



Chundikulam National park: a review of its current status and future prospects

**Kanapathy Gajapathy
Suvanthini Terensan
Sivasingham Arthiyan
Thirunavukkarasu Thirumayuran**

**University of Jaffna
Thinnaveli Property Developers (Pvt) Ltd
Center for Childrens' Happiness**

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AND FUTURE PROSPECTS

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Message from the Vice Chancellor

It is with immense pride that I extend my warm congratulations to the authors and contributors of this publication titled Chundikulam National Park: A Review of Its Current Status and Future Prospects. This work stands as a testament to the unwavering commitment of the University of Jaffna to scholarly excellence, sustainable development, environmental protection, and meaningful community engagement. Chundikulam National Park is not merely a protected area; it is a vital ecological sanctuary, an important biodiversity hotspot of our region, and a landscape deeply intertwined with the cultural and socio-economic matrix of northern Sri Lanka. The comprehensive research presented in this volume is a result of meticulous field surveys conducted by our staff. The book is also a product that came from insightful community consultations. This book lays an invaluable foundation for understanding this unique ecosystem. The four-year multidisciplinary effort led by our dedicated academics and students exemplifies the university's role in generating knowledge that serves both people and environment.

The findings emphasize a critical truth; effective conservation cannot be achieved in isolation. The future of Chundikulam depends on harmonizing ecological protection with the well-being and aspirations of local communities. This book powerfully advocates for a participatory, inclusive, and scientifically informed approach which should be the ideal model where conservation becomes a shared mission rooted in collaboration, equity, and sustainable livelihoods.

As the first institution of higher learning in the Northern Province, the University of Jaffna is profoundly committed to supporting research that addresses regional challenges and supports sustainable development. This publication aligns perfectly with our mission to promote education, innovation, and social responsibility. It will serve as an essential resource for policymakers, conservationists, researchers, students, and the wider community, guiding efforts to preserve Chundikulam for generations to come. I commend the entire research team for their exceptional dedication. My sincere gratitude also extends to our valued partners, the Center for Children's Happiness and Thinnaveli Property Developers (Pvt) Ltd., for their vital support, and to the Department of Wildlife Conservation for enabling this vital work. May this book inspire continued research, dialogue, and action towards a resilient and thriving Chundikulam National Park. May god bless all who have contributed to this book.

Professor S. Srisatkunarajah
Vice Chancellor
University of Jaffna



Message from Center for Children's Happiness

The Center for Children's Happiness (CCH) is pleased to serve as the facilitating organization for this important survey on Chundikulam National Park. We extend our sincere thanks to Thinnaveli Property Developers (Pvt) Ltd and the University of Jaffna for their generous investment of funds and intellectual resources, which has made this initiative possible.

Chundikulam National Park is widely recognized as an ecologically rich natural landscape in Northern Sri Lanka, known for its unique mix of habitats and diverse species. While this survey helps to better understand its current status and future potential, the involvement of CCH is guided by a broader purpose.

Our key interest is to create awareness among local communities and young researchers about biodiversity, nature conservation, and climate responsibility. We consider Chundikulam a valuable learning space where children and youth can build meaningful connections with nature; an experience that contributes greatly to their wellbeing, emotional development, and environmental values. As the world increasingly focuses on climate action, nurturing this relationship with nature is essential.

Through this initiative, CCH aims to promote knowledge-sharing, inspire youth engagement, and support long-term environmental stewardship while strengthening community involvement around this important natural resource.

T Thirumayran
Founder
Center for Children's Happiness (CCH)



Message from Thinnaveli Property Developers (Pvt) Ltd.

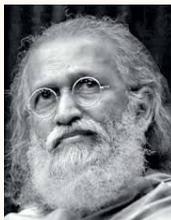
It is with great pleasure that I extend my warm congratulations on the publication of “Chundikulam National Park: A Review of Its Current Status and Future Prospects.” As a sponsor of the study on the Biodiversity of Chundikulam National Park, I am truly pleased to witness this valuable effort evolving into a comprehensive and insightful publication that enriches our understanding of this unique ecosystem.

On behalf of Thinnaveli Property Developers (Pvt) Ltd., I commend the dedicated team at the University of Jaffna and the Center for Children’s Happiness (CCH) for their hard work, commitment, and scientific vision that made this achievement possible. Your contribution not only advances research but also strengthens the shared responsibility we have in safeguarding the natural heritage of northern Sri Lanka.

At Thinnaveli Property Developers (Pvt) Ltd., sustainability lies at the core of our development philosophy. We strongly believe that progress must go hand in hand with environmental protection. In our work, we have continuously integrated green values into our projects—promoting nature-based designs, implementing greenhouse gas reduction initiatives, enhancing urban green spaces through tree planting, and taking responsible steps towards reducing construction-related waste and encouraging upcycling practices. We are also committed to creating awareness and engaging communities in environmental stewardship, fostering a culture in which responsible living and sustainable development become part of everyday life. Through these efforts, we strive to harmonize development with ecosystem conservation, ensuring a greener and healthier future for the communities we serve. We firmly believe that collaborative research and environmentally responsible development will play a crucial role in shaping a more resilient Sri Lanka. With this in mind, we look forward to continuing our partnership with the University of Jaffna and engaging in more research initiatives and conservation programs in the years to come.

Once again, we offer our sincere congratulations on this outstanding achievement, and we are proud to support an initiative that will contribute meaningfully to the protection and preservation of the Chundikulam National Park for generations to come.

Mr. Elijah Jeyaseelan Gnanam
Thinnaveli Property Developers (Pvt) Ltd.



Foreword

The present Chundikulam National Park was declared a Sanctuary for birds in 1936. This was done with the clear recognition of the significant migrating Flamingo population along with other birds that visited the lagoon. Further it was one that was apparently utilized as a communal fishing area. Having recognized this traditional practice it is possible then, as the case of many Sanctuaries that were designated, community fishing and a sanctuary for birds were recognized under the law.

This situation prevailed till the present declaration, resulting from the change in the Northern situation - the Department of Wildlife declared the area as a National Park. The decision was challenged but the prevailing situation did not put adequate pressure to change it. The new area declared include an extent that was beyond the sanctuary boundary of the past, and many new settlement areas established since 1936. Thus, creating an unnecessary "Land conflict". This situation has not changed as yet.

It would be interesting to note here, that the same situation happened with the present Bundala National Park. Bundala NP was declared a sanctuary in 1969 for the same reason "Migrant birds and especially flamingoes". In 1991 it was designated as the first International Ramsar Wetland site along the same sanctuary boundaries. In 1993 the government (Dept of Wildlife) upgraded the sanctuary to the "National Park" status along the same sanctuary boundary. This included many houses and even part of the town. This effectively made the Wildlife Law a mockery, as no legit is NOT at all comprehensive, BUT will supplement and become the possible basis for

(a) a comprehensive study of a critical wetland of the North as a wetland ecosystem;

(b) linked with a sociological study, to resolve boundary dispute, and have the blessings of the people to ensure its long-term conservation and benefit to the people too.

Thus, the study is commendable and I hope the team will continue with the addition of the social aspects in detail.

For conservation, PEOPLE'S ACCEPTANCE and PARTICIPATION IS A MUST.....

Vidya Jothi Emeritus Professor Sarath W Kotagama
University of Colombo

Chapter 1

Introduction

Overview of Chundikulam National Park

Chundikulam National Park (Figure 1) is located in the Northern Province of Sri Lanka. The park, which is located within the administrative districts of Kilinochchi, Jaffna, and Mullaitivu, is considered as one of the important natural reserves known for its remarkable ecological diversity, especially for that of birds. The park spans across 19,500 hectares, extends along the eastern coastline of the Jaffna Peninsula, bordered by the Indian Ocean to the east and the Chundikulam Lagoon at the west (Rajkumar & Wijesundara 2021; Abiramy 2023). The unique geography of this eco system with a mix of terrestrial and aquatic habitats, supports a high degree of biological diversity. A combination of saline coastal ecosystems, freshwater wetlands, and dry scrub forests contributes to the high abundance of flora and fauna, making it as one of the most important ecological hotspots in the region (Abiramy 2023; Gajapathy et al., 2024). The ecological significance of the park can be looked for reasons far beyond biodiversity. It plays a critical role in maintaining environmental stability, supporting livelihoods, and enhancing climate resilience.

The history of Chundikulam National Park is closely linked to the environmental and socio-political history of Sri Lanka. It was first declared as a wildlife sanctuary in 1938 as part of a wider colonial government's effort to protect the natural heritage (Rajkumar & Wijesundara, 2021). But the civil war that lasted over three decades hindered the development and conservation of the park. During this period, most of the Northern Province, including Chundikulam, became a high-security and war zone. As a result, regular conservation and research work could not take place within the park (Gajapathy et al., 2024).

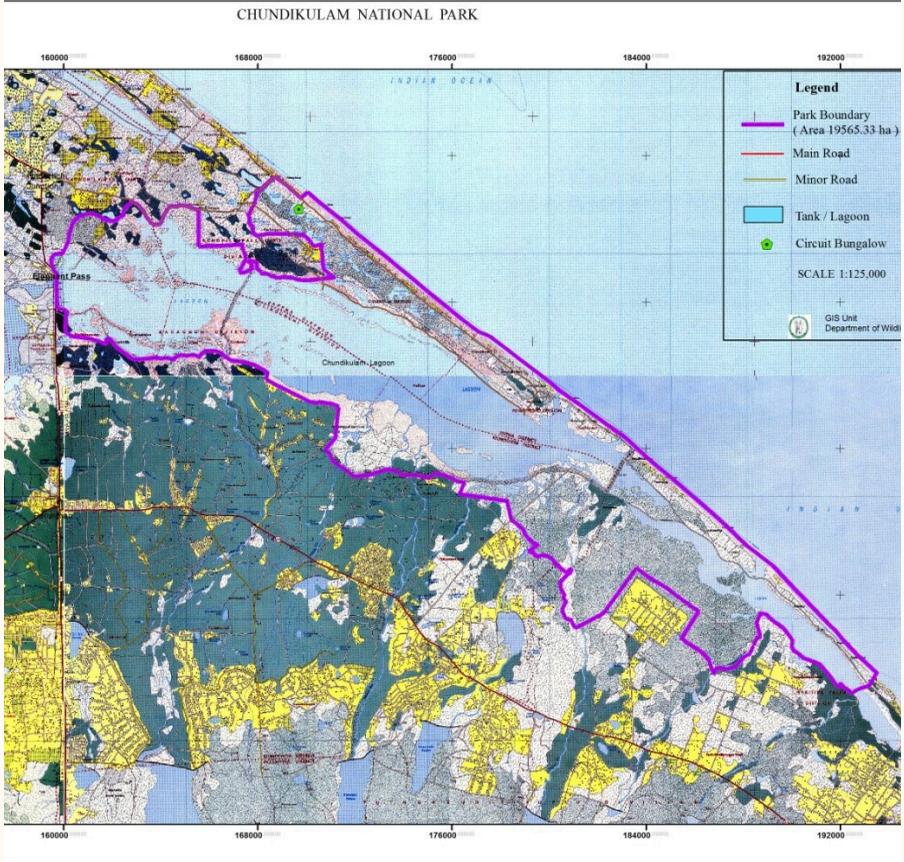


Figure 1: Chundikulam National Park present boundary highlighted in purple

After the civil war ended, the government sector and some non-governmental organizations tried to restore the regions affected by the civil war in the province, including Chundikulam. During this period only, scientific research also resumed by focusing on understanding how the war had affected the ecosystems and wildlife populations of the national park.

In 2015, the Department of Wildlife Conservation declared Chundikulam as a national park (Rajkumar & Wijesundara, 2021). This important step can be viewed as the commitment of the state government to protect biodiversity.

