




Prepared by



Local Governments
for Sustainability

SOUTH ASIA

HYDERABAD CITY BIODIVERSITY INDEX



Prepared under: Greater Hyderabad Municipal Corporation (GHMC) Supported Project “Assessing City Biodiversity through City Biodiversity Index, Tree Population and Green Cover Estimation in GHMC Area”

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FOREWORD FROM HONOURABLE MINISTER

K. TARAKA RAMA RAO

MINISTER FOR INFORMATION TECHNOLOGY,
ELECTRONICS & COMMUNICATIONS,
MUNICIPAL ADMINISTRATION & URBAN DEVELOPMENT AND
INDUSTRIES & COMMERCE, GOVERNMENT OF TELANGANA



The COVID-19 pandemic has placed cities at the forefront of dealing with some of the most pressing global issues that are putting people's well-being and prosperity at risk, including climate change and biodiversity loss.

The challenge for cities is to come up with appropriate strategies that can tackle these daunting challenges, while balancing the demands of rapid urbanisation. Home to diverse plant and animal species, the state of Telangana and its capital city of Hyderabad too have launched several initiatives towards biodiversity conservation, its sustainable use and the fair and equitable sharing of benefits arising from the use of biodiversity and natural resources. These initiatives will contribute to the attainment of the state's and India's biodiversity targets and development needs.

I commend the city authorities for their exemplary work in biodiversity conservation. The city of Hyderabad has been a pioneer in mainstreaming biodiversity conservation. Hyderabad was the first city in India to apply the City Biodiversity Index, way back in 2012. Hyderabad again, is the first city in India to be revisiting the City Biodiversity Index in 2021. I would like to take this opportunity to complement Greater Hyderabad Municipal Corporation and ICLEI-Local Governments for Sustainability, South Asia for developing the City Biodiversity Index 2021. In the end, I would like to call upon the other cities in Telangana to take inspiration from Hyderabad and replicate such action and others to conserve and promote urban biodiversity.

(K. T. RAMA RAO)

MESSAGE FROM HONOURABLE MAYOR

GADWAL VIJAYALAXMI
BA, BCJ, LLB
MAYOR, GHMC

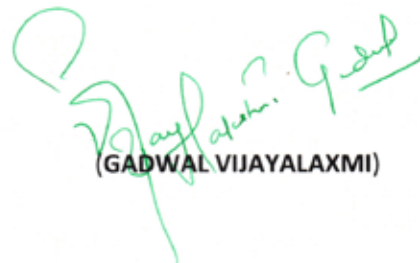


**GREATER HYDERABAD
MUNICIPAL CORPORATION**
TELANGANA STATE



Like Several other cities in India and the world, Greater Hyderabad Municipal Corporation has been fighting the challenges posed by the COVID-19 pandemic and climate change. Thanks to the resilience of our governance systems, we are now on a path to recovery. However, we cannot let down our guard and need to adapt to the changing environment quickly.

We need to conserve our natural resources, and Greater Hyderabad Municipal Corporation is committed to protecting our rich plant and animal wealth for the well being of our ecosystems and the people. We are proud of being first city in the country to update our City Biodiversity Index. The next step for us is to implement the recommendations made by ICLEI- Local Governments for Sustainability, South Asia, and to improve our scores on most of the indicators of the same. I hope to receive the full support from our people in our efforts, and I thank ICLEI- Local Governments for Sustainability, South Asia for their valuable support.


(GADWAL VIJAYALAXMI)



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MESSAGE FROM SPECIAL CHIEF SECRETARY

ARVIND KUMAR, I.A.S.,
Special Chief Secretary to Government
Commissioner & E.O. Spl. Chief Secretary



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The conservation of biodiversity in the face of rapid urbanisation has emerged as a major challenge for city and state governments in India. Conservation efforts have shown that the erosion of biological diversity can be stopped only through novel and complex mixtures of economic, social and political action.

To this end, the state of Telangana has been taking several pioneering initiatives to protect its rich biological diversity. A key initiative has been the development of a City Biodiversity Index for the capital city of Hyderabad in 2012, enabling the measurement of the effectiveness of conservation efforts. Hyderabad was the first city in India to develop this index and is also the first to revisit it now. A comparative analysis of the scores in both the years' shows marked improvement by the city on matters related to urban biodiversity.

I am sure this updated City Biodiversity Index will strengthen our efforts and help us to better understand how to formulate development strategies that simultaneously conserve biological diversity. I extend my thanks to ICLEI- Local Governments for Sustainability, South Asia for their invaluable support towards this endeavour. I would like to congratulate the Greater Hyderabad Municipal Corporation for undertaking this much needed exercise on re-assessing the City Biodiversity Index for Hyderabad, and wish them all success.

With best wishes...


(Arvind Kumar)

**Date: 10.01.2022
Hyderabad**



MESSAGE FROM HONOURABLE DEPUTY MAYOR

MOTHE SRILATHA SHOBAN REDDY
DEPUTY MAYOR
GREATER HYDERABAD MUNICIPAL CORPORATION



మోతే శ్రీలతా శోభన్ రెడ్డి
ఉప మేయర్
హైదరాబాద్ మహానగర పాలక సంస్థ



Hyderabad is well-known not just for its diverse cultures and religions, but also for its natural wealth. The city was the host of the 11th Conference of Parties of the Convention on Biological Diversity in 2012. However, the city is facing several challenges such as congestion, pollution and habitat destruction. It is our responsibility to protect these resources from the forces of urbanisation to maintain ecosystem balance and to conserve them for the benefit of future generations.

The updated City Biodiversity Index, developed with the support of ICLEI – Local Governments for Sustainability, South Asia, comprises a profile of the city and the 23 indicators that measure native biodiversity, ecosystem services provided by biodiversity, and governance and management of biodiversity. The index is useful in tracking progress, particularly by comparing the scores the city got in various indicators in 2012, when the index was first developed, and in 2021. We would like to thank ICLEI– Local Governments for Sustainability, South Asia for their technical expertise and hard work in this project.

(MOTHE SRILATHA SHOBAN REDDY)



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MESSAGE FROM MUNICIPAL COMMISSIONER

LOKESH KUMAR D.S., IAS
Commissioner



**Greater Hyderabad
Municipal Corporation**



Rapid urbanisation and industrialisation are leaving a lasting impact on the developmental patterns in the city of Hyderabad. The challenge for the Greater Hyderabad Municipal Corporation is to ensure that it can strike a balance between meeting the basic requirements of the people, while retaining and conserving its rich natural wealth.

The Greater Hyderabad Municipal Corporation is making full use of its powers and resources to this end. It developed the City Biodiversity Index in 2012 to understand and review the status of its biodiversity, becoming the first city in India to do so. This year, we updated the index to review and monitor the progress of our biodiversity conservation efforts, and to make this city a better place for all its people to live in. I thank ICLEI-Local Governments for Sustainability, South Asia for its technical assistance in updating the City Biodiversity Index, and hope that our hard work majorly contributes to the sustainable development of the city.

(LOKESH KUMAR D.S.)



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ABBREVIATIONS

BMC	Biodiversity Management Committee
BSI	Botanical Survey of India
CBD	Convention on Biological Diversity
CBI	City Biodiversity Index
CBSE	Central Board of Secondary Education
CDA	Cyberabad Development Authority
CoP	Conference of the Parties
GDP	Gross Domestic Product
GHMC	Greater Hyderabad Municipal Corporation
HADA	Hyderabad Airport Development Authority
HMDA	Hyderabad Metropolitan Development Authority
HMRL	Hyderabad Metro Rail Limited
HMWS&SB	Hyderabad Metropolitan Water Supply and Sewerage Board
HUDA	Hyderabad Urban Development Authority
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICSE	Indian Certificate of Secondary Education
IT	Information Technology
KBR	Kasu Brahmananda Reddy National Park
LBSAP	Local Biodiversity Strategy and Action Plan
MCH	Municipal Corporation of Hyderabad
MRDC	Musi Riverfront Development Corporation
NBSAP	National Biodiversity Strategy and Action Plan
NGOs	Non-Governmental Organizations
NParks	Singapore National Parks Department
PA	Protected Areas
PBR	People's Biodiversity Register
R.I.P	Riverside Parks
SCB	Secunderabad Cantonment Board
SCBD	Secretariat of the Convention on Biological Diversity
SEZ	Special Economic Zones
SI	Singapore Index
SPV	Special Purpose Vehicle
TSBB	Telangana State Biodiversity Board
USGS	United States Geological Survey
WWF	Worldwide Fund for Nature



SECTION A: ABOUT CITY BIODIVERSITY INDEX

Acknowledging the role that cities and local bodies play in the implementation of a country's National Biodiversity Strategy and Action Plan (NBSAP), an index, the City Biodiversity Index (CBI), which would measure biodiversity in urban areas was developed¹.

Developed and maintained by the Singapore National Parks Department (NParks) in 2010, with support from ICLEI, the CBD and others, the CBI is the only biodiversity index designed specifically for monitoring and evaluating biodiversity in cities (Chan & Djoghla, 2009). The index is also called the 'Singapore Index (SI)' in recognition of Singapore's contribution and leadership.

The CBI is a self-assessment tool for cities to evaluate and monitor the progress of their biodiversity conservation efforts against their own individual baselines. It comprises: a) the "Profile of the City", which provides background information on the city; and b) the 23 indicators that measure native biodiversity, ecosystem services provided by biodiversity, and governance and management of biodiversity based on guidelines and methodology provided in the User's Manual on the SI on Cities' Biodiversity (Rodricks, 2010).

The CBI scoring is quantitative in nature. A total of 23 indicators make up the index, measuring a city's native biodiversity, the ecosystem services provided and biodiversity governance. Scores range between zero to four points for each indicator, with a maximum overall score of 92. The index is meant to allow the city to visualize their progress in conserving biodiversity with every application of the index. The first year is considered the baseline against which cities can then chart their subsequent progress.

According to the Secretariat of the Convention on Biological Diversity (SCBD)¹, some of the benefits that cities derived from the application of the index include "a) the process facilitated capacity-building in biodiversity conservation, b) the indicators also function as biodiversity conservation guidelines, and c) assistance in setting priorities for conservation actions and budget allocation through quantitative scoring".

In 2012, the Greater Hyderabad Municipal Corporation (GHMC) administered the CBI within Hyderabad city in order to understand, plan and the review the city's status in the context of its biodiversity. In this exercise the city scored 36 points out of a total 92 points. Despite it being the first year of administration of the CBI, the city chose to score indicators 4-8, based on availability of data from previous years.

Taking steps to chart their progress in biodiversity conservation and management since the 2012 administration of the index, the GHMC decided to update it in 2021. ICLEI- Local Governments for Sustainability, South Asia has provided technical support for the same.

1. <https://www.cbd.int/subnational/partners-and-initiatives/city-biodiversity-index> Accessed online on 20 April 2020.



Summary of the Scores

The city scored a total of 57 out of 92 for 23 indicators. Comparing the score received by the city in 2012 which was 36 out of 92, Hyderabad has improved significantly during this timeframe of nearly 10 years. Figures 1 and 2 and Table 1 showcase these results.

The first section on “Native Biodiversity in the City”, contributed to a score of 27 out of 40. In comparison, in 2012, the city scored 15 out of 40. Comparing scores received in this section, it appears that indicators 4-8 contributed to 15 points as compared to only 6 points (out of a total possible 20 points) in 2012. Therefore, if we compare between the two applications, in 2021, Hyderabad’s score in the native biodiversity section has improved. This may be because in the 2012 application, the criteria for selection of natural areas were stringently considered as per the CBI definition which led to primarily protected areas and some lakes only, being considered as the same. In the 2021 application, we consider natural areas as areas which are natural, supporting a larger proportion of native species. It needs to be pointed out that indicator 9 in the 2012 application was scored incorrectly as one, when it should have been allotted a score of zero. This was because of a minor oversight in the scoring range.

Indicators 11-14, which relate to “Ecosystem Services Provided by Biodiversity in the City” contributed seven out of a possible 16 points. This section is linked with the first section and reflects the biodiversity health of the city. In 2012, this score was only four out of 16, implying that Hyderabad city’s biodiversity health has improved significantly since then. Urban green spaces have increased in the city, which have contributed to a better score.

Indicators 15-23 which correspond to “Governance and Management of Biodiversity in the City” received a score of 23 out of 36 points. In the 2012 application, the city scored 17 points in this section indicating that there is a substantial improvement. In the case of indicator 16 in 2012, it appears a different scoring band was considered, which is completely different from that which is detailed in the 2014 manual.

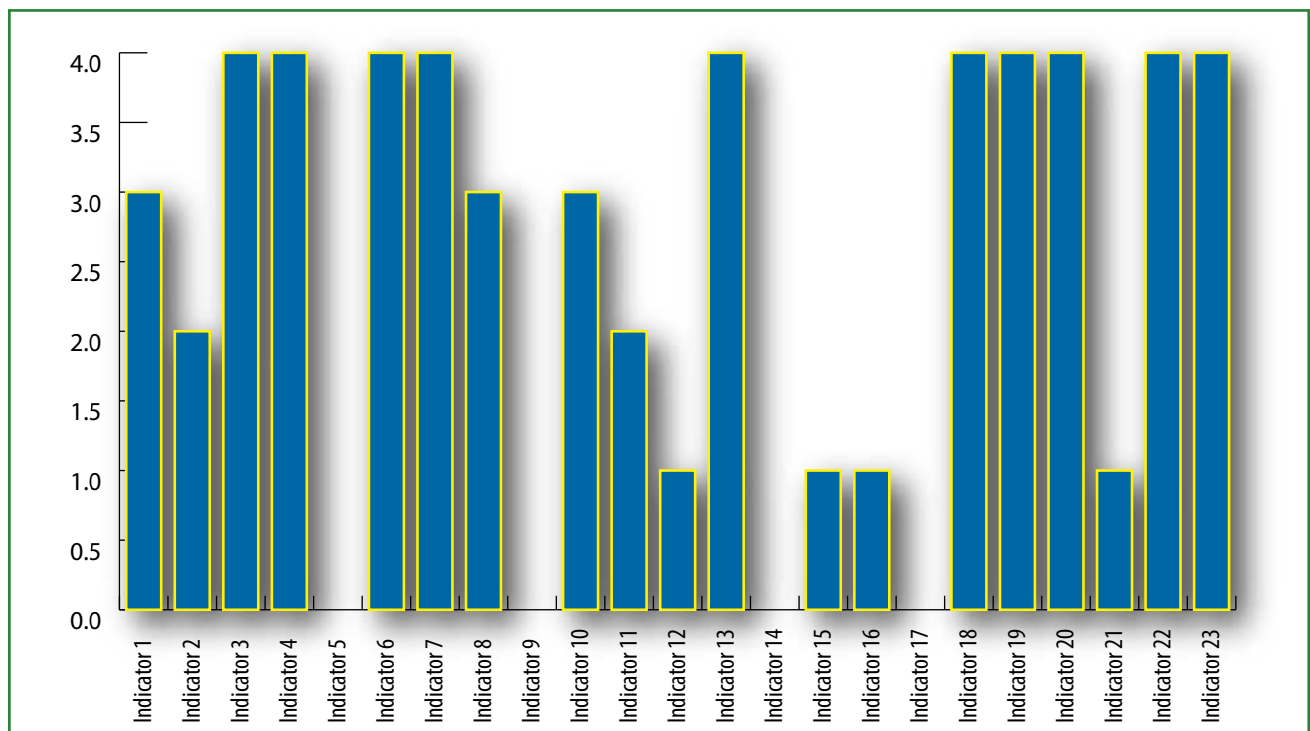


Figure 1: Hyderabad City Biodiversity Index 2021 at a glance



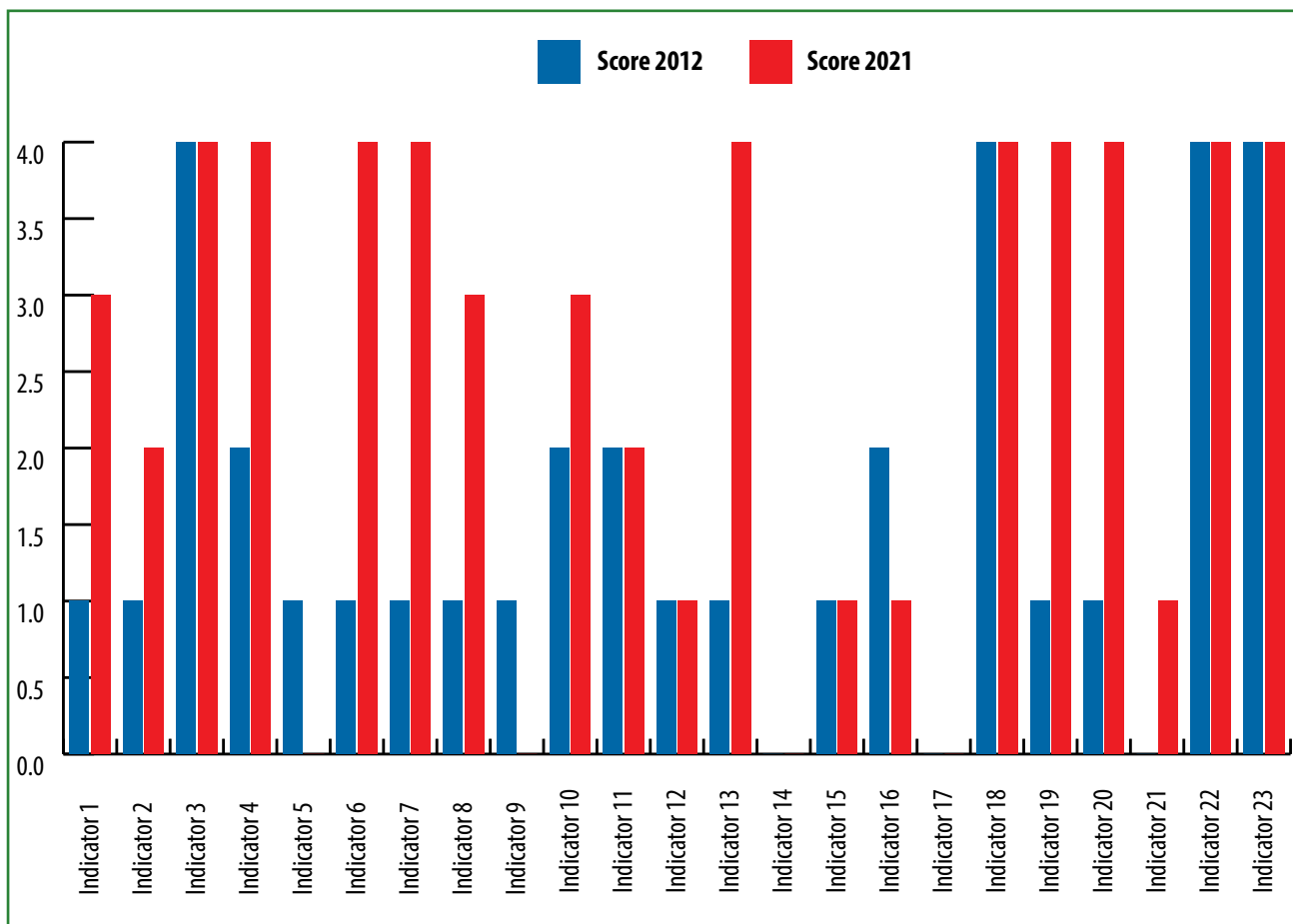


Figure 2: Comparison of scores – index application in 2012 and 2021

Table 1: Comparative of scores between different applications of the index

Indicator	Score in 2012	Score in 2021
Indicator 1	1	3
Indicator 2	1	2
Indicator 3	4	4
Indicator 4	2	4
Indicator 5	1	0
Indicator 6	1	4
Indicator 7	1	4
Indicator 8	1	3
Indicator 9	1	0
Indicator 10	2	3
Indicator 11	2	2
Indicator 12	1	1

Indicator	Score in 2012	Score in 2021
Indicator 13	1	4
Indicator 14	0	0
Indicator 15	1	1
Indicator 16	2	1
Indicator 17	0	0
Indicator 18	4	4
Indicator 19	1	4
Indicator 20	1	4
Indicator 21	0	1
Indicator 22	4	4
Indicator 23	4	4





SECTION B: CITY BIODIVERSITY INDEX OF HYDERABAD

Part A: City Profile

Location

The city of Hyderabad is located in the peneplain of the Deccan Plateau region, on the banks of the River Musi. Geographically, the city is situated at 17° 22' 31" N latitude and 78° 28' 27" E longitude and occupies a total area of 617.1 sq. km. which includes the Secunderabad Cantonment area.

In 2007, the erstwhile Municipal Corporation of Hyderabad (MCH), 12 municipalities (10 from Rangareddy district and two from Medak district) and eight gram panchayats (Rangareddy district) were merged to form the GHMC. The municipalities which have now become a part of the city include L. B. Nagar, Gaddi Annaram, Uppal Kalan, Malkajgiri, Kapra, Alwal, Qutubullapur, Kukatpally, Serilingampally, Rajendranagar, Ramachandrapuram and Patancheru. The panchayats are Shamshabad, Satamarai, Jallapalli, Mamdipalli, Mankhal, Almasguda, Sardanagar and Ravirala (GHMC, 2016). Figure 3 showcases the location of the city of Hyderabad and a digital elevation map of the city.

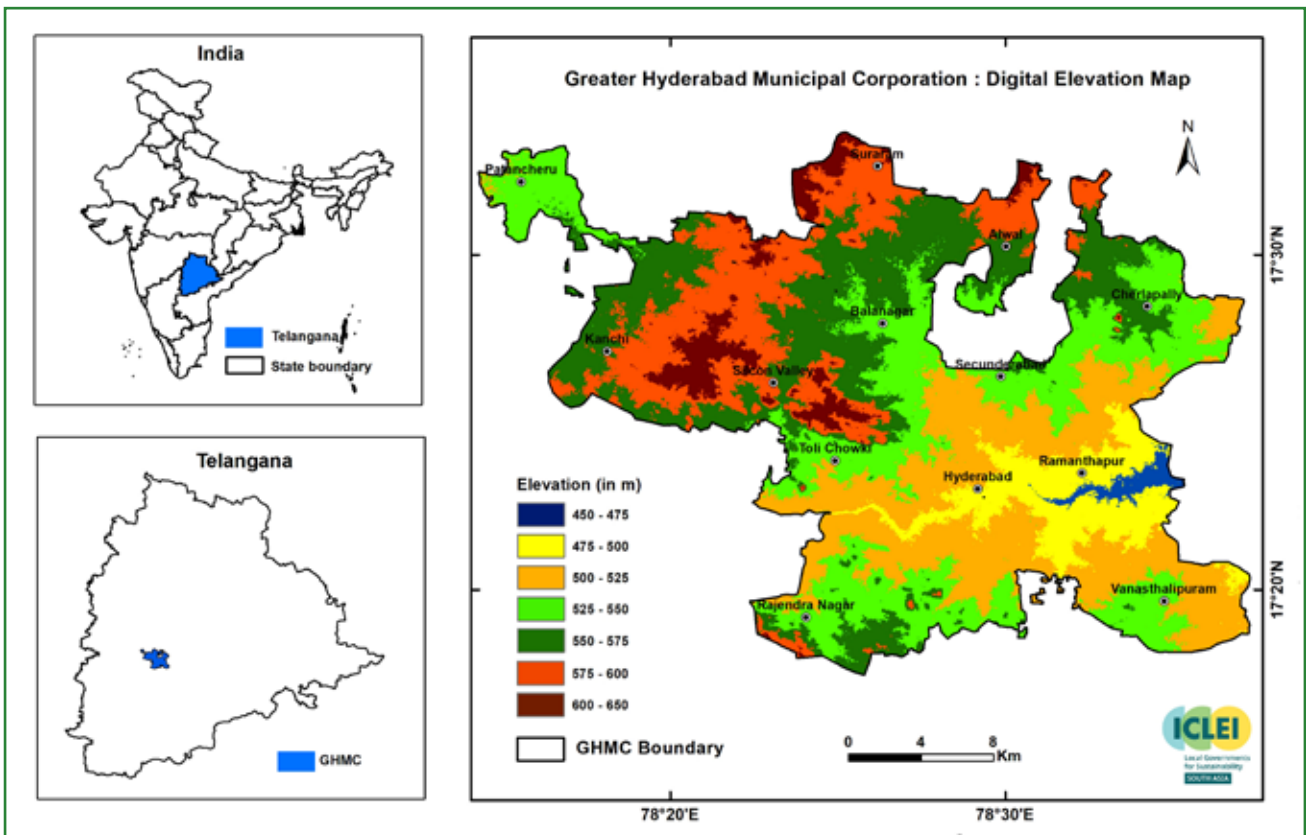


Figure 3: Location of Hyderabad City

History

Hyderabad is over 400 years old and has a rich history associated with it. The city originally fell within the kingdom of the Kakatiya Dynasty (1150-1323); however, it was in the hands of the Qutub Shahis of Golconda (1512 – 1687) that the nucleus of what is now Hyderabad city, had its beginnings (Srinivasulu and Srinivasulu, 2012). In 1687 it was annexed to the Mughal Empire by Aurangzeb and thereafter fell slowly to ruin until the viceroy of the region, Asaf Jah I, established himself as the Nizam (1724-1948) and independent ruler of the Deccan (GHMC, 2012). Eventually Hyderabad was merged into the Indian Union in 1948 where it was recognised as the capital of Andhra Pradesh. In 2014, the state of Andhra Pradesh was carved into two states, Telangana and Andhra Pradesh with Hyderabad becoming capital of the former (Mohinuddin, 2014).

Its twin city, Secunderabad, is 200 years old, established in 1798 as a cantonment area, when the Nizam signed a subsidiary alliance for military and political cooperation with the East India Company (Srinivasulu and Srinivasulu, 2012; Mohinuddin, 2014).

Climate and Geography

Hyderabad has a tropical wet and dry climate (Koppen Aw) bordering on a hot semi-arid climate (Koppen BSh, Mohinuddin, 2014). The city experiences hot summers from late February to early June, the monsoon season from late June to early October and a pleasant winter from late October to early February. Hyderabad receives about 32 inches (about 810 mm) of rain every year, almost all of it being concentrated in the monsoon months (GHMC, 2012).

The mean annual temperature varies from 25°C - 29°C. May is the hottest month with an average high-temperature of 39°C and an average low-temperature of 26.2°C, while December is the coolest month with an average high-temperature of 28°C and an average low-temperature of 14.5°C^{2,3}.

Situated on the Deccan Plateau, most of the area in the city is characterised by a rocky terrain. Paddy and other crops are cultivated in the surrounding peri-urban areas. Hyderabad has an average elevation of about 500 meters above sea level (1,640 ft) and lies on predominantly sloping terrain of grey and pink granite⁴. It is dotted with small hills, the highest being Banjara Hills at 672 metres (2,205 ft).

Soils are essentially red loam (Rhodustalf, Paleustalf and Haplustalf groups) varying from sandy loam to loamy sand with heavy compact subsoil (Elukapally, 2014). Natural vegetation is tropical dry deciduous and tropical thorn forest with *Acacia sp.*, *Azadirachta sp.* and *Tectona sp.* as dominant species. The region comprises of a number of water bodies namely Musi River, Osman Sagar, Himayat Sagar, Hussain Sagar, Shamirpet, and Uppuguda etc. Musi River traverses the area, dividing the twin cities and although initially a source of water supply to the historic city of Hyderabad, it has since been contaminated with sewage inflows.

Demographics

Hyderabad is one of the fastest growing metropolitan areas in all of India⁵. Hyderabad had a population of 6.7 million in 2011 (Census of India, 2011) and it increased to 8.7 million in 2014 with a population density of 18,480 people per square kilometre (GHMC, 2019). Based on these estimates, Hyderabad is the fourth most populous Indian city.

When the erstwhile MCH along with 12 other municipalities and eight gram panchayats merged to form the

- <https://www.weather-ind.com/en/india/hyderabad-climate> Accessed on January 30, 2020
- <http://www.weatherbase.com/weather/weather.php3?s=82134&units=metric> Accessed on January 30, 2020
- <https://jntuhdufr.com/geography> Accessed on January 30, 2020
- <https://www.weforum.org/agenda/2018/12/all-of-the-world-s-top-10-cities-with-the-fastest-growing-economies-will-be-in-india/> Accessed on February 1, 2020



GHMC in 2007, the jurisdiction area increased from 165 sq. km to 617.1 sq. km, attributing to an addition of 2,000,570 persons with the MCH population (Elukapally, 2014). Thus, between 2001-2011, there was a 21% increase in the population, with a decrease in density from 21,049 persons/ sq. km to 10,074 persons/ sq. km attributed to areal expansion (Elukapally, 2014). Hyderabad has grown by 1,306,978 since 2015, which represents a 2.84% annual change⁶. There are 1,466 slums in the city with a population of 1,805,716 (GHMC, pers.comm).

Residents of Hyderabad are principally Telugu and Urdu speaking people with a minority of Tamil, Marathi, Kannada, Marwari, Bengali, Malayali, Gujarati, Punjabi and Uttar Pradesh communities (Srinivasulu and Srinivasulu, 2012). Interestingly, there are also communities of foreigners such as Yemeni Arabs which form the majority, African Arabs, Armenians, Abyssinians, Iranians, Pathans and Turks (Mohinuddin, 2014). This population settled in Hyderabad during the time of the Nizam reign when they received patronage from the Nizams. Telugu is the official language of Hyderabad and Urdu is its second language. The Telugu dialect spoken in Hyderabad is called Telangana, and the Urdu spoken is called Dakhani (Srinivasulu and Srinivasulu, 2012).

Hindus form the majority of Hyderabad's population. Muslims are present throughout the city and predominate in and around the Old City. There are also Christian, Sikh, Jain, Buddhist and Parsi communities, and iconic temples, mosques and churches can be seen⁷.

Economic Parameters

Hyderabad is not only the administrative capital but also the economic and financial capital of Telangana. It is the largest contributor to the State's Gross Domestic Product (GDP), state taxes and excise revenues and has reached high levels of commercialization and monetization. Over past few decades, Hyderabad's economy has shifted from a primarily service city to a more diversified profile comprising trade, commerce, industry, transportation, storage, communication and construction sectors. However, the old city has suffered a decline and the peripheral areas have begun to play a more dominant role in growth and employment generation.

The city is rich in its history and tradition. Hyderabad is a major hub of trade and commerce and an international centre for Information Technology (IT), the city is also home to many start-ups like Doct1, Grab On, Popicorn etc. (Singal, 2019). Its historic sites include Golconda Fort, a former diamond-trading centre that was once the Qutb Shahi dynastic capital and the Charminar which is a 16th century mosque (GHMC, 2016). Hyderabad's many epithets include the City of Pearls, the City of Nawabs, and the Biryani City, among others.

According to the Socio-Economic Outlook Report – 2019 (Government of Telangana, 2019), Telangana state's per capita income average rose from INR 180,697 in 2017-18 to INR 205,696 in 2018-19, registering a growth of 13.8% at current prices. Hyderabad city recorded a per capita GDP growth of 8.7 per cent between 2014 and 2018 (Bouchet et al., 2018). Average per person income in Ranga Reddy was INR 0.578 million and in Hyderabad, it is INR 0.357 million, as per the District Domestic Product figures in 2020⁸. The International Airport at Shamshabad, the Outer Ring Road and associated mega townships, Special Economic Zones (SEZ), Major Real Estate Projects, IT Campuses, Biotechnology Majors, Metro Rail and other infrastructural projects are some of the reasons for the upsurge in the city's growth (Elukapally, 2014).

