaikkali</p>	<p><i>Cocculus hirsutus</i>/ Broom Creeper/Kattukkoti</p>
		
<p><i>Jasminum auriculatum</i>/Juhi/ Mullai</p>	<p><i>Jasminum malabaricum</i>/ Malabar Jasmine/Kotivakai</p>	<p><i>Wattakaka volubilis</i>/ Green Milkweed Climber/Ankara-Valli</p>
		
	<p><i>Abrus precatorius</i>/ Rosary Pea Vine/Cikantikai</p>	

*Pictures are obtained from free sources of Internet

- **Weed Management**

Two major weeds observed were:



Parthenium hysterophorus



Chromolaena odorata

- ***Parthenium hysterophorus***, commonly known as Congress grass or carrot weed, is one of India's most aggressive and problematic invasive plant species and is listed among the world's worst invasive weeds. *P. hysterophorus* is an annual herb that can exist as a short-lived perennial when soil is irrigated and moisture is good. Native to the region around the Gulf of Mexico, southern part of the USA and central South America, it has now spread to cover large parts of Africa, Indian subcontinent, Australia and parts of Europe. In India, it was introduced accidentally through contaminated grain imports in the 1950s, and it rapidly spread across the country due to its high seed production (20,000 seeds per plant), fast growth, allelopathy, high seed viability (4-6 years in soil), and ability to colonize disturbed habitats. The weed thrives along roadsides, agricultural fields, industrial lands, and vacant urban plots, forming dense monospecific stands that displace native vegetation and reduce biodiversity.
- Effective management requires integrated approaches combining mechanical removal and ecological restoration using competitive native species plantation.

- Physical removal of the plant is useful when the infested area is small, as the removal is labour-intensive – the plant has a deep tap root that must be pulled out cleanly to ensure
- Time period of manual removal – it is critical to time the physical removal exercise with the plant's life-cycle, so that it does not coincide with its seed production time - else, we will actually be aiding in the spreading of seeds. If it can be removed before it enters flowering stage, so much the better. Alternately, if this condition cannot be met, given, utmost care must be taken to prevent spreading of seeds.
- Fate of harvested plant biomass – unsafe disposal can lead to spread of the plant, hence it is safer to either mulch it and plough the biomass into the soil or to compost it along with other horticultural waste. Vermicomposting or pit composting have both been reported by researchers to convert the carrot grass biomass into resource.
- Precautions while handling – wearing of gloves and masks is mandatory as the weed has been known to cause allergic contact dermatitis and asthma.
- Post-removal monitoring – given the high seed viability of this weed, it is advised to continue monitoring the affected area over the next 5-6 years, at bi-monthly intervals. Once observed, the plant can be plucked out manually at the seedling or sapling stage, before it has entered flowering or fruiting. Bi-monthly interval of scrutiny is important as the plant can grow fast and begin flowering within a month itself.
- ***Chromolema odorata***, a fast-growing, invasive perennial shrub, aggressively colonizes disturbed and open habitats, suppressing native vegetation through dense canopy formation and allelopathic effects. *Chromolaena odorata* produces very large numbers of wind-dispersed seeds — typically ~80,000–90,000 seeds per plant. The achenes are equipped with hair-like structures (pappus) that allow them to be carried long distances by wind, and they also attach to clothing, animals, and machinery, aiding dispersal. Under favorable conditions, *C. odorata* can grow >3 cm per day, quickly forming dense stands that shade out native seedlings and ground flora. It specially grows in disturbed, open habitats, establishing before slower-growing native trees and shrubs. Also, it regenerates from rootstocks after cutting or slashing, which makes single-event removal ineffective without repeated follow-up
Like in the case of Parthenium, here, too, manual removal is feasible over smaller areas and effective removal time is before flowering has initiated.
- Fate of harvested plant biomass – unsafe disposal can lead to spread of the seed, and it is advised to carry out composting of dried-up roots and branches – however, flowers and seeds must be destroyed.

- Precautions while handling – it is advised to keep the soil moist prior to uprooting as *C. odorata* roots are deep (up to 30 cm). Also, in the case of mature plants, it is important to remove the root crown also. Leaving even cut stem stumps about can lead to regeneration.
- Post-removal monitoring – given the high seed viability of this weed, it is advised to continue monitoring the affected area over the next 5-6 years, at monthly intervals. Once observed, the plant can be plucked out manually at the seedling or sapling stage, before it has entered flowering or fruiting.

However, only manual removal is not sufficient. It must be followed by plantation of competitive native species so that the weeds have to compete for space. Native shrub, herb and climber species suggestions provided above can be considered.

References:

Daniel, J. C., & Bombay Natural History Society. (2002). *The book of Indian reptiles and amphibians*. India: Bombay Natural History Society.

Daniels, R. R. (2002). *Freshwater fishes of peninsular India*. Universities Press.

Khaire, N. (2018). *Indian Snakes: A Field Guide*. Jyotsna Prakashan.

Grimmett, R., Inskipp, C., & Inskipp, T. (2013). *Birds of the Indian Subcontinent: India, Pakistan, Sri Lanka, Nepal, Bhutan, Bangladesh and the Maldives*. Bloomsbury Publishing.

Menon, V. (2009). *Mammals of India (Princeton Field Guide)*(Vol. 200). Princeton University Press, London.

Xu, Z., & Deng, M. (2017). Fabaceae or leguminosae. In *Identification and Control of Common Weeds: Volume 2* (pp. 547-615). Dordrecht: Springer Netherlands.