However, remarking the boundaries of Chundikulam has met up with criticisms. The inclusion of private lands within the park created conflicts as the local communities started protesting the declaration saying that they were not consulted when the park boundaries were readjusted.

This situation clearly shows how socio-political and legal issues can emerge when local communities are not involved in decision making. It clearly indicates us why participatory approaches are important in such initiatives. In addition to this, we should note that sustainable resource management, fairness in decision-making, and proper compensation systems for any losses to the community are vital to balance environmental conservation with the well-being of local communities (Wondirad & Ewnetu, 2019; Habibulloev et al., 2024).

Chundikulam as an essential ecosystem

Chundikulam is well known for the bird diversity. The park harbours a rich diversity of resident and migratory birds. The population of migratory birds can be high, especially during the northern winter, when birds arrive from Siberia, Northern Europe, along South Asia (Yong et al., 2015; Yong et al., 2021; Li et al., 2025). This also makes Chundikulam an important stopover on the East Asian–Australasian Flyway; one of the major bird migration routes (Yong et al., 2015; Yong et al., 2021). This large bird population in Chundikulam presents a valuable opportunity for birdwatching-based ecotourism, which could support local livelihood.

In addition to its birds, Chundikulam National Park hosts a wide range of other animals. Elephants, sloth bears, wild cat species, monkeys, jackals, crocodiles and small rodents are known from the park as per the local community and Department of Wildlife Conservation, Sri Lanka.

The wetlands and lagoons found in the park support many aquatic species. They include commercially valuable fish and shellfish. Additionally, this rich aquatic system form the base of a highly productive food web that sustains many aquatic and terrestrial predators apart from its contribution to the local economy.

There are salt-tolerant plants, which are adapted to the saline environment, found along with the vegetation that are inhabiting sand dunes. These plants help in stabilizing sandy soils and protecting inland areas from salt water intrusion and erosion (Rodrigues et al., 2021).

Chundikulam consists of a wide array of habitats including coastal and inland ones. The coastal ones are sand dunes, beaches, lagoons and coastal wetlands. The presence of a large extent of inland wetlands is another significance of the area. All these interconnected habitats support the existence of life in and around the park. Among them mangroves are a key component in maintaining the species richness and ecosystem balance by supporting essential nutrient cycling. Mangroves also help in stabilize the coastal landscape and prevent it from erosion. They are called as natural barriers that protect the coastal and inland ecosystems (Kelleway et al., 2017). They also support the animal and plant species by providing nutrients and shelter (Ermgassen et al., 2021) and identified as a habitat with rich animal diversity.

Chundikulam is an ideal natural laboratory for conducting research on a diversity of habitats and the ecosystem services; from nutrient cycling, water management, and carbon storage (Ermgassen et al., 2021), they provide.

The rich habitat diversity and the complex trophic interaction that exist in the park makes Chundikulam as an area of interest for research and conservation.

Conservation of Chundikulam National Park

Chundikulam National Park faces several conservation challenges, beyond the ecological and economic significance;

- The most threatening one is the habitat degradation due to various anthropogenic activities like sand mining, illegal encroachments and illegal fishing practices. We have seen that the post-war resettlement process in Northern Sri Lanka has led to increased demand for land in the region.
- Unregulated tourism is another issue. Tourism is in its peak in the region after the civil war. The issues associated with tourism are the inadequate management infrastructure, and limited monitoring and enforcement capacity.
- While the development projects are entering the region through national and international donors, we have to assess their role in developing the region sustainably.
- Impact of climate change which poses a threat as well. Change in rainfall and unpredictable climate-related incidences can potentially alter the hydrology of the lagoon which can ultimately affect the balance between the terrestrial and aquatic ecosystems.

All these issues need evidence gathered through scientific studies incorporating all major stakeholders involved with the above mentioned activities. Therefore, effective conservation of Chundikulam requires an approach that integrates multidisciplinary research, scientific monitoring, and community participation.

Eco tourism in Chundikulam

There is a growing interest in promoting eco-tourism within Chundikulam National Park. Rich birdlife, and beautiful lagoon settings of Chundikulam provide ideal opportunity for such initiative. The park can be developed into a destination for wildlife photography, bird watching and trekking.

Developing eco-tourism facilities and managing them properly could create valuable job opportunities for local communities as well. But, we should make sure that these initiatives are done under proper environmental guidelines, and monitoring. We can't afford to lose these ecosystems due to any unsustainable development (Gidebo, 2022).

The only possible way to deal this is a collaborative conservation and management. The inclusion of key stakeholders like the Department of Wildlife Conservation, local communities, NGOs, and academic institutions can be ideal for aligning socio-economic benefits along with the conservation efforts. When we speak about the conservation, it should be a community-based one as illustrated elsewhere (Fisher et al., 2020) .

Chundikulam holds the potential for developing environment oriented research in the region. The vast diversity of habitats, especially the wetlands, is ideal for allowing school children and youth to be involved in such research. This will enable us to develop a generation that can appreciate the nature. The long-term monitoring and sustaining the health of this national park will also be relying on such continuous research (Surasinghe et al., 2019).

Such research can give us valuable insights about habitat degradation, changes in diversity and alien invasive species. All these data can be used to plan evidence-based conservation model and review the existing ones. Integration of local voices and traditional wisdom (He et al., 2020; Subramanian et al., 2023) are also vital for this process. This will further enhance conservation efforts and ensure the long-term sustainability of Chundikulam.

Chapter 2 The Current Survey

Objectives and Methodology

The current survey was conducted by the University of Jaffna, in collaboration with the Center for Children's Happiness and Thinnaveli Property Developers (Pvt) Ltd. This is part of larger ongoing efforts by the stakeholders to catalogue and conserve the biodiversity of Chundikulam National Park. This survey was conducted over a period of more than four years (since 2021) with an aim to provide a catalogue of the flora and fauna and contributing to the biodiversity database of the country.

The survey was conducted with the following objectives;

- Identify and document the species present in the park,
- Assess the distribution of various populations, and
- Evaluate the state of the major habitats.

The diversity related information are essential for planning future conservation efforts. These could be helpful to develop plans that balance ecological preservation with sustainable use of the resources (Campuzano-Vera et al., 2025; Dombrovska & Knyazev, 2025).

The methodology consists of fieldwork, laboratory analysis, and community consultation to maximize the outcome (De La Rosa et al., 2024). We employed a range of techniques, such as;

- Transect sampling,
- Point count methods, and
- Water hole counting (Roberts et al., 2016; O'Connor et al., 2019)

All the maps including that for potential walking track for trekking were prepared based on our survey using Google Earth Engine and/or QGIS (V. 3.44.5) software.

The detailed methodology is illustrated below;

1. Transect sampling:

- 200m X 2m belt transects established in each habitat type for flora and ground-dwelling fauna.
- Transects spaced $\geq 100\text{m}$ apart to ensure independence.
- All plants and observed animals recorded within transects.
- The transect was sampled from the starting points of sampling illustrated as sites 1,2,3 etc. in any one direction.

2. Point count method:

- Used for birds and butterflies at fixed points (5-minute observation intervals).
- Points located at 200m intervals along transects.
- Repeated during early morning and late afternoon peaks.

3. Waterhole counts:

- Conducted at 14 identified ponds and wetlands.
- Aquatic birds, amphibians, and mammals recorded at dawn and dusk.

4. Insect and Invertebrate Sampling:

- Visual surveys for pollinators and beetles.

5. Biodiversity Indices calculated using PAST v4.03:

- Shannon-Wiener Index for species diversity.
- Jaccard Similarity Index to compare species overlap between sites.
- Chi-square tests ($\alpha=0.05$) to assess differences in species richness.

There were some limitations that includes the data for locations 2 and 3 were insufficient for index calculation and a simple presence or absence comparison was done.

Selecting a mix of methods allowed us to use them based on the landscape and availability of resources. It also allowed us to collect data more accurately.

Another important inclusion in the survey was our emphasis on understanding the views of the local community and other stakeholders. We have engaged with the local people living in nearby villages and collect their views on the present status and history of the park. We also gathered the information related to their concerns related to the park and its management. This participatory approach not only enriched the data but also helped to build trust based on shared responsibility (Maund et al., 2021) for the park.

Significance of the survey

The outcome of this survey should have better impacts on the conservation of Chundikulam. We expect the baseline data on the diversity and the status of them will be helpful for future planning and monitoring to a greater extent. We believe that the researchers and planners working on conservation will use the outcome to track changes and assess the health of this ecosystem continuously. Such continuous monitoring is important for a long term and sustainable management and conservation of Chundikulam.

The whole approach in this survey is based on broader sustainable development goals to seek a balance between protection of environment with supporting the wellbeing of local communities (Wudu et al., 2023).

Chapter 3

Species catalogue for major flora

Rosary Pea (*Abrus precatorius*)

Family: Fabaceae

Conservation status: Not endangered

Ecological importance: Soil stabilization and supports insect communities.

Economic importance: Traditional medicine and jewelry, seeds are toxic due to the presence of abrin.



Gum Arabic Tree (*Acacia nilotica*)

Family: Fabaceae

Conservation status: Least Concern (IUCN)

Ecological importance: Nitrogen-fixing species that enriches soil fertility.

Economic importance: Production of gum Arabic, traditional medicine, fuelwood, and fodder.



Sage-leaved Alangium (*Alangium salviifolium*)

Family: Cornaceae

Conservation status: Not threatened

Ecological importance: Supports pollinators and small fauna.

Economic importance: Traditional medicine; snakebite treatment.



Grey Mangrove (*Avicennia marina*)

Family: Acanthaceae

Conservation status: Least Concern (IUCN)

Ecological importance: Providing coastal protection, nursery habitat for fish, and erosion control.

Economic importance: Traditional medicine; fisheries productivity.



Saltwort (*Batis maritima*)

Family: Bataceae

Conservation status: Least Concern

Ecological importance: Coastal stabilization.

Economic importance: Forage in high-salinity environments.



Palmyrah (*Borassus flabellifer*)

Family: Arecaceae

Conservation status: Not endangered

Ecological importance: Habitat and food for birds and mammals.

Economic importance: Important source of food, sap (toddy/sugar), timber, thatching material, and medicine.



Common bush (*Breynia* spp.)

Family: Phyllanthaceae

Conservation status: Most species not endangered

Ecological importance: Supports insect diversity.

Economic importance: Used as ornamental plant and in herbal medicine.



Copal chino (*Bursera submoniliformis*)

Family: Burseraceae

Conservation status: Data Deficient

Ecological importance: Produces resins that attract pollinators.

Economic importance: Aromatic resin used in traditional medicine and incense products.



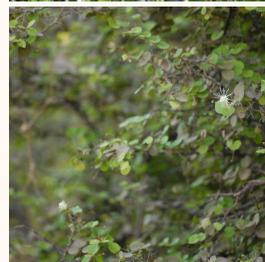
Round-leaved Caper (*Capparis rotundifolia*)

Family: Capparaceae

Conservation status: Not threatened

Ecological importance: Important nectar source for pollinators.

Economic importance: Medicine and sometimes consumed as food.



Sea mango (*Cerbera manghas*)

Family: Apocynaceae

Conservation status: Not endangered but highly toxic

Ecological importance: Coastal vegetation structure formation

Economic importance: Used ornamentally



Camphor Tree (*Cinnamomum camphora*)

Family: Lauraceae

Conservation status: Least Concern

Ecological importance: Supports insect biodiversity.

Economic importance: Camphor for medicine, aromatherapy, and repellent



Veldt Grape (*Cissus quadrangularis*)

Family: Vitaceae

Conservation status: Not endangered

Ecological importance: Prevents erosion.

Economic importance: Known for traditional medicinal uses; bone healing.



Seaside Clerodendrum (*Clerodendrum inerme*)

Family: Lamiaceae

Conservation status: Not endangered

Ecological importance: Supporting coastal ecosystems.

Economic importance: Medicine.