Hyderabad's urban sprawl has encroached onto vacant lands, rock formations and water bodies, given the increasing pressure on land for housing and other activities. Rapid population growth, industrialization

6. <https://worldpopulationreview.com/world-cities/hyderabad-population> Accessed on July 23, 2020

7. <https://www.census2011.co.in/census/city/392-hyderabad.html> Accessed on July 23, 2020

8. <https://www.thehansindia.com/telangana/rangareddy-hyderabad-most-prosperous-districts-in-telangana-state-610589> Accessed on July 23, 2020



and agricultural practices since the 1970's has led to the large-scale destruction of physical natural heritage (Ramachandriah and Prasad, 2004). Sewage and industrial discharge make the water unsuitable for domestic purposes and threaten human health through bioaccumulation, while quarrying of rock formations has led to the loss of these iconic elements (Ramachandriah and Prasad, 2004; Chigurupati, 2008). Simultaneously, real estate growth accelerated the extinction of numerous small water bodies in the peri urban zones (Singh, 2011). The major drivers of change in terms of biodiversity within the city therefore are:

1. Rapid urbanisation and population growth
2. Real estate development and land use change (including land conversion, reclamation, encroachment) and the associated habitat degradation
3. Industrial development

Biodiversity Features

Hyderabad, once known as the city of lakes, presently has around 1,350 water bodies, occupying an area of 2,000 ha. Some of the major waterbodies are the Musi River, Osman Sagar, Himayat Sagar, Hussain Sagar, Shamirpet, and Uppuguda tanks. Shamirpet Lake, Hussain Sagar Lake, Fox Sagar Lake, Mir Alam Tank and Patancheru Lake are home to local birds but attract seasonal migratory birds from different parts of the world (Mohinuddin, 2014).

The city also has important rock formations which cover an area of 1,600 ha. In terms of vegetation, southern tropical dry deciduous forests and southern tropical thorn forests are dominant. Reserve Forests (RFs) are also present within the city. Several of these forests have been converted into the Zoological Park, Botanical Gardens and Forest Department Institutional Areas (GHMC, 2012).

There are also Protected Areas (PAs) within the city in the form of two National Parks- Kasu Brahmananda Reddy (KBR) National Park and Mahavir Harina Vanasthali National Park, which host considerable diversity. The flora of KBR National Park resembles southern tropical dry deciduous forest and the last vestigial representative of the endemic flora of Hyderabad region that includes species like Teak (*Tectona grandis*), Sandalwood (*Santalum album*), Neem (*Azadirachta indica*), Babul (*Acacia nilotica*), Palash (*Butea monosperma*), and *Ficus* sp. The vegetation of Mahavir Harina Vanasthali National Park is characterized by dry deciduous forest mixed with scrub jungle and grasslands (Elukapally, 2014).

The University of Hyderabad campus contains vegetation which represents 'Deccan shrub jungle' with scattered trees typical of the semi-arid tropics. The campus currently hosts 39 species which are globally under threat, out of a whopping 734 plant species⁹.

The City Biodiversity Index of Hyderabad (GHMC, 2012) identified the following habitats which host the city's biodiversity:

- Southern tropical dry deciduous forests
- Southern tropical thorn forests
- Rocky areas
- Lakes and other water bodies
- Musi riverine area
- Protected Area network- Reserve Forests and National Parks
- Land banks present in Institutional areas
- Urban parks and open spaces
- Residential home gardens

9. <https://herald.uohyd.ac.in/our-campus-our-responsibility-save-biodiversity/> Accessed on September 29, 2021



There are 1,305 species of plants (Ramana et al., 2012), of which 577 are native and 728 are introduced. Institutional areas like the University of Hyderabad, Osmania University and International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) host a wide species diversity within their campuses.

The city is also home to 30 species of odonates (Srinivasulu and Srinivasulu, 2012), 141 species of butterflies (Kumar and Srinivasulu, 2012), 42 species of spiders (Srinivasulu and Srinivasulu, 2012), 60 species of fish (Srinivasulu, 2012) 16 amphibian species (Srinivasulu and Srinivasulu, 2012), 41 reptile species (Srinivasulu and Srinivasulu, 2012), 315 bird species (Srinivasulu and Sreekar, 2012), and 58 mammalian species (Srinivasulu and Srinivasulu, 2012).

Natural Asset Map: The natural asset map of Hyderabad city (area under the jurisdiction of GHMC) has been developed by ICLEI South Asia (Figure 4). Table 2 provides details of each land class. Further details are mentioned in Annexure 1.

Table 2: Area of Natural Assets within the GHMC boundaries

Sl. No.	Land class	Area (ha)	Percent
1	National Park	236.57	0.38
2	Natural Vegetation	2465.79	3.99
3	Rock Outcrops	2949.84	4.78
4	Sparse Vegetation	836.01	1.35
5	Tree Plantation	816.20	1.32
6	Avenue Tree Cover	1005.46	1.63
7	Riverine Vegetation	260.31	0.42
8	River	319.70	0.52
9	Marsh	376.80	0.61
10	Lake/Pond	2058.89	3.34
11	Open Green Spaces (Parks, Botanical Garden, Zoological Park and other Gardens)	751.99	1.22
12	Open Ground	525.63	0.85
13	Mixed Cultivation	2325.44	3.77
14	Paddy / Vegetable Cultivation	1877.23	3.04

Administration of Biodiversity

Krishnan et al., 2012 detail out five types of biodiversity governance models that aid in conservation, sustainable use, and fair and equitable sharing of biological resources across different landscapes in India. Of the five models, two – territorial forests and protected areas– fall under the PA type of biodiversity governance models. The other three – autonomous community efforts, co-management of forests and decentralized governance of biodiversity – are considered more closely under community-based conservation.

There are two PAs within the jurisdiction of the GHMC area- Kasu Brahmananda Reddy (KBR) National Park, which is spread over an area of 161.87 hectares and Mahavir Harina Vanasthali National Park, which has a notified area of 1,459 hectares of which 103 hectares falls with the city limits.

At the administrative level, the following agencies/institutions at the state and city levels are responsible for biodiversity related activities. Although there are a number of NGOs and academic institutions working



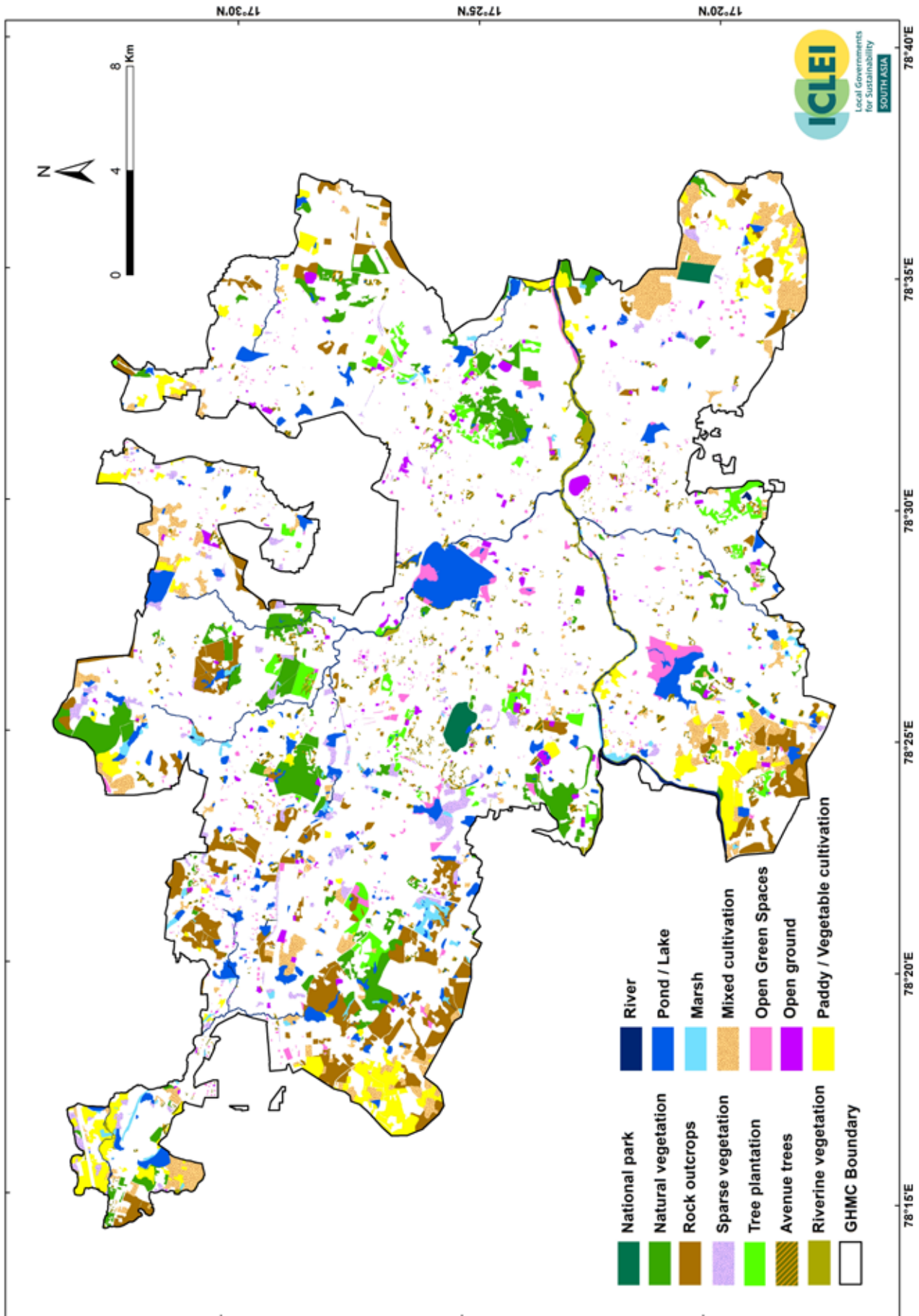


Figure 4: Natural asset map of GHMC



on various aspects of biodiversity, these have not been detailed below as they are not involved in the administration of biodiversity.

Greater Hyderabad Municipal Corporation (GHMC): Hyderabad is divided into six zones (L B Nagar, Charminar, Khairathabad, Secunderabad, Kukatpally, Serilingampally) which is administered by the GHMC. The zones are further divided into 30 circles and these circles are again divided into 150 wards. The GHMC oversees the civic infrastructure of these 30 circles. The Municipal Commissioner is the administrative head and the Mayor is the political head of the GHMC. The GHMC carries out the city's infrastructural work such as building and maintenance of roads and drains, town planning including construction regulation, maintenance of municipal markets and parks, solid waste management, the issuing of birth and death certificates, the issuing of trade licences, collection of property tax, and community welfare services such as mother and child healthcare service, pre-school education, and non-formal education. In terms of biodiversity related administration, there is an Urban Biodiversity wing within the GHMC, which is headed by an Additional Commissioner. Provision of public parks, gardens, play-grounds are among the obligations which this department fulfils along with other greening activities to improve the bio-aesthetic environment in the city. For more information, please visit <https://www.ghmc.gov.in/>

Secunderabad Cantonment Board (SCB): Secunderabad cantonment area which comprises a number of defence establishments, falls under the SCB, which is a local body falling under the administrative control of Ministry of Defence, Government of India. Primarily, the SCB is responsible for carrying out the civic amenities to the residents of the cantonment area. The SCB is India's second largest cantonment board. There are eight civilian wards in SCB, with a population of 217,910 (Census, 2011). For more information, please visit <https://scb.gov.in/SCBPortal/SCBHomePage.aspx>

Telangana Forest Department: Headed by the Principal Chief Conservator of Forests, the primary function of this department is protection, conservation and management of forests in Telangana State. Within the GHMC area, the Forest Department primarily has jurisdiction over the maintenance and conservation activities around the two PAs i.e., KBR National Park and Mahavir Harina Vanasthali National Park, as well as the Nehru Zoological Park. For more information, please visit <http://forests.telangana.gov.in/>

State Horticulture Department: The Department is charged with the responsibility of overall development of horticulture in the state. The government garden wings of the Department maintains gardens such as a) Riverside Parks on the Bank of Musi River, which is now called as R.I.P. b) Red Hills Garden c) Legislative Assembly, Council and Secretariat Gardens d) Lakeview Guest House Gardens e) Dilkusha Gardens f) Manjeera Guest House Gardens g) Anand Nilayam Gardens h) Green Land Guest House Garden i) Nursing College Garden, j) Public Gardens; and is also promoting terrace cultivation of vegetables in Hyderabad city through a scheme called urban farming. For more information, please visit <http://horticulture.tg.nic.in/>

Hyderabad Metropolitan Development Authority (HMDA): It has jurisdiction over the 2nd largest urban development area in India (7,257 sq. km), after the Bangalore Metropolitan Region Development Authority (8,005 sq. km). HMDA was formed by the merging of the following erstwhile entities like Hyderabad Urban Development Authority (HUDA), Hyderabad Airport Development Authority (HADA) and Cyberabad Development Authority (CDA). The HMDA deals with planning, co-ordination, supervising, promoting and securing the planned development of the Hyderabad Metropolitan Region. It coordinates the development activities of the municipal corporations, municipalities and other local authorities, the Hyderabad Metropolitan Water Supply & Sewerage Board, the Telangana Transmission Corporation, the Telangana Industrial Infrastructure Corporation, the Telangana State Road Transport Corporation, and other such bodies. In terms of biodiversity activities, the HMDA is also responsible for greening within its jurisdiction, parts of which fall under GHMC. For more information, please visit <https://www.hmda.gov.in/>

Hyderabad Metro Rail Limited (HMRL): The HMRL is an SPV vested with adequate powers to implement and operate the system of the Mass Rapid Transit System Project in Hyderabad. The HMRL is also responsible for greening of the area under its jurisdiction. For more information, please visit <https://hmrl.co.in/>

Hyderabad Metropolitan Water Supply and Sewerage Board (HMWS&SB): The HMWS&SB is responsible for the planning, design, construction, maintenance, operation & management of the water supply system and sewerage disposal and treatment works. For more information, please visit <https://www.hyderabadwater.gov.in/en/>

The Musi Riverfront Development Corporation (MRDC): Formed in March 2017, the MRDC is the nodal agency to monitor and coordinate the activities of various departments and agencies like the HMDA, GHMC and HMWSSB, to prepare and execute a comprehensive plan for abatement of pollution in the Musi River and develop the riverfront. For more information, please visit <https://www.musi.telangana.gov.in/index.html>

Biodiversity Management Committee (BMC) of Hyderabad: In accordance with the Biological Diversity Act, 2002, every local body is mandated to constitute a BMC to promote conservation, sustainable use and documentation of biological diversity. An important function of the BMC is the preparation of a People's Biodiversity Register (PBR) that contains comprehensive information on availability and use of local biological resources, and any other traditional knowledge associated with them. The BMC is supposed to serve as the guardian of all biological resources and traditional knowledge. GHMC with support from the State Biodiversity Board has formed a BMC in October 2020. Table 3 provides details of the members of the BMC of Hyderabad city.

Table 3: Members of BMC of Hyderabad

S I . No.	Name	Designation	Gender	Portfolio of Committee
1.	Smt. Vijaya Lakshmi R Gadwal	H.W. Mayor, GHMC	Female	Chairperson
2.	Shri. V. Krishna	Additional Commissioner, Urban Biodiversity Wing, GHMC	Male	Member Secretary
3.	Smt. Vanam Sangeetha Yadav	Corporator, Ward No.97, Somajiguda	Female	Women Member
4.	Smt. Sabitha Kishore	Corporator, Ward No.135, Venkatapuram	Female	Women Member
5.	Shri. E.S.Raj Jitendernath	Corporator, Ward No.133, Machabolarum	Male	Member (SC Category)
6.	Smt. K. Tharabai	Corporator, Ward No.46, Falaknuma	Female	Member (ST Category)
7.	Shri. Ragam Nagender Yadav	Corporator, Ward No.106, Serilingampally	Male	Member

Tree Protection Committee, Hyderabad: The Committee was formed in 2008 to function following the provisions of the Telangana Water Land and Trees Act, 2002. The Committee is responsible to oversee requests for tree felling permissions, to oversee and guide transplantation and compensatory plantation. For more information, please visit https://theasthmafiles.org/sites/default/files/artifacts/media/pdf/kbr_2008efst_rt539.pdf





Part B: Indicators of the Singapore Index on Cities' Biodiversity

Native Biodiversity

Indicator 1: Proportion of Natural Areas in the City

According to the Singapore Index Manual, natural areas are defined as "Natural areas comprise predominantly native species and natural ecosystems, which are not, or no longer, or only slightly influenced by human actions, except where such actions are intended to conserve, enhance or restore native biodiversity."

Methodology

As per the CBI user manual

Principle for calculation of the indicator

$(\text{Total area of natural, restored and naturalised areas}) \div (\text{Total area of city}) \times 100\%$

Scoring Range: (based on the CBI user manual)

0 point:	<1.0%
1 point:	1.0% - 6.9%
2 points:	7.0% - 13.9%
3 points:	14.0% - 20.0%
4 points:	> 20.0%

City Data and Calculations

The definition of natural areas in the Singapore Index manual is difficult to strictly apply within the context of Indian cities where the ground realities are significantly different. Income inequality, a high population density, and limited infrastructural outreach means that while there are native and natural ecosystems, public and community access to these areas cannot be completely restricted.

To calculate the proportion of natural areas in the city, the natural asset map (Figure 4) of Hyderabad was prepared and referred to. Table 4 below shows the various classes of natural assets identified within the natural asset map of Hyderabad which have been used for calculating this indicator. Anthropogenically created land classes such as plantations, avenue tree cover, mixed cultivation, paddy/vegetable cultivation, open ground, and parks/playground were not considered for the calculation of this indicator.

The main land use classes that have been considered (Table 4) under natural areas are national park, natural vegetation, rock outcrops, sparse vegetation, riverine vegetation, river, marsh, lake/pond. Although most of the lakes of Hyderabad were artificially created, they have been retained as natural areas since they were established more than 480 years ago and are now part of the natural landscape.



Table 4: Area wise distribution of natural assets applicable to Indicator 1

Sl. No.	Land Class	Area in sq. m.
1	National Park	2.37
2	Natural Vegetation	24.66
3	Rock outcrops	29.50
4	Sparse vegetation	8.36
5	Riverine vegetation	2.60
6	River	3.20
7	Marsh	3.77
8	Lake/Pond	20.59
	Total	95.05

Indicator 1 = (Total area of natural, restored and naturalised areas) ÷ (Total area of city) × 100%

Total area of natural, restored and naturalised areas = 617.1 sq. km.

RESULT: 18.5%

SCORE: 3

Recommendations to Improve Score

Hyderabad city can maintain their high score under this indicator by developing a LBSAP which will help to protect, improve and monitor these natural areas. Hyderabad's lakes need to be ecologically restored on priority as, not only are they essential reservoirs of biodiversity but also can support the water security of the city. Rock outcrops and their associated habitats are another important ecosystem that needs the attention of the city administration as they host biodiversity unique to the Deccan Plateau.



Indicator 2: Connectivity Measures or Ecological Networks to Counter Fragmentation

Methodology

As per the CBI user manual

Principle for calculation of the indicator

$$\frac{1}{A_{\text{total}}} * (A_1^2 + A_2^2 + A_3^2 + \dots + A_n^2)$$

Where:

- A_{total} is the total area of all natural areas
- A_1 to A_n are areas that are distinct from each other (i.e. more than or equal to 100m apart)
- n is the total number of connected natural areas

This measures effective mesh size of the natural areas in the city. A_1 to A_n may consist of areas that are the sum of two or more smaller patches which are connected. In general, patches are considered as connected if they are less than 100m apart.

Scoring Range: (based on the CBI user manual)

0 point:	< 200 ha
1 point:	201 - 500 ha
2 points:	501 - 1000 ha
3 points:	1001 - 1500 ha
4 points:	> 1500 ha

City Data and Calculations

The patches associated with the land classes used to calculate indicator 1 i.e., national park, natural vegetation, rock outcrops, sparse vegetation, riverine vegetation, river, marsh, lake/pond, have been considered in this calculation. In reality, manmade landscapes represented in Hyderabad by the land classes- plantations, avenue tree cover, mixed cultivation, paddy/vegetable cultivation, open ground, and open green spaces also form a part of the ecological network to counter fragmentation for several species. However, these have not been considered, following the guidelines of the CBI manual.

123 polygons (patches) can be merged with river and some lakes to be considered a single unit, as per the 100m proximity rule. The total area of this big patch (A_1) is 1,539.33 ha. There are 728 patches which are outside the 100m buffer of this big patch (Annexure 1, Table 7). According to 100 m proximity rule, these 728 patches merge into 295 patches (A_2 - A_{295}).

$$A_{\text{total}} = 8667.90 \text{ ha}$$

As per the final calculation

$$\text{Indicator 2} = 1/8667.90 \text{ ha} \times (5227528.50 \text{ ha}^2) = 603.09 \text{ ha}$$



RESULT: 603.09ha

SCORE: 2

Recommendations to Improve Score

The city can work towards the improvement of this score by supporting ecological restoration around natural areas and providing them with some form of protection. Developing these corridors will ensure contiguity between patches, improving movement of animal populations. KBR National Park for example, lies in the heart of the city, surrounded by built-up area. Linking the national park with other urban green areas may be beneficial for some of the local fauna and can improve the park's biodiversity. This will also act like an ecological corridor for the movement of invertebrates, birds, reptiles, amphibians and small mammals. Partnering with research and academic organisations would be beneficial for the city, as well as help improve scores in subsequent applications of the CBI.



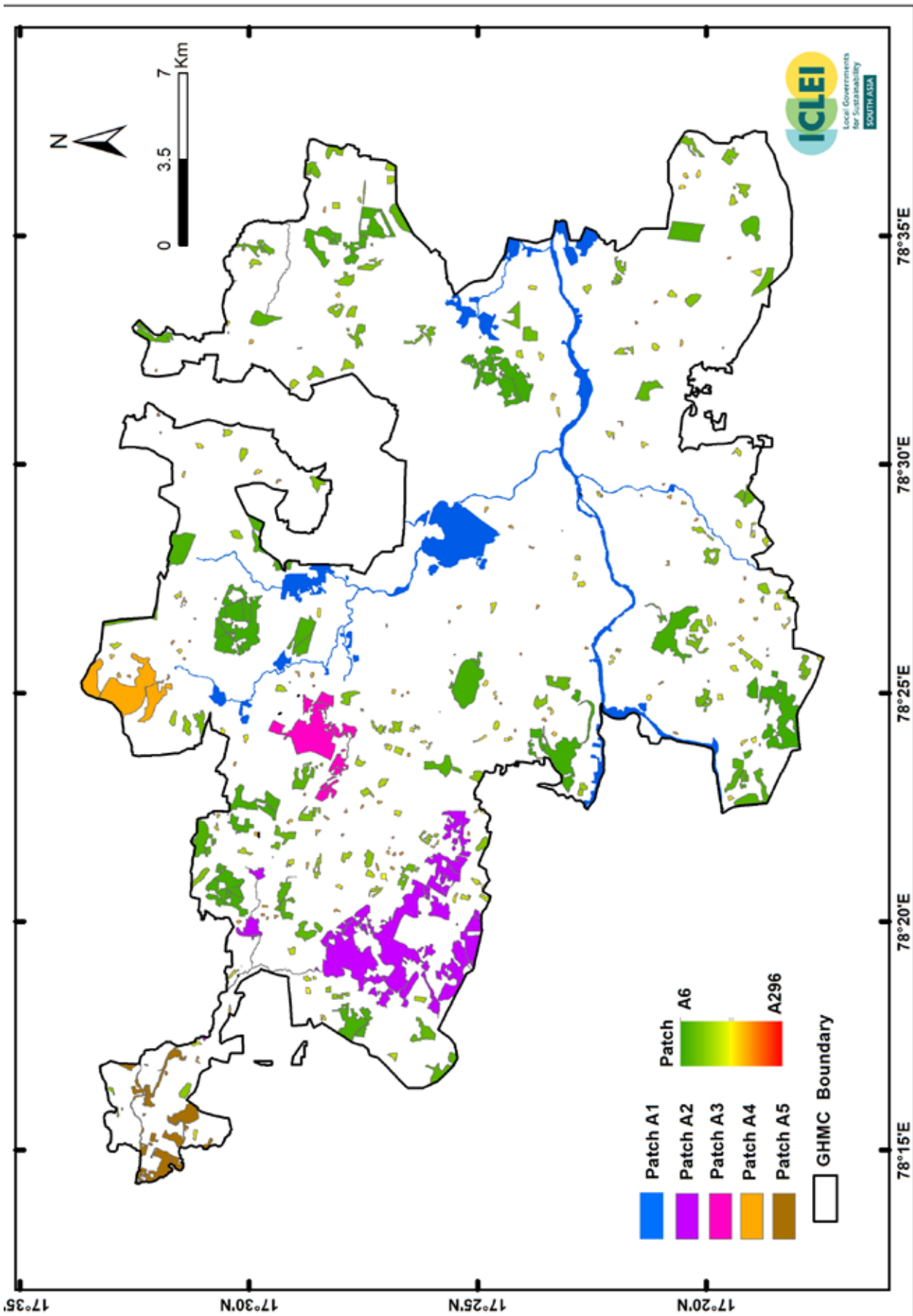


Figure 5: Patches of natural areas which can act as ecological corridors within the boundary of GHMC



Indicator 3: Native Biodiversity in Built up Areas (Bird Species)

Methodology

How to calculate indicator

Number of native bird species in built up areas where built up areas include impermeable surfaces like buildings, roads, drainage channels, etc., and anthropogenic green spaces like roof gardens, roadside planting, golf courses, private gardens, cemeteries, lawns, urban parks, etc. Areas that are counted as natural areas in indicator 1 should not be included in this indicator.

Scoring Range: (based on the CBI user manual)

0 point:	< 19 bird species
1 point:	19 - 27 bird species
2 points:	28 - 46 bird species
3 points:	47 - 68 bird species
4 points:	> 68 bird species

City Data and Calculations

For the purpose of calculating indicator 3, sightings recorded on the citizen's science platform developed by Cornell Lab of Ornithology, eBird (2021)¹⁰ were referred to. A city level list was developed (refer Table 8 in Annexure 2 for details), comparing the same with the list of birds recorded in Srinivasulu and Srinivasulu (2012), updated by the Centre for Biodiversity and Conservation Studies, Osmania University in 2021. The listed species were then categorized into residents and migrants. Resident birds sighted within the municipal corporation limits were considered. Sightings from those areas considered in indicator 1 were not taken into account for the calculation of this indicator. This type of exclusion of sightings is possible using e-bird's mapping tools. Furthermore, the list was also checked for birds occupying modified habitats (urban parks, buildings, roads, drains, gardens, cemeteries, fields) by experts including Dr. C. Srinivasulu, Director, Centre for Biodiversity and Conservation Studies, Osmania University and Mr. Aasheesh Pittie, a local bird watcher.

The total number of resident bird species identified for the purpose of this indicator is 169. Out of 169 residents, 106 are found in urban or modified areas. The list of the birds considered for this indicator is provided in Annexure 2, Table 8.

RESULT: 49 Species

SCORE: 3

Recommendations to Improve Score

Bird diversity within the city is supported by a mosaic of habitats, which are both natural and anthropogenically modified such as lakes, parks, rocks, institutional areas, and agricultural areas. In order to sustain this score, the city needs to ensure the maintenance of these spaces which provide a variety of resources for birds of the city. An action plan for the same can be developed through the LBSAP of the city.

10. eBird, (2021). The Cornell Lab of Ornithology <https://ebird.org/region/IN-TS-HY?yr=all> Accessed on June 9, 2021.



Indicators 4 - 8: Change in Number of Native Species

Methodology

How to calculate indicator

The change in number of native species is used for indicators 4 to 8. The three core groups are:

- Indicator 4 : vascular plants
- Indicator 5 : birds
- Indicator 6 : butterflies

These groups have been selected as data are most easily available and to enable some common comparison.

Cities can select any two other taxonomic groups for indicators 7 and 8 (e.g. bryophytes, fungi, amphibians, reptiles, freshwater fish, molluscs, dragonflies, beetles, spiders, hard corals, marine fish, seagrasses, sponges, etc.)

The above data from the first application of the Singapore Index would be recorded in Part I: Profile of the City as the baseline.

Net change in species from the previous survey to the most recent survey is calculated as:

Total increase in number of species (as a result of re-introduction, rediscovery, new species found, etc.) minus number of species that have gone extinct.

Scoring Range: (based on the CBI user manual)

- 0 point: Maintaining or a decrease in the number of species
- 1 point: 1 species increase
- 2 points: 2 species increase
- 3 points: 3 species increase
- 4 points: 4 species or more increase

City Data and Calculations

Osmania University's Centre for Biodiversity and Conservation Studies has been maintaining a database of species lists for Hyderabad city since 2010. For the purpose of calculation of the indicators 4-8, lists submitted as part of the Index in 2012, were updated by the Centre for Biodiversity and Conservation Studies. Additionally for the bird list, eBird¹¹ was also referred and for the reptile list iNaturalist¹² was also referred. These lists were also circulated among taxa experts to validate the same.

Indicator 4, which measures the change in number of native species of vascular plants was supplemented and validated by Dr. V. Ramana, Assistant Professor, Botany Department of Osmania University and validated by Dr. Sudhakar Reddy, Forestry and Ecology Division, National Remote Sensing Agency in order to arrive at the final result for this taxon (Annexure 2, Table 9). The Botanical Survey of India (BSI), Deccan Regional Centre was also consulted for any new additions. The 2012 list identified 1,301 angiosperms of which 574 species were identified as native. The 2021 list identified 1,665 angiosperms of which 934 species were

11. eBird (2021). <https://ebird.org/region/IN-TS-HY?yr=all> Accessed on September 30, 2021

12. iNaturalist (2021). https://www.inaturalist.org/observations?place_id=100706&subview=map&iconic_taxa=Reptilia Accessed on September 30, 2021



identified as native. 12 species which were repeats/synonyms in the 2012 list and 13 species which were identified as not likely to be found in Hyderabad by the expert validation were not included in the final list. There is an addition of 206 native species to the list, none of which are new discoveries. It is likely that areas not surveyed during the 2012 application of the Index were the main reason for the additions in 2021. The BSI, Deccan Regional has recorded two new species in 2020 - *Chloris telanganae* (Nagaraju et al., 2020) in the Agriculture University, Rajendranagar and *Corynandra telanganensis* (Swamy & Rasingam, 2020) in Manasa Hills. These localities fall within the jurisdiction of the GHMC, thus increasing the score.

RESULT: +208 Species

SCORE: 4

Indicator 5, which measures the change in number of resident bird species was validated by Dr. C. Srinivasulu, Director, Centre for Biodiversity and Conservation Studies and Mr. Aasheesh Pittie, a local birdwatcher (Annexure 2, Table 8). Data on the total number of resident birds for the 2012 Index was unavailable. The list of all the species inventoried as per Srinivasulu and Sreekar (2012) was 307. On analysing this list, it was found that the total number of resident birds in the 2012 index was 195. In 2021, only 259 birds were recorded for the year 2020-21 of which the total number of resident birds are 169. While there have been additions to the original list in 2021 such as the Hair-crested Drongo, Indian Cuckoo, Jerdon’s Leafbird, Orange-breasted Green Pigeon, Striated Heron, when citizen science platform e-Bird was referred to, it was found that most of these additions like the Hair-crested Drongo, Indian Cuckoo, Jerdon’s Leafbird, Striated Heron were actually recorded from the city prior to 2012. Only one record of the Orange-breasted Green Pigeon exists, and so it is unclear as to whether this is a vagrant or can be considered as a resident. There were also a number of birds from the 2012 list which could not be considered in the 2021 due to range and taxonomic irregularities.

RESULT: -26 Species

SCORE: 0

The list developed for **Indicator 6**, which measures the change in number of native butterflies was validated by Dr. G. Sailu, Regional Director, Tetrattech. He also provided the updated checklist for 2020-21, which was synthesised from the newsletter of the Butterfly Conservation Society, Hyderabad (Annexure 2, Table 10). Dr. George Mathew, (Ex) Emeritus Scientist, Kerala Forest Research Institute also validated the list. 120 species were identified for the city in 2012. Nativity status was unavailable for the same. In 2021, 124 species were recorded for the city. Nine species were additions to the list of which eight were native (Table 5). Of the original species recorded in the 2012 checklist, one species, *Chilades trochilus*, was recorded twice and four were no longer recorded in 2021.

