

DCB BANK



Restoring Forest Landscape of Sanjay Gandhi National Park (Mulund Range) through Assisted Natural Regeneration

Location: SGNP, Khindipada, Mulund West, Mumbai
400080

19°10'03.1"N 72°55'43.5"E

[Google Link](#)

Project Duration: April 2023 – March 2024

Project Reporting Period: Oct – Dec 2023
Project report No.: 3

Reported by: Dr. V Shubhalaxmi (Founder and Managing Trustee)
Email: shubha@inaturewatch.org
Ph: 9820165525

Compiled by:
Mr. Pratik Chile (Project Officer)
Ms. Samrita Patkar (Publication Officer)
Email: team@inaturewatch.org
Ph: 9987013144

Table of Contents

1.PROJECT HIGHLIGHTS	3
2.SUMMARY	3
2.1 Location:.....	4
2.2 Need for undertaking the Project:.....	5
2.3 Executive Summary:	6
3. INTRODUCTION	6
4.PROJECT GOAL:	7
5. PROJECT TIMELINE:.....	7
6. PROJECT IMPLEMENTATION STRATEGIES	8
6.1 Project Timeline:	8
7. PROJECT ACTIVITIES	10
7.1 Conducting Surveys:.....	10
.....	14
8. Habitat Maintenance.....	15
9. CHALLENGES:.....	19
10. NATURE TRAIL DEVELOPMENT	20
11. PROJECT PROMOTION.....	20
12. COMMUNITY ENGAGEMENT PROGRAMMES:.....	22
13. PROJECT OUTCOMES	25
13.2 Qualitative Impacts:.....	26
14. WORKS PLANNED AND COMPLETED	27
15. PROJECT FINANCE	28
Table 10: Summary of Expenditure.....	28
16. CONCLUSION	28
ANNEXURE 1: List of Plants Observed at site.....	29
ANNEXURE 2: Total List of Plants observed at site.	31
ANNEXURE 3: List of Insects and other Arthropods observed at site.	34
ANNEXURE 4: List of Reptiles and Amphibians (Herpetofauna) on the site	38
ANNEXURE 5: Birds Observed at Site	39
ANNEXURE 6: List of Mammals observed at site.	41
ANNEXURE 7: Plantation review list	42
ANNEXURE 8: Plantation Before (September 2022) and After (December 2023) Scenario.....	44

RESTORING FOREST LANDSCAPE OF SANJAY GANDHI NATIONAL PARK (MULUND RANGE) THROUGH ASSISTED NATURAL REGENERATION (ANR)

Quarterly Report 3 (Oct to Dec 2023)

1.PROJECT HIGHLIGHTS: *The project at the site has achieved significant milestones in terms of plantation, biodiversity conservation, community engagement, and environmental protection. Here are the key highlights:*

1. Plantation Progress:

- Currently, there are 5604 saplings consisting of herbs, shrubs, and trees at the site, with an impressive survival rate of 51.11%. As of previous quarter there is loss of 1279 plants as the total surviving plants were 6883.

- The nursery has successfully nurtured saplings, including Palash, Mahuva, Vavla, and Karanj.

2. Biodiversity Conservation:

- A diverse range of flora and fauna has been recorded during the project. In the current quarter alone, 39 plant species and 132 animal species were documented, including 61 species of insects, 8 species of arachnids, 8 reptiles, 3 amphibians, 44 birds, and 8 species of mammals. In total, 401 species have been recorded over the past two years, including 114 plant species and 287 animal species.

3. Community Engagement:

- A total of 161 volunteers, comprising 42 corporate volunteers and 119 community volunteers, actively participated in plantation and maintenance activities. They also contributed to nature awareness programs conducted at the site.

4. Natural Regeneration:

- The project identified 493 tree wildlings that have propagated naturally near the plantation site, contributing to the overall reforestation efforts.

5. Habitat Maintenance:

- Habitat maintenance works were carried out, including repairing tree guards, de-weeding, watering, and caring for the nursery, to ensure the well-being and growth of the plant species within the project site.

6. Care for wildlife:

- Water bowls were installed near the project site to ensure a water source for wildlife during dry seasons.

7. Nature Trails and Way Points:

- Three nature trails and 60-way points have been identified, and content development for these trails is done, the signages and exhibits will be installed at the site in the next quarter.

The project has made significant strides in promoting ecological restoration, engaging the community, and conserving biodiversity. The collective efforts of volunteers, successful plantation initiatives, and the active documentation of flora and fauna have contributed to the overall success of the project.

2.SUMMARY

Sanjay Gandhi National Park is situated partly in Thane District and (59.24 Sq.Km.) and in Mumbai Suburban District (44.44 Sq.Km.) of Maharashtra State. Khindipada, the eastern end of SGNP for this project was chosen for the interventions. This park was selected for ANR interventions as the park is grappling with encroachment throughout its boundary which resulted in a loss of tree cover. Under this project we selected the barren and rocky site at the Sanjay Gandhi National Park for restoring forest landscape through Assisted Natural Regeneration (ANR) method. The project is funded by DCB Bank, and the area comes under the jurisdiction of the Forest Department. The Project duration is three years.

During the last quarter period, we carried out the baseline survey, enrichment plantation, biodiversity survey, ground water survey for borewell digging and community engagement programmes. Owing to the slow plant growth, we request an extension of another two years.



Figure 1: Project site

2.1 Location: Sanjay Gandhi National Park (Mulund Range)

Address: Sanjay Gandhi National Park, Mulund Range, Guru Gobind Singh Marg, Near Link Road, Khindipada, Mulund West, Mumbai 400080. | **Area: 5 ha.** | **GPS coordinates:** 19°10'03.1"N 72°55'43.5"E | **Google Map:** [Click](#)

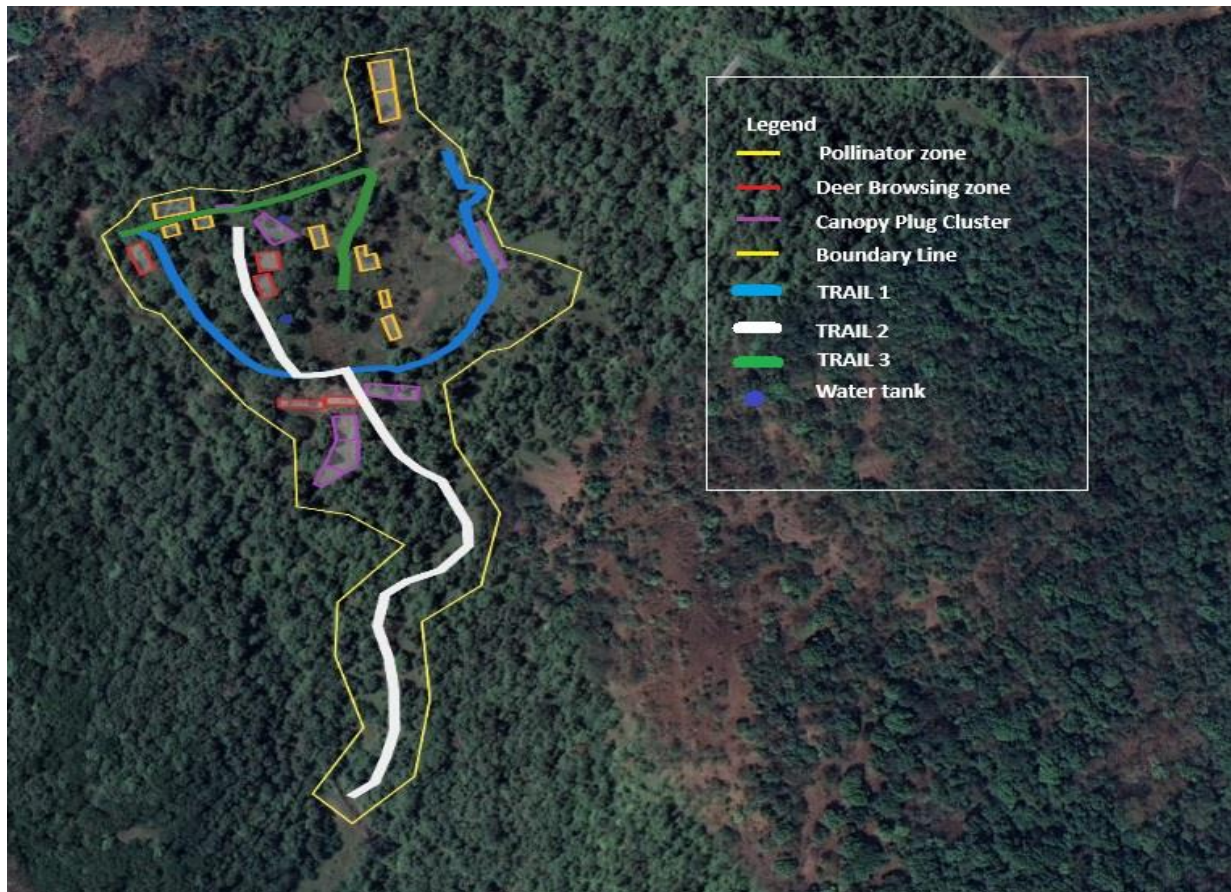


Figure 2: Map preview of project site

2.2 Need for undertaking the Project:

- **Problem:** The park falls within a metropolitan city and hence was grappling with constant issues of encroachment. Khindipada is one of the areas that was cleared of encroachment by the Forest Department. The Forest Department was therefore keen on increasing the green cover of the area.
- **Hypothesis:** It was a potential site where ANR technique could be employed to increase the ground cover and improve the local biodiversity.
- **Implementation:** 10,000 plant saplings were planted for canopy plugging and developing deer brows and pollinator zones.
- **Impact:** The green cover increases due to the plantation. This results in an increase of biodiversity as well.

2.3 Executive Summary:

Within this project, efforts were made to restore a barren and rocky site at Sanjay Gandhi National Park (SGNP) through Assisted Natural Regeneration (ANR). The project received funding from DCB Bank, and the area is under the jurisdiction of the Forest Department. The project commenced in April 2023 and



will conclude in March 2024. As of December 2023, there are 5,604 surviving saplings at the site. The design files for the signages and exhibits have been prepared and are now set for installation.

The project has achieved significant progress across various aspects. The current sapling count stands at 5604, with a survival rate of 51.11% compared with the 6883 saplings surviving in the previous quarter and with a survival rate of 62.79%. The nursery has thrived with saplings, including species like Palash, Mahuva, Vavla, and Karanj. During the reporting period, 39 plant species and 132 animal species were recorded, with a total of 401 species documented over the project's

duration. The engagement of 161 volunteers, consisting of both corporate and community members, has been instrumental in the project's success. Natural regeneration has been observed, with 493 tree saplings identified near the site. Environmental protection measures include the construction of ten contour bunds to control soil erosion. The project has also focused on seed collection, resulting in the procurement of wild seeds which were propagated in the nursery. Furthermore, the pathway development of three nature trails is underway, with content development completed, this informative signages will be installed at the site in the coming quarter. Overall, the project has demonstrated commendable achievements in plantation, biodiversity conservation, community engagement, and environmental protection. This report encompasses an overview of the project activities conducted throughout the year.