Annexures – Raw data tables have been provided below

Flora Data

Quadrant 1				
%Cover	Name	Number of individual	Height (m)	Location
	Herbs			
6.21	<i>Calyptocarpus vialis</i>	10	-	11.2514105,77.5644883
1.24	<i>Tridax procumbens</i>	2	-	
11.8	<i>Chloris barbata</i>	19	-	
19.88	<i>Indigofera linnaei</i>	32	-	
18.63	<i>Spermacoce pussila</i>	30	-	
0.62	<i>Evolvulus alsinoides</i>	1	-	
1.86	<i>Dicliptera paniculata</i>	3	-	
2.48	<i>Phyllanthus maderaspatensis</i>	4	-	
8.07	<i>Corchorus aestuans</i>	13	-	
2.48	<i>Cyanthillium cinereum</i>	4	-	
7.45	<i>Dactyloctenium aegypticum</i>	12	-	
1.86	<i>Parthenium hysterophorus</i>	3	-	
2.48	<i>Leucas aspera</i>	4	-	
1.86	<i>Commelina benghalensis</i>	3	-	
12.42	<i>Alternanthera ficoidea</i>	20	-	
0.62	<i>Tephrosia purpurea</i>	1	-	
	Climbers			
7.32	<i>Rhynchosia minima</i>	3	-	
	Shrubs			
2.44	<i>Lantana camara</i>	1	-	
	Trees			
	<i>Azadirachta indica</i>	5	20	
	<i>Alangium salviifolium</i>	5	10	
	<i>Alangium salviifolium</i>	3	10	
Quadrant 2				
	Name	Number of individual	Height (m)	Location
	Herbs			
15.63	<i>Indigofera linnaei</i>	20		
1.56	<i>Crotalaria evolvuloides</i>	2		
2.34	<i>Dicliptera paniculata</i>	3		
3.13	<i>Cyanthillium cinereum</i>	4		
12.5	<i>Blepharis integrifolia</i>	16		
3.91	<i>Commelina benghalensis</i>	5		
15.63	<i>Parthenium hysterophorus</i>	20		
3.91	<i>Ocimum americanum</i>	5		
0.78	<i>Tribulus terrestris</i>	1		
3.91	<i>Sida acuta</i>	5		
6.25	<i>Sida cordifolia</i>	8		
8.59	<i>Setaria viridis</i>	11		
	Climbers			
3.23	<i>Ipomoea pes-tigridis</i>	1		
6.45	<i>Rhynchosia minima</i>	2		
9.68	<i>Trichosanthes cucumeroides</i>	3		
	Shrubs			
29.03	<i>Ruellia patula</i>	9		
51.61	<i>indigoferra hirsuta</i>	16		
	Trees			
	<i>Tectona grandis</i>	8	6	
Quadrant 3				
	Name	Number of individual	Girth (cm)	Location
	Herbs			11.2511933,77.56449

..	<i>Cissus quadrangularis</i>	2		
	Trees			
	<i>Grewia tiliifolia</i>	1	10	
	<i>Terminalia arjuna</i>	1	15	
	<i>Samanea saman</i>	1	12	
	<i>Pongamia pinnata</i>	6	10	
	<i>Senna siamea</i>	1	10	
	<i>Azadirachta indica</i>	5	15	
	<i>Acacia holosericea</i>	1	15	
Quadrant 8				
	Name	Number of individual	Girth (cm)	Location
	Herbs			
3.25	<i>Sida acuta</i>	4		11.2498017,77.5628383
31.71	<i>Waltheria indica</i>	39		
36.59	<i>Polycarpea corymbosa</i>	45		
3.25	<i>Tridax procumbens</i>	4		
16.26	<i>Chrysopgon fulus</i>	20		
4.07	<i>Heteropgon controtus</i>	5		
4.88	<i>Sida cordifolia</i>	6		
	Climbers			
28.57	<i>Rhynchosia minima</i>	2		
	Shrubs			
71.43	<i>Indigofera hirsuta</i>	5		
	Trees			
	<i>Terminalia arjuna</i>	10	25	
	<i>Azadirachta indica</i>	8	22	
Quadrant 9				
	Name	Number of individual	Girth (cm)	Location
	Herbs			
29.07	<i>Tridax procumbens</i>	25		11.2502467,77.5632717
20.93	<i>Sida cordifolia</i>	18		
5.81	<i>Acalypha indica</i>	5		
25.58	<i>Alternanthera ficoidea</i>	22		
1.16	<i>Leucas Stricta</i>	1		
8.14	<i>Tephrosia purpurea</i>	7		
6.98	<i>Ocimum americanum</i>	6		
2.33	<i>Phyllanthus maderaspatensis</i>	2		
	Trees			
	<i>Terminalia arjuna</i>	2	25	
	<i>Azadirachta indica</i>	8	20	
Quadrant 10				
	Name	Number of individual	Girth (cm)	Location
	Herbs			
0.94	<i>Acalypha indica</i>	1		11.2508583,77.563255
30.19	<i>Tridax procumbens</i>	32		
15.09	<i>Parthenium hysterophorus</i>	16		
8.49	<i>Sida cordifolia</i>	9		

23.58	<i>Polycarpea corymbosa</i>	25	
5.66	<i>Ouret lanata</i>	6	
14.15	<i>Sida acuta</i>	15	
	Shrubs		
0.94	<i>Calotropis gigantea</i>	1	
0.94	<i>Chromolaena odorata</i>	1	
	Trees		
	<i>Azadirachta indica</i>	7	15
	<i>Tectona grandis</i>	8	10

Quadrant 11

	<i>Name</i>	Number of individual	Girth (cm)	Location
	Herbs			
19.72	<i>Sida cordifolia</i>	14		11.2497177,77.563467
38.03	<i>Tridax procumbens</i>	27		
30.99	<i>Indigofera linnaei</i>	22		
2.82	<i>Tephrosia purpurea</i>	2		
8.45	<i>Phyllanthus maderaspatensis</i>	6		
	Shrubs			
28	<i>Indigofera Hirsuta</i>	7		
	Trees			
	<i>Terminalia arjuna</i>	6	12	