Table 5: List of Butterfly Additions for Hyderabad City

Family	Common Name	Scientific Name	Nativity
Papilionidae	Red Helen	<i>Papilio helenus</i>	Native
Pieridae	African Emigrant	<i>Catopsilia florella</i>	Introduced
Nymphalidae	Dark Blue Tiger	<i>Tirumala septentrionis</i>	Native
Riodinidae	Dark Judy	<i>Abisara fylla</i>	Native
Riodinidae	Punchinello	<i>Zemeros flegyas</i>	Native



Family	Common Name	Scientific Name	Nativity
Hesperiidae	Bush Hopper	<i>Ampittia dioscorides</i>	Native
Hesperiidae	Chestnut Bob	<i>Lambrix salsala</i>	Native
Hesperiidae	Suffused Snow Flat	<i>Tagiades gana silvia</i>	Native
Hesperiidae	Pale Palm Dart	<i>Telicota colon</i>	Native

RESULT: +4 Species

SCORE: 4

The list compiled for **Indicator 7**, which measures the change in number of reptiles and the list for **Indicator 8**, which measures the change in number of freshwater fish were validated by Dr. C. Srinivasulu, Director, Centre for Biodiversity and Conservation Studies.

The species list for Indicator 7 was represented by 41 species in the 2012 report, and nativity was unavailable. Of these species, one, Brooke's gecko - *Hemidactylus brookii* is now no longer considered to be found in India due to taxonomic splits and was excluded from the 2021 list (Annexure 2, Table 11). The 2021 list has a total of 53 species, with 11 native species additions and one introduced species addition (Table 6).

Table 6: List of Native Reptile Additions for Hyderabad City

Common Name	Scientific Name	Status	Nativity
Comon Cat Snake	<i>Boiga trigonata</i>	Addition	Native
Indian Egg-Eating Snake	<i>Boiga westermanni</i>	Addition	Native
Ornate Flying Snake	<i>Chrysopelea ornata</i>	Addition	Native
Vellore Bridal Snake	<i>Dryocalamus nympha</i>	Addition	Native
Sharma's Mabuya	<i>Eutropis nagarjunensis</i>	Addition	Native
Gleadow's House Gecko	<i>Hemidactylus gleadowi</i>	Addition	Native
Treutler's Gecko	<i>Hemidactylus treutleri</i>	Addition	Native
Slender Wolf Snake	<i>Lycodon anamallensis</i>	Addition	Native
Yellow-Collared Wolfsnake	<i>Lycodon flavicollis</i>	Addition	Native
Nagarjuna Sagar Racer	<i>Platyceps bholanathi</i>	Addition	Native
Stout Sandsnake	<i>Psammophis longifrons</i>	Addition	Native
Dumeril's Black-Headed Snake	<i>Sibynophis subpunctatus</i>	Addition	Native

The species list for **Indicator 8** was represented by 60 fish species in the 2012 report. Five of the species listed in the 2012 report, were not considered for the 2021 report, due to taxonomic and range updates. Nativity of the same was unavailable for the 2012 report. 64 species were identified in the 2021 report of which 55 were native (Annexure 2, Table 12). Of these 55, three were new additions as detailed below (Table 7).

RESULT: +11 Species

SCORE: 4



Table 7: List of Native Fish Additions for Hyderabad City

Common Name	Scientific Name	Status	Nativity
Magur	<i>Clarias magur</i>	Addition	Native
Congaturi Halfbeak	<i>Hyporhamphus limbatus</i>	Addition	Native
Peninsular Osteobrama	<i>Osteobrama peninsularis</i>	Addition	Native

Annexure 2 has details of the species lists that have been considered for indicators 4-8 (Tables 10-13).

RESULT: +3 Species

SCORE: 3

Scoring these indicators presented a number of issues. First of all, the index is meant to be scored every five years which allows for manageable variations (such as taxonomic changes) in the indicators. The Hyderabad index was scored after almost 10 years, which has resulted in the issues listed above where taxonomic changes and increase in survey efforts have generated the 2021 list. This brings us to the second issue which is comparing the two lists.

The lists of the 2012 report were not included with the report. Another report published at the same time on the biodiversity of Hyderabad had to be referred. The species recorded in this report were not classified into native and non-native, which constrained further comparisons. It is also unclear as to how the information published in the aforementioned report was synthesised. It is with caution that the scores have been updated and interpreted for indicators 4-8.



Indicator 9: Proportion of Protected Natural Areas

Methodology

How to calculate indicator

(Area of protected or secured natural areas) ÷ (Total area of the city) × 100%

Scoring Range: (based on the CBI user manual)

0 point:	< 1.4%
1 point:	1.4% - 7.3%
2 points:	7.4% - 11.1%
3 points:	11.2% - 19.4%
4 points:	> 19.4%

City Data and Calculations

As detailed in Part 1 of the Index, the governance models for biodiversity in India are of five types, which fall under two main streams- State driven conservation and Community based conservation. Within Hyderabad city, natural areas that receive protection are currently those that fall under the State driven conservation stream -National Parks and reserve forests. These include

Kasu Bramhanand Reddy National Park = 1.61 sq.km.

Mahavir Harina Vanasthali National Park = 1.03 sq.km.

Nehru Zoological Park Reserve Forest = 1.53 sq.km.

Ameenpur Lake, which is a Biodiversity Heritage site, just outside of Hyderabad, has not been considered in this calculation since it falls under the jurisdiction of Ameenpur Municipality.

The total protected or secured natural area = 4.17 sq.km.

Total area of the city = 617.1 sq.km.

RESULT: 0.67%

SCORE: 0

Recommendations to Improve Score

The city can improve its score for this indicator by increasing protection of its natural areas. The city has several rock formations which form a significant element of its landscape and natural heritage. Between the years 1998 and 2009, 25 rock formations in the city received protection under Regulation 13 of the Hyderabad Urban Development Authority Zoning Regulations 1981 and 2010. The recent Telangana Heritage (Protection, Preservation Conservation and Maintenance) Act, 2017, encompasses rocks under its definition of Heritage Building. Identifying and notifying important rock formations in the city for protection under the Telangana Heritage (Protection, Preservation Conservation and Maintenance) Act, 2017, should be prioritised. The city can formulate and enact their own local acts to declare water bodies as protected. The city can also encourage more community-based conservation initiatives, through the Biodiversity Management Committee or declare some of the relevant sites as Biodiversity Heritage Sites. This will provide protection to these sites and will also help the city to improve its score on this indicator.



Indicator 10: Proportion of Invasive Alien Species

Methodology

How to calculate indicator

$(\text{Number of invasive alien species}) \div (\text{Number of native species}) \times 100\%$

Scoring Range: (based on the CBI user manual)

0 point:	> 30.0%
1 point:	20.1% - 30.0%
2 points:	11.1% - 20.0%
3 points:	1.0% - 11.0%
4 points:	< 1.0%

City Data and Calculations

The definition of invasive alien species, which has been considered for this indicator in the CBI is “one whose introduction and/or spread threatens biological diversity (For the purpose of the present guiding principles, the term “invasive alien species” shall be deemed the same as “alien invasive species” in accordance with Decision V/8 of the CoP to the Convention on Biological Diversity)”.

The vascular plant taxon, which is also the most well documented taxon in terms of alien species, was selected for the purpose of calculation of indicator 10. For the purpose of calculation of this indicator, a list of flowering plants of the city was compiled by Dr. M. Venkat Ramana, Botany Department, Osmania University and vetted by Dr. Sudhakar Reddy, Forestry and Ecology Division, National Remote Sensing Agency. This list comprises of the plants that are found across the city (Table 9). The species were then classified into native and exotic species. Exotic species were further refined¹³ into alien invasive species using the criteria followed by Reddy (2008) and Suthari et al. (2016)¹⁴ which is provided in Table 9 in Annexure 2.

Out of 1,665 flowering plant species found in Hyderabad city, 934 were identified as native, 726 were identified as introduced (including some introductions from other parts of the country like the Andaman and Nicobar Islands and the North East) of which 64 were classified as invasive alien species.

Number of invasive alien species = 64

Number of native species = 934

13. C.S. Reddy. 2008. Catalogue of invasive alien flora of India. Life Science Journal, 5(2): 84 – 89.

14. Suthari, S., Kandagatla, R., Ragan, A., and Raju, V.S. 2016. Incidence of alien Asteraceae in Telangana and residual Andhra Pradesh and possible ecological implications. Research Communications, Current Science, 110 (7): 1337-1343.



RESULT: 6.85%

SCORE: 3

Recommendations to Improve Score

It is important that a risk assessment of the alien invasive species be conducted. The risk assessment will enable an understanding of which species have high, medium, low and insignificant impacts on local ecosystems. This will help to improve the present score. Once the risk assessment has been carried out, strategies that can be taken up by city authorities in partnership with academic institutions, NGOs and state authorities can be identified in the Local Biodiversity Strategy and Action Plan (LBSAP). Mapping the spread of each of the invasive species should also be taken up on priority basis.



Indicator 11: Regulation of Quantity of Water

Methodology

How to calculate indicator

$(\text{Total permeable area}) \div (\text{Total terrestrial area of the city}) \times 100\%$

Scoring Range: (based on the CBI user manual)

0 point:	< 33.1%
1 point:	33.1% - 39.7%
2 points:	39.8% - 64.2%
3 points:	64.3% - 75.0%
4 points:	> 75.0%

City Data and Calculations

Vegetation cover is one of the important factors which partitions rainfall into various hydrologic components such as surface runoff, baseflow, groundwater flow, evapotranspiration etc. In order to calculate this, a permeability map (Figure 6) was developed. We used Sentinel – 2A data from the Copernicus programme of the European Space Agency for the permeability analysis of the GHMC Area. Sentinel-2A scene of November 2019 with a cloud cover of less than 2% comprising the study region (Tile Number - T43QHV) acquired on 10 November 2019 was downloaded from USGS Earth Explorer. Red (R), Green (G), Blue (B), and Near Infrared (NIR) bands with 10m spatial resolution were pre-processed and used in the supervised classification process based on the standard methodology (Yan et al., 2016, Sekertekin et al., 2017). The field survey location data for the general LULC classes including water body, crop land, paddy cultivation, bare land, rocks, and urban built-ups were utilized as the training data set for the classification in ERDAS IMAGINE - 2014 software. After that, the classes of urban built up and rock classes were merged and considered impermeable layers and the remaining classes were merged and to prepare the map.

The permeability of the city based on calculations from the permeability map is 316.69 sq.km.

The total terrestrial area of the city = 593.34 sq. km.

Although the permeability area has been computed based on the vegetation cover as directed in the CBI manual, it should be noted that Hyderabad is mostly covered with granitic terrain and has hard rock aquifers which only allows 7–8% of precipitation^{15, 16} to permeate to the ground water table.

15. Sukhija, B.S., Reddy, D.V., Nagabhushanam, P., Bhattacharya, S.K., Jani, R.A., and Kumar, D. 2005. Characterisation of recharge processes and groundwater flow mechanisms in weathered-fractured granites of Hyderabad (India) using isotopes. *Hydrogeology Journal*, 14: 663-674.
16. Wakode, H.B., Baier, K., Jha, R., and Azzam, R. 2018. Impact of urbanization on groundwater recharge and urban water balance for the city of Hyderabad, India, *International Soil and Water Conservation Research*, 6(1): 51-62, <https://doi.org/10.1016/j.iswcr.2017.10.003>.



RESULT: 53.36%

SCORE: 2

Recommendations to Improve Score

Given the type of terrain and geology of Hyderabad, only 7-8% of rainfall can percolate into the ground. However, studies have also identified that the contribution from surface reservoirs is significant (40 to 70%) for ground water recharge¹⁵. Hyderabad has several artificial lakes and tanks. The city must look into reviving these surface reservoirs, in order to build water security and act as storm-water receptacles. An excellent example of lake revival within the city comes from that of Nekkampur Lake. This can be up scaled throughout the city. A healthy riparian vegetation cover will also support movement of water through the landscape.



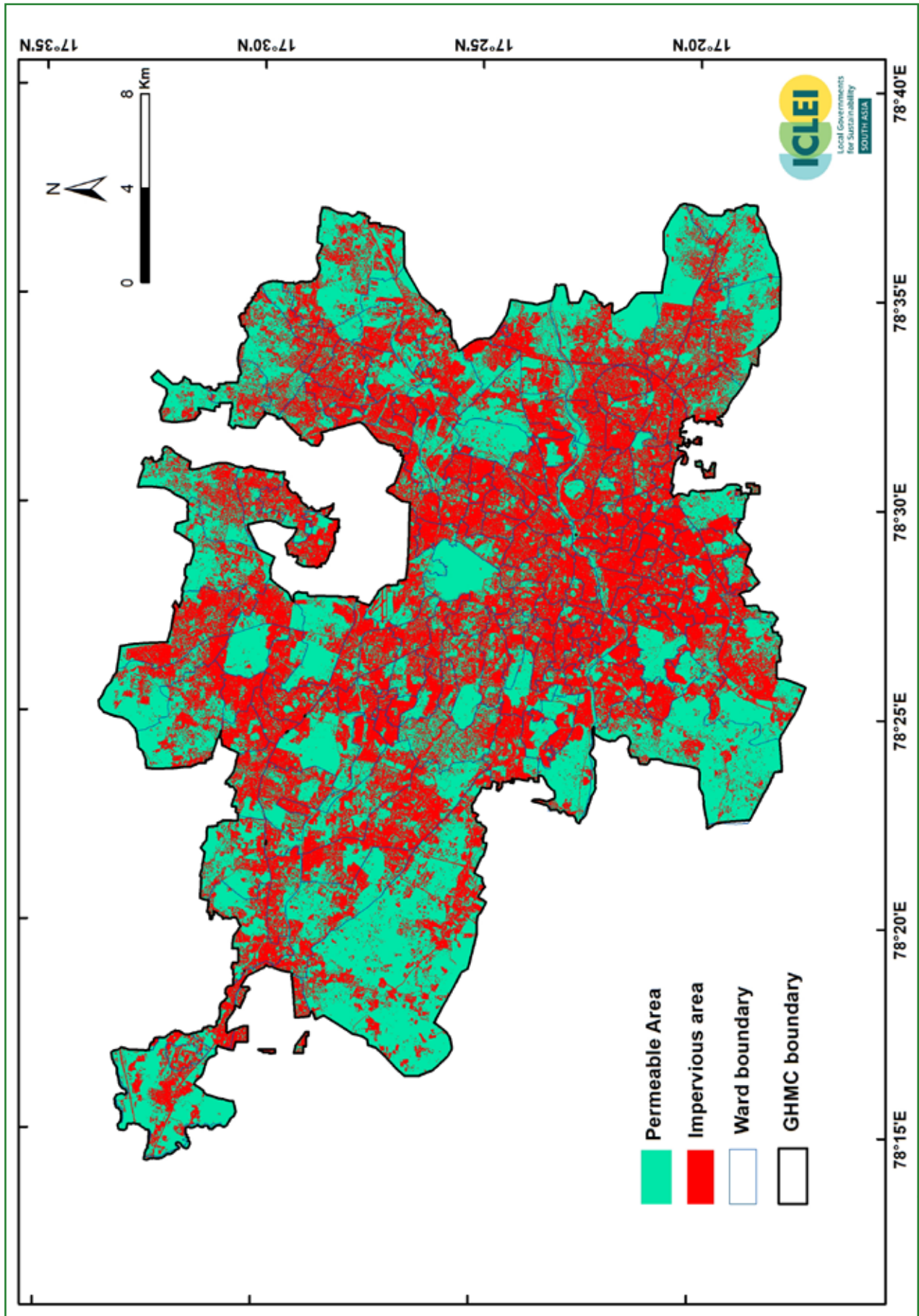


Figure 6: Permeable and Impermeable areas of Hyderabad city



Indicator 12: Climate Regulation: Carbon Storage and Cooling Effect of Vegetation

Methodology

How to calculate indicator

$(\text{Tree canopy cover}) \div (\text{Total terrestrial area of the city}) \times 100\%$

Scoring Range: (based on the CBI user manual)

0 point:	< 10.5%
1 point:	10.5% - 19.1%
2 points:	19.2% - 29.0%
3 points:	29.1% - 59.7%
4 points:	> 59.7%

City Data and Calculations

Indicator 12 measures the tree cover within the city and is used as a proxy for larger functions of climate regulation and carbon storage.

ICLEI South Asia has developed a tree cover map of Hyderabad city (Figure 7), using Sentinel – 2A data from the Copernicus programme of the European Space Agency to calculate the overall as well as ward-wise percent tree cover. Green cover refers to the area covered by crown of trees that is greater than 0.01 ha, identified through manual visual interpretation of remote sensing data at mapping scale 1:5000. Sentinel-2A scene of November 2019 with a cloud cover of less than 2% comprising the study region (Tile Number - T43QHV) acquired on 10 November 2019 was downloaded from USGS Earth Explorer. Red (R), Green (G), Blue (B), and Near Infrared (NIR) bands with 10m spatial resolution were pre-processed and used in the supervised classification process based on the standard methodology (Yan et al. 2016, Sekertekin et al. 2017). The field survey location data for the green cover area was utilized as the training data set for the tree cover classification in ERDAS IMAGINE – 2014 software. The tree cover patches delineated by the manual visual interpretation of google satellite data, available in the QGIS- Quick map services at a mapping scale 1:5000 was developed (Hu et al. 2013). The tree cover layers developed through the supervised classification process and manual visual interpretation process were merged together and the tree cover map of the GHMC was developed. The result from this analysis was used in the calculation of this indicator.

The total tree cover in the city of Hyderabad is 93.04 sq. km.

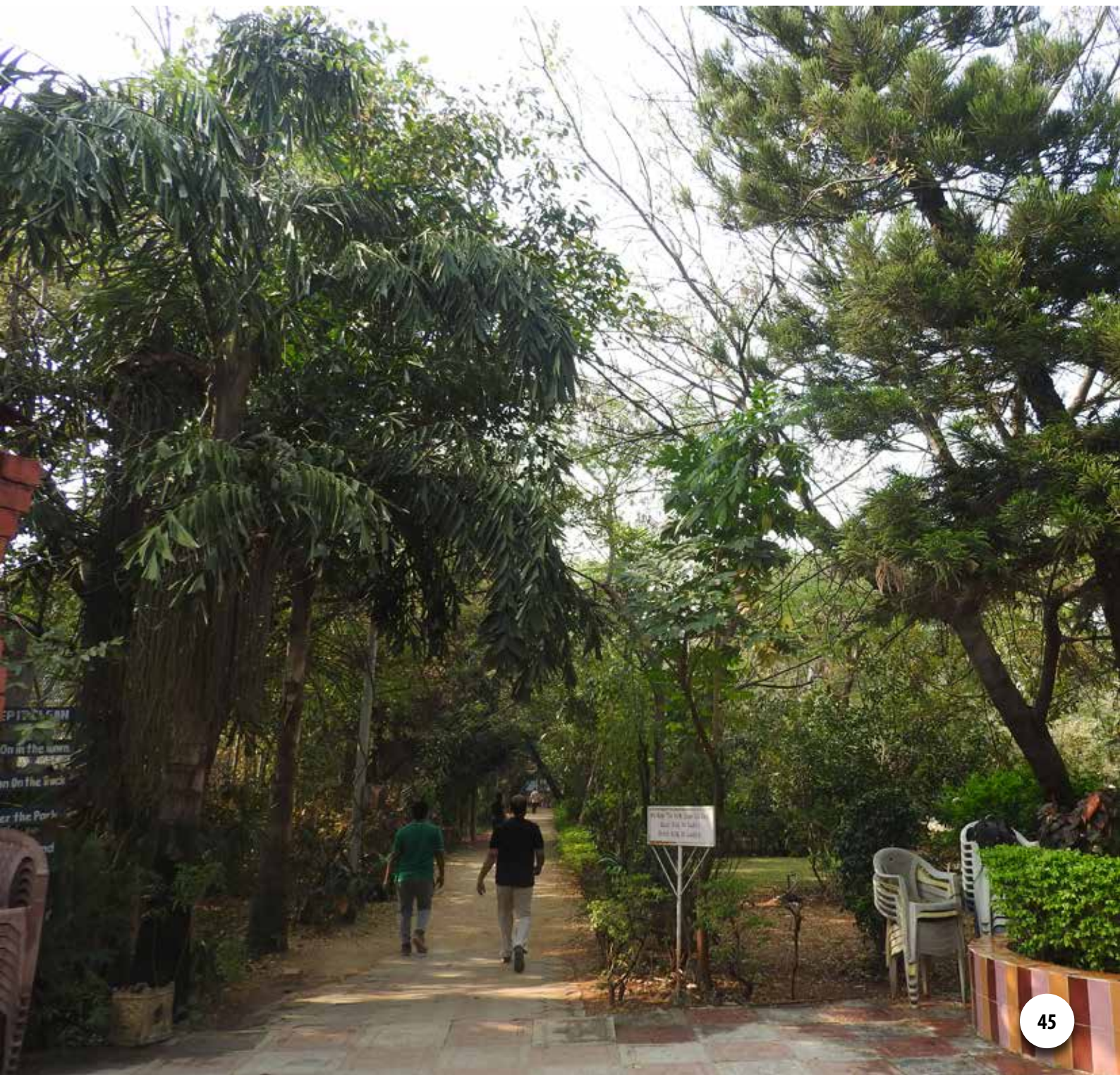
The total terrestrial area of the city is 593.34 sq. km



RESULT: 15.68%**SCORE: 1**

Recommendations to Improve Score

The city can improve their score on this indicator through a mix of activities related to conservation and restoration of its green spaces. Priority should be given for developing quality-based greenery, i.e. large foliage and high canopied trees for their economic and health services. Plantation of native tree species should be continued by GHMC. Community participation is critical for ensuring the success of programmes and strategies towards the same.



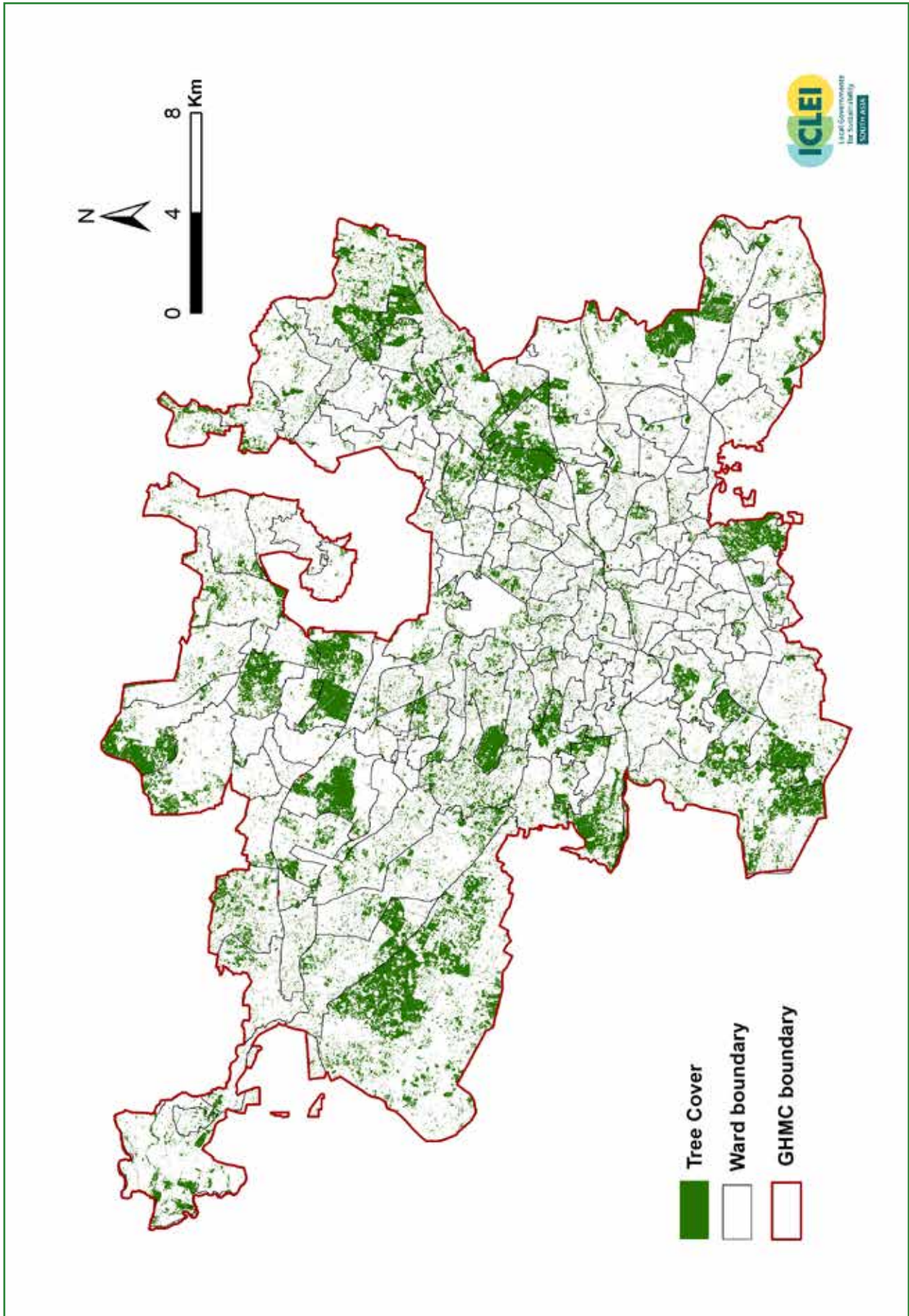


Figure 7: Tree Cover Map of GHMC

Indicator 13: Recreational Services

Methodology

How to calculate indicator

(Area of parks with natural areas and protected or secured natural areas)/1000 persons

Scoring Range: (based on the CBI user manual)

0 point:	< 0.1 ha/1000 persons
1 point:	0.1 - 0.3 ha/1000 persons
2 points:	0.4 - 0.6 ha/1000 persons
3 points:	0.7 - 0.9 ha/1000 persons
4 points:	> 0.9 ha/1000 persons

City Data and Calculations

For the city of Hyderabad, a list of the parks and their areas within the city was sourced from the GHMC. GHMC maintains and develops a number of different parks such as major parks, city-level parks, colony parks, traffic islands, medians and theme parks. Some of the important city-level parks in Hyderabad are the Sanjeevaiah Park, Indira Park, Chacha Nehru Park, Jalagam Vengala Rao Park, Imliban Park and Krishnakanth Park. The HMDA too, has some parks and lakes under its jurisdiction and is responsible for maintaining and developing these. The parks and their areas are listed in Annexure 3. The total area of all these parks is 346 ha. This area however neglects the consideration of other city parks such as the Botanical Garden, Zoological Park and other areas which are managed by the Forest Department within the city. Therefore, for the purpose of this indicator, the area of open green spaces which encompasses areas of parks in Hyderabad is 751.99 ha. Additionally, the area of the National Parks which fall within the city jurisdiction is 236.57 ha.

Other than these parks, some of the major water bodies such as the Hussain Sagar (470 ha), Mir Alam Tank (163.95 ha), Fox Sagar Lake (195.3 ha) and Durgam Cheruvu (65.07 ha) are also used for recreational purposes and are accessible lung spaces within the city. Although this area was considered in the 2012 application of the CBI, it cannot be considered as per the guidelines of the CBI since it measures green spaces.

Total area of parks with natural areas used for recreational purposes = 988.56 ha

(Area of parks with natural areas) / 1000 persons = 988.56/1000

RESULT: 0.988/1000 persons

SCORE: 4

Recommendations to Maintain Score

GHMC scores well on this indicator, highlighting that it is actively working to develop green-blue spaces for public access and recreation. The city also advertises partnerships through Corporate Social Responsibility, in order to develop and maintain these types of spaces. To maintain this score, GHMC can look into ecological restoration of degraded spaces.



Indicator 14: Educational Services

Methodology

How to calculate indicator

Average number of formal educational visits per child below 16 years to parks with natural areas or protected or secured natural areas per year

Scoring Range: (based on the CBI user manual)

- 0 point: 0 formal educational visit/year
- 1 point: 1 formal educational visit/year
- 2 points: 2 formal educational visits/year
- 3 points: 3 formal educational visits/year
- 4 points: > 3 formal educational visits/year

City Data and Calculations

Data gathered from the records of the State Education Board shows that some schools at their own discretion conduct visits to parks with natural areas. However, these visits are not mandated within the curriculum by educational boards.

Therefore, for this indicator, it was identified that no formal educational visit to natural areas takes place in schools of Hyderabad.

RESULT: No formal educational visit

SCORE: 0

Recommendations to Improve Score

Hyderabad city administration does not have an influence on the curriculum of the various boards followed by schools in the city. However, the city administration can give a directive to all schools to include such visits in their curriculum.

The various school boards responsible for curriculum development should consider including mandatory practical aspects and educational visits to support theoretical frameworks within themes of biodiversity education in the curricula. The city administration should send a request in this regard to all the school boards, through the state government.

More investment should be made in a systematic manner on environmental education, awareness and sensitisation programmes through print, electronic, entertainment and online social media.



Indicator 15: Budget Allocated to Biodiversity

Methodology

How to calculate indicator

(Amount spent on biodiversity related administration) ÷ (Total budget of city) × 100%

Scoring Range: (based on the CBI user manual)

0 point:	< 0.4%
1 point:	0.4% - 2.2%
2 points:	2.3% - 2.7%
3 points:	2.8% - 3.7%
4 points:	> 3.7%

City Data and Calculations

For the calculation of this indicator, the financial commitment of the city government through the annual municipal budget (2020-2021) was taken into consideration. State level funding which also contributes to biodiversity related administration was not factored into the calculation, as that does not constitute the city budget and will rather form part of the state budget.

The calculation of this indicator was therefore from the various direct budget allocations (in INR) made to biodiversity related activities, by the GHMC of Hyderabad city in 2020-2021, as listed below:

- Telangana Harithaharam - 30 million
- Construction and Improvements of City Level Parks - 100 million
- Construction and Improvements of Colony Parks - 300 million
- Purchase of Plants/ Translocation of plants - 15 million
- Protection of Lakes & Open Space - 100 million
- Conservation of Rivers/Lakes - 250 million
- Salaries of Urban Forestry Staff - 98.8 million
- Repairs and Maintenance of City Level Parks - 95.1 million
- Repairs and Maintenance of Colony Parks - 200 million
- Avenue and Other Plantations Maintenance - 31 million
- Traffic islands/ Central Median maintenance - 43.7 million
- Debris and Tree Branch Removal - 3.5 million
- Salaries of Horticulture department staff - 239.6 million
- Assessing city biodiversity through City Biodiversity Index, Tree population and Green Cover estimation in GHMC area - 2.18 million

Amount spent on biodiversity related administration = 1,508.88 million INR

Total Municipal Budget = 6,9736.4 million INR



RESULT: 2.16%

SCORE: 1

Recommendations to Improve Score

In 2020, the GHMC passed a resolution that 10% of the total annual revenue budget would be set aside mandatorily as a green budget for improving the greenery in the city. This has been instituted in the 2021-22 financial municipal budget. Utilising this budget in a meaningful manner to improve the quality of natural ecosystems by focussing on native species, enhancing biodiversity and generating awareness on biodiversity within the city will have a larger impact. An LBSAP will provide targeted strategies and interventions for this budget to be disbursed.



Indicator 16: Number of Biodiversity Projects Implemented by the City Annually

Methodology

How to calculate indicator

Number of programmes and projects that are being implemented by the city authorities, possibly in partnership with private sector, NGOs, etc. per year.

In addition to submitting the total number of projects and programmes carried out, cities are encouraged to provide a listing of the projects and to categorise the list into projects that are:

1. Biodiversity related
2. Ecosystems services related

Scoring Range: (based on the CBI user manual)

0 point:	< 12 programmes/projects
1 point:	12 - 21 programmes/projects
2 points:	22 - 39 programmes/projects
3 points:	40 - 71 programmes/projects
4 points:	> 71 programmes/projects

City Data and Calculations

This indicator is calculated based on the number of biodiversity related projects and programmes that the city authorities are involved in, either as the main player or in partnership with NGOs and the private sector, where the city is a key collaborator.

The city of Hyderabad is in the course of implementation of various projects such as park development and maintenance by various authorities, greening traffic islands and flyovers through vertical green walls by the GHMC, HMRL, HMDA, lake regeneration and beautification by organisations such as HMDA, Dhruvansh, District Authorities, waste management using organic composters, lake protection, Musi River restoration and greening, green-belt development, development and maintenance of nurseries in the city which are accessible to the public by the GHMC, HMRL, Forest Department and HMDA, estimating the city's green cover and enumerating the tree population of the city and stray dog sterilisation programmes. The flagship 'Telangana Ku Haritha Haram' programme initiated in 2015, is the third largest plantation effort in the world. It envisages to increase the present tree cover in the State to 33% of the total geographical area of the State. Under this programme GHMC has taken up avenue, colony, institutional, open space, graveyard plantations within Hyderabad. During 2020-21 this included 21.47 million tree plantations and a distribution of 0.52 million saplings to households and institutions.