Milk and Wine Lily (*Crinum ornatum*)

Family: Amaryllidaceae

Conservation status: Not endangered

Ecological importance: Provides habitat.

Economic importance: Medicine



Dodder (*Cuscuta* spp.)

Family: Convolvulaceae

Conservation status: Generally, not endangered

Ecological importance: Parasitic species

Economic importance: Medicine



Hupeh Rosewood (*Dalbergia hupeana*)

Family: Fabaceae

Conservation status: Data Deficient

Ecological importance: Supports forest biodiversity

Economic importance: High-value timber: furniture and musical instruments.



Common Derris (*Derris trifoliata*)

Family: Fabaceae

Conservation status: Not endangered

Ecological importance: Supports coastal ecosystem structure.

Economic importance: Natural insecticide source; traditional medicine.



Sickle bush (*Dichrostachys cinerea*)

Family: Fabaceae

Conservation status: Not at risk

Ecological importance: Nitrogen-fixing shrub

Economic importance: Used for fuelwood, fencing, and medicine.



Coin-leaved ebony (*Diospyros nummulariifolia*)

Family: Ebenaceae

Conservation status: Regionally vulnerable

Ecological importance: Provides habitat

Economic importance: Wood used in carpentry and carving.



Weera (*Drypetes sepiaria*)

Family: Putranjivaceae

Conservation status: Not endangered

Ecological importance: Dry-zone Forest structure.

Economic importance: Used in medicine and natural fencing.



Ribbonwood (*Euroschinus falcatus*)

Family: Anacardiaceae

Conservation status: Not endangered

Ecological importance: Supports wildlife.

Economic importance: Timber for construction; ornamental value.



Milky mangrove (*Excoecaria agallocha*)

Family: Euphorbiaceae

Conservation status: Not endangered but locally threatened

Ecological importance: Supporting coastal fauna.

Economic importance: Latex with pharmaceutical potential



Banyan tree (*Ficus benghalensis*)

Family: Moraceae

Conservation status: Mostly not endangered

Ecological importance: Keystone species providing fruit for many animals.

Economic importance: Medicine and cultural/religious practices.



Nickerbean (*Guilandina* spp.)

Family: Fabaceae

Conservation status: Not endangered

Ecological importance: Supports pollinators.

Economic importance: Traditional medicine; wood in handicrafts.



Dwarf palm (*Phoenix pusilla*)

Family: Arecaceae

Conservation status: Not endangered

Ecological importance: Provides cover for small fauna.

Economic importance: Used for mats, ropes, and horticulture.



Bowstring Hemp (*Sansevieria zeylanica*)

Family: Asparagaceae

Conservation status: Not threatened

Ecological importance: Improves soil stability in dry areas.

Economic importance: Fiber used for rope-making; valued for air purification.



Tanner's Cassia (*Senna auriculata*)

Family: Fabaceae

Conservation status: Not endangered

Ecological importance: Supports pollinators; improves soil quality.

Economic importance: Used in herbal tea, tanning, and Ayurveda.



Java Plum (*Syzygium cumini*)

Family: Myrtaceae

Conservation status: Least Concern

Ecological importance: Provides fruit for birds and mammals; supports pollinators.

Economic importance: Fruits used as food; wood valuable in carpentry; medicinal properties.



Grey orchid (*Vanda tessellata*)

Family: Orchidaceae

Conservation status: Not endangered but threatened regionally

Ecological importance: Supports orchid-pollinator interactions.

Economic importance: Horticulturally important; used in Ayurvedic medicine.



Chapter 4

Species catalogue for major fauna

Butterflies

Tawny Coster (*Acraea terpsichore*)

Family: Nymphalidae

Conservation status: Least Concern

Ecological importance: Contributing to plant reproduction.

Economic and ecotourism potential: Vibrant orange and black wings, it attracts butterfly enthusiasts; popular in butterfly gardens.



Plain Puffin (*Appias indra*)

Family: Pieridae

Conservation status: Least Concern

Ecological importance: Pollinates flowers

Economic and ecotourism potential: The white and black coloration makes it a desirable species for butterfly watchers.



Lemon Emigrant (*Catopsilia pomona*)

Family: Pieridae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Bright yellow wings make it an attraction



Mottled Emigrant (*Catopsilia pyranthe*)

Family: Pieridae

Conservation status: Least Concern

Ecological importance: Pollinates

Economic and ecotourism potential: The unique mottled wings are attractive to butterfly watchers



Lime Blue (*Chilades lajus*)

Family: Lycaenidae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: The delicate blue coloration and small size make it a favorite among butterfly enthusiasts.



Plain Tiger (*Danaus chrysippus*)

Family: Nymphalidae

Conservation status: Least Concern

Ecological importance: Acts as a pollinator

Economic and ecotourism potential: Its striking orange and black wings make it a popular subject



Common Tiger (*Danaus genutia*)

Family: Nymphalidae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Vibrant coloration serves as attraction



Jezebel (*Delias eucharis*)

Family: Pieridae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Yellow and black wings are highly valued



Gram Blue (*Euchrysope cnejus*)

Family: Lycaenidae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Subtle blue and brown coloring make it as an interesting species



Common Crow (*Euploea core*)

Family: Nymphalidae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Popular one among butterfly watchers



Common Grass Yellow (*Eurema hecabe*)

Family: Pieridae

Conservation status: Least Concern

Ecological importance: Pollinates flowering plants

Economic and ecotourism potential: Bright yellow color is appealing to butterfly enthusiasts



Grass Jewel (*Freyeria putli*)

Family: Lycaenidae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Its small size and delicate beauty attract butterfly watchers



Zebra Blue (*Leptotes plinius*)

Family: Lycaenidae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Its striped pattern and small size make it a fascinating species for butterfly enthusiasts



Common Sailor (*Neptis hylas*)

Family: Nymphalidae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Its striking black and white patterns attract butterfly watchers



Crimson Rose (*Pachliopta hector*)

Family: Papilionidae

Conservation status: Least Concern

Ecological importance: Pollination

Economic and ecotourism potential: Its vivid red and black coloration makes it a popular species



Common Mormon (*Papilio polytes*)

Family: Papilionidae
Conservation status: Least Concern
Ecological importance: Pollination
Economic and ecotourism potential: The appearance and widespread presence



Blue Tiger (*Tirumala limniace*)

Family: Nymphalidae
Conservation status: Least Concern
Ecological importance: Pollination
Economic and ecotourism potential: Vibrant blue coloration and distinctive markings



Moths

Crimson-speckled Flunkey (*Utethesia pulchella*)

Family: Erebidae
Conservation status: Least Concern
Ecological importance: Pollination
Economic and ecotourism potential: Its striking colors and unique appearance make it an attractive



Skipper (*Hesperia* sp)

Family: HesperIIDae
Conservation status: Varies by species (e.g., Common Skipper - Least Concern)
Ecological importance: Pollination
Economic and ecotourism potential: For their fast flight and small size, skippers are of interest to butterfly enthusiasts



Other insects

Wandering glider (*Pantala flavescens*)

Family: Libellulidae
Conservation status: Least Concern
Ecological importance: Pollination
Economic and ecotourism potential: Its migratory behavior and vibrant coloration



Desert Locust (*Schistocerca gregaria*)

Family: Acrididae

Conservation status: Varies by species (e.g., Desert Locust - Varies)

Ecological importance: Pollination

Economic and ecotourism potential: Often considered pests due to their potential for agricultural damage



Carpenter Bee (*Xylocopa violacea*)

Family: Apidae

Conservation status: Varies by species (e.g., *Xylocopa violacea* - Least Concern)

Ecological importance: Solitary bees that are important pollinators for a variety of plants

Economic and ecotourism potential: Their role in pollination and interesting behaviors make them important for both scientific study and eco-tourism



Blow Flies (*Chrysomya* sp)

Family: Calliphoridae

Conservation status: Not evaluated (IUCN Red List)

Ecological importance: Critical decomposers that aid in nutrient recycling and are widely used in forensic entomology

Economic and ecotourism potential: Important in forensic science but can act as pests in livestock industries



Sweat Bees (*Halictus* sp)

Family: Halictidae

Conservation status: Varies by species; some are abundant, others at risk.

Ecological importance: Pollination

Economic and ecotourism potential: Enhance agricultural value and ecological sustainability



Aquatic birds

Indian Pond Heron (*Ardeola grayii*)

Family: Ardeidae

Conservation status: Least Concern

Ecological importance: It helps control insect and small fish populations

Economic and ecotourism potential: Distinctive appearance and behavior make it attractive for birdwatchers



Little Egret (*Egretta garzetta*)

Family: Ardeidae

Conservation status: Least Concern

Ecological importance: Prefers shallow waters where it preys on fish and invertebrates, aiding in aquatic ecosystem balance

Economic and ecotourism potential: Popular among birdwatchers and photographers



Little Cormorant (*Microcarbo niger*)

Family: Phalacrocoracidae

Conservation status: Least Concern

Ecological importance: Effective fish hunter, which helps in maintaining fish population balance in aquatic ecosystems

Economic and ecotourism potential: Popular for its diving and fishing skills



Pied Kingfisher (*Ceryle rudis*)

Family: Alcedinidae

Conservation status: Least Concern

Ecological importance: Controlling fish populations

Economic and ecotourism potential: Striking plumage and fishing techniques, make it attractive



Great Thick-knee (*Esacus recurvirostris*)

Family: Burhinidae

Conservation status: Near Threatened

Ecological importance: Preys on insects and small invertebrates

Economic and ecotourism potential: Unique appearance and behavior make it an interesting



Oriental Darter (*Anhinga melanogaster*)

Family: Anhingidae

Conservation status: Near Threatened

Ecological importance: Controlling fish populations

Economic and ecotourism potential: Appearance and diving skills attract bird enthusiasts and wildlife photographers



Black-capped Kingfisher (*Halcyon pileata*)

Family: Alcedinidae

Conservation status: Least Concern

Ecological importance: Feeds on fish and amphibians and help in the control of these populations

Economic and ecotourism potential: Its vivid coloration and hunting skills make it a notable species



Brahminy Kite (*Haliastur indus*)

Family: Accipitridae

Conservation status: Least Concern

Ecological importance: Scavenges and preys on small animals

Economic and ecotourism potential: Known for its striking appearance and widespread presence in coastal areas



Asian Openbill (*Anastomus oscitans*)

Family: Ciconiidae

Conservation status: Least Concern

Ecological importance: Feeds on snails, helping control their populations

Economic and ecotourism potential: Distinctive bill and feeding behavior are of interest



Painted Stork (*Mycteria leucocephala*)

Family: Ciconiidae

Conservation status: Near Threatened

Ecological importance: Feeding on fish and amphibians and control the population

Economic and ecotourism potential: Colourful plumage and large size make it a highlight



Black-headed Ibis
(*Threskiornis melanocephalus*)

Family: Threskiornithidae
Conservation status: Near Threatened
Ecological importance: Feeds on a variety of aquatic prey and control them
Economic and ecotourism potential: Black head and white body make it a prominent species



Black-winged Stilt (*Himantopus himantopus*)

Family: Recurvirostridae
Conservation status: Least Concern
Ecological importance: Feed on insects and small invertebrates
Economic and ecotourism potential: Elegant appearance and long legs make it a favourite



Common Redshank (*Tringa totanus*)

Family: Scolopacidae
Conservation status: Least Concern
Ecological importance: Feeds on insects and small invertebrates, contributing to habitat balance
Economic and ecotourism potential: Distinctive call and feeding behavior attract birdwatchers



Little Ringed Plover (*Charadrius dubius*)

Family: Charadriidae
Conservation status: Least Concern
Ecological importance: Feeds on insects and small invertebrates, aiding in ecosystem balance
Economic and ecotourism potential: Unique behavior and habitat preferences attract bird watchers



Asian Woolly neck (*Ciconia episcopus*)

Family: Ciconiidae
Conservation status: Least Concern
Ecological importance: Population control of small invertebrates
Economic and ecotourism potential: Woolly neck and size make it a notable species



Fulvous Whistling Duck (*Dendrocygna bicolor*)

Family: Anatidae

Conservation status: Least Concern

Ecological importance: Aquatic plant control

Economic and ecotourism potential: Social behavior and distinctive call are of interest



Purple Swamphen (*Porphyrio porphyrio*)

Family: Rallidae

Conservation status: Least Concern

Ecological importance: Role in wetland ecosystem balance

Economic and ecotourism potential: Vibrant colors and interesting behavior



Grey Heron (*Ardea cinerea*)

Family: Ardeidae

Conservation status: Least Concern

Ecological importance: Maintaining aquatic ecosystem balance.