3. INTRODUCTION

Sanjay Gandhi National Park is one of the few national parks globally that falls within the municipal limits of a metropolis. The park is situated partly in Thane District (59.24 sq.m.) and in the Mumbai Suburban District (44.44 sq.m.) of Maharashtra State. Hence the park constantly faces the issue of encroachment. The Forest Department keeps clearing the encroached areas. One such cleared area is Khindipada, at the eastern end of SGNP. As the forest department is keen to increase the green cover throughout the park range, this was the potential site where we could use the ANR process to improve the ground cover and local biodiversity. Hence, the iNaturewatch foundation selected this area for the ANR interventions as the park is grappling with encroachment throughout its boundary, which resulted in the loss of tree cover.

Assisted Natural Regeneration (ANR) is a simple, low-cost restoration method that can effectively enhance deforested or degraded land's productivity and ecosystem functions. The method aims to accelerate, rather than replace, natural successional processes by removing or reducing barriers to natural regeneration such as soil degradation, competition with weedy species, and recurring disturbances (e.g., fire, grazing and wood harvesting). The site selected for ANR is essentially a dry deciduous habitat with undulating terrain and is largely fragmented. It is primarily dominated by Palmyra Palms, intersecting with various seasonal streams. Several open patches resulted in a fragmented canopy cover. The habitat lacks perennial undergrowth; therefore, the land is primarily exposed. We surveyed the area and identified spots wherein we could carry out plantation works to enhance the local biodiversity. An area of approximately 5 ha. was marked for the project.

4.PROJECT GOAL: To restore forest landscape of Sanjay Gandhi National Park (Mulund range) through Assisted Natural Regeneration Process.

- i. To conduct seasonal biodiversity surveys to assess the biodiversity of the park and monitor the increase in species diversity.
- ii. To manage the habitat as per the ANR principles in safeguarding existing trees, new wildlings, controlling grass, creating firebreaks, removing invasive species, contour bunding and creating forest nursery.
- iii. To water the plants and create water storage tanks.
- iv. To maintain the water holes at the project site.
- v. To complete pathway development of 3 nature trails and install signages and exhibits.
- vi. Train 10 forest guards to conduct nature awareness programmes.
- vii. To conduct community engagement programmes such as stakeholder meetings, local volunteering opportunities and nature awareness programmes for 400 target audience.

5. PROJECT TIMELINE:

The project duration is one Year (Apr 2023- Mar 2024) and following is the Table 1 with detailed Activity Calendar for October - December 2023.

Table 1. Activity Calendar for October to December 2023

Sr No.	Project activity	Activity Description	Timeline
1	Tree Guard repairing	Repairing the tree guards which were destroyed by Deer and Wild Boars.	1st October - 31st October
2	Fences repairing	The fences were repaired which were damaged by the strong windstorm at the site.	1st October - 31st October
3	Watering	The saplings in the nursery were watered regularly	1st October - 31st December
4	Employee Volunteering event	A Pathway making event was conducted for DCB Bank employees.	14th October 2023
5	De-weeding & Ring De-weeding	The weeds and the grown grass were removed from the zones as well as the Tree guards, Labours were also hired for this work.	1st Nov - 30th November 2023
6	Waste disposal	The non-biodegradable waste was collected from the site and was sent for recycling	6th November 2023
7	Invasive species removal	Invasive species such as the Siam weed were removed from the site. A total of 1500 saplings were removed	7th November 2023
8	Road Repairing	The pathway which leads to the project site was repaired to ensure proper movement of Water tanker.	10th November 2023
9	Site inspection	Dr. V. Shubhlaxmi visited the site for inspection and had a meeting with the forest officials	22nd November 2023
10	Installation of water holes	6 water bowls were placed at pre-decided locations at the Project site.	24th November 2023
11	Grass cutting	The overgrown grass was trimmed with the help of grass cutter machines	1st Dec - 8th December 2023

12	Biodiversity Survey	Mr. Pratik Chile carried out Birds, herpetofauna and insect survey at the site.	7th December 2023
13	Environment Stewardship Programme	An Introductory session for ESP programme along with fun activities	9th December 2023
14	Creation of Fireline	The fire line was created along the boundaries of the project area.	14th Dec - 16th December 2023
15	Forest fire	A forest fire broke out at the site. Few tree guards got damaged in this incident.	16th December 2023
16	Plantation review	Plantation review for this quarter was conducted by Mr. Pratik Chile and Ms. Roshni Tiwari.	18th December 2023
17	Nature trail	Dr. Ketki Marthak led the nature trail on birds at the site.	24th December 2023
18	Environment Stewardship Programme	A nature trail along with bird nest & bird feeder making activity was conducted as a part of ESP Programme	25th December 2023
19	Nature trail	Mr. Pratik chile led a nature trail for the students of MCC college	26th December 2023
20	Maintenance of water bowls	The water bowls were maintained and refilled at regular intervals.	24th November - 31st December 2023

6. PROJECT IMPLEMENTATION STRATEGIES

6.1 Project Timeline: Following is Table 2 with project timeline.

Table 2: Project Timeline

Project Activities	Y3				Activities
	Q1	Q2	Q3	Q4	
a) CONDUCTING SURVEYS					
1.1. Conducting seasonal biodiversity surveys	X	X	X	X	Increase in biodiversity as well as deer activity in deer browse zones and pollinators in Pollinator
1.2. Soil testing			X	X	Improvement in overall soil quality
1.3 Mapping of monsoon flora patches	X	X			Areas are marked and monitored to avoid future destruction of the site
1.4 Mapping of Improvement in Tree cover			X		Improvement in tree cover marginally is noticed
1.5 Publishing Scientific Paper				X	Project success stories are available for emulation
b) PLANTATION					
2.1 Compensatory Plantation	X	X			Gaps in plantation is filled up on plantation of 2000 saplings

2.2 Irrigation for plants			X	X	Plants survive well in hot weather
2.3 De-weeding and Mulching	X	X	X		Soil is enriched which support better growth in plants
2.4 Tree Guard Repair	X	X	X	X	Saplings are protected against herbivory
2.5 Plantation Review	X	X	X	X	Plants survival rate is improved
c) HABITAT MAINTENANCE					
3.1 Assistance to Existing Trees	X	X	X		Wild trees grow well without succumbing to any disease
3.2 Caring for New Wildlings	X	X			Young saplings grow well into healthy canopy plugs
3.3 Making Contour Bunds	X			X	Soil erosion is arrested at problematic sites thus improving soil quality
3.5 Removal of Invasive species	X	X	X	X	Spread of invasive species is stopped and natural vegetation comes back in cleared areas.
3.6 Fire protection			X	X	Plants and animals are protected from fire
d) NURSERY DEVELOPMENT					
4.1 Seed Collection	X		X	X	Wild saplings are available for plantation purpose which can help in increasing green cover.
4.2 Propagation from Cuttings			X		Wild saplings are available for plantation purpose which can help in increasing green cover.
4.3 Replantation	X	X			Wild saplings are available for plantation purpose which can help in increasing green cover.
e) NATURE TRAIL DEVELOPMENT					
5.1 Pathway development			X	X	Dedicated nature trails will be available for public to appreciate nature
5.2 Signage development		X	X	X	Signages help in promotion local biodiversity through self-guide nature trails
5.3 Exhibit development		X	X	X	Exhibits help in creating nature awareness among the visitors
5.4. Activity Stations development			X	X	Visitors are engaged in effective manner in learning about nature
5.5 Inauguration of Trails			X	X	Nature trails are formally announced open for
f) COMMUNITY ENGAGEMENT					
6.1 Corporate Volunteering	X	X	X	X	Corporate employees contribute in habitat maintenance works
6.2 Nature Awareness Programmes	X	X	X	X	Local community members and school groups get to learn about SGNP.
6.3 Training to Forest guards				X	The forest guards are equipped to conduct with nature trails

6.4 Valedictory event				X	Forest Guards are confident to lead groups
6.5 Project Promotion	X	X	X	X	Through weekly project updates, promotion of the project work is done on social media
6.6 Project video development				X	Project documentation will be available in video format for others to follow the example
6.7 Project review reporting	X	X	X	X	Quarterly reports help in documenting all project processes

7. PROJECT ACTIVITIES

7.1 Conducting Surveys: A seasonal biodiversity survey was conducted to assess the biodiversity at the site, for plants, mammals, birds, insects, reptiles, and amphibians. This biodiversity data is being fed regularly on the iNaturalist portal (<https://www.inaturalist.org/projects/biodiversity-of-sanjay-gandhi-national-park>). iNaturalist is a social network of naturalists, citizen scientists, and biologists built on the concept of mapping and sharing observations of biodiversity across the globe.

(a) Plantation Review: During this quarter, the comprehensive Plantation Review was carried out under the leadership of Mr. Pratik Chile and Ms. Roshni Tiwari. Their dedicated efforts and expertise played a pivotal role in evaluating and assessing the status of the plantations within the project site. The detailed findings and insights from this review process have been meticulously documented and are available for reference in Annexure 8. The review process included a thorough examination of the growth, health, and overall condition of the planted saplings, providing valuable information to guide future plantation strategies and initiatives. During the assessment, we recorded a total of 5604 saplings, encompassing



Figure 4: Experts doing Plantation review

herbs, shrubs, and trees, with an admirable survival rate of 51.11%.

However, comparing this data to the previous quarter reveals a decline of 1279 plants, marking a decrease from the initial count of 6883 surviving plants. This translates to a roughly 10% loss, attributed to several contributing factors. The key reasons include grazing by spotted deer on Gunj, Vetiver, and wild boars targeting the root bulbs of bamboo. Seasonal variations and dormancy affected specific plants, such as Crotalaria being seasonal and Shatavari becoming dormant. These elements collectively contribute to the observed changes in plant survival. Additionally, it's important to note that some plant species, like Nirgudi, suffered damage caused by wild animals, particularly the herds of deer. The occurrence of a forest fire further posed a challenge, impacting the survival and well-being of the planted saplings. These combined

factors highlight the array of challenges faced, encompassing wildlife interactions and environmental incidents like fires, impacting the overall success of the plantation efforts. The list of plant species surviving with them number is present in [ANNEXURE 7](#) and photographs to compare the growth of plants in zones is present in [ANNEXURE 8](#).

(b) Conduct quarterly biodiversity surveys: In the current quarter we recorded 39 species of plants and 132 species of animals. Altogether 401 species have been recorded in the past two years (114 species plants and 287 species animals). Following are the details of the survey and the species observed in this quarter Table 3.