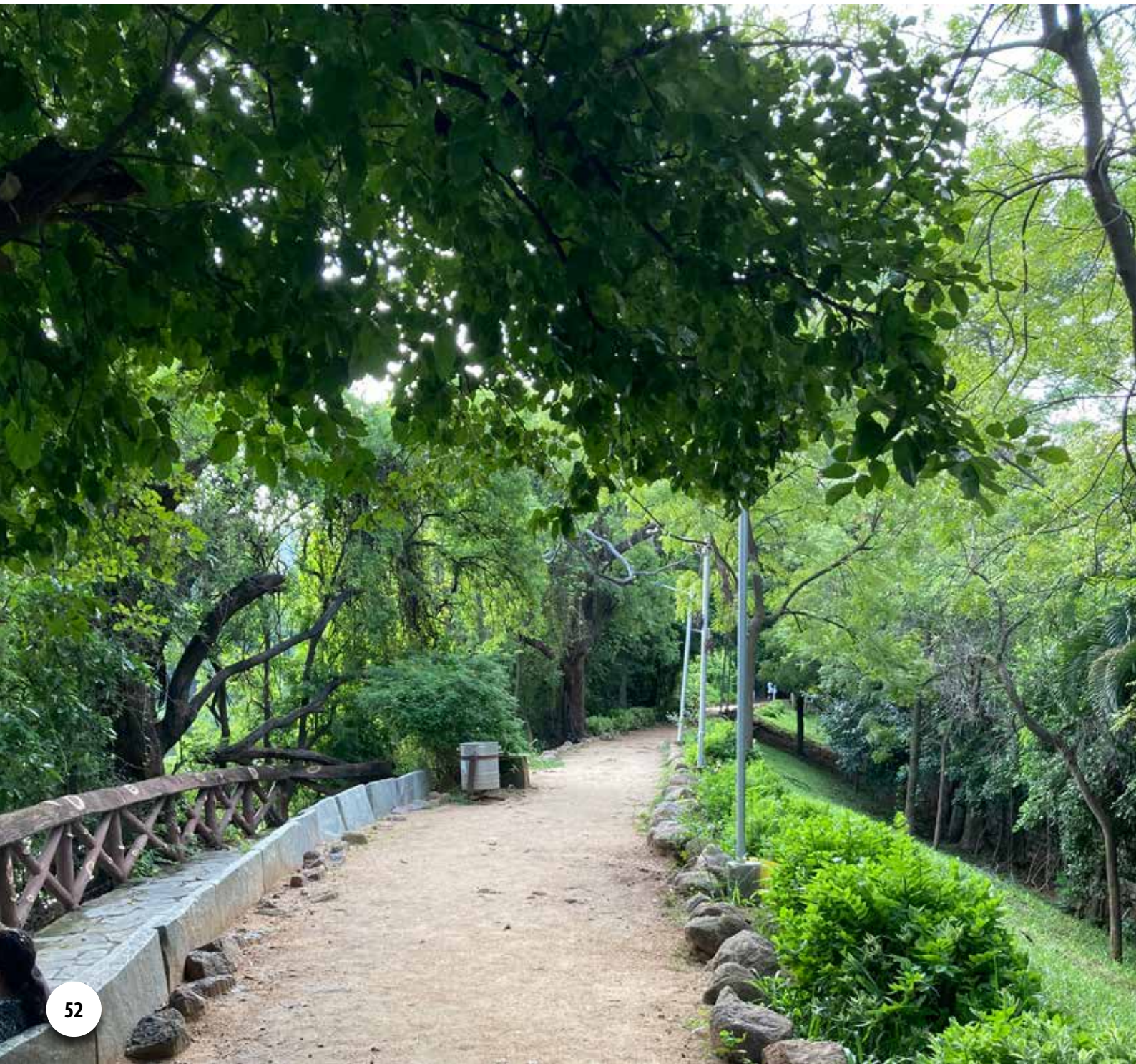
Early October of 2021, the Hon'ble Minister for Municipal Administration and Urban Development stated that there would be an amount of INR 4,070 million set aside to safeguard Hyderabad's lakes along with the creation of a post – Special Commissioner, Superintendent of Police (Lakes), to monitor and protect lakes within the Outer Ring Road.

**RESULT: 12-21
programmes/projects**

SCORE: 1

Recommendations to Improve Score

The city should develop its LBSAP where it can identify suitable partnerships and take up activities identified therein and thus improve on the score under this indicator. Ecological considerations are imperative in projects such as rejuvenation of lakes, restoration of degraded areas.



Indicator 17: Policies, Rules and Regulations – Existence of Local Biodiversity Strategy and Action Plan

Methodology

How to calculate indicator

Status of LBSAP (or any equivalent plan); number of associated CBD initiatives.

Scoring Range: (based on the CBI user manual)

- 0 point: No LBSAP*
- 1 point: LBSAP not aligned with NBSAP
- 2 points: LBSAP incorporates elements of NBSAP, but does not include any CBD initiatives**
- 3 points: LBSAP incorporates elements of NBSAP, and includes one to three CBD initiatives
- 4 points: LBSAP incorporates elements of NBSAP, and includes four or more CBD initiatives

* LBSAP or equivalent.

** The thematic programmes of work and cross-cutting issues of the CBD are listed in <http://www.cbd.int/programmes/>. The Strategic Plan for Biodiversity (2011-2020), including the Aichi Biodiversity Targets can also be used as a reference framework (<http://www.cbd.int/sp/default.shtml>).

City Data and Calculations

There is no LBSAP developed for the city of Hyderabad.

RESULT: No LBSAP

SCORE: 0

Recommendations to Improve Score

Several scores within this index for Hyderabad city can be improved with the development of an LBSAP, which will help the city mainstream, better plan and administer the local biodiversity. The initiative in this regard should be taken up on priority basis by the GHMC.

The Telanagana Water, Land and Trees Act (WALTA, 2002) can support the LBSAP from a legislative perspective.



Indicator 18 : Institutional Capacity - Essential Biodiversity Related Functions

Methodology

How to calculate indicator

Number of essential biodiversity related functions* that the city uses.

*The functions could include the following: biodiversity centre, botanical garden, herbarium, zoological garden or museum, insectarium, etc.

Scoring Range: (based on the CBI user manual)

- 0 point: No functions
- 1 point: 1 function
- 2 points: 2 functions
- 3 points: 3 functions
- 4 points: > 3 functions

City Data and Calculations

There are a number of essential biodiversity related functions within the city's jurisdiction which have been listed below:

- Nehru Zoological Park
- Birla Science Museum
- Birla Planetarium
- The Palmetum, Malakpet
- Hyderabad Botanical Garden/ Kotla Vijaya Bhaskara Reddy Botanical Garden
- Public Gardens
- Natural History Museum, Osmania University
- Herbal Gardens (e.g.; GHMC Herbal Garden, Jubilee Hills)

RESULT: 8

SCORE: 4

Recommendations to Maintain Score

Hyderabad city has a rich range of biodiversity functions. The city, in association with the Education Boards and Universities should encourage educational visits from local schools and colleges, which will support practical understanding of biodiversity-related concepts.

Indicator 19 : Institutional Capacity - Inter-Agency Co-Operation

Methodology

How to calculate indicator

Number of city or local government agencies involved in inter-agency co-operation pertaining to biodiversity matters.

Scoring Range: (based on the CBI user manual)

- 0 point: 1 or 2 agencies* cooperate on biodiversity matters
- 1 point: 3 agencies cooperate on biodiversity matters
- 2 points: 4 agencies cooperate on biodiversity matters
- 3 points: 5 agencies cooperate on biodiversity matters
- 4 points: > 5 agencies cooperate on biodiversity matters

* Agencies could include departments or authorities responsible for biodiversity, planning, water, transport, development, finance, infrastructure, etc.

City Data and Calculations

There are seven main government agencies/Special Purpose Vehicles which are involved in matters pertaining to biodiversity in Hyderabad city. They are:

- Urban Biodiversity Department and Lake Wing, GHMC
- Urban Forestry Department and Buddha Purnima Project Authority, HMDA
- Urban Forestry Department, HMRL
- Urban Forestry Department, HMWS&SB
- Musi Riverfront Development Corporation Ltd.
- BMC, Hyderabad
- Tree Protection Committee, Hyderabad

RESULT: 7 agencies

SCORE: 4

Recommendations to Maintain Score

Hyderabad is the only city in India to have a Tree Protection Committee, demonstrating the commitment to improving protection of their environment. GHMC must maintain coordination between all of these different agencies to facilitate biodiversity enhancement and protection.

Indicator 20 : Participation and Partnership - Formal or Informal Public Consultation

Methodology

How to calculate indicator

Existence and state of formal or informal public consultation process pertaining to biodiversity related matters.

Scoring Range: (based on the CBI user manual)

- 0 point: No routine formal or informal process
- 1 point: Formal or informal process being considered as part of the routine process
- 2 points: Formal or informal process being planned as part of the routine process
- 3 points: Formal or informal process in the process of being implemented as part of the routine process
- 4 points: Formal or informal process exists as part of the routine process

City Data and Calculations

There are consultations held with citizens' groups on matters of greening and beautification such as the colony welfare associations, with whom the responsibility of colony parks maintenance lies. These consultations are taken up by the urban biodiversity department of GHMC.

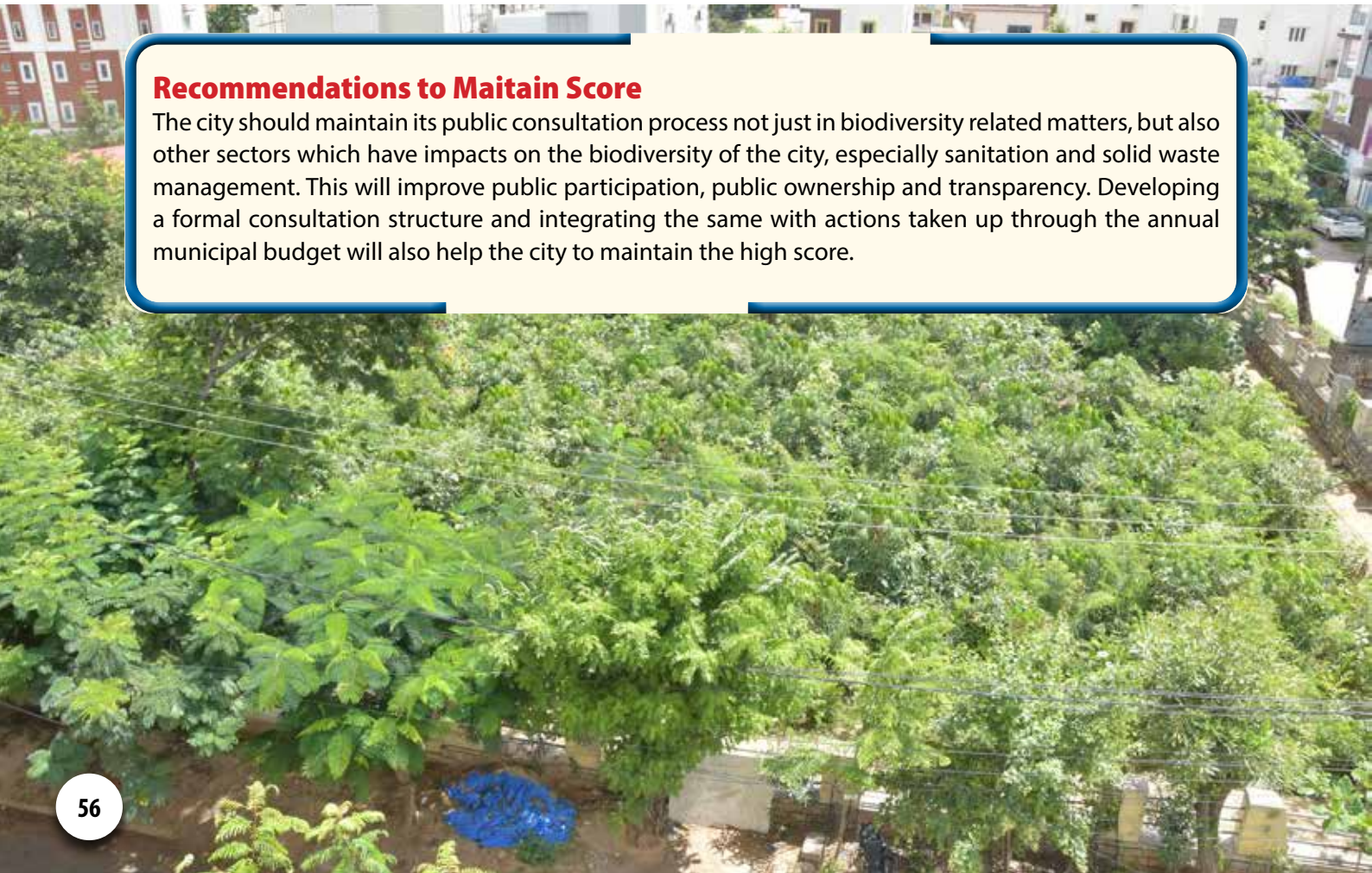
Therefore, for this indicator, a formal or informal process exists as part of the routine process.

RESULT: Formal or Informal Process Exist

SCORE: 4

Recommendations to Maitain Score

The city should maintain its public consultation process not just in biodiversity related matters, but also other sectors which have impacts on the biodiversity of the city, especially sanitation and solid waste management. This will improve public participation, public ownership and transparency. Developing a formal consultation structure and integrating the same with actions taken up through the annual municipal budget will also help the city to maintain the high score.



Indicator 21 : Participation and Partnership - Institutional Partnership

Methodology

How to calculate indicator

Number of agencies/private companies/NGOs/academic institutions/international organisations with which the city is partnering in biodiversity activities, projects and programmes.

Instances of inter-agency co-operation listed in Indicator 19 should not be listed here again.

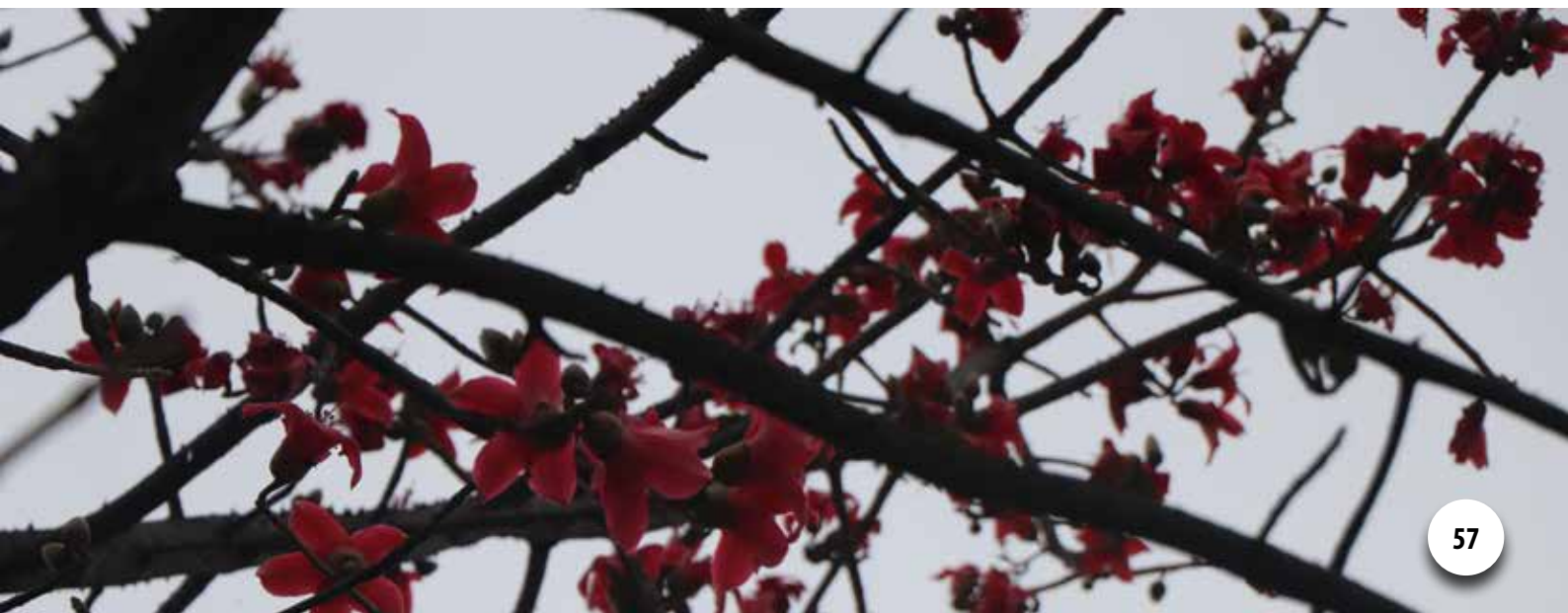
Scoring Range: (based on the CBI user manual)

- 0 point: No formal or informal partnerships
- 1 point: City in partnership with 1-6 other national or subnational agencies/private companies/NGOs/academic institutions/international organisations
- 2 points: City in partnership with 7-12 other national or subnational agencies/private companies/NGOs/academic institutions/international organisations
- 3 points: City in partnership with 13-19 other national or subnational agencies/private companies/NGOs/academic institutions/international organisations
- 4 points: City in partnership with 20 or more other national or subnational agencies/private companies/NGOs/academic institutions/international organisations

City Data and Calculations

The following are the agencies with whom the city is partnering with in terms of biodiversity related activities, projects and programmes:

- Telangana State Forest Department for undertaking plantations under the Telanganaku Haritha Haram as well as the development of urban forests
- ICLEI-Local Governments for Sustainability, South Asia: Green cover mapping, Illustrated Natural Asset Map and revisiting the City Biodiversity Index & Plastic Waste Management
- Ramkey Enviro: Waste processing and management
- The Lake Protection Committee Cell of the HMDA has taken up the identification and listing of Lakes/ Water Bodies in the HMDA Area, involving the field staff of Revenue Department, Irrigation Department and the Local Bodies
- Telangana State Pollution Control Board for monitoring water quality of the city's lakes and ensuring pollution compliance standards of industries within the city



RESULT: 1-6 organisations

SCORE: 1

Recommendations to Improve Score

There are several NGOs in Hyderabad working on aspects of environmental protection, social welfare and other activities, such as Save the Rocks, Hyderabad, WWF Hyderabad, Save Our Urban Lakes, SaciWATERs, Dhruvansh, among others. There are also several academic institutions of repute which have their campuses in the city. GHMC can easily improve their score for this indicator by reaching out to and partnering with some of these institutions and NGOs who are working on biodiversity related matters or even helping to maintain and update species lists. State and district level agencies like TSBB, the Agriculture and Horticulture Departments can also yield valuable partnerships to improve the biodiversity health of the city.



Indicator 22 : Education and Awareness: Is Biodiversity or Nature Awareness included in the School Curriculum

Methodology

How to calculate indicator

Is biodiversity or nature awareness included in the school curriculum (e.g. biology, geography, etc.)?

Scoring Range: (based on the CBI user manual)

- 0 point: Biodiversity or elements of it are not covered in the school curriculum
- 1 point: Biodiversity or elements of it are being considered for inclusion in the school curriculum
- 2 points: Biodiversity or elements of it are being planned for inclusion in the school curriculum
- 3 points: Biodiversity or elements of it are in the process of being implemented in the school curriculum
- 4 points: Biodiversity or elements of it are included in the school curriculum

City Data and Calculations

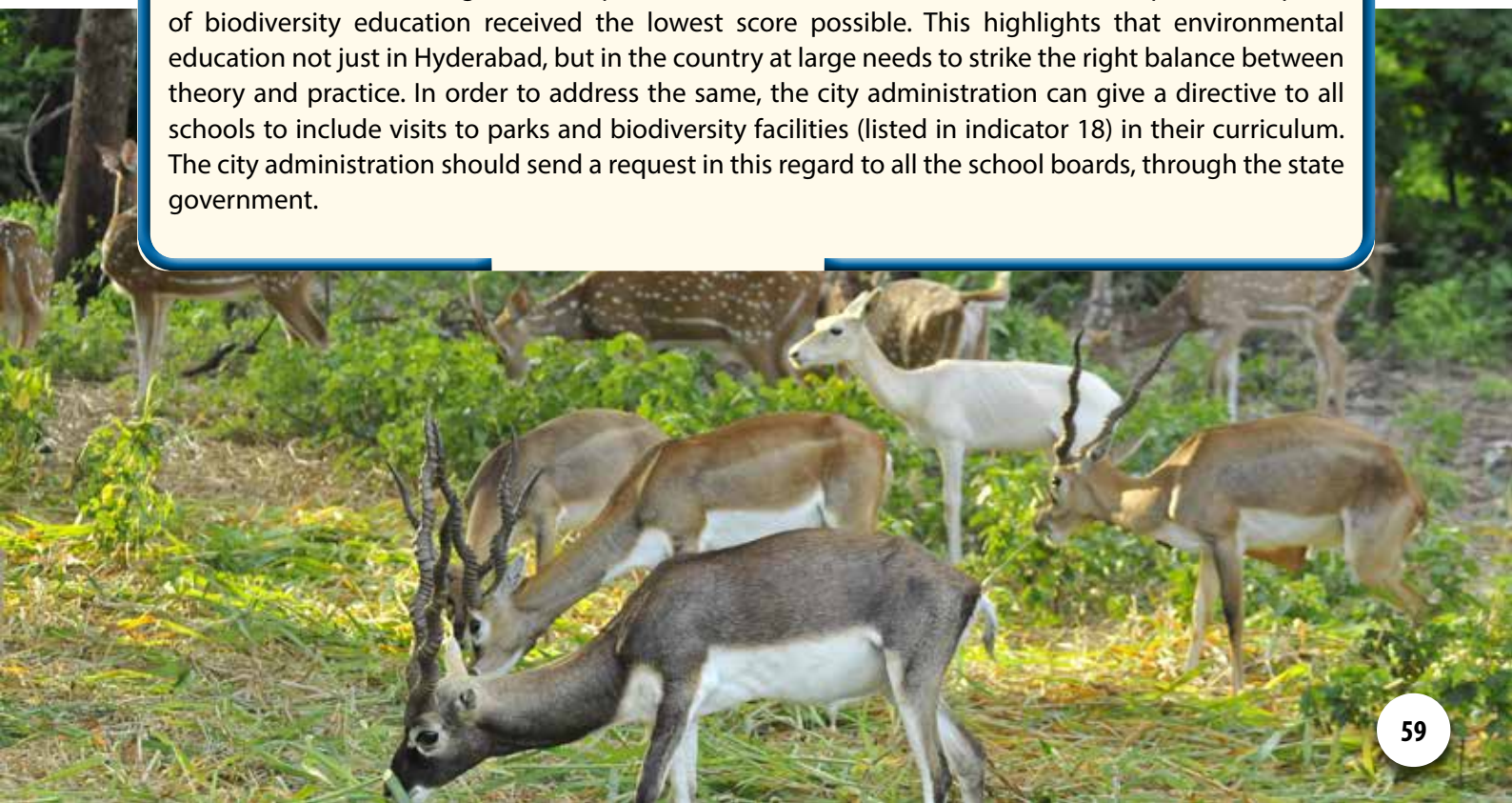
The schools within the city follow the curriculum of various boards such as the Telangana State Board, Central Board of Secondary Education (CBSE) and Indian Certificate of Secondary Education (ICSE). All of these boards have included biodiversity and nature awareness in various subjects like Biology, Geography, and Environmental Sciences. Therefore, biodiversity or elements of it are included in the school curriculum.

RESULT: Yes

SCORE: 4

Recommendations to Maintain Score

It should be noted here that this indicator which measures the theoretical aspects of biodiversity education receives the highest score possible whereas indicator 14 which measures practical aspects of biodiversity education received the lowest score possible. This highlights that environmental education not just in Hyderabad, but in the country at large needs to strike the right balance between theory and practice. In order to address the same, the city administration can give a directive to all schools to include visits to parks and biodiversity facilities (listed in indicator 18) in their curriculum. The city administration should send a request in this regard to all the school boards, through the state government.



Indicator 23: Education and Awareness - Number of Outreach or Public Awareness Events

Methodology

How to calculate indicator

Number of outreach or public awareness events held in the city per year.

Scoring Range: (based on the CBI user manual)

- 0 point: 0 outreach events/year
- 1 point: 1 - 59 outreach events/year
- 2 points: 60 -149 outreach events/year
- 3 points: 150-300 outreach events/year
- 4 points: > 300 outreach events/year

City Data and Calculations

GHMC celebrates World Environment Day and organises some public outreach programmes on sanitation and health, conducted under the aegis of the Swachh Bharat Mission which has an impact on the biodiversity of the city. Under the banner of the Telangana ku Haritha Haram Mission, GHMC also organises colony level awareness and plantation drives, programmes in schools and colleges of the city from June to December of every year. HMDA organises several awareness programmes around lake health, lake protection such as the use of eco-friendly idols during Ganesh Chaturti, Durga puja and so on. The number of programmes and events organised in the city per year falls within the range of more than 300 outreach events a year.

RESULT: >300

SCORE: 4

Recommendations to Maintain Score

There are certain informal fora such as Hyderabad trails and the Hyderabad History Project which conduct walks and activities that connect citizens with their heritage and environment. Tree walks organised by individuals, rock walks by the Society to Save Rocks, Hyderabad are also regularly organised for tourists and locals who may be interested in learning about the city's natural heritage. The city administration can easily take ownership of these by bringing them under a common banner and recognising various players. NGOs like the Hyderabad Urban Lab, WWF Hyderabad, who work towards improving the built-up and natural environment, can be recognised by the city, and brought on board as advisors for various projects on improving liveability. This will bring about transparency, participation and expertise within the city in biodiversity decision-making.



Table 8: Hyderabad's score indicator-wise for the CBI

	Maximum Score	Hyderabad City's score
Component – Native Biodiversity		
Indicators		
1. Proportion of Natural Areas in the City	4 points	3 points
2. Connectivity Measures	4 points	2 points
3. Native Biodiversity in Built Up Areas (Bird Species)	4 points	4 points
4. Change in Number of Vascular Plant Species	4 points	4 points
5. Change in Number of Bird Species	4 points	0 points
6. Change in Number of Freshwater fish Species	4 points	4 points
7. Change in Number of Species (Odonates)	4 points	4 points
8. Change in Number of Species (Amphibians)	4 points	3 points
9. Proportion of Protected Natural Areas	4 points	0 points
10. Proportion of Invasive Alien Species	4 points	3 points
Component – Ecosystem Services Provided by Biodiversity		
Indicators		
11. Regulation of Quantity of Water	4 points	2 points
12. Climate Regulation: Carbon Storage and Cooling Effect of Vegetation	4 points	1 points
13. Recreation and Education: Area of Parks with Natural Areas	4 points	4 points
14. Recreation and Education: Number of Formal Education Visits per Child Below 16 Years to Parks with Natural Areas per Year	4 points	0 points
Component – Governance and Management of Biodiversity		
Indicators		
15. Budget Allocated to Biodiversity	4 points	1 point
16. Number of Biodiversity Projects Implemented by the City Annually	4 points	1 point
17. Existence of Local Biodiversity Strategy and Action Plan	4 points	0 points
18. Institutional Capacity: Number of Biodiversity Related Function	4 points	4 points
19. Institutional Capacity: Number of City or Local Government Agencies Involved in Inter-agency Cooperation Pertaining to Biodiversity Matters	4 points	4 points
20. Participation and Partnership: Existence of Formal or Informal Public Consultation Process	4 points	4 points
21. Participation and Partnership: Number of Agencies/Private Companies/NGOs/Academic Institutions/International Organisations with which the City is Partnering in Biodiversity Activities, Projects and Programmes	4 points	1 point
22. Education and Awareness: Is Biodiversity or Nature Awareness Included in the School Curriculum	4 points	4 points
23. Education and Awareness: Number of Outreach or Public Awareness Events Held in the City per Year	4 points	4 point
Component – Native Biodiversity in the City (Sub-total for indicators 1-10)*		27 / 40 points*
Component – Ecosystem Services provided by Biodiversity (Sub-total for indicators 11-14)		7 / 16 points
Component – Governance and Management of Biodiversity (Sub-total for indicators 15-23)		23 / 36 points
Total		57 / 92 points



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ANNEXURE 1 – CALCULATION OF CONNECTIVITY AREAS

Table 9: Patches and their areas used in the calculation of Indicator 2

Patch ID	Area in ha (patch size)	Area * Area (Sq. h)	Patch ID	Area in ha (patch size)	Area * Area (Sq. h)
1	1539.33	2369536.85	39	29.86	891.35
2	1398.30	1955242.89	40	29.55	873.16
3	407.73	166246.20	41	28.22	796.33
4	385.36	148500.79	42	27.22	741.18
5	312.46	97632.50	43	26.25	688.90
6	299.37	89623.00	44	26.03	677.65
7	268.28	71973.09	45	25.86	668.93
8	262.95	69141.12	46	25.21	635.71
9	207.57	43083.23	47	24.98	624.18
10	162.88	26529.57	48	24.34	592.27
11	156.34	24440.94	49	24.30	590.55
12	152.30	23195.90	50	24.07	579.17
13	131.18	17208.72	51	23.56	554.94
14	128.65	16549.79	52	23.55	554.61
15	107.22	11496.13	53	22.80	519.81
16	96.33	9280.14	54	22.65	512.80
17	91.34	8343.21	55	22.39	501.34
18	88.50	7832.43	56	21.99	483.67
19	87.34	7628.71	57	20.51	420.46
20	73.99	5474.95	58	19.48	379.49
21	60.02	3602.76	59	19.36	374.78
22	59.82	3577.89	60	19.04	362.70
23	57.26	3278.52	61	18.50	342.38
24	52.68	2774.78	62	18.30	334.90
25	48.14	2317.78	63	17.95	322.37
26	48.06	2309.53	64	17.81	317.24
27	46.75	2185.33	65	17.46	304.74
28	46.47	2159.56	66	16.61	275.91
29	44.67	1995.32	67	16.60	275.64
30	43.93	1929.90	68	16.58	274.95
31	40.81	1665.37	69	16.50	272.15
32	40.46	1636.83	70	16.19	262.26
33	37.32	1393.13	71	16.17	261.43
34	37.20	1384.06	72	15.99	255.69
35	35.89	1288.35	73	15.40	237.06
36	34.89	1217.55	74	15.29	233.90
37	33.80	1142.17	75	14.93	222.89
38	30.72	943.99	76	13.42	180.05

Patch ID	Area in ha (patch size)	Area * Area (Sq. h)	Patch ID	Area in ha (patch size)	Area * Area (Sq. h)
77	12.05	145.24	122	5.43	29.53
78	12.01	144.12	123	5.29	28.01
79	11.88	141.20	124	5.26	27.64
80	11.79	139.06	125	5.02	25.25
81	11.74	137.80	126	5.02	25.23
82	11.69	136.71	127	5.00	24.96
83	10.86	118.03	128	4.99	24.87
84	10.72	114.89	129	4.93	24.31
85	10.64	113.30	130	4.66	21.76
86	10.48	109.81	131	4.57	20.88
87	10.47	109.62	132	4.46	19.86
88	10.42	108.64	133	4.46	19.85
89	10.34	106.87	134	4.44	19.69
90	9.84	96.82	135	4.43	19.61
91	9.14	83.45	136	4.30	18.50
92	9.09	82.71	137	4.25	18.05
93	9.02	81.37	138	4.23	17.92
94	8.98	80.57	139	4.03	16.25
95	8.59	73.81	140	4.03	16.21
96	8.18	66.91	141	3.93	15.45
97	8.07	65.05	142	3.91	15.28
98	8.00	64.04	143	3.89	15.15
99	7.86	61.72	144	3.88	15.09
100	7.85	61.63	145	3.84	14.75
101	7.84	61.50	146	3.84	14.74
102	7.67	58.89	147	3.82	14.62
103	7.64	58.34	148	3.76	14.12
104	7.59	57.57	149	3.67	13.44
105	7.31	53.39	150	3.66	13.37
106	7.22	52.11	151	3.65	13.32
107	6.98	48.75	152	3.43	11.77
108	6.97	48.60	153	3.40	11.54
109	6.49	42.14	154	3.39	11.48
110	6.48	41.93	155	3.33	11.07
111	6.38	40.71	156	3.24	10.50
112	6.33	40.01	157	3.24	10.49
113	6.15	37.81	158	3.23	10.43
114	6.12	37.51	159	3.23	10.43
115	6.07	36.81	160	3.16	9.97
116	6.03	36.33	161	3.12	9.71
117	5.98	35.81	162	3.09	9.56
118	5.95	35.35	163	3.07	9.44
119	5.74	33.00	164	3.06	9.39
120	5.72	32.71	165	3.04	9.23
121	5.49	30.15	166	2.98	8.88