Economic and ecotourism potential: Its large size and hunting behavior



Red-wattled Lapwing (*Vanellus indicus*)

Family: Charadriidae

Conservation status: Least Concern

Ecological importance: feeds on insects and small invertebrates and control them

Economic and ecotourism potential: The distinctive call



Pheasant-tailed Jacana (*Hydrophasianus chirurgus*)

Family: Jacanidae

Conservation status: Least Concern

Ecological importance: Insect control

Economic and ecotourism potential: Striking plumage and unique behavior in wetlands



White-breasted Kingfisher (*Halcyon smyrnensis*)

Family: Alcedinidae

Conservation status: Least Concern

Ecological importance: Control fish

Economic and ecotourism potential: Colours and hunting



Gull-billed Tern (*Gelochelidon nilotica*)

Family: Laridae

Conservation status: Least Concern

Ecological importance: Maintaining balance in aquatic ecosystems

Economic and ecotourism potential: Unique appearance and behavior make it a highlight for bird watchers



Other birds

Tricolored Munia (*Lonchura malacca*)

Family: Estrildidae

Conservation status: Least Concern

Ecological importance: Seed dispersal, benefiting plant communities.

Economic and ecotourism potential: Colourful plumage



Eurasian Collared Dove (*Streptopelia decaocto*)

Family: Columbidae

Conservation status: Least Concern

Ecological importance: Seed dispersal

Economic and ecotourism potential: Adaptability to various environments and gentle appearance



Asian Palm Swift (*Cypsiurus balasiensis*)

Family: Apodidae

Conservation status: Least Concern

Ecological importance: Insect population control

Economic and ecotourism potential: Aerial acrobatics and nesting habits in palm trees



Cattle Egret (*Bubulcus ibis*)

Family: Ardeidae

Conservation status: Least Concern

Ecological importance: Seen with livestock, where it helps reduce tick and insect populations

Economic and ecotourism potential: Unique association with cattle



Western Spotted Dove (*Spilopelia chinensis*)

Family: Columbidae

Conservation status: Least Concern

Ecological importance: Seed dispersal

Economic and ecotourism potential: Known for its distinctive call and coloration



Indian Blue Robin (*Larvivora brunnea*)

Family: Muscicapidae

Conservation status: Least Concern

Ecological importance: It controls insect

Economic and ecotourism potential: Vibrant blue plumage and melodious song



Yellow-billed Babbler

(*Argya affinis* , Syn: *Turdoides affinis*)

Family: Leiothrichidae

Conservation status: Least Concern

Ecological importance: Insect control.

Economic and ecotourism potential: Social behavior



Indian Peafowl (*Pavo cristatus*)

Family: Phasianidae

Conservation status: Least Concern

Ecological importance: Seed dispersal

Economic and ecotourism potential: Highly sought after for its stunning plumage and display behavior



Indian Rose-ringed Parakeet

(*Psittacula manilensis*)

Family: Psittacidae

Conservation status: Varies by species Least Concern

Ecological importance: Seed dispersal

Economic and ecotourism potential: Popular in both captivity and the wild



Blue-tailed Bee-eater (*Merops philippinus*)

Family: Meropidae

Conservation status: Least Concern

Ecological importance: Insect population control

Economic and ecotourism potential: Known for its vivid colors and aerial hunting skills



Richard's Pipit (*Anthus richardi*)

Family: Motacillidae

Conservation status: Least Concern

Ecological importance: Insect control

Economic and ecotourism potential: Distinctive call and elusive behaviour



Large-billed Crow (*Corvus macrorhynchos*)

Family: Corvidae

Conservation status: Least Concern

Ecological importance: Scavenges

Economic and ecotourism potential: Scavenging



Greater Coucal (*Centropus sinensis*)

Family: Cuculidae

Conservation status: Least Concern

Ecological importance: Ecosystem balance

Economic and ecotourism potential: Distinctive call and appearance attract bird enthusiasts, Provincial bird status



Common Myna/ Indian Myna (*Acridotheres tristis*)

Family: Sturnidae

Conservation status: Least Concern

Ecological importance: Seed dispersal and insect control

Economic and ecotourism potential: Its adaptability



Indian Robin (*Saxicoloides fulicatus*)

Family: Muscicapidae

Conservation status: Least Concern

Ecological importance: Controls insect populations

Economic and ecotourism potential: Colourful plumage and distinctive song make it a favorite



Pied Bushchat (*Saxicola caprata*)

Family: Muscicapidae

Conservation status: Least Concern

Ecological importance: Helps control insect

Economic and ecotourism potential: Appearance and active behavior attract bird watchers



Greater Sri Lanka Flameback (*Chrysocolaptes stricklandi*)

Family: Picidae

Conservation status: Near Threatened

Ecological importance: Important for forest health by excavating dead wood and feeding on insects

Economic and ecotourism potential: Appearance and role in forest ecology make it a key species for bird watchers



Red-vented Bulbul (*Pycnonotus cafer*)

Family: Pycnonotidae

Conservation status: Least Concern

Ecological importance: Insect control and seed dispersal

Economic and ecotourism potential: Cheerful song and bright colors attract bird watchers



Mammals

Grey Langur (*Semnopithecus entellus*)

Family: Cercopithecidae

Conservation status: Least Concern, though some populations are threatened by habitat loss and hunting

Ecological importance: Contribute to seed dispersal and forest regeneration

Economic and ecotourism potential: Highly significant for ecotourism and culturally revered



Toque Macaque (*Macaca sinica*)

Family: Cercopithecidae

Conservation status: Endangered; native to Sri Lanka

Ecological importance: Seed dispersal and forest regeneration

Economic and ecotourism potential: A key species for primate-based tourism and behavioral research



Grey Mongoose (*Herpestes edwardsii*)

Family: Herpestidae

Conservation status: Least Concern

Ecological importance: Controlling populations of small vertebrates and invertebrates

Economic and ecotourism potential: Indirectly beneficial through natural pest control, supporting healthy agricultural systems



Sri Lankan Jackal (*Canis aureus naria*)

Family: Canidae

Conservation status: Least Concern; despite threats from hunting and habitat loss.

Ecological importance: Functions as an important scavenger

Economic and ecotourism potential: Contributes indirectly through pest control and ecological services



The following fauna are present in the park as per the information provided by the community live in the surroundings:

Fishing cat (*Prionailurus viverrinus*)

The Fishing cat is native to South and Southeast Asia. It is classified as Vulnerable by the IUCN due to habitat loss and poaching. It is vital for helping maintain aquatic ecosystem balance. It holds potential for ecotourism as it a sought-after sight for wildlife enthusiasts and photographers.

Asian palm civet (*Paradoxurus hermaphroditus*)

The Asian palm civet is a member of the Viverridae family and is classified as Least Concern by the IUCN.

Golden palm civet (*Paradoxurus zeylonensis*)

The Golden palm civet endemic to Sri Lanka and classified as Near Threatened by the IUCN. Its rarity make it a notable species for ecotourism, although conservation efforts are essential to protect its dwindling habitat and ensure sustainable tourism practices.

Jungle rabbit

The Jungle rabbit belongs to the Leporidae family and is found in most parts of the country. It is considered as a pest in many settings. It can attract wildlife enthusiasts.

Wild boar (*Sus scrofa*)

The Wild boar is a member of the Suidae family. It is classified as Least Concern by the IUCN. They are a popular game species, and their presence in various habitats can attract tourists for wildlife observation, enhancing ecotourism opportunities.

Bat species

Various bat species may be present. While many bat species are classified as Least Concern by the IUCN, some face conservation threats.

Snake species

Even though, we couldn't see any snake species, there are reports suggesting the presence of most venomous snakes such as cobra, vipers and kraits.

Other reptiles and amphibians

The sampling did not find any other reptiles and amphibians as mostly this is a dry forest and we couldn't complete the aquatic sampling.

Chapter 5

Major habitats identified from the sampling sites

Dry grasslands:

The dry grasslands are predominant in most sampling locations. They are crucial for maintaining ecosystem balance. They provide essential feeding grounds for herbivores and serve as key habitats for various bird and insect species. These areas also support plant species adapted to dry conditions, which contribute to soil stability and prevent erosion by sustaining a diverse range of plant and animal life.

Wetlands:

There are more than 14 ponds recorded in the present survey. Along with other wetlands, they are vital in maintaining water tables, and help in nutrient cycles. These are essential in maintaining the health of the park.

Shrubs:

They provide cover and nesting sites for various animal species. There are a lot of plant species which also contribute to the overall biodiversity. They are important in managing nutrient and mineral cycles.

Thorny plants:

Patches of thorny plants made most of the park. They also provide food, shelter and other vital ecosystem services. The patchy distribution is one of the biggest concern as the lack of mega fauna may be due to this fact.

Sand dunes:

They are mostly found along the eastern part of Chundikulam. They are an important habitat for maintaining the water table and prevent erosion. Most of them near Kallaru have been degraded due to mining.

Chapter 6

Distribution of species across park

Location 1

This location is on the east side of the park along the beach road connecting Chundikulam and Thalaiyadi.

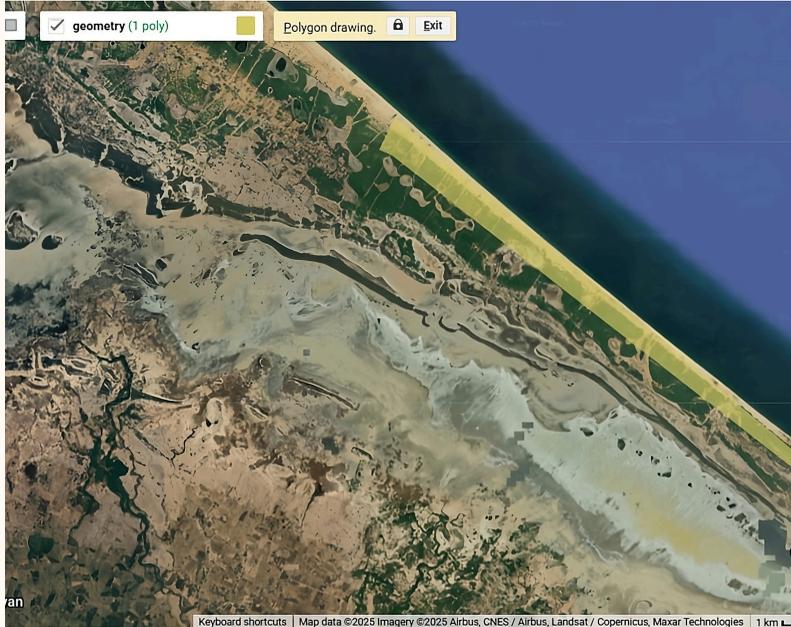


Figure 2: Map indicating the sampling location 1 (Highlighted in yellow)

Table 1: Coordinate details of the sampling site

Site 01	9°32'56.1"N 80°30'01.8"E (9.548924, 80.500487)
Site 02	9°32'53.6"N 80°30'04.2"E (9.5482110, 80.5011520)
Site 03	9°32'55.3"N 80°30'05.9"E (9.5487000,80.5016490)
Site 04	9°32'56.0"N 80°30'08.4"E (9.5488850,80.5023320)
Site 05	9°32'57.8"N 80°29'8"E (9.549389,80.499949)



Figure 3: Illustration of sampling sites (L1 to L5)

Distribution of flora across sampling sites

The table 2 illustrates the floral distribution across sites.