Quadrant 12

	<i>Name</i>	Number of individual	Girth (cm)	Location
	Herbs			
2.7	<i>Mesosphaerum suaveolens</i>	1		11°15'3.08"N, 77°33'51.75"E
13.51	<i>Leucas martinicensis</i>	5		
18.92	<i>Abutilon hirtum</i>	7		
48.65	<i>Alternanthera ficoidea</i>	18		
16.22	<i>Tridax procumbens</i>	6		
	Climbers			
21.74	<i>Rhynchosia minima</i>	5		
	Shrubs			
65.22	<i>Croton bonplandianum</i>	15		
8.7	<i>Chromolaena odorata</i>	2		
4.35	<i>Calotropis gigantea</i>	1		
	Trees			
	<i>Azadirachta indica</i>	5	10	
	<i>Madhuca longifolia</i>	6	15	

Quadrant 13

	<i>Name</i>	Number of individual	Girth (cm)	Location
	Herbs			
25	<i>Commelina benghalensis</i>	19		11°15'01.8"N 77°33'49.2"E
5.26	<i>Sida cordifolia</i>	4		
2.63	<i>Parthenium hysterophorus</i>	2		
38.16	<i>Alternanthera ficoidea</i>	29		
2.63	<i>Waltheria indica</i>	2		
26.32	<i>Tridax procumbens</i>	20		

Climbers			
6.25	<i>Gloriosa superba</i>	1	
18.75	<i>Tinospora cordifolia</i>	3	
Shrubs			
12.5	<i>Chromolaena odorata</i>	2	
31.25	<i>senna auriculata</i>	5	
25	<i>Justicia tranquebariensis</i>	4	
6.25	<i>Calotropis gigantea</i>	1	
Trees			
	<i>Azadirachta indica</i>	7	15
	<i>Acacia holosericea</i>	6	12

Quadrant 14					
	Name	Number of individual	Girth (cm)	Location	
Herbs					
13.33	<i>Dactyloctenium aegyptium</i>	6		11°15'02.3"N 77°33'48.8"E	
8.89	<i>Sida cordifolia</i>	4			
26.67	<i>Alternanthera ficoidea</i>	12			
2.22	<i>Mesosphaerum suaveolens</i>	1			
48.89	<i>Tridax procumbens</i>	22			
Climbers					
31.25	<i>Rhynchosia minima</i>	5			
Shrubs					
18.75	<i>Croton bonplandianum</i>	3			
37.5	<i>Chromolaena odorata</i>	6			
12.5	<i>Calotropis gigantea</i>	2			
Trees					
	<i>Azadirachta indica</i>	4	10		
	<i>Acacia holosericea</i>	2	16		
	<i>Bauhinia racemosa</i>	1	10		
	<i>Pterocarpus marsupium</i>	1	v small		
	<i>Pterocarpus santalinus</i>	1	v small		

Quadrant 15					
	Name	Number of individual	Girth (cm)	Location	
Herbs					
7.41	<i>Mesosphaerum suaveolens</i>	2		11°15'04.2"N 77°33'46.1"E	
14.81	<i>Parthenium hysterophorus</i>	4			
11.11	<i>Alternanthera ficoidea</i>	3			
7.41	<i>Chorchorus trilocularis</i>	2			
22.22	<i>Cyanthillium cinereum</i>	6			
14.81	<i>Abutilon hirtum</i>	4			
11.11	<i>Sida acuta</i>	3			
11.11	<i>Tridax procumbense</i>	3			
Climbers					
29.41	<i>Rhynchosia minima</i>	5			
5.88	<i>Ipomoea pes-tigridis</i>	1			
Shrubs					
23.53	<i>Croton bonplandianus</i>	4			
5.88	<i>Calotropis gigantea</i>	1			
11.76	<i>Chromolaena odorata</i>	2			

23.53	<i>Indigofera hirsuta</i>	4	
	Trees		
	<i>Azadirachta indica</i>	7	20
	<i>Syzygium cumini</i>	3	10
	<i>Thespesia populnea</i>	5	10
	<i>Macaranga peltata</i>	1	20

Quadrant 16			
	Name	Number of individual	Girth (cm)
	Herbs		
9.43	<i>Cyanthillium cinereum</i>	5	
7.55	<i>Achyranthes aspera</i>	4	
5.66	<i>Leucas aspera</i>	3	
5.66	<i>Abutilon hirtum</i>	3	
9.43	<i>Alternanthera ficoidea</i>	5	
15.09	<i>Tridax procumbens</i>	8	
30.19	<i>Sida acuta</i>	16	
9.43	<i>Ocimum americanum</i>	5	
7.55	<i>Mesosphaerum suaveolens</i>	4	
	Climbers		
16.67	<i>Clitoria ternata</i>	1	
	Shrubs		
50	<i>Croton bonplandianum</i>	3	
33.33	<i>Chromolaena odorata</i>	2	
	Trees		
	<i>Pongamia pinnata</i>	1	15
	<i>Neolamarckia cadamba</i>	2	20

11°15'05.5"N 77°33'57.7"E

Quadrant 17			
	Name	Number of individual	Girth (cm)
	Herbs		
9.68	<i>Mesosphaerum suaveolens</i>	6	
11.29	<i>Parthenium hysterophorus</i>	7	
3.23	<i>Phyllanthus maderaspatensis</i>	2	
6.45	<i>Chorchorus trilocularis</i>	4	
9.68	<i>Cyanthillium cinereum</i>	6	
25.81	<i>Melinis repens</i>	16	
6.45	<i>Leucas aspera</i>	4	
4.84	<i>Sida acuta</i>	3	
3.23	<i>Elephantopus scaber</i>	2	
16.13	<i>Tridax procumbense</i>	10	
3.23	<i>Boerhavia diffusa</i>	2	
	Shrubs		
33.33	<i>Croton bonplandianus</i>	2	
66.67	<i>Senna auriculata</i>	4	
	Trees		
	<i>Gmelina arborea</i>	2	15
	<i>Dalbergia sissoo</i>	2	10
	<i>Terminalia arjuna</i>	2	10
	<i>Bridelia sp.</i>	1	15