Table 3: List of Number of Species of Flora and Fauna

Sr. no	Type	Total Species	Apr 21- Mar 22	Apr 22- Mar 23	Apr 23 - Jun 23	Jul- Sep 23	Oct - Dec 23
1	Plants	114	69	31	30	46	39
2	Animals	287	80	109	97	153	132
		401	149	140	127	199	171

- **Plant survey:** The plant surveys were conducted by Dr Shreya Bhanap and Ms. Gauri Gurav. All the plants observed during the survey were commonly seen at the site. We recorded 39 species in the current quarter.



Figure 3: Experts doing Plant survey

- **Faunal survey:** Quarterly surveys were carried out to document the seasonal faunal diversity at the site. A survey was done for arthropods, amphibians, reptiles, birds, and mammals. A total of 132 species were recorded. Following is the table with the number of animals species observed at site.

Table 4: Number of Animal Species observed at site.

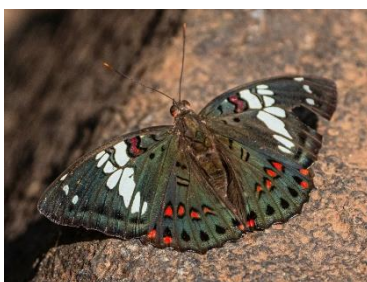
Sr No.	Type	Apr 21-Mar 22	Apr 22-Mar 23	Apr 23-Jun 23	Jul 23-Sep 23	Oct - Dec 23
1	Insect	72	64	32	82	61
2	Other Arthropods	10	18	9	7	8
3	Amphibians	3	4	0	4	3
4	Reptiles	12	13	7	13	8

5	Birds	46	64	39	41	44
6	Mammals	9	10	10	9	8
Total		152	173	97	153	132

- (i) **Insect Survey:** In a recent survey led by Mr. Pratik Chile to evaluate the arthropod diversity in the project area, a comprehensive record was obtained, documenting a total of 61 insect species and 8 arachnid species. This survey aimed to gain valuable insights into the arthropod population and their distribution within the study region. Spanning several weeks during the rainy season, when arthropod activity is typically heightened, the survey involved trained entomologists and arachnologists in the data collection process. Various sampling methods, including direct observations, were employed to capture and identify the diverse arthropod species present. The findings from this survey will undergo further analysis to assess abundance and distribution patterns, contributing to ongoing research efforts focused on understanding the ecology and conservation needs of arthropods. This information may have broader implications for ecosystem conservation and management strategies within the surveyed area, emphasizing the importance of preserving habitats to sustain the intricate web of life and biodiversity. The detailed list of Insects species found at the site is given in ANNEXURE 3.

Few interesting sightings:

- **The Karvanda Hawk Moth (*Nephele Hespera*):** The Karvanda Hawk Moth, scientifically known as *Nephele Hespera*, is a fascinating insect renowned for its distinctive characteristics. With a robust body and intricate wing patterns, this moth captures the attention of observers. Its name is derived from its association with the Karvanda plant, where it lays its eggs. The Karvanda Hawk Moth undergoes a remarkable metamorphosis, transitioning through various stages of its life cycle. As an integral part of the local ecosystem, this moth plays a role in pollination while contributing to the overall biodiversity of its habitat.



- **The Gaudy Baron Butterfly (*Euthalia lubentina*):** Renowned for its striking appearance, the Gaudy Baron Butterfly, scientifically named *Euthalia lubentina*, is a captivating insect with distinct markings and vibrant colors. This butterfly species is known for its slow and graceful flight, often observed gliding among forested areas. The Gaudy Baron adds a splash of brilliance to the ecosystem, contributing to the overall beauty of its habitat.

- **The Indian Red Scorpion (Buthidae):** Known for its unique features, the Indian Red Scorpion, scientifically classified as Buthidae, is characterized by its reddish-brown coloration and venomous nature. This arachnid strategically inhabits underground burrows and employs its potent venom to capture prey and defend against potential threats. Its presence in the ecosystem plays a role in maintaining balance, and the Indian Red Scorpion's distinct behavior and appearance make it a subject of interest for nature enthusiasts and researchers alike.



(ii) Herpetofauna Survey:

In a recent herpetofauna survey, a total of 11 species were recorded in a specific area, comprising 8 reptile species and 3 amphibian species. The list includes diverse reptiles such as the Buff Striped Keelback, Forest Calotes, Garden Lizard, Green Vine Snake, Keeled Mabuya, Monitor Lizard, Rat Snake, and Spectacled Cobra. Conducted by a team of herpetologists, the survey employed various techniques like visual identification and habitat surveys to document the rich diversity of these species within the surveyed region. The recorded reptiles represent different habitats and ecological niches, contributing to the overall biodiversity of the region. The absence of observed amphibians during the survey also offers valuable insights into the distribution patterns and ecological dynamics of these species.

Each herpetofauna species has its unique habitat preferences, behaviors, and ecological roles, enriching the ecological landscape. The collected data will be a foundational resource for understanding the distribution patterns and ecological requirements of these species. The detailed list of Herpetofaunal species found at the site is given in [ANNEXURE 4](#).

Few interesting sightings:

- **Buff Striped Keelback (*Amphiesma stolatum*):** The Buff Striped Keelback is a species native to certain regions, including India and other parts of South Asia. Known for its unique features, this snake exhibits distinctive behaviors and characteristics. They derive their name from the buff-colored stripes along their body. Buff Striped Keelbacks have a specialized diet, primarily consisting of small amphibians and fish. They contribute to the local ecosystem by helping control amphibian populations, playing a vital role in maintaining ecological balance. Their presence in the environment indicates the health and biodiversity of the surrounding habitats.



- **Balloon Frog (*Uperodon sp.*):** The Balloon Frog is a species native to certain regions, including India and other parts of South Asia. Known for its unique features, this frog exhibits distinctive behaviors and characteristics. They derive their name from their characteristic inflated appearance when threatened or disturbed, creating a balloon-like posture as a defense mechanism. Balloon Frogs have a specialized diet, primarily consisting of small insects and invertebrates. They contribute to the local ecosystem by helping control insect populations, playing a vital role in maintaining ecological balance. Their presence in the environment indicates the health and biodiversity of the surrounding habitats.

- **The Burrowing Frog (*Sphaerotheca sp*):** Burrowing frog is a fascinating amphibian species found in various regions, including India, Sri Lanka, Pakistan, and specific areas of South Asia. Unlike chameleons, Burrowing Frogs are known for their distinct behavior and habitat preferences. These frogs are well-adapted to a burrowing lifestyle, spending a significant portion of their lives underground.

One notable feature of the Burrowing Frog is its unique method of digging and creating burrows in loose soil or sand. These burrows provide the frog with protection from predators and environmental conditions. While they may not have the chameleon's ability to change colors, Burrowing Frogs showcase remarkable adaptations to their subterranean habitats.



(iii) Bird Survey: During a recent bird survey conducted by Mr. Pratik Chile at the project site, a total of 44 bird species were sighted, providing valuable insights into the avian diversity of the region. Noteworthy highlights of the survey include the sighting of the Brown Hawk Owl and the Golden-fronted Leafbird, both observed for the first time at the site. The survey aimed to document the presence and distribution of bird species and understand their population dynamics.

The recorded bird species encompassed a wide range of families and habitats, including migratory birds, raptors, passerines, and various other bird groups. This diversity indicated the ecological richness and variety of habitats within the surveyed area, emphasizing the significance of the site as a habitat for both resident and migratory birds. The data collected will contribute to ongoing conservation efforts and habitat management plans. This information can help identify key habitats and determine suitable conservation actions to protect and enhance bird populations in the region. The findings may also have implications for broader ecological studies, as birds are often considered indicators of environmental health and ecosystem stability. The detailed list of Birds species found at the site is given in [ANNEXURE 5](#).

Few interesting sightings:

Brown Hawk Owl (*Ninox scutulata*): A medium-sized owl known for its distinctive appearance; the Brown Hawk Owl is native to parts of Asia. These owls breed during specific seasons, often coinciding with the availability of prey like rodents and insects. Notably, our observation sessions captured the Brown Hawk Owl showcasing its remarkable nesting behaviors. These owls create nests in tree hollows, demonstrating their adaptability to various habitats. This sighting emphasizes the important role of the Brown Hawk Owl in maintaining ecological balance by controlling rodent and insect populations within the ecosystem.



- **Indian Gray Hornbill (*Ocyrceros birostris*):** The Indian Gray Hornbill, a distinctive bird species, is native to various parts of India. During our survey, we had the remarkable opportunity to observe and document the Indian Gray Hornbill in our project site. Known for their unique appearance and behaviors, these hornbills capture the interest of birdwatchers and wildlife enthusiasts. The conservation of their habitats, particularly the preservation of wooded areas and availability of suitable nesting sites, plays a vital role in ensuring the continued existence of the Indian Gray Hornbill in the wild.

- **Golden-fronted Leafbird (*Chloropsis aurifrons*):** The Golden-fronted Leafbird, an enchanting bird species, inhabits various regions with its distinctive appearance. During our nature trails, we were delighted to observe this captivating species engaging in interactions with local flora and foraging for insects. This behavior provides a glimpse into the intricate relationships between different species in the ecosystem, highlighting the fascinating dynamics of nature.



(iv) **Mammal Survey:** During this quarter, our mammal survey documented a total of 8 species thriving in the area. The survey unveiled compelling insights into the local mammalian community, with noteworthy sightings including Black-naped Hare, Feral Dog, Hanuman Langur, Indian Mongoose, Indian Palm Squirrel, Leopard (indicated by scat), Spotted Deer, and Wild Boar (indicated by hoof marks). The diverse mammal species observed underscore the dynamic nature of the ecosystem, providing valuable data for ongoing conservation efforts and habitat management plans. The detailed list of Mammal species found at the site is given in [ANNEXURE 6](#).

Few interesting sightings:



- **Spotted Deer (*Axis axis*):** The Spotted Deer, also known as Chital, is a common herbivorous mammal found in our project site. With its beautiful white spots on a reddish-brown coat, this graceful deer species adds to the biodiversity of the area and serves as an essential prey species for predators like leopards. Lately, there has been a rise in both the activity level and population of deer at our location.

- **Gray Langur (*Semnopithecus*):** The presence of Gray Langur has been observed throughout the vicinity of our site. These agile and sociable primates are integral to the local ecosystem. As herbivores, Gray Langurs contribute to seed dispersal and play a vital role in shaping the vegetation dynamics of the region surrounding our project site.



8. Habitat Maintenance

(a) De-weeding of zones and Tree guards: The process of managing vegetation within the designated zones involved the removal of overgrown weeds. Specifically, to address the growth of grass and undesirable weeds near the Tree guards, a method known as Ring De-weeding was employed. This targeted approach aimed at clearing the area around the Tree guards to promote a healthier environment for the trees. To efficiently carry out these tasks, additional laborers were hired to ensure the thorough removal of unwanted vegetation and to contribute to the overall maintenance of the designated zones.