Patch ID	Area in ha (patch size)	Area * Area (Sq. h)
167	2.87	8.24
168	2.81	7.92
169	2.80	7.87
170	2.77	7.66
171	2.74	7.53
172	2.73	7.44
173	2.71	7.36
174	2.71	7.33
175	2.69	7.25
176	2.64	6.95
177	2.31	5.33
178	2.28	5.21
179	2.25	5.07
180	2.23	4.98
181	2.21	4.87
182	2.19	4.81
183	2.11	4.47
184	2.11	4.44
185	2.10	4.41
186	2.09	4.38
187	2.05	4.20
188	2.04	4.17
189	2.00	4.02
190	1.99	3.96
191	1.99	3.96
192	1.97	3.86
193	1.96	3.83
194	1.96	3.83
195	1.95	3.79
196	1.94	3.78
197	1.93	3.73
198	1.87	3.49
199	1.83	3.35
200	1.82	3.31
201	1.75	3.06
202	1.75	3.05
203	1.73	3.00
204	1.73	2.99
205	1.69	2.86
206	1.69	2.86
207	1.65	2.73
208	1.63	2.65
209	1.62	2.63
210	1.61	2.59
211	1.60	2.55

Patch ID	Area in ha (patch size)	Area * Area (Sq. h)
212	1.59	2.52
213	1.58	2.50
214	1.55	2.40
215	1.53	2.35
216	1.50	2.25
217	1.48	2.20
218	1.48	2.19
219	1.40	1.97
220	1.39	1.93
221	1.39	1.93
222	1.33	1.76
223	1.30	1.70
224	1.25	1.56
225	1.24	1.55
226	1.23	1.52
227	1.23	1.51
228	1.21	1.46
229	1.20	1.44
230	1.20	1.43
231	1.18	1.39
232	1.17	1.37
233	1.14	1.31
234	1.14	1.29
235	1.13	1.28
236	1.12	1.26
237	1.11	1.23
238	1.09	1.19
239	1.05	1.10
240	1.04	1.09
241	0.97	0.95
242	0.97	0.93
243	0.95	0.91
244	0.95	0.90
245	0.92	0.84
246	0.83	0.70
247	0.78	0.61
248	0.77	0.60
249	0.73	0.53
250	0.72	0.52
251	0.70	0.49
252	0.69	0.47
253	0.69	0.47
254	0.67	0.45
255	0.67	0.45
256	0.66	0.44



Patch ID	Area in ha (patch size)	Area * Area (Sq. h)
257	0.61	0.37
258	0.60	0.37
259	0.60	0.35
260	0.59	0.35
261	0.59	0.35
262	0.56	0.32
263	0.55	0.30
264	0.54	0.30
265	0.54	0.29
266	0.52	0.27
267	0.52	0.27
268	0.52	0.27
269	0.50	0.25
270	0.49	0.24
271	0.48	0.23
272	0.46	0.21
273	0.46	0.21
274	0.45	0.20
275	0.45	0.20
276	0.41	0.17

Patch ID	Area in ha (patch size)	Area * Area (Sq. h)
277	0.41	0.16
278	0.40	0.16
279	0.38	0.14
280	0.37	0.14
281	0.36	0.13
282	0.35	0.12
283	0.31	0.09
284	0.28	0.08
285	0.24	0.06
286	0.24	0.06
287	0.23	0.05
288	0.21	0.05
289	0.18	0.03
290	0.16	0.03
291	0.16	0.03
292	0.13	0.02
293	0.09	0.01
294	0.08	0.01
295	0.06	0.00
296	0.03	0.00



ANNEXURE 2 – LIST OF SPECIES

Table 10: List used in the calculation of Indicators 3 and 5

Family	Scientific Name	Common Name	Resident/ Migrant	Status	Urban
Anatidae	<i>Anser indicus</i>	Bar Headed Goose	Migrant	Present	
Anatidae	<i>Aythya ferina</i>	Common Pochard	Migrant	Present	
Anatidae	<i>Tadorna tadorna</i>	Common Shelduck	Migrant	Present	
Anatidae	<i>Nettapus coromandelianus</i>	Cotton Pygmy Goose	Resident	Present	No
Anatidae	<i>Anas penelope</i>	Eurasian Wigeon	Migrant	Present	
Anatidae	<i>Aythya nyroca</i>	Ferruginous Duck	Migrant	Absent	
Anatidae	<i>Dendrocygna bicolor</i>	Fulvous Whistling Duck	Resident	Absent	
Anatidae	<i>Mareca strepera</i>	Gadwall	Migrant	Present	
Anatidae	<i>Anas querquedula</i>	Garganey	Migrant	Present	
Anatidae	<i>Anas crecca</i>	Green-Winged Teal	Migrant	Present	
Anatidae	<i>Anas poecilorhyncha</i>	Indian Spot-Billed Duck	Resident	Present	No
Anatidae	<i>Sarkidiornis melanotos</i>	Knob-Billed Duck	Resident	Present	No
Anatidae	<i>Dendrocygna javanica</i>	Lesser Whistling Duck	Resident	Present	No
Anatidae	<i>Anas acuta</i>	Northern Pintail	Migrant	Present	
Anatidae	<i>Anas clypeata</i>	Northern Shoveler	Migrant	Present	
Anatidae	<i>Rhodonessa rufina</i>	Red-Crested Pochard	Migrant	Present	
Anatidae	<i>Tadorna ferruginea</i>	Ruddy Shelduck	Migrant	Present	
Anatidae	<i>Aythya fuligula</i>	Tufted Duck	Migrant	Present	
Phasianidae	<i>Gallus sonneratii</i>	Gray Junglefowl	Vagrant	Absent	
Phasianidae	<i>Coturnix coturnix</i>	Common Quail	Migrant	Absent	
Phasianidae	<i>Francolinus pondicerianus</i>	Grey Francolin	Resident	Present	No
Phasianidae	<i>Pavo cristatus</i>	Indian Peafowl	Resident	Present	Yes
Phasianidae	<i>Perdicula asiatica</i>	Jungle Bush Quail	Resident	absent	
Phasianidae	<i>Francolinus pictus</i>	Painted Francolin	Resident	Present	No
Phasianidae	<i>Galloperdix lunulata</i>	Painted Spurfowl	Resident	Present	No
Phasianidae	<i>Coturnix coromandelica</i>	Rain Quail	Resident	Present	No
Phasianidae	<i>Perdicula argoondah</i>	Rock Bush Quail	Resident	Present	No
Otididae	<i>Ardeotis nigriceps</i>	Great Indian Bustard	Resident	Absent	
Otididae	<i>Sypheotides indicus</i>	Lesser Florican	Resident	Absent	
Phoenicopteridae	<i>Phoenicopterus roseus</i>	Greater Flamingo	Migrant	Present	
Podicipedidae	<i>Tachybaptus ruficollis</i>	Little Grebe	Resident	Present	Yes
Columbidae	<i>Treron bicinctus</i>	Orange-Breasted Green Pigeon	Resident	Addition	No

Family	Scientific Name	Common Name	Resident/ Migrant	Status	Urban
Columbidae	<i>Streptopelia decaocto</i>	Eurasian Collared Dove	Resident	Present	Yes
Columbidae	<i>Streptopelia senegalensis</i>	Laughing Dove	Resident	Present	Yes
Columbidae	<i>Streptopelia tranquebarica</i>	Red Collared Dove	Resident	Present	Yes
Columbidae	<i>Columba livia</i>	Rock Pigeon	Resident	Present	Yes
Columbidae	<i>Streptopelia chinensis</i>	Spotted Dove	Resident	Present	Yes
Columbidae	<i>Treron phoenicoptera</i>	Yellow-Footed Green Pigeon	Resident	Present	Yes
Pteroclididae	<i>Pterocles exustus</i>	Chestnut-Bellied Sandgrouse	Resident	Present	No
Cuculidae	<i>Surniculus dicruroides</i>	Fork-Tailed Drongo-Cuckoo	Migrant	Addition	
Cuculidae	<i>Cuculus micropterus</i>	Indian Cuckoo	Resident	Addition	No
Cuculidae	<i>Eudynamys scolopacea</i>	Asian Koel	Resident	Present	Yes
Cuculidae	<i>Phaenicophaeus viridirostris</i>	Blue-Faced Malkoha	Resident	Present	Yes
Cuculidae	<i>Cuculus canorus</i>	Common Cuckoo	Migrant	Absent	
Cuculidae	<i>Hierococyx varius</i>	Common Hawk-Cuckoo	Resident	Present	Yes
Cuculidae	<i>Centropus sinensis</i>	Greater Coucal	Resident	Present	Yes
Cuculidae	<i>Cacomantis passerinus</i>	Grey-Bellied Cuckoo	Migrant	Present	
Cuculidae	<i>Clamator jacobinus</i>	Jacobin Cuckoo	Migrant	Present	
Cuculidae	<i>Cuculus poliocephalus</i>	Lesser Cuckoo	Migrant	Addition	
Cuculidae	<i>Phaenicophaeus leschenaultii</i>	Sirkeer Malkoha	Resident	Present	No
Caprimulgidae	<i>Caprimulgus asiaticus</i>	Indian Nightjar	Resident	Present	No
Caprimulgidae	<i>Caprimulgus indicus</i>	Jungle Nightjar	Resident	Present	No
Caprimulgidae	<i>Caprimulgus afinis</i>	Savanna Nightjar	Resident	Present	No
Apodidae	<i>Tachymarptis melba</i>	Alpine Swift	Resident	Present	Yes
Apodidae	<i>Cypsiurus balasiensis</i>	Asian Palm Swift	Resident	Present	Yes
Apodidae	<i>Apus affinis</i>	Little Swift	Resident	Present	Yes
Hemiprocnidae	<i>Hemiproctne coronata</i>	Crested Treeswift	Resident	Absent	
Rallidae	<i>Zapornia fusca</i>	Ruddy-Breasted Crake	Resident	Absent	
Rallidae	<i>Porzana pusilla</i>	Baillon's Crake	Migrant	Present	
Rallidae	<i>Amaurornis akool</i>	Brown Crake	Resident	Present	No
Rallidae	<i>Fulica atra</i>	Eurasian Coot	Resident	Present	Yes
Rallidae	<i>Gallinula chloropus</i>	Eurasian Moorhen	Resident	Present	Yes
Rallidae	<i>Porphyrio poliocephalus</i>	Grey-Headed Swamphen	Resident	Present	Yes
Rallidae	<i>Gallicrex cinerea</i>	Watercock	Resident	Present	No
Rallidae	<i>Amaurornis phoenicurus</i>	White-Breasted Waterhen	Resident	Present	Yes
Gruidae	<i>Grus virgo</i>	Demoiselle Crane	Migrant	Absent	

Family	Scientific Name	Common Name	Resident/ Migrant	Status	Urban
Burhinidae	<i>Esacus recurvirostris</i>	Great Thick-Knee	Resident	Absent	
Burhinidae	<i>Burhinus indicus</i>	Indian Thick-Knee	Resident	Present	Yes
Charadriidae	<i>Pluvialis squatarola</i>	Grey Plover	Migrant	Absent	
Charadriidae	<i>Vanellus cinereus</i>	Grey-Headed Lapwing	Migrant	Present	
Charadriidae	<i>Charadrius alexandrinus</i>	Kentish Plover	Migrant	Present	
Charadriidae	<i>Charadrius dubius</i>	Little Ringed Plover	Resident	Present	No
Charadriidae	<i>Vanellus indicus</i>	Red-Wattled Lapwing	Resident	Present	Yes
Charadriidae	<i>Vanellus malabaricus</i>	Yellow-Wattled Lapwing	Resident	Present	Yes
Recurvirostridae	<i>Himantopus himantopus</i>	Black-Winged Stilt	Resident	Present	Yes
Rostratulidae	<i>Rostratula benghalensis</i>	Greater Painted-Snipe	Resident	Present	No
Scolopacidae	<i>Gallinago gallinago</i>	Common Snipe	Migrant	Addition	
Scolopacidae	<i>Calidris alpina</i>	Dunlin	Migrant	Absent	
Scolopacidae	<i>Limosa limosa</i>	Black-Tailed Godwit	Migrant	Present	
Scolopacidae	<i>Tringa nebularia</i>	Common Greenshank	Migrant	Present	
Scolopacidae	<i>Tringa totanus</i>	Common Redshank	Migrant	Present	
Scolopacidae	<i>Actitis hypoleucos</i>	Common Sandpiper	Migrant	Present	
Scolopacidae	<i>Numenius arquata</i>	Eurasian Curlew	Migrant	Absent	
Scolopacidae	<i>Scolopax rusticola</i>	Eurasian Woodcock	Migrant	Addition	
Scolopacidae	<i>Tringa ochropus</i>	Green Sandpiper	Migrant	Present	
Scolopacidae	<i>Lymnocyrtus minimus</i>	Jack Snipe	Migrant	Absent	
Scolopacidae	<i>Calidris minuta</i>	Little Stint	Migrant	Present	
Scolopacidae	<i>Tringa stagnatilis</i>	Marsh Sandpiper	Migrant	Present	
Scolopacidae	<i>Arenaria interpres</i>	Ruddy Turnstone	Migrant	Absent	
Scolopacidae	<i>Philomachus pugnax</i>	Ruff	Migrant	Present	
Scolopacidae	<i>Tringa erythropus</i>	Spotted Redshank	Migrant	Present	
Scolopacidae	<i>Calidris temminckii</i>	Temminck's Stint	Migrant	Present	
Scolopacidae	<i>Tringa glareola</i>	Wood Sandpiper	Migrant	Present	
Jacanidae	<i>Metopidius indicus</i>	Bronze-Winged Jacana	Resident	Present	No
Jacanidae	<i>Hydrophasianus chirurgus</i>	Pheasant-Tailed Jacana	Resident	Present	No
Turnicidae	<i>Turnix suscitator</i>	Barred Buttonquail	Migrant	Addition	
Glareolidae	<i>Glareola pratincola</i>	Collared Pratincole	Migrant	Absent	
Glareolidae	<i>Cursorius coromandelicus</i>	Indian Courser	Resident	Present	No
Glareolidae	<i>Glareola lactea</i>	Small Pratincole	Resident	Present	No
Laridae	<i>Larus ridibundus</i>	Black-Headed Gull	Migrant	Present	
Laridae	<i>Larus brunnicephalus</i>	Brown-Headed Gull	Migrant	Present	
Laridae	<i>Sterna aurantia</i>	Indian River Tern	Resident	Present	No
Laridae	<i>Sterna albifrons</i>	Little Tern	Migrant	Present	
Laridae	<i>Chlidonias hybridus</i>	Whiskered Tern	Migrant	Present	
Laridae	<i>Chlidonias leucopterus</i>	White-Winged Tern	Vagrant	Absent	
Laridae	<i>Rynchops albicollis</i>	Indian Skimmer	Resident	Absent	



Family	Scientific Name	Common Name	Resident/ Migrant	Status	Urban
Ciconiidae	<i>Anastomus oscitans</i>	Asian Openbill	Resident	Present	Yes
Ciconiidae	<i>Ciconia nigra</i>	Black Stork	Migrant	Absent	
Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-Necked Stork	RESIDENT	Absent	
Ciconiidae	<i>Leptoptilos javanicus</i>	Lesser Adjutant	Vagrant	Absent	
Ciconiidae	<i>Mycteria leucocephala</i>	Painted Stork	Resident	Present	No
Ciconiidae	<i>Ciconia ciconia</i>	White Stork	Migrant	Absent	
Ciconiidae	<i>Ciconia episcopus</i>	Woolly-Necked Stork	Resident	Present	Yes
Anhingidae	<i>Anhinga melanogaster</i>	Oriental Darter	Resident	Present	No
Phalacrocoracidae	<i>Phalacrocorax carbo</i>	Great Cormorant	Resident	Present	No
Phalacrocoracidae	<i>Phalacrocorax fuscicollis</i>	Indian Cormorant	Resident	Present	Yes
Phalacrocoracidae	<i>Phalacrocorax niger</i>	Little Cormorant	Resident	Present	Yes
Pelecanidae	<i>Pelecanus onocrotalus</i>	Great White Pelican	Migrant	Absent	
Pelecanidae	<i>Pelecanus philippensis</i>	Spot-Billed Pelican	Resident	Present	No
Ardeidae	<i>Butorides striata</i>	Striated Heron	Resident	Addition	No
Ardeidae	<i>Ixobrychus flavicollis</i>	Black Bittern	Migrant	Addition	
Ardeidae	<i>Nycticorax nycticorax</i>	Black-Crowned Night Heron	Resident	Present	Yes
Ardeidae	<i>Bubulcus ibis</i>	Cattle Egret	Resident	Present	Yes
Ardeidae	<i>Ixobrychus cinnamomeus</i>	Cinnamon Bittern	Resident	Present	No
Ardeidae	<i>Ardea alba</i>	Great Egret	Resident	Present	Yes
Ardeidae	<i>Ardea cinerea</i>	Grey Heron	Resident	Present	No
Ardeidae	<i>Ardeola grayii</i>	Indian Pond Heron	Resident	Present	Yes
Ardeidae	<i>Ardea intermedia</i>	Intermediate Egret	Resident	Present	Yes
Ardeidae	<i>Egretta garzetta</i>	Little Egret	Resident	Present	No
Ardeidae	<i>Ardea purpurea</i>	Purple Heron	Resident	Present	No
Ardeidae	<i>Egretta gularis</i>	Western Reef Heron	Migrant	Absent	
Ardeidae	<i>Ixobrychus sinensis</i>	Yellow Bittern	Migrant	Present	
Threskiornithidae	<i>Threskiornis melanocephalus</i>	Black-Headed Ibis	Resident	Present	Yes
Threskiornithidae	<i>Platalea leucorodia</i>	Eurasian Spoonbill	Migrant	Present	
Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	Resident	Present	Yes
Threskiornithidae	<i>Pseudibis papillosa</i>	Red-Naped Ibis	Resident	Present	Yes
Pandionidae	<i>Pandion haliaetus</i>	Osprey	Migrant	Present	
Accipitridae	<i>Aquila nipalensis</i>	Steppe Eagle	Migrant	Absent	
Accipitridae	<i>Milvus migrans</i>	Black Kite	Resident	Present	Yes
Accipitridae	<i>Elanus caeruleus</i>	Black-Winged Kite	Resident	Present	Yes
Accipitridae	<i>Hieraaetus fasciatus</i>	Bonelli's Eagle	Resident	Present	No
Accipitridae	<i>Hieraaetus pennatus</i>	Booted Eagle	Migrant	Present	
Accipitridae	<i>Haliastur indus</i>	Brahminy Kite	Resident	Present	Yes
Accipitridae	<i>Nisaetus cirrhatus</i>	Changeable Hawk-Eagle	Resident	Present	No
Accipitridae	<i>Buteo buteo</i>	Common Buzzard	Migrant	Absent	



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Accipitridae	<i>Pernis ptilorhynchus</i>	Crested Honey Buzzard	Resident	Present	Yes
Accipitridae	<i>Spilornis cheela</i>	Crested Serpent Eagle	Resident	Present	No
Accipitridae	<i>Neophron percnopterus</i>	Egyptian Vulture	Resident	Absent	
Accipitridae	<i>Gyps fulvus</i>	Eurasian Griffon	Migrant	Absent	
Accipitridae	<i>Circus aeruginosus</i>	Eurasian Marsh Harrier	Migrant	Present	
Accipitridae	<i>Accipter nisus</i>	Eurasian Sparrowhawk	Migrant	Absent	
Accipitridae	<i>Clanga clanga</i>	Greater Spotted Eagle	Migrant	Present	
Accipitridae	<i>Circus cyaneus</i>	Hen Harrier	Migrant	Absent	
Accipitridae	<i>Clanga hastata</i>	Indian Spotted-Eagle	Resident	Present	Yes
Accipitridae	<i>Gyps indicus</i>	Indian Vulture	Resident	Absent	
Accipitridae	<i>Buteo rufinus</i>	Long-Legged Buzzard	Migrant	Absent	
Accipitridae	<i>Circus pygargus</i>	Montagu's Harrier	Migrant	Present	
Accipitridae	<i>Circus macrourus</i>	Pallid Harrier	Migrant	Present	
Accipitridae	<i>Circus melanoleucos</i>	Pied Harrier	Migrant	Absent	
Accipitridae	<i>Sarcogyps calvus</i>	Red-Headed Vulture	Resident	Absent	
Accipitridae	<i>Accipter badius</i>	Shikra	Resident	Present	Yes
Accipitridae	<i>Circaetus gallicus</i>	Short-Toed Snake Eagle	Resident	Present	Yes
Accipitridae	<i>Aquila rapax</i>	Tawny Eagle	Resident	Present	No
Accipitridae	<i>Butastur teesa</i>	White-Eyed Buzzard	Resident	Present	Yes
Accipitridae	<i>Gyps bengalensis</i>	White-Rumped Vulture	Resident	Absent	
Strigidae	<i>Bubo bengalensis</i>	Indian Eagle-Owl	Resident	Present	No
Strigidae	<i>Glaucidium radiatum</i>	Jungle Owlet	Resident	Present	No
Strigidae	<i>Strix ocellata</i>	Mottled Wood Owl	Resident	Absent	
Strigidae	<i>Asio flammeus</i>	Short-Eared Owl	Migrant	Present	
Strigidae	<i>Athene brama</i>	Spotted Owlet	Resident	Present	Yes
Tytonidae	<i>Tyto capensis</i>	African Grass Owl	Migrant	Absent	
Tytonidae	<i>Tyto alba</i>	Barn Owl	Resident	Present	Yes
Upupidae	<i>Upupa epops</i>	Eurasian Hoopoe	Resident	Present	Yes
Bucerotidae	<i>Ocyceros birostris</i>	Indian Grey Hornbill	Resident	Present	Yes
Alcedinidae	<i>Alcedo atthis</i>	Common Kingfisher	Resident	Present	Yes
Alcedinidae	<i>Ceryle rudis</i>	Pied Kingfisher	Resident	Present	No
Alcedinidae	<i>Halcyon capensis</i>	Stork-Billed Kingfisher	Resident	Absent	
Alcedinidae	<i>Halcyon smyrnensis</i>	White-Throated Kingfisher	Resident	Present	Yes
Meropidae	<i>Merops philippinus</i>	Blue-Tailed Bee-Eater	Resident	Present	Yes
Meropidae	<i>Merops leschenaultii</i>	Chestnut-Headed Bee-Eater	Resident	Present	Yes
Meropidae	<i>Merops orientalis</i>	Green Bee-Eater	Resident	Present	Yes
Coraciidae	<i>Coracias garrulus</i>	European Roller	Migrant	Absent	
Coraciidae	<i>Coracias benghalensis</i>	Indian Roller	Resident	Present	Yes
Megalaimidae	<i>Megalaima zeylanica</i>	Brown-Headed Barbet	Resident	Absent	



Family	Scientific Name	Common Name	Resident/ Migrant	Status	Urban
Megalaimidae	<i>Megalaima haemacephala</i>	Coppersmith Barbet	Resident	Present	Yes
Picidae	<i>Chrysocolaptes guttacristatus</i>	Greater Flameback	Vagrant	Addition	
Picidae	<i>Dinopium benghalense</i>	Black-Rumped Flameback	Resident	Present	Yes
Picidae	<i>Dendrocopos nanus</i>	Brown-Capped Pygmy Woodpecker	Resident	Absent	
Picidae	<i>Jynx torquilla</i>	Eurasian Wryneck	Migrant	Present	
Picidae	<i>Celeus brachyurus</i>	Rufous Woodpecker	Resident	Absent	
Picidae	<i>Chrysocolaptes festivus</i>	White-Naped Woodpecker	Resident	Present	No
Falconidae	<i>Falco subbuteo</i>	Eurasian Hobby	Migrant	Present	
Falconidae	<i>Falco tinnunculus</i>	Eurasian Kestrel	Migrant	Present	
Falconidae	<i>Falco jugger</i>	Laggar Falcon	Migrant	Present	
Falconidae	<i>Falco peregrines</i>	Peregrine Falcon	Migrant	Present	
Falconidae	<i>Falco chicquera</i>	Red-Necked Falcon	Migrant	Present	
Psittacidae	<i>Psittacula eupatria</i>	Alexandrine Parakeet	Vagrant	Absent	
Psittacidae	<i>Psittacula cyanocephala</i>	Plum-Headed Parakeet	Resident	Present	Yes
Psittacidae	<i>Psittacula krameri</i>	Rose-Ringed Parakeet	Resident	Present	Yes
Psittacidae	<i>Loriculus vernalis</i>	Vernal Hanging Parrot	Resident	Absent	
Pittidae	<i>Pitta brachyura</i>	Indian Pitta	Migrant	Present	
Campephagidae	<i>Coracina melanoptera</i>	Black-Headed Cuckooshrike	Resident	Present	No
Campephagidae	<i>Coracina melaschistos</i>	Black-Winged Cuckooshrike	Migrant	Absent	
Campephagidae	<i>Coracina macei</i>	Large Cuckooshrike	Resident	Present	Yes
Campephagidae	<i>Pericrocotus flammeus</i>	Orange Minivet	Vagrant	Absent	
Campephagidae	<i>Pericrocotus cinnamomeus</i>	Small Minivet	Resident	Present	Yes
Campephagidae	<i>Pericrocotus erythropygius</i>	White-Bellied Minivet	Resident	Absent	
Oriolidae	<i>Oriolus xanthornus</i>	Black-Hooded Oriole	Resident	Absent	
Oriolidae	<i>Oriolus chinensis</i>	Black-Naped Oriole	Migrant	Absent	
Oriolidae	<i>Oriolus kundoo</i>	Indian Golden Oriole	Resident	Present	Yes
Artamidae	<i>Artamus fuscus</i>	Ashy Woodswallow	Resident	Present	Yes
Vangidae	<i>Tephrodornis pondicerianus</i>	Common Woodshrike	Resident	Present	Yes
Aegithinidae	<i>Aegithina tiphia</i>	Common Iora	Resident	Present	Yes
Rhipiduridae	<i>Rhipidura albogularis</i>	Spot-Breasted Fantail	Resident	Absent	
Rhipidurinae	<i>Rhipidura aureola</i>	White-Browed Fantail	Resident	Present	Yes
Rhipidurinae	<i>Rhipidura albicollis</i>	White-Throated Fantail	Vagrant	Absent	
Dicruridae	<i>Dicrurus hottentottus</i>	Hair-Crested Drongo	Resident	Addition	No



Family	Scientific Name	Common Name	Resident/ Migrant	Status	Urban
Dicruridae	<i>Dicrurus leucophaeus</i>	Ashy Drongo	LOCAL MIGRANT	Present	
Dicruridae	<i>Dicrurus macrocercus</i>	Black Drongo	Resident	Present	Yes
Dicruridae	<i>Dicrurus caeruleus</i>	White-Bellied Drongo	Resident	Present	No
Monarchinae	<i>Hypothymis azurea</i>	Black-Naped Monarch	Resident	Present	No
Monarchinae	<i>Terpsiphone paradisi</i>	Indian Paradise Flycatcher	Migrant	Present	
Laniidae	<i>Lanius vittatus</i>	Bay-Backed Shrike	Resident	Present	No
Laniidae	<i>Lanius cristatus</i>	Brown Shrike	Migrant	Present	
Laniidae	<i>Lanius excubitor</i>	Great Grey Shrike	Resident	Absent	
Laniidae	<i>Lanius schach</i>	Long-Tailed Shrike	Resident	Present	Yes
Corvidae	<i>Corvus splendens</i>	House Crow	Resident	Present	Yes
Corvidae	<i>Corvus macrorhynchos</i>	Large-Billed Crow	Resident	Present	Yes
Corvidae	<i>Dendrocitta vagabunda</i>	Rufous Treepie	Resident	Present	Yes
Paridae	<i>Parus cinereus</i>	Cinereous Tit	Resident	Present	Yes
Paridae	<i>Parus xanthogenys</i>	Himalayan Black-Lored Tit		Absent	
Alaudidae	<i>Eremopterix grisea</i>	Ashy-Crowned Sparrow-Lark	Resident	Present	Yes
Alaudidae	<i>Calandrella brachydactyla</i>	Greater Short-Toed Lark	Migrant	Absent	
Alaudidae	<i>Mirafra erythroptera</i>	Indian Bush Lark	Resident	Present	Yes
Alaudidae	<i>Mirafra affinis</i>	Jerdon's Bush Lark	Resident	Present	No
Alaudidae	<i>Alauda gulgula</i>	Oriental Skylark	Migrant	Present	
Alaudidae	<i>Ammomanes phoenicurus</i>	Rufous-Tailed Lark	Resident	Present	Yes
Alaudidae	<i>Mirafra cantillans</i>	Singing Bush Lark	Resident	Absent	
Alaudidae	<i>Galerida deva</i>	Sykes's Lark	Resident	Present	Yes
Alaudidae	<i>Calandrella dukhunensis</i>	Sykes's Short-Toed Lark	Migrant	Absent	
Cisticolidae	<i>Prinia socialis</i>	Ashy Prinia	Resident	Present	Yes
Cisticolidae	<i>Orthotomus sutorius</i>	Common Tailorbird	Resident	Present	Yes
Cisticolidae	<i>Prinia hodgsonii</i>	Grey-Breasted Prinia	Resident	Present	No
Cisticolidae	<i>Prinia sylvatica</i>	Jungle Prinia	Resident	Present	No
Cisticolidae	<i>Prinia buchanani</i>	Rufous-Fronted Prinia	Resident	Absent	
Cisticolidae	<i>Prinia inornata</i>	Plain Prinia	Resident	Present	No
Cisticolidae	<i>Cisticola juncidis</i>	Zitting Cisticola	Resident	Present	No
Acrocephalidae	<i>Acrocephalus dumetorum</i>	Blyth's Reed Warbler	Migrant	Present	
Acrocephalidae	<i>Hippolais caligata</i>	Booted Warbler	Migrant	Present	
Acrocephalidae	<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	Migrant	Present	
Acrocephalidae	<i>Acrocephalus agricola</i>	Paddyfield Warbler	Migrant	Absent	
Acrocephalidae	<i>Iduna rama</i>	Sykes's Warbler	Migrant	Addition	