11°15'06.6"N 77°33'53.1"E

	<i>Ailanthus excelsa</i>	1	40	
--	--------------------------	---	----	--

Quadrant 18				
	Name	Number of individual	Girth (cm)	Location
	Herbs			
9.52	<i>Mesosphaerum suaveolens</i>	4		11°15'5.83"N, 77°33'54.41"E
4.76	<i>Chorchorus trilocularis</i>	2		
7.14	<i>Cyanthillium cinereum</i>	3		
9.52	<i>Leucas Stricta</i>	4		
40.48	<i>Sida cordifolia</i>	17		
28.57	<i>Tridax procumbense</i>	12		
	Shrubs			
50	<i>Croton bonplandianus</i>	4		
50	<i>Senna auriculata</i>	4		
	Trees			
	<i>Azadirachta indica</i>	5	12	
	<i>Alangium salvifolium</i>	2	10	
	<i>Ailanthus excelsa</i>	1	40	

Quadrant 19				
	Name	Number of individual	Girth (cm)	Location
	Herbs			
2.7	<i>Mesosphaerum suaveolens</i>	1		11°15'4.47"N, 77°33'56.25"E
18.92	<i>Chorchorus trilocularis</i>	7		
8.11	<i>sida acuta</i>	3		
18.92	<i>Abutilon hirtum</i>	7		
43.24	<i>Alternanthera ficoidea</i>	16		
8.11	<i>Leucas aspera</i>	3		
	Climbers			
8.33	<i>Ipomoea pes-tigridis</i>	2		
20.83	<i>Rhynchosia minima</i>	5		
	Shrubs			
62.5	<i>Croton bonplandianum</i>	15		
8.33	<i>Calotropis gigantea</i>	2		
	Trees			
	<i>Azadirachta indica</i>	6	15	
	<i>pongamia pinnata</i>	3	10	

Quadrant 20				
	Name	Number of individual	Girth (cm)	Location
	Herbs			
29.73	<i>Parthenium hysterophorus</i>	22		11°15'6.08"N, 77°33'56.25"E
40.54	<i>Indigofera linnaei</i>	30		
2.7	<i>Phyllanthus maderaspatensis</i>	2		
16.22	<i>Tridax procumbens</i>	12		
8.11	<i>Abutilon hirtum</i>	6		
2.7	<i>Dicliptera paniculata</i>	2		
	Climbers			
27.27	<i>Rhynchosia minima</i>	3		
9.09	<i>Vigna trilobata</i>	1		

	Shrubs		
36.36	<i>Senna occidentalis</i>	4	
27.27	<i>Calotropis gigantea</i>	3	
	Trees		
	<i>Azadirachta indica</i>	5	15

Fauna Data

Day 1 09/12/25					
	Scientific Name	Common Name	Individual Count	Observation	IUCN Status
Class: Amphibia					
Order: Anura (frogs and toads)					
1	<i>Duttaphrynus melanostictus</i>	Asian Common Toad	2		LC
2	<i>Minervarya agricola</i>	Common Indian Cricket Frog	4		LC
Class: Reptilia					
Order: Squamata – Sauria (lizards)					
	<i>Calotes versicolor</i>	Oriental Garden Lizard	1		LC
Order: Squamata – Serpentes (snakes)					
	<i>Eryx johnii</i>	Red Sand Boa	1		NT
Class: Aves (Birds)					
1	<i>Pavo cristatus</i>	Indian Peafowl	14		LC
2	<i>Ortygornis pondicerianus</i>	Gray Francolin	1		LC
3	<i>Columba livia</i>	Rock Pigeon (Feral Pigeon)	41		LC
4	<i>Streptopelia decaocto</i>	Eurassian Collared Dove	1		LC
5	<i>Spilopelia chinensis</i>	Spotted Dove	9		LC
6	<i>Centropus sinensis</i>	Greater Coucal	3		LC

7	<i>Clamator jacobinus</i>	Pied Cuckoo	1		LC
8	<i>Eudynamys scolopaceus</i>	Asian Koel	11		LC
9	<i>Hierococcyx varius</i>	Common Hawk-Cuckoo	3		LC
10	<i>Vanellus indicus</i>	Red wattled Lapwing	4		LC
11	<i>Plegadis falcinellus</i>	Glossy Ibis	14		LC
12	<i>Ardeola grayii</i>	Indian Pond Heron	2		LC
13	<i>Ardea coromanda</i>	Eastern Cattle-Egret	6		
14	<i>Milvus migrans</i>	Black Kite	2		LC
15	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	3		LC
16	<i>Psittacula krameri</i>	Rose-ringed Parakeet	17		LC
17	<i>Dicrurus macrocercus</i>	Black Drongo	8		LC
18	<i>Dicrurus leucophaeus</i>	Ashy Drongo	4		LC
19	<i>Dendrocitta vagabunda</i>	Rufous Treepie	2		LC
20	<i>Corvus splendens</i>	House Crow	26		LC
21	<i>Plocealauda affinis</i>	Jerdon's Bushlark	2		LC
22	<i>Orthotomus sutorius</i>	Common Tailorbird	8		LC
23	<i>Prinia socialis</i>	Ashy Prinia	2		LC
24	<i>Prinia inornata</i>	Plain Prinia	2		LC
25	<i>Acrocephalus dumetorum</i>	Blyth's Reed Warbler	2		LC
26	<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	1		LC
27	<i>Hirundo rustica</i>	Barn Swallow	4		LC
28	<i>Pycnonotus cafer</i>	Red-vented Bulbul	11		LC
29	<i>Argya affinis</i>	Yellow-billed Babbler	19		LC