Figure 5: De-weeding of zones and Ring De-weeding of Tree guards

- (b) Tree guard & Fence Repair Works:** Tree guards and fence guards of pollinator zones, and deer browse areas needed regular attention as they were being damaged due to wild animals, vandalism. There was constant interference of deer, wild boars and Langurs in our deer browse areas and pollinator zones in this quarter as well. For this, material like bamboo, green net tarpaulin, rope, zip ties etc. was procured as and when required at the site. As we also faced issues of vandalism and theft, caretakers had to constantly investigate repair work.



Figure 6: Caretakers repairing broken tree guards

- (c) Removal of invasive species:** The invasive species, particularly the Siam weed, which exhibited dominance following the monsoon, underwent removal from the project site. The extraction process involved the removal of over 1500 saplings of Siam weed. These removed saplings are being stored temporarily, and once they have dried up, they will be subjected to controlled burning. This systematic approach aims to manage and control the spread of the invasive species effectively, preventing its further impact on the local ecosystem.



Figure 7: Uprooted saplings of Invasive Siam weed

BEFORE



AFTER

Figure 8: Comparison photographs after removing saplings of Invasive Siam weed

(d) Disposal of Trash: On 6th November, the accumulated trash in the vicinity of the project site was appropriately disposed of, with a focus on recycling. The discarded waste comprised non-biodegradable items, including plastic bottles, sapling bags, polythene bags, and remnants of green net. Approximately 50 kilograms of waste were successfully disposed of, contributing to the responsible management of environmental impact, and promoting sustainable practices within the project area.



Figure 9: Disposal of Trash accumulated near the Project site

(e) Repairing of road: Due to the adverse impact of the monsoon season, the road at the project site undergoes damage, necessitating annual repairs. In line with this, road repair activities were undertaken to ensure the smooth movement of water tankers. This proactive measure aims to address and prevent hindrances caused by road damage, enabling unobstructed access for water tankers to the project site.



Figure 10: Repairing of road

(f) Installation of Water holes: To bolster support for the flourishing wildlife within the park, we have strategically placed six water bowls at predetermined locations within the project site. These water bowls play a vital role in providing essential hydration for various wild animals inhabiting the park. Moreover, our dedicated caretakers ensure the continuous replenishment of these bowls at regular intervals, further contributing to the well-being of the wildlife and fostering a sustainable ecosystem within the project area.

Figure 11: Installation of Water Bowls at Project site



(g) Installation of Ground Trap: We have implemented an innovative approach to study and monitor subterranean animals' activity at the project site by installing a wooden ground trap. This box serves as a dedicated space for observing and documenting the behavior of various organisms such as insects, reptiles, Arthropods, arachnids and so on. Constructed from wood, the box is specifically designed for study purposes. During nature trails and educational programs, the box provides an interactive platform. By opening the door of the box, participants can witness and study the diverse subterranean species present, contributing to a hands-on and insightful learning experience about the local ground dwelling animal population. This initiative aligns with our commitment to fostering environmental education and research within the project area.



Figure 12: Installation of Insect Box

9. CHALLENGES:

During this quarter, a significant challenge confronted us in the form of a forest fire near the project site, seemingly ignited deliberately by an unknown party. The repercussions of this incident were observed with a few tree guards and an entire canopy plug cluster zone succumbing to the flames.

Fortunately, proactive measures taken, such as the prior trimming and removal of grass, played a crucial role in limiting the fire's spread. The swift action in grass management proved instrumental in containing the fire and preventing more extensive damage.



Figure 13: Challenges faced at the site during this quarter.

10. NATURE TRAIL DEVELOPMENT

The nature trails at Sanjay Gandhi National Park have been finalized, and the ongoing work involves demarcating the trails. Notably, the demarcation of Trail No. 1 has been completed using stone lines, a task for which laborers were engaged. The acquisition of stones presented a challenge, but with the dedicated efforts of caretakers, this obstacle was successfully overcome. The commitment to enhancing these trails showcases our dedication to creating an enriched natural experience for visitors.



Figure 14: Stone lining of Nature trail

11. PROJECT PROMOTION

To effectively promote the project and engage with stakeholders, a strategy of creating weekly project updates has been implemented. These updates serve as a means of sharing the progress, achievements, and key developments of the project. Here is a brief overview of the project promotion activities:

1. **Content Creation:** Weekly project updates are generated, highlighting the significant milestones, activities, and outcomes of the project. The content is concise, engaging, and tailored to capture the interest of the target audience.
2. **Social Media Sharing:** The project updates are shared on various social media platforms, including Facebook, Twitter, Instagram, and LinkedIn. These platforms provide a wide reach and allow for interaction and engagement with followers.
3. **Website Integration:** The weekly updates are also published on the project's dedicated page on iNaturewatch's website. This ensures that the information is readily accessible to stakeholders and interested individuals who visit the website for project-related information.
4. **Visual Media:** The updates are enriched with visual content, such as images, infographics, or short videos, to make them visually appealing and easily shareable across different platforms. Visual media enhances the engagement and helps convey the project's impact effectively.
5. **Call-to-Action:** Each update includes a call-to-action, encouraging readers to share the update, leave comments, or participate in specific project activities as volunteers. This helps foster a sense of community and involvement among the audience. So far, we have 84 volunteers who have enrolled on our WhatsApp group.
6. **Consistent Schedule:** The updates are published on a regular schedule, typically on a weekly basis, to maintain consistency and ensure that followers anticipate and look forward to the updates.
7. **Stakeholder Engagement:** The project team actively monitors social media platforms and the project website to respond to comments, questions, and feedback from stakeholders. This engagement creates a sense of inclusivity and encourages participation in project-related discussions.

Through the creation and sharing of weekly project updates on social media accounts and websites, the project gains visibility, creates awareness, and fosters engagement among stakeholders. This proactive approach in promoting the project helps build a strong online presence and facilitates effective communication with the project's target audience.

- (a) **Project Video:** The drone shoot for the project video has been successfully completed, and the remaining shooting is scheduled to be finalized in the upcoming quarter, with an expected completion date in November. Following the conclusion of shooting and subsequent post-production activities, the first draft of the project video will be made available to all stakeholders. This comprehensive video is designed to effectively showcase the project's objectives, document its progress, and highlight its overall impact. Once completed, the project video will serve as a compelling and informative tool for promotional activities and stakeholder engagement.



Figure 17: Few shots captured during drone shoot

12. COMMUNITY ENGAGEMENT PROGRAMMES: (Target: 400
Achieved: 341, Remaining: 59)

During the past two quarters, a total of six programs were conducted, engaging 272 participants in various activities. In the first quarter, 111 participants took part, including 66 DCB Bank employees and 45 Tata Realty volunteers. They actively contributed to the Plantation Drive event and mulching activity at the site. In the subsequent quarter, three additional programs were organized, attracting 161 participants. The breakdown included 42 participants from DCB Bank attending the Pathway Development event on October 14th, 30 participants involved in Environment Stewardship Programme Inaugural function and mask-making competition on December 9th, and 89 participants collectively engaged in the Bird Trail, Environment Stewardship Programme Nature trail, and bird home/feeder making workshop on December 24th and 25th. The collaborative efforts of these participants across both quarters have played a crucial role in the success of environmental initiatives and activities at the project site. The detailed breakdown of participants for each quarter is provided in Table 9.

Table 9: List of Volunteering Programmes

Sr.no	Date	Activity Name	Group	Numbers
1	7th May 2023	Clean-up Drive Event	Community volunteer	8
2	13th May 2023	Clean-up Drive Event and Sapling bag making	DCB Bank	54
3	14th May 2023	Sapling bag making activity	Community	7
4	1st July 2023	Plantation Drive	DCB Bank employees	11
5	9th September 2023	Plantation Drive Event and mulching activity	DCB Bank employees	55
6	15th September 2023	Plantation Drive Event and mulching activity	Tata Realty employees	45
7	14th October 2023	DCB Bank-Pathway Development	DCB bank	42
8	9th December 2023	Environment Stewardship Programme Inaugural function and mask making competition	Local Community children	30
9	24th December 2023	Bird Trail by Dr.Ketki Marthak	Community volunteers	27

10	25th December 2023	Environment Stewardship Programme Nature trail and bird home/feeder making workshop	Local Community children	32
11	26th December 2023	Nature trail for MCC college students	Community volunteers	30
Total				341

The event details are given below:

- **(14th October 2023) Pathway Development**

A Pathway Development event was conducted at SGNP, Mulund, aimed at demarcating the Nature trail. The event witnessed the active participation of 42 employees, showcasing their dedication and enthusiasm. Together, they contributed to the demarcation of the Nature trail, ensuring a well-defined and accessible pathway for visitors.



Figure 18: Pathway development for DCB bank employees

- **(9th September 2023) Inaugural function and Mask making activity as a part of Environment Stewardship Programme:** The Environment Stewardship Programme was officially launched on the 9th of September with an inaugural function held at Khindipada, near the Project site. The event was attended by a total of 30 enthusiastic kids, and the inauguration was graced by the presence of forest officials. The inaugural function marked the beginning of this significant environmental initiative. As part of the event, a fun and creative mask-making activity engaged the participants, adding an element of enjoyment to the learning experience.



Figure 19: ESP inauguration and Mask making activity

• **(24th December 2023): Nature Trail:**

Dr. Ketki Marthak led an insightful nature trail focused on birds, engaging a total of 27 participants. The trail provided a unique opportunity for participants to explore and observe the avian biodiversity within the project site. Dr. Ketki Marthak's expertise likely contributed to an enriching experience.



Figure 20: Nature Trail on Birds

- **(25th December 2023) Environment Stewardship Programme -Nature trail and bird home & feeder making workshop:** As part of the Environment Stewardship Programme, a nature trail, and a hands-on activity for creating bird feeders and bird homes were organized. A total of 32 enthusiastic children actively participated in this engaging event. The nature trail allowed the young participants to explore the biodiversity of the project site, fostering a deeper connection with nature. Additionally, the bird feeder and bird home making activity added a creative and educational element to the program, encouraging the children to contribute positively to wildlife conservation.



Figure 21: Nature trail and Bird feeder + Bird home making Activity

- **(26th December 2023) Nature Trail:** A nature trail was meticulously organized for the students of MCC College in Mulund, spearheaded by Mr. Pratik Chile. The event witnessed active participation from a total of 30 students who engaged in an immersive exploration of the natural surroundings. The primary objective of this nature trail was to cultivate environmental awareness among the students, providing them with firsthand experiences and insights into the local biodiversity.



Figure 22: Nature trail event for students of MCC College

13. PROJECT OUTCOMES

13.1 National Biodiversity Targets and SDGs

Table 10: Project outcomes and the Biodiversity Targets they achieve.