Table 2: Distribution of floral species across location 1

Species	Abundance in numbers				
	Site 1	Site 2	Site 3	Site4	Site 5
<i>Abrus precatorius</i>	3	0	0	0	0
<i>Ficus</i> sp	0	1	0	0	2
<i>Breynia</i>	6	0	3	1	1
<i>Cerbera manghas</i>	7	0	0	0	0
<i>Cissus quadrangularis</i>	18	0	4	1	1
<i>Clerodendrum inerene</i>	0	0	1	0	0
<i>Crinum ornatum</i>	9	0	0	0	0
<i>Cynanchum viminale</i>	10	0	2	3	0
<i>Dendrophthoe falcata</i>	0	0	0	1	1
<i>Derris trifolita</i>	25	0	8	0	2
<i>Diospyros nummulariifolia</i>	17	0	1	3	0
<i>Drypetes sepiaria</i>	31	0	6	0	2

Species	Abundance in numbers				
	Site 1	Site 2	Site 3	Site4	Site 5
<i>Euroschinus falcatus</i>	11	0	1	0	2
<i>Excoecaria agallocha</i>	0	2	1	0	0
<i>Guilandina</i>	8	4	4	0	1
<i>Orchids</i>	0	0	1	0	0
<i>Borassus flabellifer</i>	0	0	0	2	0
<i>Pavetta sp.</i>	6	0	0	1	1
<i>Phoenix pusilla</i>	18	0	1	1	0
<i>Piliostigma</i>	0	0	0	0	2
<i>Quercus laeta</i>	16	2	3	1	0
<i>Sansevieria zeylanica</i>	15	0	2	0	0
<i>Senna auriculata</i>	0	0	0	0	2
<i>Syzygium cumini</i>	20	0	22	10	2

The species distribution across the five study sites reveals a diverse plant community. This is reflecting the resilience of a semi-tropical ecosystem with varied microhabitats.

Drypetes sepiaria, *Derris trifolita*, *Syzygium cumini*, and *Cissus quadrangularis* were found at multiple locations. This indicates their ability to adapt in such environment. Climbers like *Cynanchum viminalis* and *Guilandina* sp, were also found with woody plants such as *Euroschinus falcatus* and *Quercus laeta*. This mix of different kinds of plants is a testament for the healthy ecosystem which will support the diversity of organisms.

Some trees like *Olearia gardneri* and *Phoenix pusilla*, were only found in a few sites. This is likely due to site-specific soil or moisture conditions that favor their growth. The presence of orchids and *Clerodendrum inerme*, highlights the importance of this location as potential refuges for rare flora.

Faunal distribution

The faunal diversity at the location is low, with only a few bird species observed and insects constituting the majority of the fauna.

List of birds

- Little Egret
- Little Cormorant
- Brahminy Kite
- White throated Kingfisher
- Little green Bee-eater
- Great thick Knee

List of insects and other crawlers

- *Catopsilia pyranthe*
- *Trigona* sp.
- *Dysdercus* sp.
- Whitefly
- *Delias eucharis*
- *Junonia almana*
- *Trimerotropis* sp.
- Robber fly
- *Xylocopa* sp.
- *Heteralonia rivularis*
- *Agrilus* sp.
- *Trombidium grandissimum*
- *Polytela gloriosae*
- *Pachliopta hector*
- *Musca domestica*
- *Pantala flavescens*
- *Brachythemis contaminata*
- *Hippasa greenalliae*
- *Hyalomma marginatum*
- *Leptosia nina*
- *Tirumala limniace*

Location 2

This is more inside the park connected by the road from Iyakkachchi leading to the Chundikulam. This sampling site contained more than 14 small to medium water bodies.

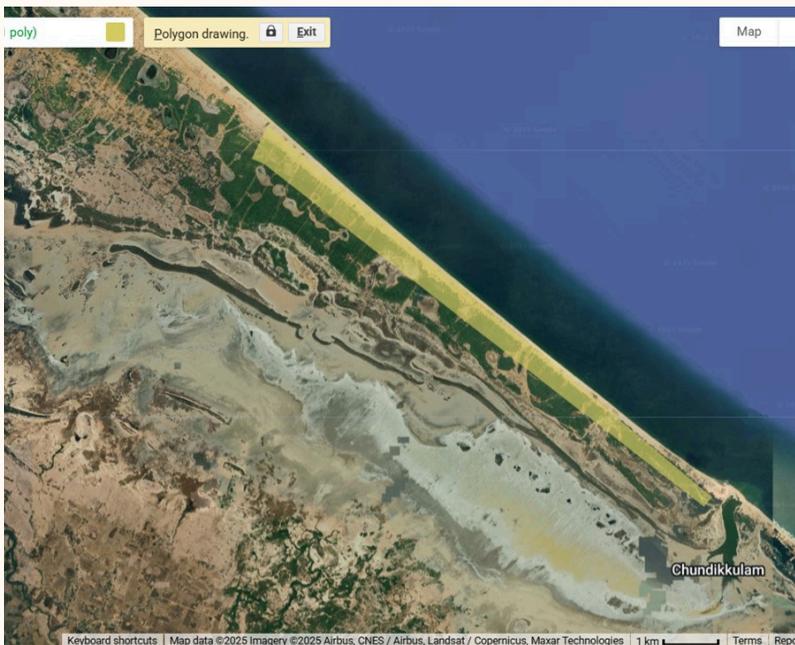


Figure 4: Sampling sites from location 2 highlighted in yellow

Sampling sites' coordinate details are given below;

- L1 - 9.549631, 80.449166
- L2 - 9.5569280, 80.4662260
- L3 - 9.5650100, 80.4666340
- L4 - 9.5355650, 80.5007930
- L5 - 9.5340880, 80.5082830
- L6 - 9.5339620, 80.5205500
- L7 - 9.5286550, 80.5243160

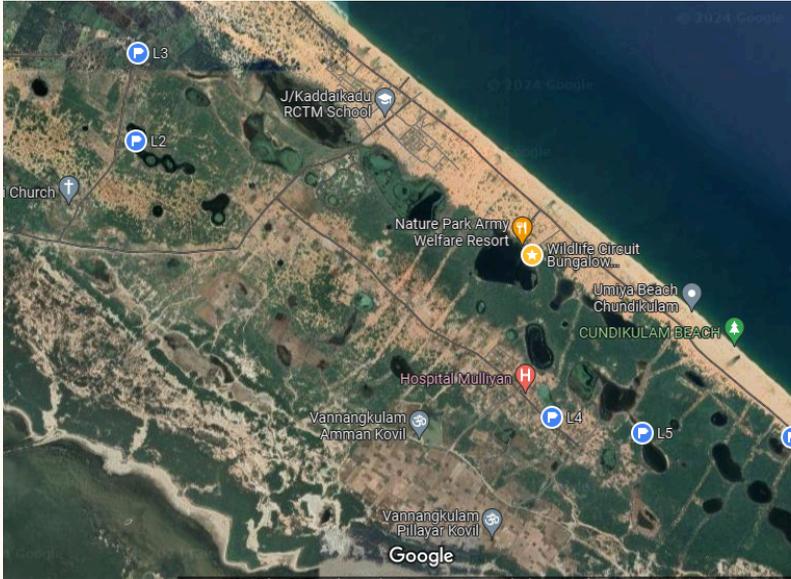


Figure 5: Illustrating sampling sites (flag marks) with the distribution of ponds

Floral distribution in location 2

This site has a lot of small thorny plants such as *Abrus precatorius*, *Drypetes sepiaria*, and *Senna auriculata*, as well as climbers like *Cissus quadrangularis*, *Clerodendrum inerme*, *Cynanchum viminale*, *Dendrophthoe falcata*, and *Derris trifolita*, showing a patchy distribution, unlike Location 1, which has quite extensive coverage of green

Faunal diversity in location 2

This site has rich faunal diversity which consists of birds, mammals and insects. Many bird species were spotted with langurs and jackals. The presence of many insect species including pollinators indicate a healthy ecosystem.

Presence of such diversity suggests that the location is with ideal nesting, feeding, and breeding conditions. The location can be noted as an important reservoir of biodiversity. Protecting this site is essential to maintaining ecological balance, supporting natural processes like pollination and seed dispersal. This is important to conserve the park.

The survey recorded many butterfly and other insect species across the seven sampling sites. The butterfly species identified include Tawny Coster, Plain Puffin, Lemon Emigrant, Mottled Emigrant, Lime Blue, Plain Tiger, Common Tiger, Jezebel, Gram Blue, Common Crow, Common Grass Yellow, Grass Jewel, Zebra Blue, Common Sailor, Crimson Rose, Common Mormon and Blue Tiger. Other recorded insects included bees, locusts, dragon flies and flies.

Mottled emigrant and Indian Jazebel are the most abundant butterflies and found in all sites. Tawny Coster and Common crow were found in six sites. Other insects showed moderate distribution and found in one or two sites alone.

Overall, the abundance pattern reflects a community dominated by a few widely distributed species alongside several species with limited site occupancy.

We have reported many bird species across the seven sampling sites; a reflection of the rich bird diversity of Chundikulam. Indian Pond Heron, which was present in all seven sites. Several other species showed moderate distribution, appearing in three to four sites, such as the Cattle Egret, Little Cormorant, Parrot, Brahminy Kite, Asian Openbill, Black-headed Ibis, Black-winged Stilt, Common Redshank, Little Ringed Plover, Eurasian Collared Dove, Common Gull-billed Tern, Tickell's Blue Flycatcher, and Common Sandpiper. A number of species were restricted to only one or two sites, indicating localized or habitat-specific occurrences. These included the Little Egret, Asian Palm-swift, Pied Kingfisher, Indian Peafowl, Great Thick-knee, Oriental Darter, Black-capped Kingfisher, Painted Stork, Large-billed Crow, Tricoloured Munia, Western Spotted Dove, Indian Blue Robin, Yellow-billed Babbler, Red-vented Bulbul, Red-wattled Lapwing, Blue-tailed Bee-eater, Richard's Pipit, Greater Coucal, Indian Robin, Pied Bushchat, Black Kite, Pheasant-tailed Jacana, White-breasted Kingfisher, Purple Swamphen, Grey Heron, Grey Plover, Common Myna, and the Greater Sri Lanka Flameback. Overall, the distribution of birds had two spectrums; one with species which are common in most sites and the other with species limited to a very few sites.

Only two species of mammals were recorded; Jackal and Gray Langur. Jackal was detected only in site 1, indicating the species' restricted habitat preference or a migration pattern which needs to be studied. Similarly, Gray Langur was also found from one site. Overall, mammalian diversity and abundance were low in the location indication of the park's suitability to harbor mega fauna permanently.

Location 3

This location is near the east coastal belt near Chaalai beach in the Mullaitivu district. This is rich in shaded bushes and has ideal potential to incorporate tourism. But the site has high impact due to anthropogenic activities.