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Locustellidae	<i>Locustella naevia</i>	Common Grasshopper Warbler	Migrant	Absent	
Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow	Migrant	Present	
Hirundinidae	<i>Hirundo concolor</i>	Dusky Crag Martin	Resident	Present	Yes
Hirundinidae	<i>Riparia riparia</i>	European Sand Martin	Migrant	Absent	
Hirundinidae	<i>Riparia chinensis</i>	Grey-Throated Martin	Resident	Absent	
Hirundinidae	<i>Hirundo daurica</i>	Red-Rumped Swallow	Resident	Present	Yes
Hirundinidae	<i>Hirundo fluvicola</i>	Streak-Throated Swallow	Resident	Present	Yes
Hirundinidae	<i>Hirundo smithii</i>	Wire-Tailed Swallow	Resident	Present	No
Pycnonotidae	<i>Pycnonotus cafer</i>	Red-Vented Bulbul	Resident	Present	Yes
Pycnonotidae	<i>Pycnonotus jocosus</i>	Red-Whiskered Bulbul	Resident	Absent	
Pycnonotidae	<i>Pycnonotus luteolus</i>	White-Browed Bulbul	Resident	Present	No
Phylloscopidae	<i>Phylloscopus collybita</i>	Common Chiffchaff	Migrant	Present	
Phylloscopidae	<i>Phylloscopus trochiloides</i>	Green Warbler	Migrant	Addition	
Phylloscopidae	<i>Phylloscopus trochiloides</i>	Greenish Warbler	Migrant	Present	
Phylloscopidae	<i>Phylloscopus humei</i>	Hume's Warbler	Migrant	Absent	
Phylloscopidae	<i>Phylloscopus magnirostris</i>	Large-Billed Leaf Warbler	Migrant	Absent	
Phylloscopidae	<i>Phylloscopus griseolus</i>	Sulphur-Bellied Warbler	Migrant	Present	
Sylviidae	<i>Sylvia althaea</i>	Hume's Whitethroat	Migrant	Absent	
Sylviidae	<i>Sylvia curruca</i>	Lesser Whitethroat	Migrant	Present	
Sylviidae	<i>Phylloscopus inornatus</i>	Yellow-Browed Warbler	Migrant	Absent	
Sylviidae	<i>Sylvia crassirostris</i>	Eastern Orphean Warbler	Migrant	Absent	
Paradoxornithidae	<i>Chrysomma sinense</i>	Yellow-Eyed Babbler	Resident	Present	No
Zosteropidae	<i>Zosterops palpebrosus</i>	Indian White-Eye	Resident	Present	Yes
Timaliidae	<i>Dumetia hyperythra</i>	Tawny-Bellied Babbler	Resident	Present	Yes
Leiothrichidae	<i>Turdoides caudatus</i>	Common Babbler	Resident	Absent	
Leiothrichidae	<i>Turdoides striatus</i>	Jungle Babbler	Resident	Present	Yes
Leiothrichidae	<i>Turdoides malcolmi</i>	Large Grey Babbler	Resident	Present	No
Leiothrichidae	<i>Turdoides affinis</i>	Yellow-Billed Babbler	Resident	Present	Yes
Sturnidae	<i>Sturnus contra</i>	Asian Pied Starling	Resident	Present	Yes
Sturnidae	<i>Sturnus pagodarum</i>	Brahminy Starling	Resident	Present	Yes
Sturnidae	<i>Sturnus malabaricus</i>	Chestnut-Tailed Starling	Resident	Present	Yes
Sturnidae	<i>Acridotheres tristis</i>	Common Myna	Resident	Present	Yes
Sturnidae	<i>Sturnus roseus</i>	Rosy Starling	Migrant	Present	
Turdinae	<i>Turdus simillimus</i>	Indian Blackbird	Resident	Present	Yes



Family	Scientific Name	Common Name	Resident/ Migrant	Status	Urban
Turdinae	<i>Zoothera citrina</i>	Orange-Headed Thrush	Resident	Present	No
Muscicapidae	<i>Myophonus horsfieldii</i>	Malabar Whistling Thrush	Vagrant	Absent	
Muscicapidae	<i>Muscicapa dauurica</i>	Asian Brown Flycatcher	Migrant	Present	
Muscicapidae	<i>Phoenicurus ochruros</i>	Black Redstart	Migrant	Present	
Muscicapidae	<i>Monticola solitarius</i>	Blue Rock Thrush	Migrant	Present	
Muscicapidae	<i>Monticola cinclorhynchus</i>	Blue-Capped Rock Thrush	Migrant	Present	
Muscicapidae	<i>Luscinia svecica</i>	Bluethroat	Migrant	Present	
Muscicapidae	<i>Cyornis rubeculoides</i>	Bluethroated Flycatcher	Migrant	Present	
Muscicapidae	<i>Muscicapa muttui</i>	Brown-Breasted Flycatcher	Migrant	Present	
Muscicapidae	<i>Saxicoloides fulicata</i>	Indian Robin	Resident	Present	Yes
Muscicapidae	<i>Copsychus saularis</i>	Oriental Magpie-Robin	Resident	Present	Yes
Muscicapidae	<i>Saxicola caprata</i>	Pied Bush Chat	Resident	Present	Yes
Muscicapidae	<i>Ficedula parva</i>	Red-Breasted Flycatcher	Migrant	Present	
Muscicapidae	<i>Muscicapa ruficauda</i>	Rusty-Tailed Flycatcher	Migrant	Present	
Muscicapidae	<i>Luscinia calliope</i>	Siberian Rubythroat	Migrant	Absent	
Muscicapidae	<i>Saxicola maurus</i>	Siberian Stonechat	Migrant	Absent	
Muscicapidae	<i>Ficedula albicilla</i>	Taiga Flycatcher	Migrant	Addition	
Muscicapidae	<i>Cyornis tickelliae</i>	Tickell's Blue Flycatcher	Resident	Present	Yes
Muscicapidae	<i>Eumyias thalassina</i>	Verditer Flycatcher	Resident	Present	No
Muscicapidae	<i>Copsychus malabaricus</i>	White-Rumped Shama	Resident	Absent	
Muscicapidae	<i>Saxicola torquatus</i>	African Stonechat	Migrant	Absent	
Muscicapidae	<i>Oenanthe deserti</i>	Desert Wheatear	Migrant	Absent	
Dicaeidae	<i>Dicaeum erythrorhynchos</i>	Pale-Billed Flowerpecker	Resident	Present	Yes
Dicaeidae	<i>Dicaeum agile</i>	Thick-Billed Flowerpecker	Resident	Present	Yes
Nectariniidae	<i>Cinnyris asiaticus</i>	Purple Sunbird	Resident	Present	Yes
Nectariniidae	<i>Leptocoma zeylonica</i>	Purple-Rumped Sunbird	Resident	Present	Yes
Chloropseidae	<i>Chloropsis aurifrons</i>	Golden-Fronted Leafbird	Resident	Present	No
Chloropseidae	<i>Chloropsis jerdoni</i>	Jerdon's Leafbird	Resident	Addition	No
Chloropseidae	<i>Chloropsis cochinchinensis</i>	Blue-Winged Leafbird	Resident	Absent	
Ploceinae	<i>Ploceus manyar</i>	Streaked Weaver	Resident	Present	Yes
Ploceinae	<i>Ploceus philippinus</i>	Baya Weaver	Resident	Present	Yes



Family	Scientific Name	Common Name	Resident/ Migrant	Status	Urban
Ploceinae	<i>Ploceus benghalensis</i>	Black-Breasted Weaver	Resident	Present	No
Estrildidae	<i>Lonchura malabarica</i>	Indian Silverbill	Resident	Present	Yes
Estrildidae	<i>Amandava amandava</i>	Red Avadavat	Resident	Present	Yes
Estrildidae	<i>Lonchura punctulata</i>	Scaly-Breasted Munia	Resident	Present	Yes
Estrildidae	<i>Lonchura malacca</i>	Tricoloured Munia	Resident	Present	Yes
Estrildidae	<i>Lonchura striata</i>	White-Rumped Munia	Resident	Present	No
Passerinae	<i>Passer domesticus</i>	House Sparrow	Resident	Present	Yes
Passerinae	<i>Petronia xanthocollis</i>	Yellow-Throated Sparrow	Resident	Present	No
Motacillidae	<i>Motacilla citreola</i>	Citrine Wagtail	Migrant	Present	
Motacillidae	<i>Dendronanthus indicus</i>	Forest Wagtail	Migrant	Present	
Motacillidae	<i>Motacilla cinerea</i>	Grey Wagtail	Migrant	Present	
Motacillidae	<i>Anthus hodgsoni</i>	Olive-Backed Pipit	Migrant	Absent	
Motacillidae	<i>Anthus rufulus</i>	Paddyfield Pipit	Resident	Present	Yes
Motacillidae	<i>Anthus richardi</i>	Richard's Pipit	Migrant	Absent	
Motacillidae	<i>Anthus campestris</i>	Tawny Pipit	Migrant	Absent	
Motacillidae	<i>Anthus trivialis</i>	Tree Pipit	Migrant	Present	
Motacillidae	<i>Motacilla flava</i>	Western Yellow Wagtail	Migrant	Present	
Motacillidae	<i>Motacilla alba</i>	White Wagtail	Migrant	Present	
Motacillidae	<i>Motacilla maderaspatensis</i>	White-Browed Wagtail	Resident	Present	Yes
Fringillidae	<i>Carpodacus erythrinus</i>	Common Rosefinch	Migrant	Absent	
Emberizinae	<i>Emberiza melanocephala</i>	Black-Headed Bunting	Migrant	Present	
Emberizinae	<i>Melophus lathami</i>	Crested Bunting	Resident	Absent	
Emberizinae	<i>Emberiza bruniceps</i>	Red-Headed Bunting	Migrant	Present	



Table 11: List of plants considered in the calculation of indicators 4 and 10

Family	Scientific Name	Status	Nativity
Acanthaceae	<i>Aphelandra sinclairiana</i>	Addition	Introduced
Acanthaceae	<i>Dicliptera paniculata</i>	Addition	Native
Acanthaceae	<i>Eranthemum pulchellum</i>	Addition	Native
Acanthaceae	<i>Justicia aurea</i>	Addition	Introduced
Acanthaceae	<i>Justicia brasiliiana</i>	Addition	Introduced
Acanthaceae	<i>Justicia carnea</i>	Addition	Introduced
Acanthaceae	<i>Odontonema tubaeforme</i>	Addition	Introduced
Acanthaceae	<i>Pachystachys lutea</i>	Addition	Introduced
Acanthaceae	<i>Ruellia brevifolia</i>	Addition	Introduced
Acanthaceae	<i>Strobilanthes alternata</i>	Addition	Introduced
Acanthaceae	<i>Andrographis echiioides</i>	Present	Native
Acanthaceae	<i>Andrographis paniculata</i>	Present	Native
Acanthaceae	<i>Aphelandra arborea</i>	Present	Introduced
Acanthaceae	<i>Aphelandra squarrosa</i>	Present	Introduced
Acanthaceae	<i>Asystasia gangetica</i>	Present	Native
Acanthaceae	<i>Barleria cristata</i>	Present	Native
Acanthaceae	<i>Barleria longiflora</i>	Present	Native
Acanthaceae	<i>Barleria prionitis</i>	Present	Native
Acanthaceae	<i>Blepharis integrifolia</i>	Present	Native
Acanthaceae	<i>Blepharis maderaspatensis</i>	Present	Native
Acanthaceae	<i>Crossandra infundibuliformis</i>	Present	Native
Acanthaceae	<i>Dicliptera paniculata</i>	Present	Native
Acanthaceae	<i>Graptophyllum pictum</i>	Present	Introduced
Acanthaceae	<i>Hygrophila auriculata</i>	Present	Native
Acanthaceae	<i>Justicia adhatoda</i>	Present	Native
Acanthaceae	<i>Justicia brandegeana</i>	Present	Introduced
Acanthaceae	<i>Justicia gendarussa</i>	Present	Native
Acanthaceae	<i>Justicia glauca</i>	Present	Native
Acanthaceae	<i>Justicia micrantha</i>	Present	Native
Acanthaceae	<i>Lepidagathis cristata</i>	Present	Native
Acanthaceae	<i>Pseuderanthemum bicolor</i>	Present	Introduced
Acanthaceae	<i>Pseuderanthemum maculatum</i>	Present	Introduced
Acanthaceae	<i>Rhinacanthus nasutus</i>	Present	Native
Acanthaceae	<i>Rostellularia procumbens</i>	Present	Native
Acanthaceae	<i>Rostellularia quinqueangularis</i>	Present	Native
Acanthaceae	<i>Ruellia prostrata</i>	Present	Native
Acanthaceae	<i>Ruellia tuberosa</i>	Present	Invasive Alien
Acanthaceae	<i>Rungia repens</i>	Present	Native
Acanthaceae	<i>Sanchezia longiflora</i>	Present	Introduced
Acanthaceae	<i>Sanchezia oblonga</i>	Present	Introduced
Acanthaceae	<i>Thunbergia alata</i>	Present	Introduced
Acanthaceae	<i>Thunbergia erecta</i>	Present	Introduced
Acanthaceae	<i>Thunbergia fragrans</i>	Present	Native
Achariaceae	<i>Hydnocarpus annamensis</i>	Addition	Introduced
Acoraceae	<i>Acorus calamus</i>	Present	Native
Agavaceae	<i>Agave victoriae-reginae</i>	Addition	Introduced



Family	Scientific Name	Status	Nativity
Agavaceae	<i>Agave americana</i>	Present	Introduced
Agavaceae	<i>Agave vivipara</i>	Present	Introduced
Aizoaceae	<i>Mesembryanthemum cordifolium</i>	Addition	Introduced
Aizoaceae	<i>Trianthena portulacastrum</i>	Present	Native
Aizoaceae	<i>Trianthena triquetrum</i>	Present	Native
Aizoaceae	<i>Zaleya decandra</i>	Present	Native
Alismataceae	<i>Limnophyton obtusifolium</i>	Present	Native
Alismataceae	<i>Butomopsis latifolia</i>	Present	Native
Amaranthaceae	<i>Alternanthera ficoidea</i>	Addition	Invasive Alien
Amaranthaceae	<i>Iresine diffusa</i>	Addition	Introduced
Amaranthaceae	<i>Trichuriella monsoniae</i>	Addition	Native
Amaranthaceae	<i>Achyranthes aspera</i>	Present	Native
Amaranthaceae	<i>Aerva javanica</i>	Present	Native
Amaranthaceae	<i>Allmania nodiflora</i>	Present	Native
Amaranthaceae	<i>Alternanthera bettzickiana</i>	Present	Introduced
Amaranthaceae	<i>Alternanthera paronychioides</i>	Present	Introduced
Amaranthaceae	<i>Alternanthera philoxeroides</i>	Present	Invasive Alien
Amaranthaceae	<i>Alternanthera pungens</i>	Present	Invasive Alien
Amaranthaceae	<i>Alternanthera sessilis</i>	Present	Native
Amaranthaceae	<i>Amaranthus caudatus</i>	Present	Introduced
Amaranthaceae	<i>Amaranthus spinosus</i>	Present	Introduced
Amaranthaceae	<i>Amaranthus tricolor</i>	Present	Native
Amaranthaceae	<i>Amaranthus viridis</i>	Present	Introduced
Amaranthaceae	<i>Celosia argentea</i>	Present	Invasive Alien
Amaranthaceae	<i>Chenopodium album</i>	Present	Native
Amaranthaceae	<i>Digera muricata</i>	Present	Native
Amaranthaceae	<i>Dysphania ambrosioides</i>	Present	Introduced
Amaranthaceae	<i>Gomphrena globosa</i>	Present	Introduced
Amaranthaceae	<i>Gomphrena serrata</i>	Present	Invasive Alien
Amaranthaceae	<i>Ouret lanata</i>	Present	Native
Amaranthaceae	<i>Pupalia lappacea</i>	Present	Native
Amaranthaceae	<i>Spinacia oleracea</i>	Present	Introduced
Amaryllidaceae	<i>Crinum zeylanicum</i>	Addition	Native
Amaryllidaceae	<i>Crinum latifolium</i>	Present	Native
Amaryllidaceae	<i>Crinum viviparum</i>	Present	Native
Amaryllidaceae	<i>Pancratium triflorum</i>	Present	Native
Amaryllidaceae	<i>Zephyranthes candida</i>	Addition	Introduced
Amaryllidaceae	<i>Allium cepa</i>	Present	Introduced
Amaryllidaceae	<i>Allium sativum</i>	Present	Introduced
Amaryllidaceae	<i>Crinum asiaticum</i>	Present	Native
Amaryllidaceae	<i>Crinum powellii</i>	Present	Introduced
Amaryllidaceae	<i>Hippeastrum vittatum</i>	Present	Introduced
Amaryllidaceae	<i>Howea forsteriana</i>	Present	Introduced
Amaryllidaceae	<i>Hymenocallis tenuiflora</i>	Present	Introduced
Amaryllidaceae	<i>Scadoxus multiflorus</i>	Present	Introduced
Amaryllidaceae	<i>Zephyranthes citrina</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Amaryllidaceae	<i>Zephyranthes minuta</i>	Present	Introduced
Anacardiaceae	<i>Searsia mysorensis</i>	Addition	Native
Anacardiaceae	<i>Anacardium occidentale</i>	Present	Introduced
Anacardiaceae	<i>Buchanania cochinchinensis</i>	Present	Native
Anacardiaceae	<i>Lannea coromandelica</i>	Present	Native
Anacardiaceae	<i>Mangifera indica</i>	Present	Native
Anacardiaceae	<i>Searsia incisa</i>	Present	Introduced
Anacardiaceae	<i>Semecarpus anacardium</i>	Present	Native
Anacardiaceae	<i>Spondias pinnata</i>	Present	Native
Annonaceae	<i>Annona cherimola</i>	Addition	Introduced
Annonaceae	<i>Annona glabra</i>	Addition	Introduced
Annonaceae	<i>Huberantha cerasoides</i>	Addition	Native
Annonaceae	<i>Huberantha korinti</i>	Addition	Native
Annonaceae	<i>Milium tomentosa</i>	Addition	Native
Annonaceae	<i>Polyalthia suberosa</i>	Addition	Native
Annonaceae	<i>Annona muricata</i>	Present	Introduced
Annonaceae	<i>Annona reticulata</i>	Present	Introduced
Annonaceae	<i>Annona squamosa</i>	Present	Introduced
Annonaceae	<i>Artabotrys hexapetalus</i>	Present	Native
Annonaceae	<i>Cananga odorata</i>	Present	Introduced
Annonaceae	<i>Monoon longifolium</i>	Present	Native
Anthericaceae	<i>Chlorophytum comosum</i>	Present	Introduced
Anthericaceae	<i>Chlorophytum laxum</i>	Present	Native
Apiaceae	<i>Pimpinella tirupatiensis</i>	Addition	Native
Apiaceae	<i>Carum carvi</i>	Present	Native
Apiaceae	<i>Centella asiatica</i>	Present	Native
Apiaceae	<i>Coriandrum sativum</i>	Present	Introduced
Apiaceae	<i>Cuminum cyminum</i>	Present	Introduced
Apiaceae	<i>Daucus carota</i>	Present	Introduced
Apiaceae	<i>Foeniculum vulgare</i>	Present	Introduced
Apiaceae	<i>Pimpinella anisum</i>	Present	Introduced
Apiaceae	<i>Trachyspermum ammi</i>	Present	Kashmir Range
Apiaceae	<i>Trachyspermum roxburghianum</i>	Present	Native
Apocyanacea	<i>Finlaysonia wallichii</i>	Present	Introduced
Apocynaceae	<i>Alstonia macrophylla</i>	Addition	Introduced
Apocynaceae	<i>Caralluma umbellata</i>	Addition	Native
Apocynaceae	<i>Chonemorpha fragrans</i>	Addition	Native
Apocynaceae	<i>Cosmostigma cordatum</i>	Addition	Native
Apocynaceae	<i>Gomphocarpus physocarpus</i>	Addition	Introduced
Apocynaceae	<i>Holostemma ada-kodien</i>	Addition	Native
Apocynaceae	<i>Pachypodium geayi</i>	Addition	Introduced
Apocynaceae	<i>Plumeria pudica</i>	Addition	Introduced
Apocynaceae	<i>Rauvolfia serpentina</i>	Addition	Native
Apocynaceae	<i>Wrightia arborea</i>	Addition	Native
Apocynaceae	<i>Adenium obesum</i>	Present	Introduced
Apocynaceae	<i>Aganosma heynei</i>	Present	Native



Family	Scientific Name	Status	Nativity
Apocynaceae	<i>Allamanda blanchetii</i>	Present	Introduced
Apocynaceae	<i>Allamanda cathartica</i>	Present	Introduced
Apocynaceae	<i>Alstonia scholaris</i>	Present	Native
Apocynaceae	<i>Beaumontia grandiflora</i>	Present	Native
Apocynaceae	<i>Carissa carandas</i>	Present	Native
Apocynaceae	<i>Carissa spinarum</i>	Present	Native
Apocynaceae	<i>Cascabela thevetia</i>	Present	Introduced
Apocynaceae	<i>Catharanthus pusillus</i>	Present	Native
Apocynaceae	<i>Catharanthus roseus</i>	Present	Introduced
Apocynaceae	<i>Holarrhena pubescens</i>	Present	Native
Apocynaceae	<i>Nerium oleander</i>	Present	Native
Apocynaceae	<i>Plumeria alba</i>	Present	Introduced
Apocynaceae	<i>Plumeria rubra</i>	Present	Introduced
Apocynaceae	<i>Rauvolfia tetraphylla</i>	Present	Native
Apocynaceae	<i>Tabernaemontana citrifolia</i>	Present	Introduced
Apocynaceae	<i>Tabernaemontana divaricata</i>	Present	Native
Apocynaceae	<i>Vallisneria spiralis</i>	Present	Native
Apocynaceae	<i>Wrightia tinctoria</i>	Present	Native
Aponogetonaceae	<i>Aponogeton natans</i>	Present	Native
Araceae	<i>Aglaonema pictum</i>	Present	Introduced
Araceae	<i>Alocasia macrorrhizos</i>	Present	Introduced
Araceae	<i>Anthurium andraeanum</i>	Present	Introduced
Araceae	<i>Colocasia esculenta</i>	Present	Native
Araceae	<i>Epipremnum pinnatum</i>	Present	Native
Araceae	<i>Aglaonema commutatum</i>	Present	Introduced
Araceae	<i>Aglaonema crispum</i>	Present	Introduced
Araceae	<i>Aglaonema modestum</i>	Present	Introduced
Araceae	<i>Aiphanes minima</i>	Present	Introduced
Araceae	<i>Alocasia reginula</i>	Present	Introduced
Araceae	<i>Alocasia robusta</i>	Present	Introduced
Araceae	<i>Monstera deliciosa</i>	Present	Introduced
Araceae	<i>Philodendron cordatum</i>	Present	Introduced
Araceae	<i>Philodendron giganteum</i>	Present	Introduced
Araceae	<i>Pistia stratiotes</i>	Present	Invasive Alien
Araceae	<i>Spirodela polyrrhiza</i>	Present	Introduced
Araceae	<i>Wolffia arrhiza</i>	Present	Native
Araliaceae	<i>Aralia elata</i>	Addition	Introduced
Araliaceae	<i>Polyscias filicifolia</i>	Addition	Introduced
Araliaceae	<i>Polyscias paniculata</i>	Addition	Introduced
Araliaceae	<i>Schefflera roxburghii</i>	Addition	Native
Araliaceae	<i>Hedera helix</i>	Present	Introduced
Araliaceae	<i>Heptapleurum arboricola</i>	Present	Introduced
Araliaceae	<i>Polyscias balfouriana</i>	Present	Introduced
Araliaceae	<i>Polyscias fruticosa</i>	Present	Introduced
Araliaceae	<i>Polyscias guilfoylei</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Araliaceae	<i>Schefflera actinophylla</i>	Present	Introduced
Arecaceae	<i>Phoenix acaulis</i>	Addition	Native
Arecaceae	<i>Calamus rotang</i>	Present	Native
Arecaceae	<i>Caryota mitis</i>	Present	Introduced
Arecaceae	<i>Caryota urens</i>	Present	Native
Arecaceae	<i>Cocos nucifera</i>	Present	Introduced
Arecaceae	<i>Cyrtostachys renda</i>	Present	Introduced
Arecaceae	<i>Latania verschaffeltii</i>	Present	Introduced
Arecaceae	<i>Livistona jenkinsiana</i>	Present	Introduced
Arecaceae	<i>Phoenix loureiroi</i>	Present	Native
Arecaceae	<i>Phoenix pusilla</i>	Present	Native
Arecaceae	<i>Phoenix rupicola</i>	Present	Eastern Himalayas
Arecaceae	<i>Phoenix sylvestris</i>	Present	Native
Arecaceae	<i>Pinanga coronata</i>	Present	Introduced
Arecaceae	<i>Adonidia merrillii</i>	Present	Introduced
Arecaceae	<i>Archontophoenix alexandrae</i>	Present	Introduced
Arecaceae	<i>Areca catechu</i>	Present	Introduced
Arecaceae	<i>Arenga engleri</i>	Present	Introduced
Arecaceae	<i>Bismarckia nobilis</i>	Present	Introduced
Arecaceae	<i>Borassus flabellifer</i>	Present	Native
Arecaceae	<i>Brahea armata</i>	Present	Introduced
Arecaceae	<i>Butia capitata</i>	Present	Introduced
Arecaceae	<i>Caladium bicolor</i>	Present	Introduced
Arecaceae	<i>Caladium lindenii</i>	Present	Introduced
Arecaceae	<i>Carpentaria acuminata</i>	Present	Introduced
Arecaceae	<i>Chamaedorea elegans</i>	Present	Introduced
Arecaceae	<i>Chamaedorea metallica</i>	Present	Introduced
Arecaceae	<i>Chamaedorea seifrizii</i>	Present	Introduced
Arecaceae	<i>Chamaerops humilis</i>	Present	Introduced
Arecaceae	<i>Chambeyronia macrocarpa</i>	Present	Introduced
Arecaceae	<i>Chuniophoenix hainanensis</i>	Present	Introduced
Arecaceae	<i>Coccothrinax argentata</i>	Present	Introduced
Arecaceae	<i>Coccothrinax barbadensis</i>	Present	Introduced
Arecaceae	<i>Coccothrinax crinita</i>	Present	Introduced
Arecaceae	<i>Copernicia prunifera</i>	Present	Introduced
Arecaceae	<i>Dictyosperma album</i>	Present	Introduced
Arecaceae	<i>Dieffenbachia seguine</i>	Present	Introduced
Arecaceae	<i>Drymophloeus oliviformis</i>	Present	Introduced
Arecaceae	<i>Dypsis cabadae</i>	Present	Introduced
Arecaceae	<i>Dypsis decaryi</i>	Present	Introduced
Arecaceae	<i>Dypsis lastelliana</i>	Present	Introduced
Arecaceae	<i>Dypsis lutescens</i>	Present	Introduced
Arecaceae	<i>Elaeis guineensis</i>	Present	Introduced
Arecaceae	<i>Heterospathe elata</i>	Present	Introduced
Arecaceae	<i>Hyophorbe lagenicaulis</i>	Present	Introduced
Arecaceae	<i>Hyophorbe verschaffeltii</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Arecaceae	<i>Latania loddigesii</i>	Present	Introduced
Arecaceae	<i>Licuala grandis</i>	Present	Introduced
Arecaceae	<i>Licuala lauterbachii</i>	Present	Introduced
Arecaceae	<i>Licuala spinosa</i>	Present	Introduced
Arecaceae	<i>Livistona australis</i>	Present	Introduced
Arecaceae	<i>Livistona chinensis</i>	Present	Introduced
Arecaceae	<i>Livistona decipiens</i>	Present	Introduced
Arecaceae	<i>Livistona humilis</i>	Present	Introduced
Arecaceae	<i>Livistona saribus</i>	Present	Introduced
Arecaceae	<i>Nypa fruticans</i>	Present	Native
Arecaceae	<i>Phoenicophorium borsigianum</i>	Present	Introduced
Arecaceae	<i>Phoenix dactylifera</i>	Present	Introduced
Arecaceae	<i>Phoenix roebelenii</i>	Present	Introduced
Arecaceae	<i>Pritchardia pacifica</i>	Present	Introduced
Arecaceae	<i>Pseudophoenix sargentii</i>	Present	Introduced
Arecaceae	<i>Pseudoraphis spinescens</i>	Present	Native
Arecaceae	<i>Ptychosperma macarthurii</i>	Present	Introduced
Arecaceae	<i>Ravenea glauca</i>	Present	Introduced
Arecaceae	<i>Ravenea rivularis</i>	Present	Introduced
Arecaceae	<i>Ravenea xerophila</i>	Present	Introduced
Arecaceae	<i>Rhapidophyllum hystrix</i>	Present	Introduced
Arecaceae	<i>Rhapis excelsa</i>	Present	Introduced
Arecaceae	<i>Rhapis humilis</i>	Present	Introduced
Arecaceae	<i>Rhapis multifida</i>	Present	Introduced
Arecaceae	<i>Roystonea regia</i>	Present	Introduced
Arecaceae	<i>Sabal palmetto</i>	Present	Introduced
Arecaceae	<i>Serenoa repens</i>	Present	Introduced
Arecaceae	<i>Syagrus romanzoffiana</i>	Present	Introduced
Arecaceae	<i>Syngonium auritum</i>	Present	Introduced
Arecaceae	<i>Syngonium podophyllum</i>	Present	Introduced
Arecaceae	<i>Trachycarpus fortunei</i>	Present	Introduced
Arecaceae	<i>Trithrinax brasiliensis</i>	Present	Introduced
Arecaceae	<i>Veitchia winin</i>	Present	Introduced
Arecaceae	<i>Washingtonia filifera</i>	Present	Introduced
Arecaceae	<i>Wodyetia bifurcata</i>	Present	Introduced
Aristolochiaceae	<i>Aristolochia grandiflora</i>	Addition	Introduced
Aristolochiaceae	<i>Aristolochia bracteolata</i>	Present	Native
Aristolochiaceae	<i>Aristolochia indica</i>	Present	Native
Aristolochiaceae	<i>Aristolochia littoralis</i>	Present	Introduced
Arundinellaceae	<i>Arundinella setosa</i>	Present	Native
Asclepiadaceae	<i>Ceropegia spiralis</i>	Addition	Native
Asclepiadaceae	<i>Asclepias curassavica</i>	Present	Invasive Alien
Asclepiadaceae	<i>Calotropis gigantea</i>	Present	Native
Asclepiadaceae	<i>Calotropis procera</i>	Present	Native
Asclepiadaceae	<i>Caralluma adscendens</i>	Present	Native
Asclepiadaceae	<i>Ceropegia bulbosa</i>	Present	Native



Family	Scientific Name	Status	Nativity
Asclepiadaceae	<i>Ceropegia juncea</i>	Present	Native
Asclepiadaceae	<i>Cryptolepis buchananii</i>	Present	Native
Asclepiadaceae	<i>Cryptostegia grandiflora</i>	Present	Invasive Alien
Asclepiadaceae	<i>Decalepis hamiltonii</i>	Present	Native
Asclepiadaceae	<i>Dregea volubilis</i>	Present	Native
Asclepiadaceae	<i>Gymnema sylvestre</i>	Present	Native
Asclepiadaceae	<i>Hemidesmus indicus</i>	Present	Native
Asclepiadaceae	<i>Leptadenia reticulata</i>	Present	Native
Asclepiadaceae	<i>Oxystelma esculentum</i>	Present	Native
Asclepiadaceae	<i>Pergularia daemia</i>	Present	Native
Asclepiadaceae	<i>Sarcostemma acidum</i>	Present	Native
Asclepiadaceae	<i>Telosma minor</i>	Present	Native
Asclepiadaceae	<i>Tylophora indica</i>	Present	Native
Asparagaceae	<i>Dracaena roxburghiana</i>	Addition	Native
Asparagaceae	<i>Asparagus asiaticus</i>	Present	Native
Asparagaceae	<i>Asparagus gonocladus</i>	Present	Native
Asparagaceae	<i>Asparagus racemosus</i>	Present	Native
Asparagaceae	<i>Asparagus setaceus</i>	Present	Introduced
Asparagaceae	<i>Chlorophytum malabaricum</i>	Present	Native
Asparagaceae	<i>Chlorophytum tuberosum</i>	Present	Native
Asparagaceae	<i>Dracaena zeylanica</i>	Present	Native
Asparagaceae	<i>Furcraea foetida</i>	Present	Introduced
Asparagaceae	<i>Asparagus fasciculatus</i>	Addition	Introduced
Asparagaceae	<i>Beaucarnea recurvata</i>	Addition	Introduced
Asparagaceae	<i>Yucca elephantipes</i>	Addition	Introduced
Asparagaceae	<i>Yucca rostrata</i>	Addition	Introduced
Asparagaceae	<i>Asparagus densiflorus</i>	Present	Introduced
Asparagaceae	<i>Asparagus falcatus</i>	Present	Native
Asparagaceae	<i>Asparagus laevis</i>	Present	Native
Asparagaceae	<i>Asparagus umbellatus</i>	Present	Introduced
Asparagaceae	<i>Chlorophytum arundinaceum</i>	Present	Introduced
Asparagaceae	<i>Cordyline australis</i>	Present	Introduced
Asparagaceae	<i>Cordyline fruticosa</i>	Present	Introduced
Asparagaceae	<i>Cordyline stricta</i>	Present	Introduced
Asparagaceae	<i>Drimia wightii</i>	Present	Native
Asparagaceae	<i>Hyacinthus orientalis</i>	Present	Introduced
Asparagaceae	<i>Ledebouria hyderabadensis</i>	Present	Native
Asparagaceae	<i>Ledebouria revoluta</i>	Present	Native
Asparagaceae	<i>Polianthes tuberosa</i>	Present	Introduced
Asparagaceae	<i>Sansevieria cylindrica</i>	Present	Introduced
Asparagaceae	<i>Sansevieria hyacinthoides</i>	Present	Introduced
Asparagaceae	<i>Sansevieria stuckyi</i>	Present	Introduced
Asparagaceae	<i>Sansevieria trifasciata</i>	Present	Introduced
Asparagaceae	<i>Yucca aloifolia</i>	Present	Introduced
Asparagaceae	<i>Yucca gloriosa</i>	Present	Introduced
Asphodelaceae	<i>Aloe haworthioides</i>	Addition	Introduced