30	<i>Acridotheres tristis</i>	Common Myna	7		LC
31	<i>Dicaeum erythrorhynchos</i>	Pale-billed Flowerpecker	2		LC
32	<i>Leptocoma zeylonica</i>	Purple-rumped Sunbird	6		LC
33	<i>Cinnyris asiaticus</i>	Purple Sunbird	10		LC
34	<i>Cinnyris lotenius</i>	Loten's Sunbird	1		LC
35	<i>Lonchura punctulata</i>	Scaly-breasted Munia	1		LC
36	<i>Passer domesticus</i>	House Sparrow	10		LC
37	<i>Motacilla flava</i>	Western Yellow Wagtail	1		LC
Class: Mammalia					
1	<i>Funambulus palmarum</i>	Three-striped Palm Squirrel	1		LC
2	<i>Lepus nigricollis</i>	Indian Hare	2		LC
3	<i>Pteropus giganteus</i>	Flying Fox	1		LC
Class: Insecta					
Order: Odonata					
Sub-Order: Anisoptera					
1	<i>Brachythemis contaminata</i>	Ditch Jewel	2		LC
2	<i>Crocothemis servilia</i>	Scarlet Skimmer	2		LC
3	<i>Diplacodes trivialis</i>	Chalky Percher	4		LC
4	<i>Orthetrum sabina</i>	Slender Skimmer	9		LC
5	<i>Pantala flavescens</i>	Wandering Glider	27		LC
6	<i>Tholymis tillarga</i>	Twister	1		LC

Sub-Order: Zygoptera					
7	<i>Agriocnemis pygmaea</i>	Wandering Midget	2		LC
Class: Insecta					
Order: Lepidoptera - Butterflies					
1	<i>Junonia orithya</i>	Blue Pansy	1		LC
2	<i>Tirumala septentrionis</i>	Blue Tiger	17		NE
3	<i>Junonia iphita</i>	Chocolate Pansy	3		NE
4	<i>Appias albina</i>	Common Albatross	1		NE
5	<i>Ariadne merione</i>	Common Castor	3		NE
6	<i>Jamides celeno</i>	Common Cerulean	1		NE
7	<i>Euploea core</i>	Common Crow	7		LC
8	<i>Ypthima huebneri</i>	Common Four Ring	2		NE
9	<i>Eurema hecabe</i>	Common Grass Yellow	7		LC
10	<i>Delias eucharis</i>	Common Jezebel	2		NE
11	<i>Papilio polytes</i>	Common Mormon	3		NE
12	<i>Castalius rosimon</i>	Common Pierrot	1		NE
13	<i>Pachliopta aristolochiae</i>	Common Rose	3		LC
14	<i>Ypthima asterope</i>	Common Three Ring	2		LC
15	<i>Pachliopta hector</i>	Crimson Rose	6		LC
16	<i>Hypolimnas misippus</i>	Danaid Eggfly	7		NE
17	<i>Tirumala septentrionis</i>	Dark Blue Tiger	3		NE

18	<i>Zizeeria karsandra</i>	Dark Grass Blue	1		LC
19	<i>Mycalesis perseus</i>	Dingy Bushbrown	1		NE
20	<i>Freyeria trochylus</i>	Jewelled Grass Blue	1		LC
21	<i>Catopsilia pomona</i>	Lemon Emigrant	1		NE
22	<i>Junonia lemonias</i>	Lemon Pansy	2		NE
23	<i>Zizina otis</i>	Lesser Grass Blue	1		LC
24	<i>Danaus chrysippus</i>	Plain Tiger	7		LC
25	<i>Luthrodes pandav</i>	Plains Cupid	1		NE
26	<i>Danaus genutia</i>	Striped Tiger	7		NE
27	<i>Acraea terpsicore</i>	Tawny Coster	2		NE
28	<i>Eurema blanda</i>	Three spotted Grass Yellow	2		NE
29	<i>Ypthima ceylonica</i>	White Four Ring	5		NE
30	<i>Ixias marianne</i>	White Orange Tip	1		NE
31	<i>Leptotes plinius</i>	Zebra Blue	4		NE
Class: Insecta					
Order: Lepidoptera - Moths					
1	<i>Chiasma sp.</i>	Chiasma sp.	1		NE
2	<i>Ancylolomia japonica</i>	Ancylolomia japonica	3		NE
Class: Insecta					
1	<i>Probergrothius sanguinolens</i>	Indian Red Bug	9		NE
2	<i>Polistinae sp.</i>	Paper Wasp	18		NE
3	<i>Apis sp.</i>	Honey Bees	9		NE
4	<i>Heteracris pulchra</i>	Heteracris pulchra	1		NE
5	<i>Flata stellaris</i>	Flata stellaris	1		NE
6	<i>Harpagophoridae sp.</i>	Millipede	2		NE

7	<i>Hycleus biundulatus</i>	Beetle	3		NE
8	<i>Stegodyphus sarasinorum</i>	Indian Cooperative Spider	9		NE
9	<i>Thyene imperialis</i>	Thyene imperialis Spider	1		NE
10	<i>Anoplodesmus saussurii</i>	Millipede	2		NE
Class: Mollusca					
1	<i>Laevicaulis alte</i>	Tropical Leatherleaf Slug	2		NE

Day 2 10/12/25

	Scientific Name	Common Name	Individual Count	Observation	IUCN Status
Class: Amphibia					
Order: Anura (frogs and toads)					
1	<i>Duttaphrynus melanostictus</i>	Asian Common Toad	3		LC
2	<i>Minervarya agricola</i>	Common Indian Cricket Frog	6		LC
Class: Reptilia					
Order: Squamata – Sauria (lizards)					
	<i>Calotes versicolor</i>	Oriental Garden Lizard	3		LC