Project activity	Outcome	National Biodiversity Targets	SDGs
Afforestation	Greening of barren land, creating canopy plugs for biodiversity	Target 2	SDG 15

Habitat restoration	Restoration of a degraded area to provide food and shelter to local wildlife	Target 3	SDG 15
Climate action	Carbon sequestration, reducing soil erosion and recharging ground water level.	Target 3	SDG 13
Biodiversity population	Rise in the total number of species observed at the site through subsequent. Surveys	Target 6	SDG 15
Community engagement	Engaging corporate and community members in plantation related activities helps in destressing the participants and getting a fresh dose of oxygen with the outdoor session	Target 1	SDG 3
Local employment	The project provides employment to capable locals of the community	Target 11	
Partnership for goals	Joint effort by DCB Bank, iNaturewatch foundation, Forest Department and local community	Target 2	SDG 17

13.2 Qualitative Impacts:

- **Plantation:** The land once barren is slowly turning greener as the plantation has progressed since the beginning of the project.
- **Protecting Wildlings at site:** Wildlings which were planted in deer browse and pollinator zones are protected and growing well. We have found around 327 counts of wildlings, including Karvanda, Palas, Karanj, Kala Kuda, Soccer ball, and white Kuda. This abundance of wildlings signifies a significant growth and serves as a testament to the ultimate success of our ANR technique. The wildlings are ring de-weeded and mulch is also added to fasten their growth.
- **Increase in biodiversity:** An increase was observed in the total number of species sighted at the site in this quarter.
- **Observation on deer browsing zones and pollinator zones:** We have implemented carefully planned zones, which includes deer browsing zones and pollinator zones, each tailored to specific plant species. In the deer browsing zones, we have planted vetiver grass, bamboo, and other shrubs to suit the browsing habits of the deer whereas thick patch of Bamboos will act as the sheltering grounds. Similarly, in the pollinator zones, we have curated a selection of flowering shrubs such as Shatavari, Rangoon creeper, Hiptage, and Touch me not to attract and support pollinators.
During our monitoring activities, we have observed deer droppings in the vicinity of the deer browsing zones, indicating their preference for those areas. Moving forward, we will diligently conduct weekly monitoring to track the activities of both herbivores and pollinators in their respective zones.
- **Site maintenance:** Regular site maintenance works like tree-guard and fence repair, De-weeding, watering have made the site presentable and have attracted public attention.
- **Plant growth:** Species like Touch me not, Barleria, Nirgudi and Madhumalti have started flowering.
- **Nursery development:** Sapling bags of locally collected seeds and cuttings were made for further plantation on the site.
- **Community engagement:** The target for the community engagement programmes was fulfilled. Apart from the community and corporate volunteers' college and school students have shown interest in visiting the site.

14. WORKS PLANNED AND COMPLETED

The work activities initiated and commenced till now over the expected timescale.

Table 11: Status of work planned and completed from October to December 2023

Project Activities	Q1	Q2	Q3	Q4	% of completion
1. CONDUCTING SURVEYS					
1.1. Conducting seasonal biodiversity	X	X	X	X	75%
1.2. Soil testing			X	X	50%
1.3 Mapping of monsoon flora patches	X	X			100%
1.4 Mapping of Improvement in Tree cover			X		0%
1.5 Publishing Scientific Paper				X	0%
2. PLANTATION					
2.1 Compensatory Plantation	X	X			100%
2.2 Irrigation for plants			X	X	0%
2.3 Weeding and Mulching	X	X	X		75%
2.4 Tree Guard Repair	X	X	X	X	75%
2.5 Plantation Review	X	X	X	X	75%
3. HABITAT MAINTENANCE					
3.1 Assistance to Existing Trees		X			100%
3.2 Caring for New Wildlings	X	X			100%
3.3 Making Contour Bunds	X			X	50%
3.5 Removal of Invasive species		X		X	75%
3.6 Fire protection			X	X	50%
4. NURSERY DEVELOPMENT					
4.1 Seed Collection	X			X	50%
4.2 Propagation from Cuttings			X		0%
4.3 Replantation	X		X		50%
5. NATURE TRAIL DEVELOPMENT					
5.1 Pathway development			X	X	50%
5.2 Signage development		X	X		75%
5.3 Exhibit development		X	X		75%
5.4. Activity Stations development		X			25%
5.5 Inauguration of Trails			X		0%
6. COMMUNITY ENGAGEMENT					
6.1 Corporate Volunteering	X		X	X	100%
6.2 Nature Awareness Programmes		X	X		75%
6.3 Training to Forest guards				X	0%
6.4 Valedictory event				X	0%
6.5 Project Promotion	X	X	X	X	75%
6.6 Project video development			X	X	0%
6.7 Project review reporting	X	X	X	X	75%

15. PROJECT FINANCE

We received an amount of Rs.1343488 /- of which we have utilized an amount of Rs. **1711929.83/-**. The statement of expenditure is attached as Annexure 9. The summary is presented in Table 10.

Table 10: Summary of Expenditure

Budget Head	Amount Spent (Rs.)
Honorarium	36000
Irrigation Cost	69506
Plantation Cost	42043
Miscellaneous exp.	542945
Community Engagement	93650
Execution cost	599922
Administrative cost	327863.83
Total	1711929.83
Grant Received	1343488
Over-expenditure	-368441.83

16. CONCLUSION

In conclusion, the developments, and accomplishments at Sanjay Gandhi National Park during this quarter have been noteworthy. The flourishing deer browsing zones and thriving Pollinators zone have successfully attracted a diverse range of biodiversity, showcasing the positive impact on the local ecosystem. The strategically installed water bowls have become focal points, drawing various mammals and bird species to the park. The continuous support and collaboration from the Maharashtra Forest Department and DCB Bank have played a crucial role in the project's success. We express our gratitude to all individuals contributing to the restoration of the landscape. The progress achieved thus far establishes a promising foundation for the future initiatives of the project.

ANNEXURE 1: List of Plants Observed at site.

		Previous data Apr-21- Mar 23)	Apr- Jun 2023	Jul-Sept 2023	Oct-Dec 2023
Sr. No.	Type	Common Name	Common Name	Common Name	Common Name
1	Trees	Alu	Austrailian acacia	Austrailian acacia	Austrailian acacia
2		Apta	Bartondi	Bartondi	Bartondi
3		Australian acacia	Dhaman	Ber	Black rosewood
4		Ben Teak	Gliricidia	Black rosewood	Dhaman
5		Dhaman	Indian elm	Dhaman	Gliricidia
6		Easter Tree	Shemat	Gliricidia	Kakad
7		False Guava	Kala kuda	Indrajao	Kala kuda
8		Flame of forest	Karaya gum tree	Kala kuda	Karanj
9		Ghost tree	Kashid	Karanj	Karaya gum tree
10		Humb	Kala Kuda	Karaya gum tree	Kashid
11		Indian Butter Tree / Moha	Kumbhi	Kashid	Kuda
12		Indian elm	Flame of forest	Kuda	Kumbhi
13		Indian jujube	Sandpaper tree	Kumbhi	Palash
14		Indian Laburnam	Sisum	Palas	Sandpaper tree
15		Indian Rosewood	Tad	Sandpaper tree	Sisum
16		Kakad	Teak	Shemat	Tad
17		Kashid	Wild jujube	Sisum	Teak
18		Kaim / Kalamb		Tad	Vavla
19		Morinda Tree / Bartondi		Teak	Wild jujube
20		Moi / Indian ash tree		Vavla	
21		Pala indigo		Wild jujube	
22		Palmyra Palm / Toddy palm			
23		Pongam tree			
24		Rough leaved fig / Kalaambar			
25		Sandpaper Tree			
26		Sebesten Plum / Bhokar			
27		Slow Match Tree / Kumbhi			
28		Spinous Kino			
29		Spotted Gliricidia			
30		Teak			
31		Waras			
32		Senna siamea			
33		Yellow Teak / Haladu			
34	Shrubs	Christ Thorn / Karavand	Rui	Karvand	Paperflower climber
35		Dinda	Karvand	Large leaf leea	Karvand
36		Common Floss Flower	Kate Adulsa	Rui	Rui

37		Ran bhendi		Takala	Wild bhendi
38		Kate Adulsa			
39		Woodrow's Grape Tree			
40		Giant milkweed			
41		Christ Thorn / Karavand			
42	Climbers	Anantamul	Ukshi	Air Yam	Broom Creeper
43		Ran Jui	Broom Creeper	Broom Creeper	Anantmul
44		Anantmul	Anantmul	Ukshi	Ghotvel
45		Day Glory		Wild grapes	Sagar gota
46		Smilax / Ghot wel			
47		Broom creeper			
48		Morning Glory			
49		Sword bean			
50		Paperflower climber			
51		Patalgarudi / cocculus			
52		Vaghati			
53		White morning Glory			
54	Herbs	Adiantum	Alyce clover	Basket grass	Alyce clover
55		Acmella spp	Bhamburda	Bhui awala	Basket grass
56		Alternanthera (Joy weed)	Comb rungia	Creeping rungia	Bhamburda
57		Banded button orchid	Joyweed	Cuban jute	Comb rungia
58		Bhamburda Cocks comb	Basket grass	Hill Turmeric	Creeping rungia
59		Ledebouria	Nut Grass	Joyweed	Heart leaf sida
60		Alyce clover	Tadgola	Phatphati	Joy weed
61		Comb rungia		Siam Weed	Kate Adulsa
62		Common Purple Mallow		Toddy palm	Kurdu
63		Pin cushion		Un id grass	Nut Grass
64		Nut grass		Un id grass 1	Phatphati
65		Common wireweed		Un id grass 2	Pseudanthistiria spp
66		Pot Cassia / Takla		Unid grass 3	
67		Basket grass			
68		Psuedanthistiria spp			
69		Costus			
70		Sida sp			
71		Ran Aboli			
72		Foxtail Orchid/Seetechi Veni			
73		Turnsole			
74		Cock's comb			
75		Indian Borage			
76		Wild Turmeric / Ran halad			

77		Indian heliotrope			
78		Wild Yam / Jungli Suran			
79		Yellow ground star / Kali musali			
80		Heteropogon spp			
81		Kilwar Snake weed			
82		Crotolaria			
83		Unidentified Grass			
84	Fungi	Bracket Fungus			
85		Coral mushroom			
86		Dead men's finger			
87		Oyster Mushroom			
88		Puff balls			
89		Staghorn fungus			
90		Tubular fungus			

ANNEXURE 2: Total List of Plants observed at site.