Family	Scientific Name	Status	Nativity
Asphodelaceae	<i>Aloidendron dichotomum</i>	Addition	Introduced
Asphodelaceae	<i>Haworthia angustifolia</i>	Addition	Introduced
Asphodelaceae	<i>Haworthia cuspidata</i>	Addition	Introduced
Asphodelaceae	<i>Haworthia fasciata</i>	Addition	Introduced
Asphodelaceae	<i>Haworthia limifolia</i>	Addition	Introduced
Asphodelaceae	<i>Dianella ensifolia</i>	Present	Introduced
Asteraceae	<i>Cosmos atrosanguineus</i>	Addition	Introduced
Asteraceae	<i>Dahlia pinnata</i>	Addition	Introduced
Asteraceae	<i>Felicia abyssinica</i>	Addition	Introduced
Asteraceae	<i>Gaillardia x grandiflora</i>	Addition	Introduced
Asteraceae	<i>Gazania linearis</i>	Addition	Introduced
Asteraceae	<i>Gazania rigens</i>	Addition	Introduced
Asteraceae	<i>Jacobaea maritima</i>	Addition	Introduced
Asteraceae	<i>Kleinia grandiflora</i>	Addition	Native
Asteraceae	<i>Melampodium divaricatum</i>	Addition	Introduced
Asteraceae	<i>Pseudogynoxys chenopodioides</i>	Addition	Introduced
Asteraceae	<i>Sphaeranthus indicus</i>	Addition	Native
Asteraceae	<i>Tithonia diversifolia</i>	Addition	Introduced
Asteraceae	<i>Zinnia haageana</i>	Addition	Introduced
Asteraceae	<i>Acanthospermum hispidum</i>	Present	Invasive Alien
Asteraceae	<i>Acmella oleracea</i>	Present	Introduced
Asteraceae	<i>Acmella paniculata</i>	Present	Introduced
Asteraceae	<i>Ageratum conyzoides</i>	Present	Invasive Alien
Asteraceae	<i>Artemisia annua</i>	Present	Native
Asteraceae	<i>Artemisia nilagirica</i>	Present	Native
Asteraceae	<i>Bidens bipinnata</i>	Present	Invasive Alien
Asteraceae	<i>Bidens pilosa</i>	Present	Invasive Alien
Asteraceae	<i>Blainvillea acmella</i>	Present	Native
Asteraceae	<i>Blumea axillaris</i>	Present	Native
Asteraceae	<i>Blumea bifoliata</i>	Present	Native
Asteraceae	<i>Blumea lacera</i>	Present	Native
Asteraceae	<i>Blumea obliqua</i>	Present	Native
Asteraceae	<i>Blumea oxyodonta</i>	Present	Native
Asteraceae	<i>Blumea sinuata</i>	Present	Native
Asteraceae	<i>Caesulia axillaris</i>	Present	Native
Asteraceae	<i>Calendula officinalis</i>	Present	Introduced
Asteraceae	<i>Callistephus chinensis</i>	Present	Introduced
Asteraceae	<i>Calyptocarpus vialis</i>	Present	Invasive Alien
Asteraceae	<i>Carthamus tinctorius</i>	Present	Invasive Alien
Asteraceae	<i>Chromolaena odorata</i>	Present	Invasive Alien
Asteraceae	<i>Chrysanthemum indicum</i>	Present	Introduced
Asteraceae	<i>Conyza bonariensis</i>	Present	Native
Asteraceae	<i>Coreopsis tinctoria</i>	Present	Introduced
Asteraceae	<i>Cosmos bipinnatus</i>	Present	Invasive Alien
Asteraceae	<i>Cosmos sulphureus</i>	Present	Invasive Alien
Asteraceae	<i>Cyanthillium cinereum</i>	Present	Native



Family	Scientific Name	Status	Nativity
Asteraceae	<i>Cyanthillium cinereum</i> var. <i>parviflorum</i>	Present	Native
Asteraceae	<i>Dicoma tomentosa</i>	Present	Native
Asteraceae	<i>Echinops echinatus</i>	Present	Native
Asteraceae	<i>Eclipta prostrata</i>	Present	Invasive Alien
Asteraceae	<i>Emilia sonchifolia</i>	Present	Native
Asteraceae	<i>Epaltes divaricata</i>	Present	Native
Asteraceae	<i>Flaveria trinervia</i>	Present	Invasive Alien
Asteraceae	<i>Gaillardia aristata</i>	Present	Introduced
Asteraceae	<i>Gaillardia pulchella</i>	Present	Invasive Alien
Asteraceae	<i>Gerbera jamesonii</i>	Present	Introduced
Asteraceae	<i>Glossocardia bosvallia</i>	Present	Native
Asteraceae	<i>Guizotia abyssinica</i>	Present	Invasive Alien
Asteraceae	<i>Helianthus annuus</i>	Present	Invasive Alien
Asteraceae	<i>Helianthus debilis</i> subsp. <i>cucumerifolius</i>	Present	Introduced
Asteraceae	<i>Helianthus laetiflorus</i>	Present	Introduced
Asteraceae	<i>Helianthus mollis</i>	Present	Introduced
Asteraceae	<i>Lagascea mollis</i>	Present	Invasive Alien
Asteraceae	<i>Matricaria chamomilla</i>	Present	Native
Asteraceae	<i>Oligochaeta divaricata</i>	Present	Native
Asteraceae	<i>Parthenium hysterophorus</i>	Present	Invasive Alien
Asteraceae	<i>Pulicaria angustifolia</i>	Present	Native
Asteraceae	<i>Solidago canadensis</i>	Present	Invasive Alien
Asteraceae	<i>Sonchus oleraceus</i>	Present	Invasive Alien
Asteraceae	<i>Sphagneticola trilobata</i>	Present	Invasive Alien
Asteraceae	<i>Symphotrichum ericoides</i> var. <i>ericoides</i>	Present	Invasive Alien
Asteraceae	<i>Synedrella nodiflora</i>	Present	Invasive Alien
Asteraceae	<i>Tagetes erecta</i>	Present	Introduced
Asteraceae	<i>Tagetes minuta</i>	Present	Introduced
Asteraceae	<i>Tagetes tenuifolia</i>	Present	Introduced
Asteraceae	<i>Tanacetum cinerariifolium</i>	Present	Introduced
Asteraceae	<i>Tridax procumbens</i>	Present	Invasive Alien
Asteraceae	<i>Vernonia anthelmintica</i>	Present	Native
Asteraceae	<i>Vicoa indica</i>	Present	Native
Asteraceae	<i>Xanthium strumarium</i>	Present	Invasive Alien
Asteraceae	<i>Zinnia angustifolia</i>	Present	Introduced
Asteraceae	<i>Zinnia elegans</i>	Present	Introduced
Balanitaceae	<i>Balanites aegyptiaca</i>	Present	Introduced
Balsaminaceae	<i>Impatiens linearifolia</i>	Addition	Introduced
Balsaminaceae	<i>Impatiens walleriana</i>	Addition	Introduced
Balsaminaceae	<i>Impatiens balsamina</i>	Present	Native
Basellaceae	<i>Basella alba</i>	Present	Native
Begoniaceae	<i>Begonia reniformis</i>	Addition	Introduced
Begoniaceae	<i>Begonia rex</i>	Addition	Native
Begoniaceae	<i>Begonia semperflorens</i>	Addition	Introduced
Berberidaceae	<i>Nandina domestica</i>	Present	Native
Bignoniaceae	<i>Campsis radicans</i>	Addition	Introduced



Family	Scientific Name	Status	Nativity
Bignoniaceae	<i>Heterophragma quadriloculare</i>	Addition	Native
Bignoniaceae	<i>Jacaranda mimosifolia</i>	Addition	Introduced
Bignoniaceae	<i>Mansoa alliacea</i>	Addition	Introduced
Bignoniaceae	<i>Radermachera xylocarpa</i>	Addition	Native
Bignoniaceae	<i>Tabebuia pallida</i>	Addition	Introduced
Bignoniaceae	<i>Tecoma castanifolia</i>	Addition	Introduced
Bignoniaceae	<i>Adenocalymma comosum</i>	Present	Introduced
Bignoniaceae	<i>Amphilophium paniculatum</i>	Present	Introduced
Bignoniaceae	<i>Anemopaegma chamberlaynii</i>	Present	Introduced
Bignoniaceae	<i>Bignonia magnifica</i>	Present	Introduced
Bignoniaceae	<i>Campsis grandiflora</i>	Present	Introduced
Bignoniaceae	<i>Crescentia cujete</i>	Present	Introduced
Bignoniaceae	<i>Dolichandra unguis-cati</i>	Present	Introduced
Bignoniaceae	<i>Dolichandrone falcata</i>	Present	Native
Bignoniaceae	<i>Handroanthus chrysanthus</i>	Present	Introduced
Bignoniaceae	<i>Handroanthus impetiginosus</i>	Present	Introduced
Bignoniaceae	<i>Jacaranda acutifolia</i>	Present	Introduced
Bignoniaceae	<i>Kigelia africana</i>	Present	Introduced
Bignoniaceae	<i>Mansoa hymenaea</i>	Present	Introduced
Bignoniaceae	<i>Markhamia lutea</i>	Present	Introduced
Bignoniaceae	<i>Millingtonia hortensis</i>	Present	Native
Bignoniaceae	<i>Podranea ricasoliana</i>	Present	Introduced
Bignoniaceae	<i>Pyrostegia venusta</i>	Present	Introduced
Bignoniaceae	<i>Spathodea campanulata</i>	Present	Introduced
Bignoniaceae	<i>Stereospermum colais</i>	Present	Native
Bignoniaceae	<i>Tabebuia aurea</i>	Present	Introduced
Bignoniaceae	<i>Tabebuia heterophylla</i>	Present	Introduced
Bignoniaceae	<i>Tabebuia rosea</i>	Present	Introduced
Bignoniaceae	<i>Tecoma capensis</i>	Present	Introduced
Bignoniaceae	<i>Tecoma stans</i>	Present	Introduced
Bixaceae	<i>Cochlospermum vitifolium</i>	Addition	Introduced
Bixaceae	<i>Bixa orellana</i>	Present	Introduced
Bixaceae	<i>Cochlospermum religiosum</i>	Present	Native
Bombacaceae	<i>Alcea rosea</i>	Present	Introduced
Bombacaceae	<i>Ceiba pentandra</i>	Present	Introduced
Bombacaceae	<i>Diplopenta odorata</i>	Present	Native
Bombacaceae	<i>Gossypium hirsutum</i>	Present	Introduced
Bombacaceae	<i>Herissantia crispa</i>	Present	Introduced
Bombacaceae	<i>Hibiscus mutabilis</i>	Present	Introduced
Bombacaceae	<i>Hibiscus schizopetalus</i>	Present	Introduced
Bombacaceae	<i>Hibiscus trionum</i>	Present	Introduced
Bombacaceae	<i>Malachra capitata</i>	Present	Invasive Alien
Bombacaceae	<i>Malva sylvestris</i>	Present	Introduced
Bombacaceae	<i>Malvaviscus penduliflorus</i>	Present	Introduced
Bombacaceae	<i>Pachira aquatica</i>	Present	Introduced
Bombacaceae	<i>Sida acuta</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Bombacaceae	<i>Sida spinosa</i>	Present	Native
Boraginaceae	<i>Cordia macleodii</i>	Addition	Native
Boraginaceae	<i>Cordia sinensis</i>	Addition	Native
Boraginaceae	<i>Cordia subcordata</i>	Addition	Native
Boraginaceae	<i>Ehretia pubescens</i>	Addition	Native
Boraginaceae	<i>Trichodesma sedgwickianum</i>	Addition	Native
Boraginaceae	<i>Trichodesma zeylanicum</i>	Addition	Native
Boraginaceae	<i>Coldenia procumbens</i>	Present	Native
Boraginaceae	<i>Cordia dichotoma</i>	Present	Native
Boraginaceae	<i>Cordia monoica</i>	Present	Native
Boraginaceae	<i>Cordia sebestena</i>	Present	Native
Boraginaceae	<i>Ehretia laevis</i>	Present	Native
Boraginaceae	<i>Heliotropium indicum</i>	Present	Native
Boraginaceae	<i>Heliotropium ovalifolium</i>	Present	Native
Boraginaceae	<i>Heliotropium zeylanicum</i>	Present	Native
Boraginaceae	<i>Trichodesma indicum</i>	Present	Native
Brassicaceae	<i>Brassica juncea</i>	Present	Introduced
Brassicaceae	<i>Brassica nigra</i>	Present	Native
Brassicaceae	<i>Brassica oleracea</i>	Present	Introduced
Brassicaceae	<i>Iberis amara</i>	Present	Introduced
Brassicaceae	<i>Iberis umbellata</i>	Present	Introduced
Brassicaceae	<i>Raphanus sativus</i>	Present	Introduced
Brassicaceae	<i>Rorippa indica</i>	Present	Native
Bromeliaceae	<i>Billbergia nutans</i>	Addition	Introduced
Bromeliaceae	<i>Billbergia pyramidalis</i>	Addition	Introduced
Bromeliaceae	<i>Aechmea fasciata</i>	Present	Introduced
Bromeliaceae	<i>Ananas comosus</i>	Present	Introduced
Burseraceae	<i>Boswellia ovalifoliolata</i>	Addition	Native
Burseraceae	<i>Commiphora caudata</i>	Addition	Native
Burseraceae	<i>Garuga pinnata</i>	Addition	Native
Burseraceae	<i>Boswellia serrata</i>	Present	Native
Burseraceae	<i>Bursera penicillata</i>	Present	Introduced
Burseraceae	<i>Commiphora wightii</i>	Present	Native
Cactaceae	<i>Ariocarpus retusus</i>	Addition	Introduced
Cactaceae	<i>Echinocactus grusonii</i>	Addition	Introduced
Cactaceae	<i>Mammillaria bombycina</i>	Addition	Introduced
Cactaceae	<i>Mammillaria hahniana</i>	Addition	Introduced
Cactaceae	<i>Mammillaria spinosissima</i>	Addition	Introduced
Cactaceae	<i>Mammilloidya candida</i>	Addition	Introduced
Cactaceae	<i>Millaria longimamma</i>	Addition	Introduced
Cactaceae	<i>Nopalea cochenillifera</i>	Addition	Introduced
Cactaceae	<i>Opuntia ficus-indica</i>	Addition	Introduced
Cactaceae	<i>Opuntia microdasys</i>	Addition	Introduced
Cactaceae	<i>Opuntia dillenii</i>	Addition	Introduced
Cactaceae	<i>Harrisia bonplandii</i>	Present	Introduced
Cactaceae	<i>Opuntia cochenillifera</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Cactaceae	<i>Opuntia elatior</i>	Present	Introduced
Cactaceae	<i>Opuntia stricta</i>	Present	Introduced
Caesalpiniaceae	<i>Peltophorum pterocarpum</i>	Present	Introduced
Calophyllaceae	<i>Mesua ferrea</i>	Addition	Native
Calophyllaceae	<i>Calophyllum inophyllum</i>	Present	Native
Cannabaceae	<i>Trema orientalis</i>	Addition	Native
Cannabaceae	<i>Cannabis sativa</i>	Present	Native
Cannaceae	<i>Canna flaccida</i>	Present	Introduced
Cannaceae	<i>Canna generalis</i>	Present	Introduced
Cannaceae	<i>Canna indica</i>	Present	Introduced
Capparaceae	<i>Crataeva tapia</i>	Addition	Native
Capparaceae	<i>Crateva religiosa</i>	Addition	Native
Capparaceae	<i>Maerua oblongifolia</i>	Addition	Native
Capparaceae	<i>Crataeva adansonii</i>	Maybe- Addition	Native
Capparaceae	<i>Crateva magna</i>	Maybe- Addition	Native
Capparaceae	<i>Cadaba indica</i>	Present	Native
Capparaceae	<i>Capparis decidua</i>	Present	Native
Capparaceae	<i>Capparis divaricata</i>	Present	Native
Capparaceae	<i>Capparis grandis</i>	Present	Native
Capparaceae	<i>Capparis sepiaria</i>	Present	Native
Capparidaceae	<i>Capparis zeylanica</i>	Present	Native
Caprifoliaceae	<i>Lonicera sempervirens</i>	Addition	Introduced
Caricaceae	<i>Carica papaya</i>	Present	Native
Caryophyllaceae	<i>Dianthus chinensis</i>	Addition	Native
Caryophyllaceae	<i>Dianthus hyssopifolius</i>	Addition	Introduced
Caryophyllaceae	<i>Polycarpaea corymbosa</i>	Present	Native
Caryophyllaceae	<i>Polycarpon prostratum</i>	Present	Native
Caryophyllaceae	<i>Spergula arvensis</i>	Present	Native
Casuarinaceae	<i>Casuarina equisetifolia</i>	Present	Native
Celastraceae	<i>Celastrus paniculatus</i>	Addition	Native
Celastraceae	<i>Gymnosporia spinosa</i>	Addition	Introduced
Celastraceae	<i>Pleurostyliia opposita</i>	Addition	Native
Celastraceae	<i>Salacia oblonga</i>	Addition	Native
Celastraceae	<i>Cassine glauca</i>	Present	Native
Celastraceae	<i>Maytenus emarginata</i>	Present	Native
Celastraceae	<i>Salacia reticulata</i>	Present	Introduced
Ceratophyllaceae	<i>Ceratophyllum demersum</i>	Present	Native
Chloridaceae	<i>Chloris barbata</i>	Present	Native
Chloridaceae	<i>Chloris gayana</i>	Present	Introduced
Chloridaceae	<i>Chloris virgata</i>	Present	Introduced
Cleomaceae	<i>Cleome aspera</i>	Present	Native
Cleomaceae	<i>Cleome felina</i>	Present	Native
Cleomaceae	<i>Cleome gynandra</i>	Present	Native
Cleomaceae	<i>Cleome monophylla</i>	Present	Native
Cleomaceae	<i>Cleome viscosa</i>	Present	Native
Clusiaceae	<i>Clusia rosea</i>	Addition	Introduced



Family	Scientific Name	Status	Nativity
Clusiaceae	<i>Garcinia xanthochymus</i>	Addition	Native
Colchicaceae	<i>Gloriosa superba</i>	Present	Native
Colchicaceae	<i>Iphigenia indica</i>	Present	Native
Combretaceae	<i>Bucida molinetti</i>	Addition	Introduced
Combretaceae	<i>Combretum comosum</i>	Addition	Introduced
Combretaceae	<i>Combretum roxburghii</i>	Addition	Native
Combretaceae	<i>Conocarpus erectus</i>	Addition	Introduced
Combretaceae	<i>Getonia floribunda</i>	Addition	Native
Combretaceae	<i>Terminalia pendula</i>	Addition	Native
Combretaceae	<i>Combretum album</i>	Present	Native
Combretaceae	<i>Combretum coccineum</i>	Present	Introduced
Combretaceae	<i>Combretum indicum</i>	Present	Native
Combretaceae	<i>Terminalia anogeissiana</i>	Present	Native
Combretaceae	<i>Terminalia arjuna</i>	Present	Native
Combretaceae	<i>Terminalia bellirica</i>	Present	Native
Combretaceae	<i>Terminalia catappa</i>	Present	Native
Combretaceae	<i>Terminalia chebula</i>	Present	Native
Combretaceae	<i>Terminalia elliptica</i>	Present	Native
Commelinaceae	<i>Cyanotis tuberosa</i>	Addition	Native
Commelinaceae	<i>Commelina benghalensis</i>	Present	Native
Commelinaceae	<i>Commelina clavata</i>	Present	Native
Commelinaceae	<i>Commelina subulata</i>	Present	Native
Commelinaceae	<i>Cyanotis adscendens</i>	Present	Native
Commelinaceae	<i>Cyanotis cristata</i>	Present	Native
Commelinaceae	<i>Cyanotis fasciculata</i>	Present	Native
Commelinaceae	<i>Murdannia semiteres</i>	Present	Native
Commelinaceae	<i>Murdannia spirata</i>	Present	Native
Commelinaceae	<i>Commelina erecta</i>	Addition	Introduced
Commelinaceae	<i>Commelina forskalii</i>	Addition	Native
Commelinaceae	<i>Tradescantia pallida</i>	Addition	Introduced
Commelinaceae	<i>Tradescantia zebrina</i>	Addition	Introduced
Commelinaceae	<i>Commelina caroliniana</i>	Present	Native
Commelinaceae	<i>Murdannia nudiflora</i>	Present	Native
Commelinaceae	<i>Tradescantia spathacea</i>	Present	Introduced
Convolvulaceae	<i>Argyreia involucrata</i>	Addition	Native
Convolvulaceae	<i>Ipomoea batatas</i>	Addition	Introduced
Convolvulaceae	<i>Ipomoea horsfalliae</i>	Addition	Introduced
Convolvulaceae	<i>Ipomoea mauritiana</i>	Addition	Introduced
Convolvulaceae	<i>Jacquemontia ovalifolia</i>	Addition	Introduced
Convolvulaceae	<i>Jacquemontia pentantha</i>	Addition	Introduced
Convolvulaceae	<i>Rivea ornata</i>	Addition	Native
Convolvulaceae	<i>Argyreia nervosa</i>	Present	Native
Convolvulaceae	<i>Cuscuta chinensis</i>	Present	Native
Convolvulaceae	<i>Cuscuta reflexa</i>	Present	Native
Convolvulaceae	<i>Evolvulus alsinoides</i>	Present	Native
Convolvulaceae	<i>Evolvulus nummularius</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Convolvulaceae	<i>Ipomoea aquatica</i>	Present	Native
Convolvulaceae	<i>Ipomoea cairica</i>	Present	Native
Convolvulaceae	<i>Ipomoea carnea</i>	Present	Invasive Alien
Convolvulaceae	<i>Ipomoea eriocarpa</i>	Present	Native
Convolvulaceae	<i>Ipomoea hederifolia</i>	Present	Invasive Alien
Convolvulaceae	<i>Ipomoea indica</i>	Present	Introduced
Convolvulaceae	<i>Ipomoea nil</i>	Present	Invasive Alien
Convolvulaceae	<i>Ipomoea obscura</i>	Present	Native
Convolvulaceae	<i>Ipomoea pes-tigridis</i>	Present	Native
Convolvulaceae	<i>Ipomoea purpurea</i>	Present	Introduced
Convolvulaceae	<i>Ipomoea quamoclit</i>	Present	Introduced
Convolvulaceae	<i>Merremia aegyptia</i>	Present	Introduced
Convolvulaceae	<i>Merremia emarginata</i>	Present	Native
Convolvulaceae	<i>Merremia hederacea</i>	Present	Native
Convolvulaceae	<i>Merremia quinquefolia</i>	Present	Introduced
Convolvulaceae	<i>Merremia tridentata</i>	Present	Native
Convolvulaceae	<i>Merremia tuberosa</i>	Present	Introduced
Convolvulaceae	<i>Operculina turpethum</i>	Present	Native
Cornaceae	<i>Alangium salviifolium</i>	Present	Native
Costaceae	<i>Hellenia speciosa</i>	Addition	Native
Costaceae	<i>Cheilocostus speciosus</i>	Present	Native
Crassulaceae	<i>Cotyledon orbiculata</i>	Addition	Introduced
Crassulaceae	<i>Crassula ovata</i>	Addition	Introduced
Crassulaceae	<i>Echeveria agavoides</i>	Addition	Introduced
Crassulaceae	<i>Echeveria elegans</i>	Addition	Introduced
Crassulaceae	<i>Echeveria pilosa</i>	Addition	Introduced
Crassulaceae	<i>Kalanchoe beharensis</i>	Addition	Introduced
Crassulaceae	<i>Kalanchoe bhidei</i>	Addition	Native
Crassulaceae	<i>Kalanchoe blossfeldiana</i>	Addition	Introduced
Crassulaceae	<i>Echeveria setosa</i>	Present	Introduced
Crassulaceae	<i>Kalanchoe delagoensis</i>	Present	Introduced
Crassulaceae	<i>Kalanchoe floribunda</i>	Present	Introduced
Crassulaceae	<i>Kalanchoe laciniata</i>	Present	Introduced
Crassulaceae	<i>Kalanchoe pinnata</i>	Present	Introduced
Cucurbitaceae	<i>Benincasa hispida</i>	Present	Introduced
Cucurbitaceae	<i>Citrullus lanatus</i>	Present	Native
Cucurbitaceae	<i>Coccinia grandis</i>	Present	Native
Cucurbitaceae	<i>Corallocarpus epigaeus</i>	Present	Native
Cucurbitaceae	<i>Ctenolepis cerasiformis</i>	Present	Native
Cucurbitaceae	<i>Cucumis melo</i>	Present	Native
Cucurbitaceae	<i>Cucumis sativus</i>	Present	Native
Cucurbitaceae	<i>Cucurbita maxima</i>	Present	Native
Cucurbitaceae	<i>Cucurbita moschata</i>	Present	Introduced
Cucurbitaceae	<i>Cucurbita pepo</i>	Present	Introduced
Cucurbitaceae	<i>Diplocyclos palmatus</i>	Present	Native
Cucurbitaceae	<i>Lagenaria siceraria</i>	Present	Introduced

Family	Scientific Name	Status	Nativity
Cucurbitaceae	<i>Luffa acutangula</i>	Present	Native
Cucurbitaceae	<i>Momordica charantia</i>	Present	Native
Cucurbitaceae	<i>Momordica cochinchinensis</i>	Present	Native
Cucurbitaceae	<i>Momordica dioica</i>	Present	Native
Cucurbitaceae	<i>Mukia maderaspatana</i>	Present	Native
Cucurbitaceae	<i>Trichosanthes cucumerina</i>	Present	Native
Cucurbitaceae	<i>Trichosanthes tricuspidata</i>	Present	Introduced
Cyperaceae	<i>Cyperus dubius</i>	Addition	Native
Cyperaceae	<i>Fuirena ciliaris</i>	Addition	Native
Cyperaceae	<i>Bulbostylis barbata</i>	Present	Native
Cyperaceae	<i>Cyperus alulatus</i>	Present	Native
Cyperaceae	<i>Cyperus ceylanicus</i>	Present	Native
Cyperaceae	<i>Cyperus clarkei</i>	Present	Native
Cyperaceae	<i>Cyperus exaltatus</i>	Present	Native
Cyperaceae	<i>Cyperus flavidus</i>	Present	Native
Cyperaceae	<i>Cyperus neochinensis</i>	Present	Native
Cyperaceae	<i>Cyperus niveus</i>	Present	Native
Cyperaceae	<i>Cyperus pangorei</i>	Present	Native
Cyperaceae	<i>Cyperus polystachyos</i>	Present	Native
Cyperaceae	<i>Cyperus pumilus</i>	Present	Native
Cyperaceae	<i>Cyperus rotundus</i>	Present	Native
Cyperaceae	<i>Cyperus squarrosus</i>	Present	Native
Cyperaceae	<i>Cyperus tenuispica</i>	Present	Northern India
Cyperaceae	<i>Fimbristylis aestivalis</i>	Present	Native
Cyperaceae	<i>Fimbristylis argentea</i>	Present	Native
Cyperaceae	<i>Fimbristylis complanata</i>	Present	Native
Cyperaceae	<i>Fimbristylis falcata</i>	Present	Native
Cyperaceae	<i>Fimbristylis ovata</i>	Present	Native
Cyperaceae	<i>Fimbristylis quinquangularis</i>	Present	Native
Cyperaceae	<i>Fimbristylis schoenoides</i>	Present	Native
Cyperaceae	<i>Fimbristylis woodrowii</i>	Present	Native
Cyperaceae	<i>Kyllinga brevifolia</i>	Present	Native
Cyperaceae	<i>Rhynchospora longisetis</i>	Present	Native
Cyperaceae	<i>Rhynchospora wightiana</i>	Present	Native
Cyperaceae	<i>Sacciolepis indica</i>	Present	Native
Cyperaceae	<i>Schoenoplectiella articulata</i>	Present	Native
Cyperaceae	<i>Schoenoplectiella roylei</i>	Present	Native
Cyperaceae	<i>Carex hebecarpa</i>	Present	Native
Cyperaceae	<i>Cyperus albostriatus</i>	Addition	Introduced
Cyperaceae	<i>Cyperus papyrus</i>	Addition	Introduced
Cyperaceae	<i>Fimbristylis puberula</i>	Addition	Introduced
Cyperaceae	<i>Cyperus alopecuroides</i>	Present	Native
Cyperaceae	<i>Cyperus articulatus</i>	Present	Native
Cyperaceae	<i>Cyperus bulbosus</i>	Present	Native
Cyperaceae	<i>Cyperus compressus</i>	Present	Native
Cyperaceae	<i>Cyperus difformis</i>	Present	Native



Family	Scientific Name	Status	Nativity
Cyperaceae	<i>Cyperus hyalinus</i>	Present	Native
Cyperaceae	<i>Cyperus involucratus</i>	Present	Introduced
Cyperaceae	<i>Cyperus iria</i>	Present	Native
Cyperaceae	<i>Cyperus laevigatus</i>	Present	Native
Cyperaceae	<i>Cyperus meeboldii</i>	Present	Native
Cyperaceae	<i>Cyperus pulchellus</i>	Present	Introduced
Cyperaceae	<i>Cyperus rubicundus</i>	Present	Native
Cyperaceae	<i>Cyperus stoloniferus</i>	Present	Native
Cyperaceae	<i>Dichanthium foveolatum</i>	Present	Native
Cyperaceae	<i>Eleocharis atropurpurea</i>	Present	Native
Cyperaceae	<i>Eleocharis geniculata</i>	Present	Native
Cyperaceae	<i>Fimbristylis alboviridis</i>	Present	Native
Cyperaceae	<i>Fimbristylis bisumbellata</i>	Present	Native
Cyperaceae	<i>Fimbristylis cymosa</i>	Present	Native
Cyperaceae	<i>Fimbristylis dichotoma</i>	Present	Native
Cyperaceae	<i>Fimbristylis ferruginea</i>	Present	Native
Cyperaceae	<i>Fimbristylis tenera</i>	Present	Native
Cyperaceae	<i>Fimbristylis tetragona</i>	Present	Native
Cyperaceae	<i>Lipocarpha chinensis</i>	Present	Native
Cyperaceae	<i>Pycnus diaphanus</i>	Present	Native
Cyperaceae	<i>Schoenoplectiella senegalensis</i>	Present	Native
Cyperaceae	<i>Schoenoplectiella supina</i>	Present	Native
Cyperaceae	<i>Schoenoplectus mucronatus</i>	Present	Native
Cyperaceae	<i>Scleria rugosa</i>	Present	Native
Dilleniaceae	<i>Dillenia indica</i>	Addition	Native
Dilleniaceae	<i>Dillenia pentagyna</i>	Addition	Native
Dilleniaceae	<i>Tetracera akara</i>	Addition	Native
Dilleniaceae	<i>Tetracera volubilis</i>	Addition	Introduced
Dioscoreaceae	<i>Dioscorea bulbifera</i>	Present	Native
Dioscoreaceae	<i>Dioscorea hispida</i>	Present	Native
Dioscoreaceae	<i>Dioscorea pentaphylla</i>	Present	Native
Dioscoreaceae	<i>Dioscorea alata</i>	Present	Native
Dracaenaceae	<i>Dracaena fragrans</i>	Present	Introduced
Dracaenaceae	<i>Dracaena marginata</i>	Present	Introduced
Dracaenaceae	<i>Dracaena reflexa</i>	Present	Introduced
Dracaenaceae	<i>Dracaena sanderiana</i>	Present	Introduced
Dracaenaceae	<i>Dracaena surculosa</i>	Present	Introduced
Droseraceae	<i>Drosera burmanni</i>	Present	Native
Droseraceae	<i>Drosera indica</i>	Present	Native
Ebenaceae	<i>Diospyros candolleana</i>	Addition	Native
Ebenaceae	<i>Diospyros montana</i>	Addition	Native
Ebenaceae	<i>Diospyros sylvatica</i>	Addition	Native
Ebenaceae	<i>Diospyros chloroxylon</i>	Present	Native
Ebenaceae	<i>Diospyros malabarica</i>	Present	Native
Ebenaceae	<i>Diospyros melanoxylon</i>	Present	Native
Elaeagnaceae	<i>Elaeagnus latifolia</i>	Addition	Native