	Order: Aves				
1	<i>Pavo cristatus</i>	Indian Peafowl	26		LC
2	<i>Ortygornis pondicerianus</i>	Gray Francolin	2		LC
3	<i>Columba livia</i>	Rock Pigeon (Feral Pigeon)	39		LC
4	<i>Spilopelia chinensis</i>	Spotted Dove	13		LC
5	<i>Centropus sinensis</i>	Greater Coucal	5		LC
6	<i>Clamator jacobinus</i>	Pied Cuckoo	2		LC
7	<i>Eudynamys scolopaceus</i>	Asian Koel	8		LC
8	<i>Hierococcyx varius</i>	Common Hawk-Cuckoo	3		LC
9	<i>Cypsiurus balasiensis</i>	Asian Palm Swift	2		LC
10	<i>Gallinula chloropus</i>	Eurasian Moorhen	2		LC
11	<i>Vanellus indicus</i>	Red wattled Lapwing	4		LC
12	<i>Actitis hypoleucos</i>	Common Sandpiper	1		LC
13	<i>Egretta garzetta</i>	Little Egret	1		LC
14	<i>Ardeola grayii</i>	Indian Pond Heron	6		LC
15	<i>Ardea coromanda</i>	Eastern Cattle-Egret	10		LC
16	<i>Ardea intermedia</i>	Medium Egret	1		LC
17	<i>Bubo bengalensis</i>	Rock Eagle Owl	1		LC
18	<i>Athene brama</i>	Spotted Owlet	2	Sch I	LC
19	<i>Merops orientalis</i>	Asian Green Bee Eater	2		LC
20	<i>Merops philippinus</i>	Blue-tailed Bee Eater	8		LC
21	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	4		LC
22	<i>Psilopogon haemacephalus</i>	Coppersmith Barbet	1		LC

23	<i>Psittacula krameri</i>	Rose-ringed Parakeet	15		LC
24	<i>Oriolus kundoo</i>	Indian Golden Oriole	2		LC
25	<i>Dicrurus macrocercus</i>	Black Drongo	13		LC
26	<i>Dicrurus leucophaeus</i>	Ashy Drongo	2		LC
27	<i>Dendrocitta vagabunda</i>	Rufous Treepie	4		LC
28	<i>Corvus splendens</i>	House Crow	29		LC
29	<i>Corvus macrorhynchos</i>	Large-billed Crow	2		LC
30	<i>Plocealauda affinis</i>	Jerdon's Bushlark	2		LC
31	<i>Orthotomus sutorius</i>	Common Tailorbird	3		LC
32	<i>Prinia sylvatica</i>	Jungle Prinia	2		LC
33	<i>Prinia socialis</i>	Ashy Prinia	3		LC
34	<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	2		LC
35	<i>Hirundo rustica</i>	Barn Swallow	11		LC
36	<i>Cecropis daurica</i>	Eastern Red-rumped Swallow	6		LC
37	<i>Pycnonotus cafer</i>	Red-vented Bulbul	10		LC
38	<i>Argya affinis</i>	Yellow-billed Babbler	36		LC
39	<i>Acridotheres tristis</i>	Common Myna	4		LC
40	<i>Dicaeum erythrorhynchos</i>	Pale-billed Flowerpecker	1		LC
41	<i>Leptocoma zeylonica</i>	Purple-rumped Sunbird	2		LC
42	<i>Cinnyris asiaticus</i>	Purple Sunbird	6		LC
43	<i>Lonchura punctulata</i>	Scaly-breasted Munia	4		LC
44	<i>Passer domesticus</i>	House Sparrow	3		LC

45	<i>Caprimulgus affinis</i>	Savanna Nightjar	2		LC
Class: Mammalia					
1	<i>Funambulus palmarum</i>	Three-striped Palm Squirrel	4		LC
2	<i>Lepus nigricollis</i>	Indian Hare	7		LC
3	<i>Urva edwardsii</i>	Indian Grey Mongoose	1		LC
Class: Insecta					
Order: Odonata					
Sub-Order: Anisoptera					
1	<i>Brachythemis contaminata</i>	Ditch Jewel	2		LC
2	<i>Crocothemis servilia</i>	Scarlet Skimmer	6		LC
3	<i>Diplacodes trivialis</i>	Chalky Percher	9		LC
4	<i>Orthetrum sabina</i>	Slender Skimmer	4		LC
5	<i>Pantala flavescens</i>	Wandering Glider	49		LC
6	<i>Potamarcha congener</i>	Swampwatcher	1		LC
7	<i>Tholymis tillarga</i>	Twister	2		LC
8	<i>Tramea limbata</i>	Ferruginous Glider	3		LC
Sub-Order: Zygoptera					
9	<i>Agriocnemis pygmaea</i>	Wandering Midget	5		LC
10	<i>Copera marginipes</i>	Yellow Featherlegs	1		LC
11	<i>Lestes praemorsus</i>	Scalloped Spreadwing	3		LC
Class: Insecta					