Sr. No.		Total Plant list			
	Habit	Common Name	Scientific Name	Total	
1	Climber	Wild grapes	<i>Ampelocissus latifolia</i>	16	
2	Climber	Paperflower climber	<i>Bougainvillea spp.</i>		
3	Climber	Ukshi	<i>Calycopteris floribunda</i>		
4	Climber	Sword bean	<i>Canavalia gladiata</i>		
5	Climber	Broom Creeper	<i>Cocculus hirsutus</i>		
6	Climber	Ceylon Caper	<i>Crateva adansonii</i>		
7	Climber	Air Yam	<i>Dioscorea bulbifera</i>		
8	Climber	Vaghati	<i>Evolvulus alsinoides</i>		
9	Climber	Ukshi	<i>Getonia floribunda</i>		
10	Climber	Sagar gota	<i>Guilandina bonduc</i>		
11	Climber	Anantmul	<i>Hemidesmus indicus</i>		
12	Climber	Morning Glory	<i>Ipomoea spp.</i>		
13	Climber	White morning Glory	<i>Ipomoea violacea (Ipomoea alba)</i>		
14	Climber	Patalgarudi	<i>Jatropha gossypifolia</i>		
15	Climber	Ran Jui	<i>Jatropha multifida</i>		
16	Climber	Smilax / Ghot Vel	<i>Smilax zeylanica</i>		
17	Fungi	Bracket Fungus	<i>Ganoderma lucidum</i>	7	
18	Fungi	Coral mushroom	<i>Ramaria spp.</i>		
19	Fungi	Dead men's finger	<i>Xylaria polymorpha</i>		
20	Fungi	Oyster Mushroom	<i>Pleurotus ostreatus</i>		
21	Fungi	Puff balls	<i>Lycoperdon spp.</i>		
22	Fungi	Staghorn fungus	<i>Calocera spp.</i>		
23	Fungi	Tubular fungus	<i>Clavaria spp.</i>		

24	Grass	Basket grass	<i>Oplismenus hirtellus</i>	8
25	Grass	Nut Grass	<i>Cyperus rotundus</i>	
26	Grass	Unid grass 3	<i>Digitaria spp</i>	
27	Grass	Un id grass		
28	Grass	Un id grass 1	<i>Panicum spp</i>	
29	Grass	Un id grass 2	<i>Setaria pumila</i>	
30	Grass		<i>Panicum spp</i>	
31	Grass		<i>Pseudanthistiria spp</i>	
32	Herb	Acmella spp	<i>Acmella</i>	33
33	Herb	Adiantum	<i>Adiantum</i>	
34	Herb	Siteche Pohe	<i>Aerva spp.</i>	
35	Herb	Alternanthera (Joy weed)	<i>Alternanthera</i>	
36	Herb	Alyce clover	<i>Alysicarpus spp.</i>	
37	Herb	Pot Cassia / Takla	<i>Cassia tora</i>	
38	Herb	Cocks comb	<i>Celosia argentea</i>	
39	Herb	Siam Weed	<i>Chromolaena odorata</i>	
40	Herb	Kilwar	<i>Clerodendrum inerme</i>	
41	Herb	Costus	<i>Costus spp.</i>	
42	Herb	Phatphati	<i>Crotalaria filipes</i>	
43	Herb	Crotalaria	<i>Crotalaria spp.</i>	
44	Herb	Yellow ground star /Kali musali	<i>Curculigo spp.</i>	
45	Herb	Wild Turmeric /Ran halad	<i>Curcuma aromatica</i>	
46	Herb	Hill Turmeric	<i>Curcuma pseudomontana</i>	
47	Herb	Ran-Aboli	<i>Cymbidium spp.</i>	
48	Herb	Wild Yam/ Jungli Suran	<i>Dioscorea spp.</i>	
49	Herb	Banded button orchid	<i>Epipactis spp.</i>	
50	Herb	Bhamburda	<i>Gmelina spp.</i>	
51	Herb	Indian heliotrope	<i>Heliotropium indicum</i>	
52	Herb	Heteropogon spp	<i>Heteropogon</i>	
53	Herb	Ledebouria	<i>Ledebouria spp.</i>	
54	Herb	Common Purple Mallow	<i>Malva spp.</i>	
55	Herb	Bhui awala	<i>Phyllanthus amarus</i>	
56	Herb	Indian Borage	<i>Plectranthus amboinicus</i>	
57	Herb	Psuedanthistiria spp	<i>Pseudanthistiria spp.</i>	
58	Herb	Foxtail Orchid/Seetechi Veni	<i>Rhynchostylis spp.</i>	
59	Herb	Comb rungia	<i>Rungia pectinata</i>	
60	Herb	Creeping rungia	<i>Rungia repens</i>	
61	Herb	Pin cushion	<i>Scabiosa spp.</i>	
62	Herb	Common wireweed	<i>Sida acuta</i>	
63	Herb	Cuban jute	<i>Sida rhombifolia</i>	
64	Herb	Snake weed	<i>Stachytarpheta spp.</i>	

65	Shrub	Ran bhendi	<i>Abelmoschus esculentus</i>	12
66	Shrub	Common Floss Flower	<i>Ageratum houstonianum</i>	
67	Shrub	Wild bhendi	<i>Azanza lampas</i>	
68	Shrub	Giant milkweed	<i>Calotropis gigantea</i>	
69	Shrub	Karvand	<i>Carissa carandas</i>	
70	Shrub	Woodrow's Grape tree	<i>Cocculus hirsutus (Anamirta cocculus)</i>	
71	Shrub	Dinda	<i>Crotalaria retusa</i>	
72	Shrub	Christ Thorn /Karavand	<i>Euphorbia milii</i>	
73	Shrub	Paperflower climber	<i>Getonia floribunda</i>	
74	Shrub	Large leaf leea	<i>Leea Macrophylla</i>	
75	Shrub	Kate Adulsa	<i>Lepidagathis cuspidata</i>	
76	Shrub	Takala	<i>Senna tora</i>	
77	Tree	Australian acacia	<i>Acacia auriculiformis</i>	38
78	Tree	Apta	<i>Bauhinia vahlii</i>	
79	Tree	Vavla	<i>Bauhinia variegata</i>	
80	Tree	Tad	<i>Borassus flabellifer</i>	
81	Tree	Palash	<i>Butea monosperma</i>	
82	Tree	Kumbhi	<i>Careya arborea</i>	
83	Tree	Indian Laburnam	<i>Cassia fistula</i>	
84	Tree	Alu	<i>Colocasia esculenta</i>	
85	Tree	Sebesten Plum / Bhokar	<i>Cordia sebestena</i>	
86	Tree	Black rosewood	<i>Dalbergia latifolia</i>	
87	Tree	Sisum	<i>Dalbergia sissoo</i>	
88	Tree	Humb	<i>Diospyros lotus</i>	
89	Tree	Kakad	<i>Diospyros melanoxylon</i>	
90	Tree	False Guava	<i>Eugenia jambolana</i>	
91	Tree	Sand Paper Tree	<i>Ficus auriculata</i>	
92	Tree	Rough leaved fig / Kala umbar	<i>Ficus hispida</i>	
93	Tree	Kakad	<i>Garuga pinnata</i>	
94	Tree	Gliricidia	<i>Gliricidia sepium</i>	
95	Tree	Dhaman	<i>Grewia tenax</i>	
96	Tree	Dhaman	<i>Grewia tiliifolia</i>	
97	Tree	Indrajao	<i>Holarrhena pubescens</i>	
98	Tree	Vavla	<i>Holoptelea integrifolia</i>	
99	Tree	Moi/Indian Ash tree	<i>Lagerstroemia speciosa</i>	
100	Tree	Indian Butter Tree /Moha	<i>Madhuca longifolia</i>	
101	Tree	Pongam tree	<i>Millettia pinnata</i>	
102	Tree	Kaim /Kalamb	<i>Mitragyna parvifolia</i>	
103	Tree	Bartondi	<i>Morinda citrifolia</i>	
104	Tree	Easter Tree	<i>Polyalthia longifolia</i>	
105	Tree	Karanj	<i>Pongamia pinnata</i>	

106	Tree	Ben Teak	<i>Pterocarpus marsupium</i>
107	Tree	Kashid	<i>Saccharum spontaneum</i>
108	Tree	Kashid	<i>Senna siamea</i>
109	Tree	Karaya gum tree	<i>Sterculia urens</i>
110	Tree	Sandpaper tree	<i>Streblus asper</i>
111	Tree	Teak	<i>Tectona grandis</i>
112	Tree	Kala kuda	<i>Wrightia tinctoria</i>
113	Tree	Ber	<i>Ziziphus mauritiana</i>
114	Tree	Wild jujube	<i>Ziziphus rugosa</i>

ANNEXURE 3: List of Insects and other Arthropods observed at site.

Sr. no	Arthropods	Total	Previous data (Apr 21- Mar 23)	Apr- Jun 2023	Jul-Sep 2023	Oct-Dec 2023
1	Ants	Ant sp	Ant sp	Ant sp	Ant sp	Ant sp
2		Arboreal bicoloured	Arboreal	Harvester ants	Harvester ants	Harvester
3		Harvester ants	Harvester ants	Pogoda ant	Pagoda ant	Pagoda ant
4		Pogoda ant	Pogoda ant	Weaver ants	Weaver ants	Weaver ants
5		Weaver ants	Weaver ants		Slender ant	
6		Slender ant (Tetraoponera)				
7	Bee	Stingless bees	Stingless bees	Stingless bees	Stingless bees	Stingless
8	Beetle	Blister beetle	Blister beetle	Ladybird	Tortoise shell	Blister
9		Bombardier Beetle	Bombardier			Stem Borer
10		Click Beetle	Click Beetle			Ladybird
11		Ladybird Beetle	Ladybird Beetle			
12		Tiger beetle	Tiger beetle			
13		Tortoise shell beetle	Tortoise shell			
14		Weevil	Weevil			
15	Cricket	Field Cricket	Field Cricket		Bush cricket	Bush Cricket
16		Bush Cricket	Bush Cricket			Leaf Bush
17		Bush Bark cricket	Cricket nymph			
18		Leaf Bush Cricket	Leaf Bush			
19	Bristle tail	Bristle tail	Bristle tail			
20	Bugs	Catacanthus	Assassin Bug		Green stink bug	Green stink