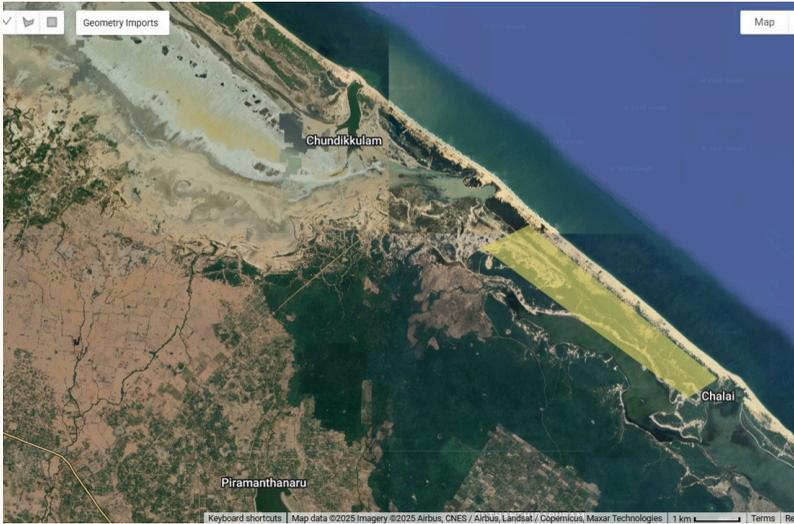


Figure 6: Map illustrating the sampling location highlighted in yellow

Floral distribution

A variety of thorny, spiny, and economically important plants were found in the location. *Dichrostachys cynerea*, *Excoecaria agallocha*, *Terminalia elliptica*, *Phoenix sylvestris*, and *Salvadora persica* were found in most sites. *Senna auriculata*, Java plum, *Manilkara hexandra*, *Borassus*, *Opuntia stricta*, and *Cissus quadrangularis* are found in scattered distribution. This mix of thorny plants, and other varieties can support the existence of different animals species. This also can be considered as an important site for conservation and habitat management.

Faunal distribution

The site has rich insect and habitat diversity. The identified insect species include pollinators, herbivores and predators suggesting the complexed food web that exists here. Species of wasps, dragonflies, butterflies, shield bugs, cochineal bugs, locusts, blowflies, carpenter bees, and halictid bees were recorded from the site.

The presence of jackal also indicating functional trophic interactions in a relatively undisturbed terrestrial environment. The location is considered a key reservoir of faunal biodiversity based on these findings, making this as a location of interest for conservation.

Chapter 7

Comparison of each study locations

Location 1: Eastern coastal belt (Chundikulam–Thalaiyadi road)

Location 1 is situated along the eastern boundary of the park near the coastal road connecting Chundikulam and Thalaiyadi. This area is characterized by sandy soils and coastal scrub vegetation.

Floral diversity:

A rich diversity of plants were found. *Drypetes sepiaria*, *Syzygium cumini*, *Derris trifolita*, *Olearia gardneri*, and *Cissus quadrangularis* were dominant. Among the sampling sites, site 1 was found to be highest plant diversity with 18 species. The presence of *Drypetes sepiaria* and *Syzygium cumini* is well suited for the site's coastal sandy soils, while semi-arid and salt tolerant species like *Sansevieria zeylanica* and *Cerbera manghas* were also present.

The sites 3, 4 and 5 which are found away from the coast have lesser species. Plants like *Olearia gardneri* and *Euroschinus falcatus* were abundant in these sites.

Faunal diversity:

Birds such as little egret, brahminy kite, white-throated kingfisher, and great thick-knee were found in the location. These birds' presence is characteristic of coastal wetlands and open scrublands. Brahminy kite and cormorant were also found in the site indicating rich aquatic productivity nearby.

Insect diversity is also high from the location. More than 20 species were recorded.

Location 2: Inland wetland complex (Iyakkachchi-Chundikulam road)

The second location consists of 14 small to medium-sized water bodies, making this an ideal wetland ecosystem. These ponds created an ideal habitat to support rich diversity of plants and animals.

Floral diversity:

Floral diversity is comparatively less and the patchy habitats support thorny bushes and very few trees.

Faunal diversity:

This is evident from a wide variety of birds recorded from the location. Indian pond heron, Asian openbill, painted stork, black-headed ibis, and purple swamp hen were the dominant species recorded from the location. The site 4 had the highest bird diversity among the sampling sites. This location provides ideal breeding and feeding grounds for migratory and resident bird species.

Mammals like jackal and gray langur were also recorded, revealing a healthy ecosystem balance supported by the available prey and vegetation cover.

Insects belong to the orders Lepidoptera, Odonata, and Hymenoptera were recorded from the location. The occurrence of pollinators like *Xylocopa* sp. and *Halictus* sp. supports rich inland vegetation.

Location 3: Eastern coastal belt near Chaalai beach (Mullaitivu District)

This location is found to be with a mix of coastal and inland vegetation. It serves as a transitional zone between marine and terrestrial ecosystems. But the site has a significant anthropogenic activities.

Floral diversity:

Dichrostachys cinerea and *Excoecaria agallocha*, were dominant in the location. The other notable species include *Phoenix sylvestris* and *Cissus quadrangularis*.

Faunal diversity:

Insects such as *Vespa tropica*, *Pantala flavescens*, *Acrea terpiscore*, and *Papilio demoleus* were recorded. Their presence indicate a healthy pollinator diversity. Lepidopteran species richness here is high due to the presence of large amount of flowering shrubs and open landscapes. Only jackal was recorded among mammals, showing that megafauna may be scarce in the location due to human interference and habitat fragmentation.

The three study locations are unique in their ecological characteristics and biodiversity.

Location 1, found along the coast, is characterized by sandy soils, coastal scrub vegetation, and high floral diversity. Dominant plant species include *Drypetes sepiaria*, *Syzygium cumini*, and *Olearia gardneri*. The faunal diversity is less.

Location 2, is a rich wetland ecosystem. It supports rich faunal diversity. The bird diversity is considerably high here. Both aquatic and terrestrial birds inhabit this location and making use of the wetlands. Mammals like jackal and grey langur indicate a functioning trophic structure. Insect diversity is also notably high.

Location 3 represents a transitional coastal-terrestrial ecosystem dominated by scrub and mangrove-edge species such as *Dichrostachys cinerea*, *Excoecaria agallocha*, and *Salvadora persica*. The rich flowering plant diversity supports the insects in the location. Mammalian presence is limited to Jackal, may be due to habitat fragmentation and human disturbance.

All three locations harbor a diverse range of flora and fauna. But, location 2 is found to be with rich insect and bird diversity. This emphasizes the critical role of this location as a key biodiversity hotspot within Chundikulam national park. Location 3 along the in Mullaitivu district can be ideal for developing lagoon-based tourism activities with the possibility of citing jackal and fishing cat.

Table 3. Comparison of distribution of flora across locations

Species	Presence of species		
	Location 1	Location 2	Location 3
<i>Abrus precatorius</i>	√	√	–
<i>Ficus</i> spp.	√	–	–
<i>Breynia</i> spp.	√	–	–
<i>Cerbera manghas</i>	√	–	–
<i>Cissus quadrangularis</i>	√	√	√
<i>Clerodendrum inerme</i>	√	√	–
<i>Crinum ornatum</i>	√	–	–
<i>Cynanchum viminale</i>	√	√	–
<i>Dendrophthoe falcata</i>	√	√	–
<i>Derris trifoliata</i>	√	√	–
<i>Diospyros nummulariifolia</i>	√	–	–
<i>Drypetes sepiaria</i>	√	√	–
<i>Euroschinus falcatus</i>	√	–	–

Species	Presence of species		
	Location 1	Location 2	Location 3
<i>Excoecaria agallocha</i>	√	–	√
<i>Guilandina</i>	√	–	–
<i>Olearia gardneri</i>	√	–	–
Orchids	√	–	–
<i>Borassus flabellifer</i>	√	–	–
<i>Pavetta</i> spp.	√	–	–
<i>Phoenix pusilla</i>	√	–	–
<i>Piliostigma</i> spp.	√	–	–
<i>Quercus laeta</i>	√	–	–
<i>Sansevieria zeylanica</i>	√	–	–
<i>Senna auriculata</i>	√	√	√
<i>Syzygium cumini</i>	√	–	–
Tamarind like	–	–	√
<i>Limonia acidissima</i>	–	–	√

Species	Presence of species		
	Location 1	Location 2	Location 3
<i>Dichrostachys cinerea</i>	-	-	√
<i>Terminalia elliptica</i>	-	-	√
<i>Phoenix sylvestris</i>	-	-	√
<i>Syzygium cumini</i>	-	-	√
<i>Manilkara hexandra</i>	-	-	√
<i>Borassus</i> spp.	-	-	√
<i>Opuntia stricta</i>	-	-	√
<i>Lawsonia inermis</i>	-	-	√
<i>Melia dubia</i>	-	-	√
<i>Ziziphus jujuba</i>	-	-	√

Species	Presence of species		
	Location 1	Location 2	Location 3
<i>Thespesia populnea</i>	-	-	✓
<i>Lantana camara</i>	-	-	✓
<i>Salvadora persica</i>	-	-	✓
<i>Phoenix dactylifera</i>	-	-	✓
<i>Tamarindus indica</i>	-	-	✓
<i>Limonia acidissima</i>	-	-	✓

Table 4. Comparison of distribution of fauna across locations

Butterfly Species	Presence of species		
	Location 1	Location 2	Location 3
<i>Catopsilia pyranthe</i>	√	√	√
<i>Delias eucharis</i>	√	√	-
<i>Junonia almana</i>	√	-	√
<i>Pachliopta hector</i>	√	√	-
<i>Leptosia nina</i>	√	-	-
<i>Tirumala limniace</i>	√	√	-
<i>Acraea terpsicore</i>	-	√	√
<i>Appias indra</i>	-	√	-
<i>Catopsilia pomona</i>	-	√	√
<i>Chilades lajus</i>	-	√	-
<i>Danaus chrysippus</i>	-	√	√

Butterfly species	Presence of species		
	Location 1	Location 2	Location 3
<i>Danaus genutia</i>	-	√	-
<i>Euchrysops cnejus</i>	-	√	-
<i>Euploea core</i>	-	√	-
<i>Eurema hecabe</i>	-	√	√
<i>Freyeria putli</i>	-	√	-
<i>Leptotes plinius</i>	-	√	-
<i>Neptis hylas</i>	-	√	-
<i>Papilio polytes</i>	-	√	-
<i>Colotis amata</i>	-	-	√
<i>Ariadne ariadne</i>	-	-	√
<i>Junonia lemonias</i>	-	-	√
<i>Junonia atlites</i>	-	-	√
<i>Junonia iphita</i>	-	-	√
<i>Papilio demoleus</i>	-	-	√

Other arthropod species	Presence of species		
	Location 1	Location 2	Location 3
<i>Trigona</i> sp.	√	-	-
<i>Dysdercus</i> sp.	√	-	-
Whitefly	√	-	-
<i>Trimerotropis</i> sp.	√	-	-
Robber fly	√	-	√
<i>Xylocopa</i> sp.	√	√	√
<i>Heteralonia rivularis</i>	√	-	-
<i>Agrilus</i> sp.	√	-	-
<i>Trombidium grandissimum</i>	√	-	-
<i>Polytela gloriosae</i>	√	-	-
<i>Musca domestica</i>	√	-	-

Other faunal species	Presence of species		
	Location 1	Location 2	Location 3
<i>Brachythemis contaminata</i>	√	-	√
Lycosidae spiders	√	-	-
Jumping spider	√	-	-
<i>Hyalomma marginatum</i>	√	-	-
<i>Vespa tropica</i>	-	-	√
<i>Rhyothemis variegata</i>	-	-	√
Cochineal bug	-	-	√
Locust	-	√	√
<i>Halictus</i> sp.	-	-	√
<i>Chrysomya</i> sp.	-	-	√

Bird species	Presence of species		
	Location 1	Location 2	Location 3
Little Egret	√	-	-
Little Cormorant	√	√	-
Great Thick-knee	√	-	-
Indian Pond Heron	-	√	-
Cattle Egret	-	√	-
Asian Openbill	-	√	-
Painted Stork	-	√	-
Black-headed Ibis	-	√	-
Black-winged Stilt	-	√	-
Little Ringed Plover	-	√	-
Common Gull-billed Tern	-	√	-
Pheasant-tailed Jacana	-	√	-
Grey Heron	-	√	-
Grey Plover	-	√	-