Order: Lepidoptera - Butterflies					
1	<i>Junonia orithya</i>	Blue Pansy	1		LC
2	<i>Tirumala septentrionis</i>	Blue Tiger	9		NE
3	<i>Junonia iphita</i>	Chocolate Pansy	2		NE
4	<i>Appias albina</i>	Common Albatross	2		NE
5	<i>Ariadne merione</i>	Common Castor	4		NE
6	<i>Jamides celeno</i>	Common Cerulean	2		NE
7	<i>Euploea core</i>	Common Crow	7		LC
8	<i>Ypthima huebneri</i>	Common Four Ring	2		NE
9	<i>Eurema hecabe</i>	Common Grass Yellow	9		LC
10	<i>Delias eucharis</i>	Common Jezebel	2		NE
11	<i>Papilio polytes</i>	Common Mormon	3		NE
12	<i>Castalius rosimon</i>	Common Pierrot	1		NE
13	<i>Pachliopta aristolochiae</i>	Common Rose	5		LC
14	<i>Cigaritis vulcanus</i>	Common Silverline	1		NE
15	<i>Ypthima asterope</i>	Common Three Ring	1		LC
16	<i>Pachliopta hector</i>	Crimson Rose	5		LC
17	<i>Hypolimnas misippus</i>	Danaid Eggfly	8		LC
18	<i>Tirumala septentrionis</i>	Dark Blue Tiger	2		NE
19	<i>Zizeeria karsandra</i>	Dark Grass Blue	5		LC
20	<i>Mycalesis perseus</i>	Dingy Bushbrown	2		NE
21	<i>Catochrysops strabo</i>	Forget me not	1		NE
22	<i>Euchrysops cnejus</i>	Gram Blue	1		NE
23	<i>Freyeria trochylus</i>	Jewelled Grass Blue	4		LC
24	<i>Arhopala amantes</i>	Large Oakblue	1		NE

25	<i>Catopsilia pomona</i>	Lemon Emigrant	1		NE
26	<i>Junonia lemonias</i>	Lemon Pansy	3		NE
27	<i>Zizina otis</i>	Lesser Grass Blue	4		LC
28	<i>Chilades lajus</i>	Lime Blue	1		NE
29	<i>Catopsilia pyranthe</i>	Mottled Emigrant	2		NE
30	<i>Danaus chrysippus</i>	Plain Tiger	12		LC
31	<i>Luthrodes pandav</i>	Plains Cupid	2		NE
32	<i>Appias libythea</i>	Striped Albatross	1		NE
33	<i>Tarucus nara</i>	Striped Pierrot	1		NE
34	<i>Danaus genutia</i>	Striped Tiger	8		NE
35	<i>Acraea terpsicore</i>	Tawny Coster	3		NE
36	<i>Eurema blanda</i>	Three spotted Grass Yellow	1		NE
37	<i>Zizula hylax</i>	Tiny Grass Blue	1		LC
38	<i>Ypthima ceylonica</i>	White Four Ring	2		NE
39	<i>Ixias marianne</i>	White Orange Tip	1		NE
40	<i>Leptotes plinius</i>	Zebra Blue	8		NE
	Class: Insecta				
	Order: Lepidoptera - Moths				
1	<i>Cyana Peregrina</i>	Cyana Peregrina	1		NE
2	<i>Chiasma sp.</i>	Chiasma sp.	1		NE
3	<i>Ancylolomia japonica</i>	Ancylolomia japonica	5		NE
	Class: Insecta				

1	<i>Apis sp.</i>	Honey Bees	9		NE
2	<i>Heteracris pulchra</i>	Heteracris pulchra	1		NE
3	<i>Camponotus compressus</i>	Indian Black Ant	9		NE
4	<i>Harpagophoridae sp.</i>	Millipede	1		NE
5	<i>Hycleus biundulatus</i>	Beetle	12		NE
6	<i>Stegodyphus sarasinorum</i>	Indian Cooperative Spider	22		NE
Class: Mollusca					
1	<i>Laevicaulis alte</i>	Tropical Leatherleaf Slug	14		NE

Day 3 11/12/25

	Scientific Name	Common Name	Individual Count	Observation	IUCN Status
Class: Amphibia					
Order: Anura (frogs and toads)					
1	<i>Duttaphrynus melanostictus</i>	Asian Common Toad	3		LC
2	<i>Microhyla ornata</i>	Ornate Narrow-mouthed Frog	1		LC
3	<i>Minervarya agricola</i>	Common Indian Cricket Frog	4		LC
Class: Reptilia					
Order: Squamata – Sauria (lizards)					
	<i>Calotes versicolor</i>	Oriental Garden Lizard	2		LC

	Order: Aves				
1	<i>Pavo cristatus</i>	Indian Peafowl	36		LC
2	<i>Galloperdix spadicea</i>	Red Spurfowl	1		LC
3	<i>Ortygornis pondicerianus</i>	Gray Francolin	2		LC
4	<i>Columba livia</i>	Rock Pigeon (Feral Pigeon)	30		LC
5	<i>Spilopelia chinensis</i>	Spotted Dove	9		LC
6	<i>Centropus sinensis</i>	Greater Coucal	3		LC
7	<i>Eudynamys scolopaceus</i>	Asian Koel	5		LC
8	<i>Hierococcyx varius</i>	Common Hawk-Cuckoo	2		LC
9	<i>Vanellus indicus</i>	Red wattled Lapwing	2		LC
10	<i>Ardeola grayii</i>	Indian Pond Heron	44		LC
11	<i>Ardea coromanda</i>	Eastern Cattle-Egret	8		LC
12	<i>Accipiter badius</i>	Shikra	1		LC
13	<i>Merops orientalis</i>	Asian Green Bee Eater	1		LC
14	<i>Merops philippinus</i>	Blue-tailed Bee Eater	8		LC
15	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	3		LC
16	<i>Psittacula krameri</i>	Rose-ringed Parakeet	13		LC
17	<i>Dicrurus macrocercus</i>	Black Drongo	6		LC
18	<i>Dicrurus leucophaeus</i>	Ashy Drongo	2		LC
19	<i>Dendrocitta vagabunda</i>	Rufous Treepie	1		LC