21		Leaf hoppers	Catacanthus			Red cotton
22		Red cotton bug	Leaf hoppers			Leaf hoppers
23		Summer cicada	Long Legged			
24		Long Legged bug	Red cotton bug			
25		Assassin Bug	Stink Bug			
26		Stink Bug	Summer cicada			
27		Un id bug	Un id bug			
28		Green stink bug				
29	Butterflies	Baronet	Baronet Butterfly	Blue tiger	Bamboo bush brown	Baronet
30		Bamboo bush brown	Blue tiger	Chocolate Pansy	Banded Awl	Bamboo bush brown
31		Banded Awl	Blue mormon	Common	Black Rajah	Blue
32		Baronet	Blue oak leaf	Common	Blue mormon	Blue oak leaf
33		Black Rajah	Chocolate pansy	Common Crow	Blue Tiger	Blue tiger
34		Blue mormon	Chestnut-	Common	Commander	Chocolate
35		Blue oak leaf	Common	Common	Common Awl	Commander
36		Blue tiger	Common Crow	Common gull	Common	Common
37		Chestnut-streaked	Common castor	Common	Common	Common
38		Chocolate Pansy	Common jezebel	Common Rose	Common Bushbrown	Common Crow
39		Commander	Common	Lemon pansy	Common castor	Common
40		Common Awl	Common rose	Lime Butterfly	Common	Common
41		Common baron butterfly caterpillar	Danaid eggfly	Plain tiger	Common Crow	Common Jay
42		Common Barron	Cerulean	Psyche	Common	Common
43		Common bushbrown	Emigrant	Spotted sword	Common	Common
44		Common castor	Common Jay	Tawny coster	Common gull	Common Rose
45		Common Cerulean	Grass Yellow	White orange	Common Jay	Common
46		Common Crow	Glassy tiger		Common	Common
47		Common Emigrant	Lemon pansy		Common Wanderer	Crimson rose
48		Common fivering	Golden flat		Golden Angle	Danaid
49		Common Grass Yellow	Lime Butterfly		Grass Demon	Gaudy Baron
50		Common gull	Plain tiger		Great orange	Glassy tiger
51		Common Jay	Psyche		Grey Pansy	Golden
52		Common jezebel	Spotted		Lemon Pansy	Grey Pansy
53		Common Leopard	Dark banded bushbrown		Lime butterfly	Lemon Pansy
54		Common Rose	Forget me not		Peacock pansy	Lime
55		Common Sailor	Peacock Pansy		Plain tiger	Peacock
56		Common Wanderer	Tawny coster		Plum Judy	Plain tiger
57		Danaid eggfly	Grass Jewel		Psyche	Plum Judy
58		Dark banded	Zebra blue		Sahyadri	Psyche
59		Forget me not	Plum Judy		Sahyadri Yamfly	Striped tiger
60		Gaudy Baron	Rice swift		Small grass	Tailed Jay

61		Glassy tiger	Small Salmon		Spotted	Tawny coster
62		Golden Angle	Spot swordtail		Striped tiger	White
63		Golden flat	Small grass		Tailed Jay	Yellow
64		Grass demon	White orange		Tawny coster	
65		Grass Jewel	Salmon Arab		Wanderer	
66		Grass yellow	Wanderer		White Orange	
67		Great orange tip			Yam Fly	
68		Grey Pansy			Yellow orange	
69		Lemon Pansy				
70		Lime Butterfly				
71		Peacock Pansy				
72		Plain tiger				
73		Plum Judy				
74		Psyche				
75		Rice swift				
76		Sahyadri Blueoak leaf				
77		Sahyadri Yamfly				
78		Salmon Arab				
79		Small grass yellow				
80		Small Salmon Arab				
81		Spotted swordtail				
82		Striped tiger				
83		Tailed Jay				
84		Tawny coster				
85		White orange tip				
86		Yam Fly				
87		Yellow orange Tip				
88		Zebra blue				
89	Cockroach	Forest cockroach nymph	Forest cockroach nymph	Forest cockroach	Forest cockroach	Forest cockroach nymph
90	Termite	Termite	Termite	Termite	Termite	Termite
91	Dragonfly	Dragonfly	Dragonfly	Dragonfly	Picturewing	
92		Picturewing	Picturewing	Lined Hooktail	Asiatic Blood	
93		Asiatic Blood tail				
94	Damselfly	Blue damselfly	Blue damselfly		Coromandel	Coromandel
95		Yellow damselfly	Yellow damselfly			
96	Flies	Robber fly	Robber fly	Robber fly	Blue bottle fly	Robber fly
97		Blue bottle fly				Blue bottle
98	Grasshopper	Grasshopper	Grasshopper	Grasshopper	Short horned	
99		Hooded	Hooded		Hooded	
100		Short horned grasshopper	Short horned grasshopper			
101	Mantis	Boxer mantis sp.	Boxer mantis sp.	Bark Mantis	Praying Mantis	Praying

102		Praying Mantis	Praying Mantis	Praying Mantis	Bark Mantis	Bark Mantis
103	Moths	Algira Passenger	Algira Passenger	White	Black looper	Grass moth
104		Amata bicincta	Checkered	Talaca Leaf	Black Tip Moth	Handmaiden
105		Bagworm Moth	Bagworm moth caterpillar	Woolly Bear Moth	Blue-Spotted Forester Moth	Bagworm Moth
106		Bagworm moth	Bagworm moth	Bagworm	Brown tussock	
107		Black looper moth	Amata bicincta	Black Tip Moth	Choreutidae	
108		Black Tip Moth	Grass moth	Hill Fern Moth	Chrysocraspeda	
109		Blue-Spotted	Cocoon of slug	Euproctis sp	Euproctis sp	
110		Blue-Spotted	Hummingbird	Blue-Spotted	Grass moth	
111		Brown tussock moth	Eastern tree leaf roller grass moth		Handmaiden moth sp.	
112		Checkered snout	Cocoon of		Hill Fern Moth	
113		Choreutidae	Fruit piercing		Humming bird	
114		Chrysocraspeda	Talaca leaf moth		Lappet moth	
115		Eastern tree leaf	Looper moth		Talaca Leaf	
116		Euproctis sp	Owl moth		Tussock moth	
117		Fruit piercing moth	Grass moth		Woolly Bear	
118		Grass moth	Tussar silk moth		Bagworm Moth	
119		Grass moth caterpillars	Slug moth caterpillar			
120		Handmaiden moth sp.	Hawkmoth caterpillar			
121		Hawkmothcaterpillar	Tussock moth caterpillar			
122		Hill Fern Moth	Snouted tiger moth			
123		Humming bird hawkmoth	Wolly bear moth caterpillar			
124		Lappet moth	Lappet moth caterpillar (Trabala Vishnou)			
125		Lappet	Noctuid moth			
126		Looper moth	Tiger moth			
127		Noctuid moth	Yellow			
128		Owl moth	Ant Lion			
129		Praying Mantis	Lacewing eggs			
130		Slug moth	Potter wasp			
131		Slug moth caterpillar	Daddy Long legs			
132		Snouted tiger moth	Jumping spider			
133		Talaca leaf moth				
134		Tiger moth				
135		Tussar silk moth				
136		Tussock moth				
137		Tussock moth caterpillar				
138		White Medasina				

139		Wolly bear moth				
140		Woolly Bear Moth				
141		Yellow Underwing moth				
142	Lacewing/ Antlion/ Owlfly	Antlion	Tarantula	Antlion	Antlion	Antlion
143		Lacewing eggs	Centipede		Lacewing	Lacewing eggs
144	Wasp	Potter wasp	Scorpion		Potter wasp	Potter wasp
145	Others	Centipede	Giant Forest	Jumping	Centipede	Crab Spider
146		Crab Spider	Hetrometrus sp.	Funnel web	Crab Spider	Funnel web
147		Daddy long legs	Unidentified spider	Ground spider	Funnel web spider	Lynx spider
148		Funnel web spider	Crab Spider	Lynx spider	Lynx spider	Jumping spider
149		Giant Forest	Funnel web	Tarantula	Millipede	Two tailed
150		Ground spider	Lynx spider	Centipede	Orb weaver spider	Wolf spider
151		Jumping spider	Wood louse	Indian red	Signature	Indian red
152		Lynx spider	Ground spider	Two tailed spider	Wolf spider	Wood louse
153		Centipede	Millipede	Giant Forest	Giant Forest	
154		Millipede	Signature spider			
155		Orb weaver spider	Orb Weaver			
156		Scorpion	Wolf spider			
157		Indian red scorpion				
158		Signature Spider				
159		Tarantula				
160		Unidentified spider				
161		Two Tailed spider				
162		Wolf spider				
163		Wood louse				
164		Wolf spider				
165		Wood louse				

ANNEXURE 4: List of Reptiles and Amphibians (Herpetofauna) on the site

Sr.No	Herpetofauna	Total	Apr - Jun 2023	Jul-Sep 2023	Oct - Dec 2023
1	Amphibian	Balloon frog		Burrowing Frog	Balloon frog
2		Burrowing Frog		Common Indian toad	Burrowing Frog
3		Common Indian toad		Common Tree frog	Skittering Frog
4		Common Tree frog		Skittering Frog	
5		Cricket Frog			
6		Skittering Frog			
7	Reptiles	Bronzeback Tree snake	Bronzeback treesnake	Bronzeback tree snake	Buff Striped keelback

8		Buff striped keelback	Forest calotes	Buff Striped keelback	Forest calotes
9		Checkered keelback	Keeled Mabuya	Checkered keelback	Garden Lizard
10		Dumeril's black headed snake	Monitor lizard	Freshwater crocodile	Green vine snake
11		Fan throated lizard	Garden lizard	Garden Lizard	Keeled Mabuya
12		Forest calotes	Rat snake	Green vine snake	Monitor lizard
13		Freshwater crocodile	Spectacled cobra	Indian Chameleon	Rat snake
14		Garden Lizard	Supple skink	Keeled Mabuya	Spectacled cobra
15		Green keelback snake		Lined supple skink	
16		Indian Chameleon		Rat snake	
17		Indian Rock python		Russell's viper	
18		Keeled mabuya		Spectacled cobra	
19		Lined Supple skink		Spotted supple skink	
20		Monitor lizard			
21		Rat Snake			
22		Russell's Viper			
23		Spectacled cobra			
24		Spotted supple skink			

ANNEXURE 5: Birds Observed at Site

Sr.no	Total	Previous data April 21- March 23	Apr- Jun 2023	Jul-Sep 2023	Oct-Dec 2023
1	Alexandrine	Alexandrine	Alexandrine Parakeet	Ashy Prinia	Alexandrine
2	Ashy Drongo	Ashy Drongo	Asian Koel	Black Kite	Ashy drongo
3	Ashy Prinia	Ashy Prinia	Asian Palm-Swift	Blue-eared	Asian Koel
4	Asian Brown	Asian Brown	Black Kite (Black)	Common Myna	Asian Palm-Swift
5	Asian Koel	Asian Koel	Black-rumped	Emerald Dove	Asian paradise
6	Asian Palm-Swift	Asian Palm-Swift	Brown-headed Barbet	Greater Coucal	Black kite
7	Asian paradise	Black Drongo	Cattle Egret	Green Bee Eater	Brown Hawk owl
8	Baya Weaver	Black Hooded	Common Hawk-	Grey Junglefowl	Brown-headed
9	Black Drongo	Black Kite	Common Iora	House Crow	Cattle Egret
10	Black Hooded	Black-rumped	Common Myna	Jungle Crow	Common Myna
11	Black kite	Blue-tailed Bee-	Common Tailorbird	Jungle Owlet	Common
12	Black Kite (Black)	Brown-headed	Coppersmith Barbet	Oriental Dwarf	Eurasian Hoopoe
13	Black-rumped	Cattle Egret	Crested Serpent Eagle	Pale Billed	Golden fronted
14	Blue-tailed Bee-eater	Common Hawk-Cuckoo	Gray Junglefowl	Purple Rumped Sunbird	Golden oriole
15	Brown Hawk owl	Common Iora	House Crow	Purple Sunbird	Greater spotted
16	Brown-headed Barbet	Common Myna	House Sparrow	Rose Ringed Parakeet	Green bee eater
17	Cattle Egret	Gray Junglefowl	Indian Golden Oriole	Rufous	Green warbler
18	Common Myna	Gray-breasted	Indian Grey Hornbill	Spot Breasted	Grey Wagtail
19	Common Tailorbird	Greater Coucal	Indian Robin	Spotted Owlet	House crow
20	Common	Greater Racket-	Jungle Babbler	Tailor Bird	Indian grey