Bird species	Presence of species		
	Location 1	Location 2	Location 3
Brahminy Kite	√	√	-
White-throated Kingfisher	√	-	-
Little Green Bee-eater	√	-	-
Asian Palm Swift	-	√	-
Parrot	-	√	-
Large-billed Crow	-	√	-
Tricolored Munia	-	√	-
Eurasian Collared Dove	-	√	-
Western Spotted Dove	-	√	-
Indian Blue Robin	-	√	-
Yellow-billed Babbler	-	√	-
Red-vented Bulbul	-	√	-

Bird species	Presence of species		
	Location 1	Location 2	Location 3
Red-wattled Lapwing	-	√	-
Blue-tailed Bee-eater	-	√	-
Richard's Pipit	-	√	-
Tickell's Blue Flycatcher	-	√	-
Greater Coucal	-	√	-
Indian Robin	-	√	-
Pied Bushchat	-	√	-
Black Kite	-	√	-
White-breasted Kingfisher	-	√	-
Asian Woollyneck	-	√	-
Purple Swamphen	-	√	-
Common Myna	-	√	-
Greater Sri Lanka Flameback	-	√	-

Mammal species	Presence of species		
	Location 1	Location 2	Location 3
Jackal	-	√	√
Gray Langur	-	√	-

Analysis of diversity data

Statistical analysis was performed in PAST software to quantify the results based on each location and to compare them. The locations were classified as coastal scrubs (location1), inland wetlands (locations 2) and costal transition zone (location 3) based on the observations. Shannon-Wiener Diversity Index (H') was calculated for the diversity. We calculated Jaccard Similarity Indices to compare community similarity between locations. The assumption was that the sampling efforts are similar for all locations. Statistical analysis testing using chi-square analysis was also performed to determine if observed differences in total species richness across locations were statistically significant ($\alpha = 0.05$).

Table 5: Location-wise analysis

Metric	Location 1 (Coastal)	Location 2 (Wetland)	Location 3 (Transition)
Total species richness	40	72	32
Bird species richness	6	34	0
Butterfly species richness	11	19	13
Floral species richness	23	17	18
Shannon diversity index (flora)	2.42	1.946	1
Evenness (J')	0.87	1	0
Threatened/endemic species	0	7	0

The analysis revealed that there is significant difference exist in biodiversity across the three locations. Location 2 is found to be a hotspot with 72 total species. This number is nearly double that of both locations 1 (40 species) and 3 (32 species). The bird diversity is prominent in the location 2 with 34 species; a staggering 82% of the total recorded bird species from the park.

Floral diversity analysis from location 1 yielded a Shannon Index (H') of 2.42 with an evenness (J') of 0.87, indicating both high diversity and relatively equitable species distribution. This is suggesting a healthy ecosystem structure without excessive dominance by a single species.

The analysis on butterflies revealed a unique distribution pattern across locations. The Jaccard Similarity Index showed moderate overlap between locations 2 and 3 (33% similarity), while locations 1 and 3 shared only 14% of butterfly species. Locations 1 and 2 exhibited intermediate similarity at 20%. The Jaccard Similarity Index (Figure 7) was evident for moderate overlap between locations 2 and 3 (33% similarity), while locations 1 and 3 shared only 14% of butterfly species. Locations 1 and 2 exhibited intermediate similarity at 20%. These patterns reflect the differing habitat characteristics as illustrated below;

- Location 1: coastal scrub supports species adapted to sandy soils and salt spray
- Location 2: wetlands host species requiring aquatic or semi-aquatic conditions.

Chi-square testing (assuming each count was independent and no duplicates occurred during sampling) confirmed that species richness differences were highly significant ($\chi^2 = 18.66$, $df = 2$, $p < 0.001$). This rejects the null hypothesis of equal richness across locations. The wetland habitat of location 2 not only supported greater species numbers but also hosted a higher proportion of species with conservation concerns, including five near threatened bird species and two endemic mammals (Golden palm civet and Toque macaque).

The quantitative analysis is providing a strong evidence for targeted conservation. Location 2 is identified as a site to be protected due to its rich diversity. Location 1 is a resilient coastal ecosystem that should be preserved as a buffer zone against coastal erosion and climate impacts.

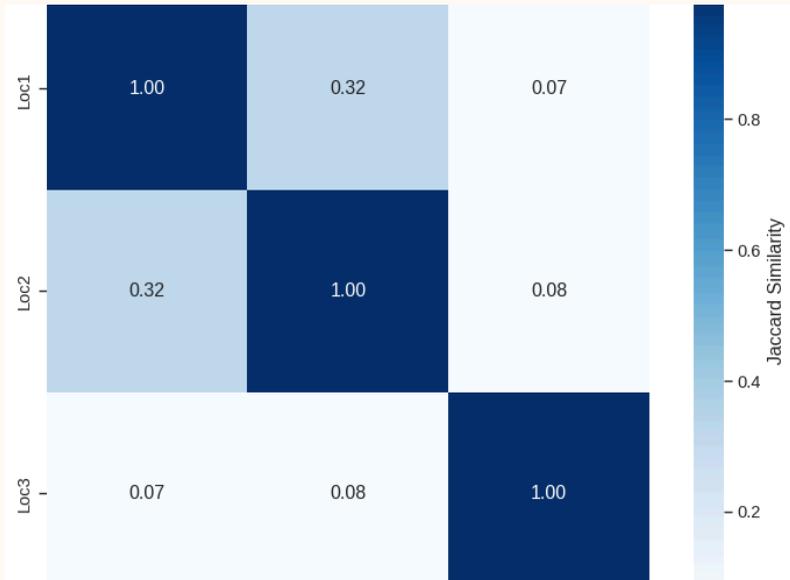


Figure 7: Jaccard similarity heatmap across locations

Chapter 8

Summary on biodiversity in Chundikulam national park

Chundikulam national park has rich bird and insect species diversity throughout the year. Different habitats found in the park supports this diversity. The rich bird diversity, especially in aquatic birds, can be attributed to the presence of many wetlands. Another notable aspect of the park is its floral diversity. Regardless of its arid nature, Chundikulam has a good floral diversity with varying types of plants inhabit the park.

This rich diversity highlights the role of this park as a crucial habitat for numerous species and emphasizes its importance in regional biodiversity conservation.

Natural resource utilization by villagers

The natural resources like fruits, fish, and woody plants are utilized by local villagers. Species such as *Manilkara hexandra*, known locally as "Paalai," and Jamun or "Naaval" (*Syzygium cumini*) are considered valuable trees within the park. The dependency of local villagers on the park for their livelihood should be looked on a positive note. At the same time, sustainable harvesting practices should be ensured to make sure that these activities do not negatively impact the park.

Seasonal dryness

The park experiences a pronounced dry period from April to September unless there is rain due to any cyclones or depressions. This leads to the partial or complete drying of many ponds. This seasonal variation affects the availability of water for wildlife and can influence the behavior and distribution of animals.

Trekking and Camping Opportunities

Trekking in Chundikulam national park is feasible but limited by seasonal conditions. The extreme hot weather and reduced bird activity from June to October can be an issue to continue this as a tourism activity throughout the year. But within the productive months, the park offers an ideal opportunity for trekking to explore the diverse landscapes, especially the wetlands, and rich faunal diversity. Beyond trekking, the camping along the beaches can be promoted as well. It should be noted that all these activities should be promoted with integrating the local communities. Developing eco-friendly facilities and promoting responsible tourism practices will be key to balance visitors' satisfaction with conservation.



Figure 8: Illustrating possible trekking path (indicated in yellow)

Chapter 9 Going forward



Figure 9: Satellite images from 1984 to 2020 (from top left to bottom right) showing the clearing of tree cover (circled)

The above set of images taken from Google earth clearly show the degradation in forest cover that occurred after the end of war in 2009. This is observed mainly along the north and south parts of the park in Kilinochchi and Mullaitivu districts.

The research team conducted a comprehensive community consultation process involving a wide range of stakeholders; government officials, civil society organizations (CSOs) including fishermen society, and women groups, with local residents from the surroundings areas of Chundikulam park. The majority of residents are engaged in farming and fishing, while others are employed as government servants.

A total of 150 people took part in the consultation process. These participants also include former hunters from the 1970s and 1980s. They have deep ties with the park. These individuals, from Kallaru, Pooneryn, Visuwamadu, and Chundikulam villages, shared valuable insights based on their experience on exploring the park.

This inclusive approach with all relevant stakeholder groups, aligns with the best practices in conservation research. We felt that integrating local voices and traditional knowledge into protected area management is important to build trust and encourage collaboration. This is essential for effective and sustainable conservation outcomes. This was missing in the earlier process of redefining the park boundary, which created a gap between the local community and conservation authorities.

The team employed a mixed-methods research design. The methods include structured one-on-one interviews and focus group discussions. Most of the sessions were held in government institutions such as Divisional Secretariat offices, as well as in community centers and private homes.

A set of structured questions guided the discussions to explore the perceptions of the respondents on conservation, their dependence on the park for livelihoods, and the changes they have observed in biodiversity over the decades.

Through this approach we have collected both quantitative data and qualitative insights, providing a holistic understanding of community attitudes and the broader socio-ecological context. We expected that the outcome will pave the way for a more sustainable and inclusive approach to environmental governance.

By engaging a broad spectrum of community members, we have ensured the inclusion of diverse perspectives. This inclusivity was maintained to make sure that a sense of ownership among local communities is elicited. The target is to encourage them to view the park as part of their shared heritage.

The consultation process also created opportunities for open dialogue, allowing participants to share their views and identify areas for collaboration. Most importantly, it helped reveal underlying issues that are often overlooked or unspoken in public. These issues include resource access conflicts and competing priorities between conservation and development.

Through these participatory methods, the team identified following key opportunities for strengthening conservation efforts;

- Using local ecological knowledge,
- Promoting alternative livelihoods, and
- Building trust among stakeholders.

Identified major challenges were;

- Conflicts over resource use and
- The need for fair and equitable sharing of benefits.

The findings emphasize the importance of continued transparent communication, and adaptive management strategies that reconcile conservation goals with the well-being of local communities. The term “reconcile” here refers to developing harmony between humans and their environment.

Overall, the consultations presents a more inclusive vision for conservation in Chundikulam National Park. This vision combines ecological priorities with social, cultural, and political realities.

Core themes identified from the survey is presented in the table below;

Table 6: Core themes of the survey with detailed descriptions

Theme	Description
Recognition & inclusion	Communities want their voices heard and their traditional knowledge acknowledged.
Livelihoods & cultural identity	The park should support fishing, small-scale agriculture, and cultural practices.
Ecological awareness & stewardship	Residents understand and value biodiversity conservation.
Biodiversity decline	Concern over diminishing wildlife populations.
Human vs. wildlife conflict	Increasing interactions leading to crop/livelihood damage.
Resource exploitation	Unregulated use threatening ecological balance.
Land tenure & access issues	Park gazettelement restricted traditional access to ancestral lands.
Critique of enforcement-based conservation	Need for inclusive and adaptive approaches.

It is important to note that the identified themes are interconnected and not independent:

- Recognition and inclusion act as prior conditions for equitable conservation
- Ecological degradation and social exclusion reinforce each other by reducing both community trust and biodiversity outcomes
- Participatory conservation should be considered as a central pathway toward community resilience and sustainability of the ecosystems.

A visual representation of how these themes are interrelated by showing how social inclusion, ecological health, and governance can interact to influence the conservation outcomes is presented as figure 10.