20	<i>Corvus splendens</i>	House Crow	17		LC
21	<i>Corvus macrorhynchos</i>	Large-billed Crow	2		LC
22	<i>Plocealauda affinis</i>	Jerdon's Bushlark	2		LC
23	<i>Orthotomus sutorius</i>	Common Tailorbird	4		LC
24	<i>Prinia sylvatica</i>	Jungle Prinia	1		LC
25	<i>Prinia socialis</i>	Ashy Prinia	1		LC
26	<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	3		LC
27	<i>Hirundo rustica</i>	Barn Swallow	7		LC
28	<i>Cecropis daurica</i>	Eastern Red-rumped Swallow	3		LC
29	<i>Pycnonotus cafer</i>	Red-vented Bulbul	3		LC
30	<i>Argya affinis</i>	Yellow-billed Babbler	22		LC
31	<i>Saxicola caprata</i>	Pied Bushchat	2		LC
32	<i>Dicaeum erythrorhynchos</i>	Pale-billed Flowerpecker	1		LC
33	<i>Cinnyris asiaticus</i>	Purple Sunbird	6		LC
34	<i>Passer domesticus</i>	House Sparrow	2		LC
35	<i>Motacilla maderaspatensis</i>	White-browed Wagtail	3		LC
Class: Mammalia					
1	<i>Funambulus palmarum</i>	Three-striped Palm Squirrel	6		LC
2	<i>Lepus nigricollis</i>	Indian Hare	4		LC
3	<i>Urva edwardsii</i>	Indian Grey Mongoose	1		LC
Class: Insecta					

	Order: Odonata				
	Sub-Order: Anisoptera				
1	<i>Brachythemis contaminata</i>	Ditch Jewel	2		LC
2	<i>Crocothemis servilia</i>	Scarlet Skimmer	1		LC
3	<i>Diplacodes trivialis</i>	Chalky Percher	2		LC
4	<i>Orthetrum sabina</i>	Slender Skimmer	3		LC
5	<i>Pantala flavescens</i>	Wandering Glider	28		LC
6	<i>Tholymis tillarga</i>	Twister	1		LC
7	<i>Tramea limbata</i>	Ferruginous Glider	2		LC
8	<i>Trithemis pallidinervis</i>	Dancing Dropwing	2		LC
	Sub-Order: Zygoptera				
9	<i>Agriocnemis pygmaea</i>	Wandering Midget	3		LC
10	<i>Copera marginipes</i>	Yellow Featherlegs	1		LC
11	<i>Lestes praemorsus</i>	Scalloped Speadwing	3		LC
	Class: Insecta				
	Order: Lepidoptera - Butterflies				
1	<i>Junonia orithya</i>	Blue Pansy	1		LC
2	<i>Tirumala septentrionis</i>	Blue Tiger	4		NE
3	<i>Junonia iphita</i>	Chocolate Pansy	1		NE
4	<i>Appias albina</i>	Common Albatross	1		NE
5	<i>Ariadne merione</i>	Common Castor	2		NE
6	<i>Jamides celeno</i>	Common Cerulean	1		NE
7	<i>Euploea core</i>	Common Crow	6		LC
8	<i>Ypthima huebneri</i>	Common Four Ring	1		NE

9	<i>Eurema hecabe</i>	Common Grass Yellow	2		LC
10	<i>Delias eucharis</i>	Common Jezebel	2		NE
11	<i>Papilio polytes</i>	Common Mormon	2		NE
12	<i>Castalius rosimon</i>	Common Pierrot	1		NE
13	<i>Pachliopta aristolochiae</i>	Common Rose	4		LC
14	<i>Cigaritis vulcanus</i>	Common Silverline	1		NE
15	<i>Pachliopta hector</i>	Crimson Rose	2		LC
16	<i>Hypolimnas misippus</i>	Danaid Eggfly	5		LC
17	<i>Zizeeria karsandra</i>	Dark Grass Blue	2		LC
18	<i>Mycalesis perseus</i>	Dingy Bushbrown	2		NE
19	<i>Freyeria trochylus</i>	Jewelled Grass Blue	1		LC
20	<i>Catopsilia pomona</i>	Lemon Emigrant	1		NE
21	<i>Junonia lemonias</i>	Lemon Pansy	3		NE
22	<i>Zizina otis</i>	Lesser Grass Blue	1		LC
23	<i>Catopsilia pyranthe</i>	Mottled Emigrant	1		NE
24	<i>Danaus chrysippus</i>	Plain Tiger	7		LC
25	<i>Appias libythea</i>	Striped Albatross	1		NE
26	<i>Danaus genutia</i>	Striped Tiger	6		NE
27	<i>Acraea terpsicore</i>	Tawny Coster	2		NE
28	<i>Eurema blanda</i>	Three spotted Grass Yellow	2		NE
29	<i>Ypthima ceylonica</i>	White Four Ring	1		NE
30	<i>Ixias marianne</i>	White Orange Tip	1		NE
31	<i>Leptotes plinius</i>	Zebra Blue	4		NE
Class: Insecta					
Order: Lepidoptera - Moths					

1	<i>Cyana Peregrina</i>	Cyana Peregrina	1		NE
2	<i>Chiasma sp.</i>	Chiasma sp.	1		NE
3	<i>Ancylolomia japonica</i>	Ancylolomia japonica	2		NE
Class: Insecta					
1	<i>Apis sp.</i>	Honey Bees	4		NE
2	<i>Heteracris pulchra</i>	Heteracris pulchra	1		NE
3	<i>Camponotus compressus</i>	Indian Black Ant	6		NE
4	<i>Harpagophoridae sp.</i>	Millipede	2		NE
5	<i>Hycleus biundulatus</i>	Beetle	9		NE
6	<i>Stegodyphus sarasinorum</i>	Indian Cooperative Spider	6		NE
7	<i>Anoplodesmus saussurii</i>	Millipede	6		NE
Class: Mollusca					
1	<i>Laevicaulis alte</i>	Tropical Leatherleaf Slug	9		NE

NE – Not evaluated; LC – Least Concern

Working pictures