21	Coppersmith	Greater Spotted	Jungle Owlet	White Throated	Indian peafowl
22	Emerald Dove	Green Bee-eater	Large-billed Crow		Indian Robin
23	Eurasian Hoopoe	House Crow	Oriental Magpie-Robin		Indian roller
24	Golden fronted leaf	House Sparrow	Pale billed		Intermediate
25	Golden oriole	Indian Golden	Purple Sunbird		Jerdons leaf bird
26	Gray Junglefowl	Indian Grey Hornbill	Purple-rumped Sunbird		Jungle owlet
27	Gray-breasted	Indian Peafowl	Red Spurfowl		Jungle Owlet
28	Greater Coucal	Indian Pond Heron	Red-vented Bulbul		Large billed crow
29	Greater Racket-	Indian Robin	Red-whiskered Bulbul		Lesser
30	Greater Spotted	Large-billed Crow	Rock Pigeon (Feral		Orange Headed
31	Green bee eater	Oriental Honey	Rose-ringed Parakeet		Oriental magpie
32	Green Bee-eater	Oriental Magpie-	Rufous treepie		Purple sunbird
33	Green warbler	Purple-rumped	Spot Breasted Fantail		Red breasted
34	Grey Wagtail	Red-vented Bulbul	Spotted owlet		Rose ringed
35	House Crow	Rock Pigeon (Feral Pigeon)			Rufous treepie
36	House Sparrow	Rose-ringed Parakeet	Vigor's Sunbird		Shikra
37	Indian Golden	Rufous Treepie	Yellow-throated		Southern Coucal
38	Indian Grey	Scaly-breasted			Spotted Owlet
39	Indian grey hornbill	Shikra			Steppe eagle
40	Indian Peafowl	Spot-breasted Fantail			Taiga flycatcher
41	Indian Pond-Heron	Spotted Dove			Tickell's blue
42	Indian Robin	Spotted Owlet			White eyed buzzard
43	Indian roller	Taiga Flycatcher			White rumped
44	Intermediate Egret	Tickell's Blue Flycatcher			Yellow - Throated Sparrow
45	Jerdons leaf bird	White-breasted Waterhen			
46	Jungle Babbler	White-eyed			
47	Jungle Owlet	White-throated Kingfisher			
48	Large billed crow	Yellow-throated			
49	Large-billed Crow (Indian Jungle)				
50	Lesser Whitethroat				
51	Little Cormorant				
52	Orange Headed Thrush				
53	Oriental Dwarf				
54	Oriental Honey				
55	Oriental magpie Robin				
56	Oriental Magpie-				
57	Pale billed				

58	Plum Headed				
59	Puff-throated Babbler				
60	Purple Sunbird				
61	Purple sunbird				
62	Purple-rumped Sunbird				
63	Red Breasted				
64	Red breasted				
65	Red Spurfowl				
66	Red-vented Bulbul				
67	Red-whiskered Bulbul				
68	Rock Pigeon (Feral Pigeon)				
69	Rose ringed parakeet				
70	Rose-ringed Parakeet				
71	Rufous treepie				
72	Rufous Woodpecker				
73	Scaly-breasted Munia				
74	Shikra				
75	Southern Coucal				
76	Spot Breasted Fantail				
77	Spotted Dove				
78	Spotted owl				
79	Steppe eagle				
80	Taiga Flycatcher				
81	Tailor Bird				
82	Tickell's blue flycatcher				
83	Vigor's Sunbird				
84	White eyed buzzard				
85	White rumped shama				
86	White Throated Kingfisher				
87	Yellow - Throated Sparrow				

ANNEXURE 6: List of Mammals observed at site.

Sr.no	Total	Apr 2021- March2023	Apr 2023- Jun 2023	Jul 2023-Sep 2023	Oct 2023 - Dec 2023
-------	-------	------------------------	--------------------	----------------------	---------------------

1	Black-naped Hare	Black-naped	Bonnet macaque	Spotted deer	Black-naped Hare
2	Bonnet macaque	Bonnet macaque	Feral Dog	Indian Palm	Feral Dog
3	Feral Dog	Feral Dog	Hanuman Langur	Rhesus Macaque	Hanuman Langur
4	Hanuman Langur	Hanuman Langur	Indian Mongoose		Indian Mongoose
5	Indian Mongoose	Indian	Indian Palm Squirrel		Indian Palm Squirrel
6	Indian Palm	Indian Palm	Leopard (pugmark)		Leopard (scat)
7	Leopard (scat)	Rhesus Macaque	Rhesus Macaque		Spotted deer
8	Rhesus Macaque	Spotted Deer	Sambar deer		Wild Boar (Hoof)
9	Sambar deer	Wild Boar	Spotted Deer		
10	Spotted Deer	Leopard (scat)	Wild Boar (Hoof)		
11	Wild Boar				

ANNEXURE 7: Plantation review list

Type	Name	Total Target Completion	Review Feb'23	Review June'23	CP	Review Sept'23	Review Dec' 23	% survival	% mortality
Herb	Spiral Ginger	200	0	0		0	0	0	100
	Wild banana	600	0	0		0	0	0	100
	Bamboo	1000	384	338	250	477	386	80.92	19.08
	Vetiver grass	1279	865	906	70	867	598	68.93	31.07
Shrub	Ceylon Caper	50	0	0		0	0	0	100
	Rattle pod (Crotolaria)	150	0	0	93	40	4	90	10
	Spiny Barleria	450	73	39	204	214	95	44.39	55.61
	Ixora	200	45	21		15	12	80	20
	Giant milkweed	100	20	17	100	83	28	25.3	74.7
	Adulsa	500	247	202	200	313	290	92.66	7.34
	Karvanda	1510	932	794	250	918	823	89.51	10.49
	Crab's eye creeper	180	51	56	15	92	50	54.35	45.65
	Combretum (Rangoon creeper)	300	163	168		153	138	90.2	9.8
	Wild jasmine	200	129	120	200	324	217	67.01	32.99
	Fever nut	103	73	67		75	67	52.63	47.37
	Hiptage	100	75	77		65	17	20.75	79.25
	Touch me not (lajalu)	469	335	330	51	819	1000	100	0
	Coat Buttons	0	0	0	60	55	21	27.27	72.73

	Asparagus (Shatawari)	300	129	272		250	154	61.6	38.4
Tree	Phanshi (Anogeissus latifolia)	25	20	0		0	0	0	100
	Indian Ash tree/ Moi (Lansea coromandelica)	20	17	0		1	1	50	50
	Kaushi (Sterculia colorata)	20	1	0		0	0	0	100
	Governer's plum (Flacourtia indica)	25	0	0		0	8	100	0
	Ain	10	0	0		0	0	0	100
	Fishtail Palm	35	2	1		2	2	50	50
	Pala Indigo (Kala Kuda)	60	24	3		1	2	50	50
	Peepal	45	8	5		5	3	60	40
	Neem	7	2	1		1	2	66.67	33.33
	Red silk cotton (Sawar)	200	62	39		40	27	60	40
	Chandada (Macaranga)	25	2	5		4	6	40	60
	Indian Coral tree (Pangara)	70	20	14		14	16	87.5	12.5
	Khair (Acacia)	111	31	27	30	54	52	94.44	5.56
	Shivan	160	37	41		39	32	82.05	17.95
	Mango	110	35	34	45	66	52	78.79	21.21
	Clammy Cherry (Cordia) (Bhokar)	25	10	8		8	14	36.36	63.64
	Mahuva	105	34	35	59	62	50	80.65	19.35
	Indian Ber (Bor)	53	22	20		21	18	85.71	14.29
	Amla	90	35	34		31	28	90.32	9.68
	Shisham (Dalbergia sisoo)	77	7	31		26	22	84.62	15.38
	Wild fig (Umber)	166	84	63	50	107	97	90.65	9.35
	Indian Chaste tree (Nirgudi)	500	204	253		388	118	76.03	23.97
	Arjun	35	8	18	25	40	40	100	0
	Flame of Forest (Palas)	25	8	13	40	50	40	80	20
	Indian trumpet tree (Tetu)	176	64	62		65	61	93.85	6.15
	Bael	35	21	19		17	14	54.84	45.16
	Kumbhi	35	16	19		14	11	78.57	21.43
	Hairy fig (Kala Umbar)	40	27	22		16	11	68.75	31.25
	Kaim/ Kalamb	110	75	66		70	66	94.29	5.71
	Wild Guava	200	139	157		137	114	83.21	16.79
	Behada	10	4	8	51	56	55	50	50
	Banyan	25	22	21		19	21	90.48	9.52
	Jamun	300	237	245	100	299	297	99.33	0.67
	Indian Elm (Holoptelea) Vavla	10	9	10		10	8	80	20

Laburnum (Bahawa)	25	36	32	75	100	104	96.15	3.85
Pongam (Karanj)	170	273	258	60	290	260	89.66	10.34
Lagerstroemia speciosa (Tamhan)	50	23	18		35	23	65.71	34.29
Scholars Tree					1	1	50	50
Apta	0	0	0	10	9	6	66.67	33.33
White kuda						11	100	0
Unidentified trees	88	88	40		25	11	44	56
Total	10964	5228	5029	2038	6883	5604		
Survival rate %		47.72%	45.89%		62.79%	51.11%		
Mortality rate %		52.28%	54.11%		37.21%	48.88%		

CP- Compensatory Plantation

ANNEXURE 8: Plantation Before (September 2022) and After (December 2023) Scenario

BEFORE (September 2022)



AFTER (December 2023)



BEFORE (September 2022)



AFTER (December 2023)



BEFORE (September 2022)



AFTER (December 2023)



BEFORE (September 2022)



AFTER (December 2023)



BEFORE (September 2022)



AFTER (December 2023)



BEFORE (September 2022)



AFTER (December 2023)

BEFORE (September 2022)



AFTER (December 2023)



BEFORE (September 2022)



AFTER (December 2023)



BEFORE (September 2022)



AFTER (December 2023)

BEFORE (September 2022)



AFTER (December 2023)