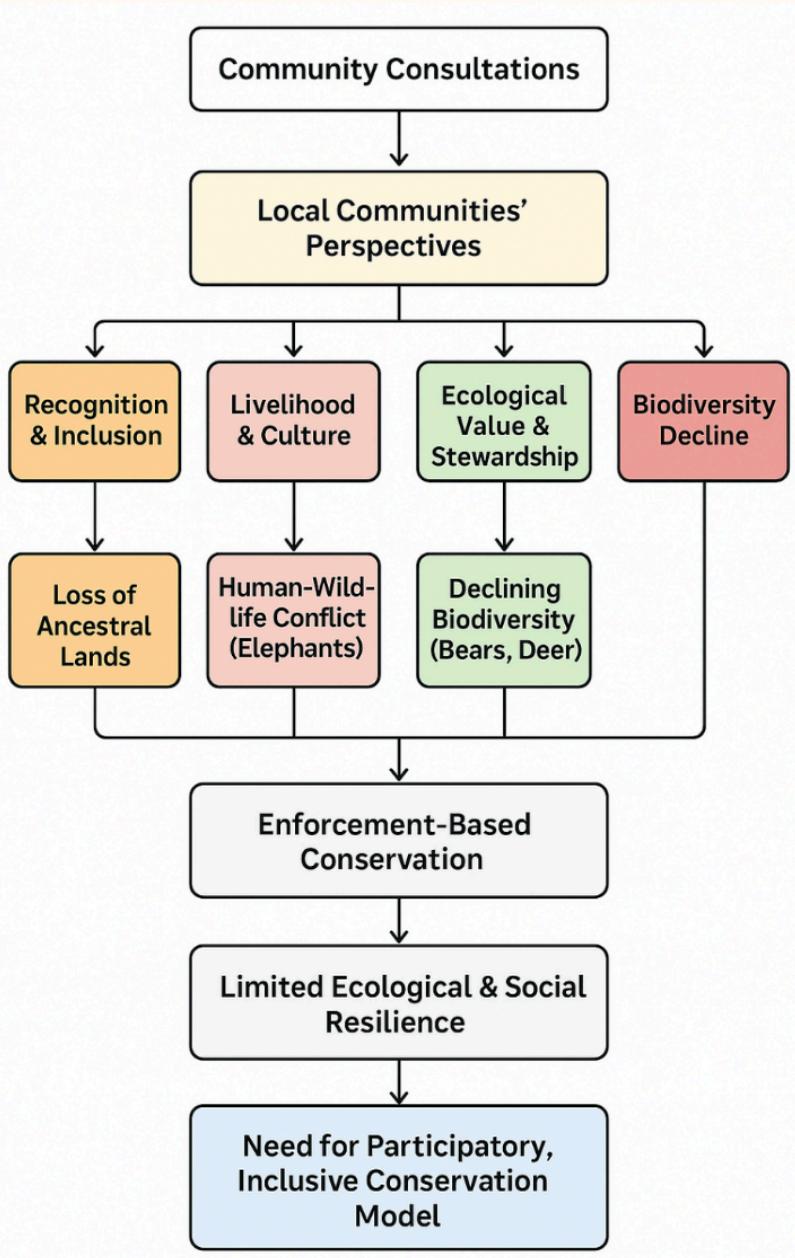


Figure 10: Flowchart: dynamics of conservation and community relations at Chundikulam National Park

The flowchart shows that local communities value Chundikulam National Park for both ecological and cultural reasons. But, the top-down enforcement is identified as a key problem for the long-term sustainability.

Going forward with conservation

The results from the biodiversity survey and the community consultation highlight that conservation in Chundikulam cannot be advanced through enforcement alone. It requires a transformative and participatory model that connects ecological protection with social justice (inclusivity and benefit sharing) in a meaningful way.

It is identified that the local communities deeply value Chundikulam National Park for its ecological and cultural significance beyond the conservation status. But the community seeks recognition, equitable inclusion, and fair benefit-sharing. The sense of ownership on any efforts is missing when they are isolated as not being a part of Chundikulam conservation efforts and decision making. This creates a clear direction for us. If we need to protect this park, we need to move beyond protection from people toward protection with people. This should be the ideal model for us.

If we want to protect the park, the concerns of the community members on biodiversity decline, coupled with concerns about restricted land access, elephant conflict, and illegal resource extraction can't be overlooked. We have to call for conservation strategies that prioritize cooperation, co-ownership, and adaptive governance for a sustainable future.

Community-Integrated Conservation Framework for Chundikulam

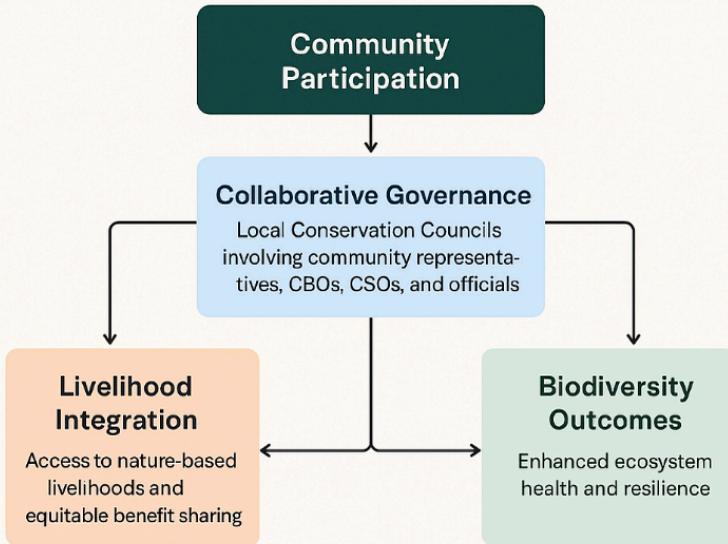


Figure 11: A sustainable conservation framework for Chundikulam National Park

After analyzing the situation, we propose to work further under the following steps;

- **Collaborative conservation practice**

The conservation in Chundikulam should be guided by an inclusive and community-centered framework. This will be built upon the trust and relationships established through transparent dialogues. A Community-Integrated Conservation (CIC) approach should be the way forward.

This model supports a collaborative governance structure involving a local conservation body with the participation of community representatives, CBOs, CSOs, and government officials including the ones from the Department of Wildlife Conservation.

They would jointly oversee conservation planning, conflict resolution, and benefit sharing by ensuring that women, youth, and marginalized have a seat at the forum.

- **Linking conservation with livelihood**

A critical finding from the research is that conservation goals will remain a dream unless they are tied to real community benefits. So, the present model proposes developing nature-based livelihoods that integrate ecological protection with income generation.

Such activities could include but not limited to:

- Eco-enterprises such as mangrove honey production and solar-based fish drying
- Community-managed ecotourism through homestays and guided wetland tours coupled with tradition and customs such as bull cart safari tied up with responsible private organizations and institutions
- Handicraft industries utilizing sustainable local materials
- Microcredit and revolving funds to empower local entrepreneurship through private partnerships under the monitoring of conservation body.
- Agro-forest initiatives

Such initiatives enable communities to act as stewards, partners and beneficiaries of the resources from the park while generating ownership, and long-term sustainability.

- **Strengthening environmental governance**

The CIC framework should promote joint monitoring and enforcement through community watch groups to address persistent issues such as illegal sand mining, poaching, and encroachment. When supported by modern digital tools, this can be an effective means of protection. This participatory enforcement not only enhances compliance but also builds mutual trust between local community and authorities.

- **Encouraging learning, youth engagement, and innovation**

Education and capacity building must form the foundation of long-term vision for sustainability. Programmes such as school-based biodiversity monitoring, and eco-innovation hubs can create new pathways for environmental entrepreneurship led by youth and local communities. By integrating conservation education into local schools, universities and community centers, we can cultivate a generation that sees conservation as a source of opportunity and innovation, not a limitation.

The formation of an education center for conservation near the park is also proposed through this project. This center can be the place for students and researchers to learn by observation and sharing.

- **Pathway of coexistence**

Moving forward with conservation in Chundikulam requires supporting coexistence, co-creation, and co-benefit as the only guiding principles. Through participatory research and education, adaptive management, and equitable benefit-sharing mechanisms, Chundikulam can be a pioneer in developing a socio-ecological governance model in the country.

In this way, conservation becomes not a restriction imposed upon people, but a shared mission of regeneration. It can be viewed as an alliance between communities and ecosystems that ensures both ecological integrity and human dignity for generations to come in the region.

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Author profile

Kanapathy Gajapathy is an academic and researcher serving in the Department of Zoology at the University of Jaffna. Renowned for his expertise in biodiversity and parasitology, he has made valuable contributions to understanding wildlife ecology, vector-borne diseases, and species conservation in Sri Lanka.



Dr. (Mrs.) Suvanthini Terensan is a distinguished academic serving as the Senior Lecturer and Head of the Department of Agricultural Biology at the University of Jaffna. Specializing in molecular and plant biology, she has made significant contributions to advancing agricultural science and sustainable crop research in Sri Lanka.

Dr. Sivasingham Arthiyan is a dedicated environmental professional and Senior Lecturer in the Department of Zoology at the University of Jaffna. With a specialization in environmental science and ecology, he has contributed extensively to research on biodiversity conservation, ecosystem management, and sustainable environmental practices in Sri Lanka.



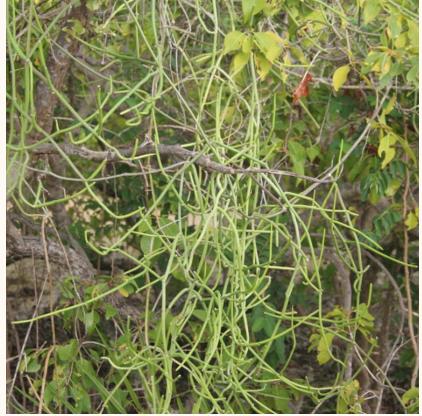
Mr. T. Thirumayuran, Executive Director of the Center for Children's Happiness (CCH) in Jaffna, is a passionate leader dedicated to improving the lives of vulnerable children. Guided by his deep commitment to social welfare and environmental education, he has worked tirelessly to create safe, nurturing spaces where children can learn, grow, and dream of brighter futures.

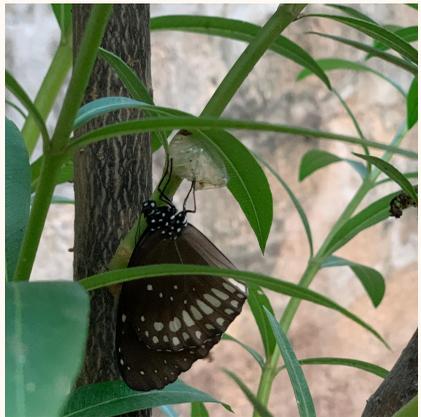
Team members who have conducted the survey

- Dr. K. Gajapathy, Department of Zoology, University of Jaffna, Sri Lanka
- Dr. Mrs. T. Suvanthini, Department of Agricultural Biology, University of Jaffna, Sri Lanka
- Dr. S. Arthiyan, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. L. Lukshana, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. S. Kokularathai, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. R. Rajamanokari, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. M. Mathula, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. V. Thilaksika, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. B. Arani, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. M.R. Luckshika, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. K. Vasuki, Department of Zoology, University of Jaffna, Sri Lanka
- Mr. W.A.B. Abishek, Department of Zoology, University of Jaffna, Sri Lanka
- Miss. S.P.M.M. Rathnayaka, Department of Zoology, University of Jaffna, Sri Lanka
- Mr. A. Ajith Argavin, Department of Zoology, University of Jaffna, Sri Lanka
- Mr. K. Kiritharan, Centre for Children's Happiness.
- Mr. S.Kajentiran, Centre for Children's Happiness (Coordination and field work)

Photographs taken from the field







This book is the result of the hard work of the team together with dedicated volunteers and students over more than three years in the field. It is a comprehensive volume presenting the current ecosystem status of Chundikulam National Park, one of the most valuable ecosystems in the region. We are very proud to release our findings as a book to make sure that it is used by the planners and researchers.



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Kanapathy Gajapathy
Suvanithini Terensan
Sivasingahm Arthiyan
Thirunavukkarasu Thirumayuran



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