Family	Scientific Name	Status	Nativity
Elaeocarpaceae	<i>Elaeocarpus tectorius</i>	Addition	Native
Elatinaceae	<i>Bergia ammannioides</i>	Present	Native
Elatinaceae	<i>Bergia capensis</i>	Present	Native
Eragrostidaceae	<i>Eragrostis atrovirens</i>	Present	Native
Eragrostidaceae	<i>Eragrostis cilianensis</i>	Present	Native
Eragrostidaceae	<i>Eragrostis minor</i>	Present	Native
Eragrostidaceae	<i>Eragrostis patula</i>	Present	Introduced
Eragrostidaceae	<i>Eragrostis pilosa</i>	Present	Native
Eragrostidaceae	<i>Eragrostis tremula</i>	Present	Native
Eriocaulaceae	<i>Eriocaulon quinquangulare</i>	Present	Native
Erythroxylaceae	<i>Erythroxylum monogynum</i>	Addition	Native
Euphorbiaceae	<i>Acalypha ciliata</i>	Addition	Native
Euphorbiaceae	<i>Acalypha scabrosa</i>	Addition	Introduced
Euphorbiaceae	<i>Euphorbia hyssopifolia</i>	Addition	Invasive Alien
Euphorbiaceae	<i>Euphorbia stenoclada</i>	Addition	Introduced
Euphorbiaceae	<i>Excoecaria cochinchinensis</i>	Addition	Introduced
Euphorbiaceae	<i>Givotia moluccana</i>	Addition	Native
Euphorbiaceae	<i>Hura crepitans</i>	Addition	Introduced
Euphorbiaceae	<i>Macaranga peltata</i>	Addition	Native
Euphorbiaceae	<i>Mallotus philippensis</i>	Addition	Native
Euphorbiaceae	<i>Reutealis trisperma</i>	Addition	Introduced
Euphorbiaceae	<i>Suregada lanceolata</i>	Addition	Native
Euphorbiaceae	<i>Tritaxis glabella</i>	Addition	Native
Euphorbiaceae	<i>Acalypha capitata</i>	Present	Native
Euphorbiaceae	<i>Acalypha fruticosa</i>	Present	Native
Euphorbiaceae	<i>Acalypha hispida</i>	Present	Introduced
Euphorbiaceae	<i>Acalypha indica</i>	Present	Native
Euphorbiaceae	<i>Acalypha lanceolata</i>	Present	Native
Euphorbiaceae	<i>Acalypha wilkesiana</i>	Present	Introduced
Euphorbiaceae	<i>Baliospermum solanifolium</i>	Present	Native
Euphorbiaceae	<i>Breynia disticha</i>	Present	Introduced
Euphorbiaceae	<i>Bridelia montana</i>	Present	Native
Euphorbiaceae	<i>Bridelia retusa</i>	Present	Native
Euphorbiaceae	<i>Chamaesyce prostrata</i>	Present	Introduced
Euphorbiaceae	<i>Chamaesyce serpens</i>	Present	Introduced
Euphorbiaceae	<i>Chrozophora rottleri</i>	Present	Native
Euphorbiaceae	<i>Codiaeum variegatum</i>	Present	Introduced
Euphorbiaceae	<i>Croton bonplandianus</i>	Present	Invasive Alien
Euphorbiaceae	<i>Euphorbia antiquorum</i>	Present	Native
Euphorbiaceae	<i>Euphorbia cyathophora</i>	Present	Invasive Alien
Euphorbiaceae	<i>Euphorbia heterophylla</i>	Present	Invasive Alien
Euphorbiaceae	<i>Euphorbia hirta</i>	Present	Invasive Alien
Euphorbiaceae	<i>Euphorbia leucocephala</i>	Present	Introduced
Euphorbiaceae	<i>Euphorbia milii</i>	Present	Introduced
Euphorbiaceae	<i>Euphorbia neriifolia</i>	Present	Native
Euphorbiaceae	<i>Euphorbia pulcherrima</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Euphorbiaceae	<i>Euphorbia sanguinea</i>	Present	Introduced
Euphorbiaceae	<i>Euphorbia thymifolia</i>	Present	Introduced
Euphorbiaceae	<i>Euphorbia tirucalli</i>	Present	Native
Euphorbiaceae	<i>Euphorbia tithymaloides</i>	Present	Introduced
Euphorbiaceae	<i>Flueggea leucopyrus</i>	Present	Native
Euphorbiaceae	<i>Flueggea virosa</i>	Present	Native
Euphorbiaceae	<i>Jatropha curcas</i>	Present	Introduced
Euphorbiaceae	<i>Jatropha gossypifolia</i>	Present	Introduced
Euphorbiaceae	<i>Jatropha heynei</i>	Present	Native
Euphorbiaceae	<i>Jatropha integerrima</i>	Present	Introduced
Euphorbiaceae	<i>Jatropha moluccana</i>	Present	Native
Euphorbiaceae	<i>Jatropha multifida</i>	Present	Introduced
Euphorbiaceae	<i>Jatropha podagrica</i>	Present	Introduced
Euphorbiaceae	<i>Manihot esculenta</i>	Present	Introduced
Euphorbiaceae	<i>Microstachys chamaelea</i>	Present	Native
Euphorbiaceae	<i>Ricinus communis</i>	Present	Introduced
Fabaceae	<i>Indigofera hirsuta</i>	Present	Native
Fabaceae	<i>Senna surattensis</i>	Present	Native
Fabaceae	<i>Stylosanthes hamata</i>	Present	Introduced
Fabaceae	<i>Acacia concurrens</i>	Addition	Introduced
Fabaceae	<i>Acacia holosericea</i>	Addition	Introduced
Fabaceae	<i>Acrocarpus fraxinifolius</i>	Addition	Native
Fabaceae	<i>Aeschynomene brasiliana</i>	Addition	Introduced
Fabaceae	<i>Albizia chinensis</i>	Addition	Native
Fabaceae	<i>Alysicarpus longifolius</i>	Addition	Native
Fabaceae	<i>Bauhinia dubia</i>	Addition	Introduced
Fabaceae	<i>Bauhinia galpinii</i>	Addition	Introduced
Fabaceae	<i>Brownea grandiceps</i>	Addition	Introduced
Fabaceae	<i>Butea superba</i>	Addition	Native
Fabaceae	<i>Calliandra hybrida</i>	Addition	Introduced
Fabaceae	<i>Calliandra inermis</i>	Addition	Native
Fabaceae	<i>Calliandra haematocephala</i>	Addition	Introduced
Fabaceae	<i>Calliandra tergemina</i>	Addition	Introduced
Fabaceae	<i>Calliandra tweedii</i>	Addition	Introduced
Fabaceae	<i>Chamaecrista mimosoides</i>	Addition	Native
Fabaceae	<i>Clitoria fairchildiana</i>	Addition	Introduced
Fabaceae	<i>Colvillea racemosa</i>	Addition	Introduced
Fabaceae	<i>Corymbia opaca</i>	Addition	Introduced
Fabaceae	<i>Eleiotis monophyllos</i>	Addition	Native
Fabaceae	<i>Erythrina blakei</i>	Addition	Introduced
Fabaceae	<i>Erythrina crista-galli</i>	Addition	Introduced
Fabaceae	<i>Faidherbia albida</i>	Addition	Introduced
Fabaceae	<i>Gliricidia maculata</i>	Addition	Introduced
Fabaceae	<i>Lablab purpureus</i>	Addition	Native
Fabaceae	<i>Millettia peguensis</i>	Addition	Introduced
Fabaceae	<i>Mundulea sericea</i>	Addition	Native



Family	Scientific Name	Status	Nativity
Fabaceae	<i>Phanera retusa</i>	Addition	Native
Fabaceae	<i>Piliostigma malabaricum</i>	Addition	Native
Fabaceae	<i>Pterocarpus macrocarpus</i>	Addition	Introduced
Fabaceae	<i>Pueraria tuberosa</i>	Addition	Native
Fabaceae	<i>Rhynchosia hirta</i>	Addition	Native
Fabaceae	<i>Senegalia polyacantha</i>	Addition	Native
Fabaceae	<i>Senegalia rugata</i>	Addition	Native
Fabaceae	<i>Senna bicapsularis</i>	Addition	Introduced
Fabaceae	<i>Senna pallida</i>	Addition	Introduced
Fabaceae	<i>Senna sulfurea</i>	Addition	Native
Fabaceae	<i>Spatholobus parviflorus</i>	Addition	Native
Fabaceae	<i>Vachellia eburnea</i>	Addition	Native
Fabaceae	<i>Vachellia horrida</i>	Addition	Native
Fabaceae	<i>Vachellia tortilis</i>	Addition	Introduced
Fabaceae	<i>Zornia diphylla</i>	Addition	Native
Fabaceae	<i>Abrus precatorius</i>	Present	Native
Fabaceae	<i>Acacia auriculiformis</i>	Present	Introduced
Fabaceae	<i>Acacia farnesiana</i>	Present	Introduced
Fabaceae	<i>Acacia nilotica subsp. indica</i>	Present	Native
Fabaceae	<i>Acacia planifrons</i>	Present	Native
Fabaceae	<i>Adenantha pavonina</i>	Present	Native
Fabaceae	<i>Aeschynomene indica</i>	Present	Native
Fabaceae	<i>Albizia amara</i>	Present	Native
Fabaceae	<i>Albizia inundata</i>	Present	Introduced
Fabaceae	<i>Albizia lebbeck</i>	Present	Native
Fabaceae	<i>Albizia odoratissima</i>	Present	Native
Fabaceae	<i>Albizia procera</i>	Present	Native
Fabaceae	<i>Albizia richardiana</i>	Present	Introduced
Fabaceae	<i>Albizia saman</i>	Present	Introduced
Fabaceae	<i>Alysicarpus bupleurifolius</i>	Present	Native
Fabaceae	<i>Alysicarpus hamosus</i>	Present	Native
Fabaceae	<i>Alysicarpus monilifer</i>	Present	Native
Fabaceae	<i>Alysicarpus rugosus</i>	Present	Native
Fabaceae	<i>Alysicarpus tetragonolobus</i>	Present	Native
Fabaceae	<i>Alysicarpus vaginalis</i>	Present	Native
Fabaceae	<i>Aphyllodium biarticulatum</i>	Present	Native
Fabaceae	<i>Arachis hypogaea</i>	Present	Introduced
Fabaceae	<i>Bauhinia acuminata</i>	Present	Native
Fabaceae	<i>Bauhinia purpurea</i>	Present	Native
Fabaceae	<i>Bauhinia racemosa</i>	Present	Native
Fabaceae	<i>Bauhinia tomentosa</i>	Present	Introduced
Fabaceae	<i>Bauhinia variegata</i>	Present	Native
Fabaceae	<i>Biancaea decapetala</i>	Present	Native
Fabaceae	<i>Biancaea sappan</i>	Present	Native
Fabaceae	<i>Brachypterum scandens</i>	Present	Native
Fabaceae	<i>Butea monosperma</i>	Present	Native



Family	Scientific Name	Status	Nativity
Fabaceae	<i>Caesalpinia coriaria</i>	Present	Introduced
Fabaceae	<i>Caesalpinia pulcherrima</i>	Present	Introduced
Fabaceae	<i>Cajanus cajan</i>	Present	Native
Fabaceae	<i>Cajanus scarabaeoides</i>	Present	Native
Fabaceae	<i>Canavalia gladiata</i>	Present	Native
Fabaceae	<i>Canavalia mollis</i>	Present	Native
Fabaceae	<i>Cassia fistula</i>	Present	Native
Fabaceae	<i>Cassia grandis</i>	Present	Introduced
Fabaceae	<i>Cassia javanica</i>	Present	Introduced
Fabaceae	<i>Cassia roxburghii</i>	Present	Native
Fabaceae	<i>Chamaecrista absus</i>	Present	Native
Fabaceae	<i>Chamaecrista pumila</i>	Present	Native
Fabaceae	<i>Cicer arietinum</i>	Present	Introduced
Fabaceae	<i>Clitoria ternatea</i>	Present	Introduced
Fabaceae	<i>Crotalaria angulata</i>	Present	Native
Fabaceae	<i>Crotalaria bifaria</i>	Present	Native
Fabaceae	<i>Crotalaria hebecarpa</i>	Present	Native
Fabaceae	<i>Crotalaria hirsuta</i>	Present	Native
Fabaceae	<i>Crotalaria juncea</i>	Present	Native
Fabaceae	<i>Crotalaria laburnifolia</i>	Present	Native
Fabaceae	<i>Crotalaria mysorensis</i>	Present	Native
Fabaceae	<i>Crotalaria orixensis</i>	Present	Native
Fabaceae	<i>Crotalaria pallida</i>	Present	Native
Fabaceae	<i>Crotalaria prostrata</i>	Present	Native
Fabaceae	<i>Crotalaria pusilla</i>	Present	Native
Fabaceae	<i>Crotalaria ramosissima</i>	Present	Introduced
Fabaceae	<i>Crotalaria retusa</i>	Present	Native
Fabaceae	<i>Crotalaria trifolium</i>	Present	Native
Fabaceae	<i>Crotalaria verrucosa</i>	Present	Native
Fabaceae	<i>Cullen corylifolium</i>	Present	Native
Fabaceae	<i>Cyamopsis tetragonoloba</i>	Present	Native
Fabaceae	<i>Dalbergia lanceolaria</i>	Present	Native
Fabaceae	<i>Dalbergia latifolia</i>	Present	Native
Fabaceae	<i>Dalbergia sissoo</i>	Present	Native
Fabaceae	<i>Dalbergia volubilis</i>	Present	Native
Fabaceae	<i>Delonix elata</i>	Present	Introduced
Fabaceae	<i>Delonix regia</i>	Present	Introduced
Fabaceae	<i>Desmanthus virgatus</i>	Present	Introduced
Fabaceae	<i>Dichrostachys cinerea</i>	Present	Native
Fabaceae	<i>Dolichos trilobus</i>	Present	Native
Fabaceae	<i>Erythrina stricta</i>	Present	Native
Fabaceae	<i>Erythrina suberosa</i>	Present	Native
Fabaceae	<i>Erythrina variegata</i>	Present	Native
Fabaceae	<i>Gliricidia sepium</i>	Present	Introduced
Fabaceae	<i>Glycine max</i>	Present	Introduced
Fabaceae	<i>Grona triflora</i>	Present	Native



Family	Scientific Name	Status	Nativity
Fabaceae	<i>Guilandina bonduc</i>	Present	Native
Fabaceae	<i>Hardwickia binata</i>	Present	Native
Fabaceae	<i>Indigofera astragalina</i>	Present	Native
Fabaceae	<i>Indigofera cordifolia</i>	Present	Native
Fabaceae	<i>Indigofera glabra</i>	Present	Native
Fabaceae	<i>Indigofera glandulosa</i>	Present	Native
Fabaceae	<i>Indigofera linifolia</i>	Present	Native
Fabaceae	<i>Indigofera linnaei</i>	Present	Native
Fabaceae	<i>Indigofera nummulariifolia</i>	Present	Native
Fabaceae	<i>Indigofera tinctoria</i>	Present	Native
Fabaceae	<i>Indigofera trifoliata</i>	Present	Native
Fabaceae	<i>Indigofera trita</i>	Present	Native
Fabaceae	<i>Leucaena leucocephala</i>	Present	Invasive Alien
Fabaceae	<i>Macroptilium atropurpureum</i>	Present	Introduced
Fabaceae	<i>Macroptilium lathyroides</i>	Present	Introduced
Fabaceae	<i>Macrotyloma ciliatum</i>	Present	Native
Fabaceae	<i>Medicago polymorpha</i>	Present	Introduced
Fabaceae	<i>Medicago sativa</i>	Present	Introduced
Fabaceae	<i>Melilotus albus</i>	Present	Introduced
Fabaceae	<i>Melilotus indicus</i>	Present	Native
Fabaceae	<i>Mimosa hamata</i>	Present	Native
Fabaceae	<i>Mimosa prainiana</i>	Present	Native
Fabaceae	<i>Mimosa pudica</i>	Present	Invasive Alien
Fabaceae	<i>Mucuna pruriens</i>	Present	Native
Fabaceae	<i>Paracalyx scariosus</i>	Present	Native
Fabaceae	<i>Parkia biglandulosa</i>	Present	Introduced
Fabaceae	<i>Parkinsonia aculeata</i>	Present	Introduced
Fabaceae	<i>Phanera vahlii</i>	Present	Native
Fabaceae	<i>Pithecellobium dulce</i>	Present	Introduced
Fabaceae	<i>Pongamia pinnata</i>	Present	Native
Fabaceae	<i>Prosopis cineraria</i>	Present	Native
Fabaceae	<i>Prosopis juliflora</i>	Present	Invasive Alien
Fabaceae	<i>Pterocarpus marsupium</i>	Present	Native
Fabaceae	<i>Pterocarpus santalinus</i>	Present	Native
Fabaceae	<i>Pterolobium hexapetalum</i>	Present	Native
Fabaceae	<i>Rhynchosia aurea</i>	Present	Native
Fabaceae	<i>Rhynchosia minima</i>	Present	Native
Fabaceae	<i>Rhynchosia suaveolens</i>	Present	Native
Fabaceae	<i>Rhynchosia viscosa</i>	Present	Native
Fabaceae	<i>Rothia indica</i>	Present	Native
Fabaceae	<i>Saraca asoca</i>	Present	Native
Fabaceae	<i>Senegalia caesia</i>	Present	Native
Fabaceae	<i>Senegalia catechu</i>	Present	Native
Fabaceae	<i>Senegalia chundra</i>	Present	Native
Fabaceae	<i>Senegalia intsia</i>	Present	Native
Fabaceae	<i>Senegalia torta</i>	Present	Native



Family	Scientific Name	Status	Nativity
Fabaceae	<i>Senna alata</i>	Present	Introduced
Fabaceae	<i>Senna alexandrina</i>	Present	Native
Fabaceae	<i>Senna auriculata</i>	Present	Native
Fabaceae	<i>Senna obtusifolia</i>	Present	Invasive Alien
Fabaceae	<i>Senna occidentalis</i>	Present	Introduced
Fabaceae	<i>Senna siamea</i>	Present	Introduced
Fabaceae	<i>Senna sophera</i>	Present	Introduced
Fabaceae	<i>Senna spectabilis</i>	Present	Introduced
Fabaceae	<i>Senna tora</i>	Present	Invasive Alien
Fabaceae	<i>Senna uniflora</i>	Present	Invasive Alien
Fabaceae	<i>Sesbania bispinosa</i>	Present	Introduced
Fabaceae	<i>Sesbania grandiflora</i>	Present	Introduced
Fabaceae	<i>Sesbania sesban</i>	Present	Native
Fabaceae	<i>Shutteria involucreta</i>	Present	Native
Fabaceae	<i>Stylosanthes fruticosa</i>	Present	Native
Fabaceae	<i>Tamarindus indica</i>	Present	Introduced
Fabaceae	<i>Tephrosia maxima</i>	Present	Native
Fabaceae	<i>Tephrosia pumila</i>	Present	Native
Fabaceae	<i>Tephrosia purpurea</i>	Present	Native
Fabaceae	<i>Tephrosia strigosa</i>	Present	Native
Fabaceae	<i>Tephrosia villosa</i>	Present	Native
Fabaceae	<i>Teramnus labialis</i>	Present	Native
Fabaceae	<i>Trigonella foenum-graecum</i>	Present	Introduced
Fabaceae	<i>Vachellia campbellii</i>	Present	Native
Fabaceae	<i>Vachellia leucophloea</i>	Present	Native
Fabaceae	<i>Vigna aconitifolia</i>	Present	Native
Fabaceae	<i>Vigna mungo</i>	Present	Native
Fabaceae	<i>Vigna radiata</i>	Present	Native
Fabaceae	<i>Vigna trilobata</i>	Present	Native
Fabaceae	<i>Vigna unguiculata</i>	Present	Introduced
Fabaceae	<i>Zornia gibbosa</i>	Present	Native
Gentianaceae	<i>Canscora diffusa</i>	Present	Native
Gentianaceae	<i>Enicostema axillare</i>	Present	Native
Gentianaceae	<i>Exacum pedunculatum</i>	Present	Native
Gentianaceae	<i>Hoppea dichotoma</i>	Present	Native
Geraniaceae	<i>Pelargonium grandiflorum</i>	Addition	Introduced
Geraniaceae	<i>Pelargonium graveolens</i>	Present	Introduced
Gisekiaceae	<i>Gisekia pharnaceoides</i>	Present	Native
Heliconiaceae	<i>Heliconia metallica</i>	Addition	Introduced
Heliconiaceae	<i>Heliconia latispatha</i>	Present	Introduced
Heliconiaceae	<i>Heliconia psittacorum</i>	Present	Introduced
Heliconiaceae	<i>Heliconia rostrata</i>	Present	Introduced
Heliconiaceae	<i>Heliconia stricta</i>	Present	Introduced
Hernandiaceae	<i>Gyrocarpus americanus</i>	Present	Native
Hyacinthaceae	<i>Drimia indica</i>	Present	Native
Hydrangiaceae	<i>Hydrangea aspera subsp. strigosa</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Hydrangiaceae	<i>Hydrangea macrophylla</i>	Present	Introduced
Hydrocharitaceae	<i>Nechamandra alternifolia</i>	Present	Native
Hydrocharitaceae	<i>Ottelia alismoides</i>	Present	Native
Hydrocharitaceae	<i>Blyxa aubertii</i>	Present	Native
Hydrocharitaceae	<i>Hydrilla verticillata</i>	Present	Native
Hydrocharitaceae	<i>Vallisneria americana</i>	Present	Introduced
Hypoxidaceae	<i>Curculigo orchioides</i>	Present	Native
Iridaceae	<i>Iris domestica</i>	Present	Native
Iridaceae	<i>Gladiolus gandavensis</i>	Present	Introduced
Lamiaceae	<i>Clerodendrum phlomidis</i>	Present	Native
Lamiaceae	<i>Coleus amboinicus</i>	Addition	Native
Lamiaceae	<i>Gmelina asiatica</i>	Addition	Native
Lamiaceae	<i>Leucas biflora</i>	Addition	Native
Lamiaceae	<i>Leucas zeylanica</i>	Addition	Native
Lamiaceae	<i>Mentha spicata</i>	Addition	Introduced
Lamiaceae	<i>Premna serratifolia</i>	Addition	Native
Lamiaceae	<i>Premna barbata</i>	Addition	Native
Lamiaceae	<i>Salvia dianthera</i>	Addition	Native
Lamiaceae	<i>Vitex altissima</i>	Addition	Native
Lamiaceae	<i>Vitex leucoxydon</i>	Addition	Native
Lamiaceae	<i>Vitex pinnata</i>	Addition	Native
Lamiaceae	<i>Anisomeles indica</i>	Present	Native
Lamiaceae	<i>Anisomeles malabarica</i>	Present	Native
Lamiaceae	<i>Clerodendrum indicum</i>	Present	Native
Lamiaceae	<i>Clerodendrum infortunatum</i>	Present	Native
Lamiaceae	<i>Coleus barbatus</i>	Present	Native
Lamiaceae	<i>Coleus strobilifer</i>	Present	Native
Lamiaceae	<i>Gmelina arborea</i>	Present	Native
Lamiaceae	<i>Holmskioldia sanguinea</i>	Present	Native
Lamiaceae	<i>Hyptis suaveolens</i>	Present	Invasive Alien
Lamiaceae	<i>Leonotis nepaetifolia</i>	Present	Introduced
Lamiaceae	<i>Leucas aspera</i>	Present	Native
Lamiaceae	<i>Leucas cephalotes</i>	Present	Native
Lamiaceae	<i>Mentha aquatica</i>	Present	Introduced
Lamiaceae	<i>Mentha arvensis</i>	Present	Native
Lamiaceae	<i>Ocimum americanum</i>	Present	Native
Lamiaceae	<i>Ocimum basilicum</i>	Present	Native
Lamiaceae	<i>Ocimum filamentosum</i>	Present	Native
Lamiaceae	<i>Ocimum gratissimum</i>	Present	Native
Lamiaceae	<i>Ocimum tenuiflorum</i>	Present	Native
Lamiaceae	<i>Plectranthus scutellarioides</i>	Present	Introduced
Lamiaceae	<i>Premna mollissima</i>	Present	Native
Lamiaceae	<i>Premna tomentosa</i>	Present	Native
Lamiaceae	<i>Rothea serrata</i>	Present	Native
Lamiaceae	<i>Salvia coccinea</i>	Present	Introduced
Lamiaceae	<i>Salvia leucantha</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Lamiaceae	<i>Salvia splendens</i>	Present	Introduced
Lamiaceae	<i>Salvia viridis</i>	Present	Introduced
Lamiaceae	<i>Tectona grandis</i>	Present	Native
Lamiaceae	<i>Vitex negundo</i>	Present	Native
Lamiaceae	<i>Vitex trifolia</i>	Present	Native
Lamiaceae	<i>Volkameria inermis</i>	Present	Native
Lauraceae	<i>Beilschmiedia roxburghiana</i>	Addition	Native
Lauraceae	<i>Litsea deccanensis</i>	Addition	Native
Lauraceae	<i>Cassytha filiformis</i>	Present	Native
Lauraceae	<i>Cinnamomum camphora</i>	Present	Introduced
Lauraceae	<i>Cinnamomum verum</i>	Present	Introduced
Lecythidaceae	<i>Barringtonia acutangula</i>	Addition	Native
Lecythidaceae	<i>Barringtonia asiatica</i>	Addition	Native
Lecythidaceae	<i>Barringtonia racemosa</i>	Addition	Native
Lecythidaceae	<i>Careya arborea</i>	Addition	Native
Lecythidaceae	<i>Couropita guianensis</i>	Present	Introduced
Lemnaceae	<i>Lemna aequinoctialis</i>	Present	Native
Lentibulariaceae	<i>Utricularia scandens</i>	Addition	Native
Lentibulariaceae	<i>Utricularia aurea</i>	Present	Native
Lentibulariaceae	<i>Utricularia caerulea</i>	Present	Native
Lentibulariaceae	<i>Utricularia stellaris</i>	Present	Native
Liliaceae	<i>Ophiopogon jaburan</i>	Addition	Introduced
Liliaceae	<i>Lilium candidum</i>	Present	Introduced
Linaceae	<i>Linum usitatissimum</i>	Present	Introduced
Lobeliaceae	<i>Lobelia alsinoides</i>	Present	Native
Loganiaceae	<i>Strychnos nux-vomica</i>	Present	Native
Loranthaceae	<i>Dendrophthoe falcata</i>	Present	Native
Lythraceae	<i>Cuphea hyssopifolia</i>	Addition	Introduced
Lythraceae	<i>Lagerstroemia minuticarpa</i>	Addition	Sikkim And Assam
Lythraceae	<i>Lagerstroemia parviflora</i>	Addition	Native
Lythraceae	<i>Lagerstroemia speciosa</i>	Addition	Native
Lythraceae	<i>Punica granatum</i>	Addition	Introduced
Lythraceae	<i>Rotala densiflora</i>	Addition	Native
Lythraceae	<i>Ammania baccifera</i>	Present	Native
Lythraceae	<i>Ammannia prostrata</i>	Present	Native
Lythraceae	<i>Lagerstroemia floribunda</i>	Present	Introduced
Lythraceae	<i>Lagerstroemia indica</i>	Present	Introduced
Lythraceae	<i>Lawsonia inermis</i>	Present	Native
Lythraceae	<i>Rotala fimbriata</i>	Present	Native
Lythraceae	<i>Rotala illecebroides</i>	Present	Native
Lythraceae	<i>Rotala indica</i>	Present	Native
Lythraceae	<i>Woodfordia fruticosa</i>	Present	Native
Magnoliaceae	<i>Magnolia grandiflora</i>	Addition	Native
Magnoliaceae	<i>Magnolia champaca</i>	Present	Native
Malpighiaceae	<i>Galphimia glauca</i>	Addition	Introduced
Malpighiaceae	<i>Tristellateia australasiae</i>	Addition	Introduced



Family	Scientific Name	Status	Nativity
Malpighiaceae	<i>Galphimia gracilis</i>	Present	Introduced
Malpighiaceae	<i>Hiptage benghalensis</i>	Present	Native
Malpighiaceae	<i>Malpighia coccigera</i>	Present	Introduced
Malpighiaceae	<i>Malpighia glabra</i>	Present	Introduced
Malpighiaceae	<i>Stigmaphyllon bonariense</i>	Present	Introduced
Malpighiaceae	<i>Stigmaphyllon ciliatum</i>	Present	Introduced
Malpighiaceae	<i>Stigmaphyllon emarginatum</i>	Present	Introduced
Malvaceae	<i>Corchorus fascicularis</i>	Addition	Native
Malvaceae	<i>Corchorus urticifolia</i>	Addition	Native
Malvaceae	<i>Dombeya × cayeuxii</i>	Addition	Introduced
Malvaceae	<i>Eriolaena hookeriana</i>	Addition	Native
Malvaceae	<i>Firmiana colorata</i>	Addition	Native
Malvaceae	<i>Gossypium barbadense</i>	Addition	Introduced
Malvaceae	<i>Grewia orientalis</i>	Addition	Native
Malvaceae	<i>Helicteres isora</i>	Addition	Native
Malvaceae	<i>Hibiscus liliiflorus</i>	Addition	Introduced
Malvaceae	<i>Hibiscus micranthus</i>	Addition	Native
Malvaceae	<i>Hibiscus platanifolius</i>	Addition	Native
Malvaceae	<i>Hibiscus vitifolius</i>	Addition	Native
Malvaceae	<i>Hildegardia populifolia</i>	Addition	Native
Malvaceae	<i>Melhanhia hamiltoniana</i>	Addition	Introduced
Malvaceae	<i>Pavonia zeylonica</i>	Addition	Native
Malvaceae	<i>Pterospermum suberifolium</i>	Addition	Native
Malvaceae	<i>Pterygota alata</i>	Addition	Native
Malvaceae	<i>Abelmoschus esculentus</i>	Present	Native
Malvaceae	<i>Abelmoschus ficulneus</i>	Present	Native
Malvaceae	<i>Abelmoschus moschatus</i>	Present	Native
Malvaceae	<i>Abutilon hirtum</i>	Present	Native
Malvaceae	<i>Abutilon indicum</i>	Present	Native
Malvaceae	<i>Abutilon pannosum</i>	Present	Native
Malvaceae	<i>Adansonia digitata</i>	Present	Introduced
Malvaceae	<i>Bombax ceiba</i>	Present	Native
Malvaceae	<i>Corchorus aestuans</i>	Present	Introduced
Malvaceae	<i>Corchorus olitorius</i>	Present	Native
Malvaceae	<i>Corchorus tridens</i>	Present	Native
Malvaceae	<i>Corchorus trilocularis</i>	Present	Native
Malvaceae	<i>Gossypium arboreum</i>	Present	Native
Malvaceae	<i>Gossypium herbaceum</i>	Present	Introduced
Malvaceae	<i>Grewia abutilifolia</i>	Present	Native
Malvaceae	<i>Grewia asiatica</i>	Present	Native
Malvaceae	<i>Grewia carpinifolia</i>	Present	Introduced
Malvaceae	<i>Grewia flavescens</i>	Present	Native
Malvaceae	<i>Grewia hirsuta</i>	Present	Native
Malvaceae	<i>Grewia rothii</i>	Present	Native
Malvaceae	<i>Grewia tiliifolia</i>	Present	Native
Malvaceae	<i>Grewia villosa</i>	Present	Native



Family	Scientific Name	Status	Nativity
Malvaceae	<i>Guazuma ulmifolia</i>	Present	Introduced
Malvaceae	<i>Hibiscus cannabinus</i>	Present	Introduced
Malvaceae	<i>Hibiscus hirtus</i>	Present	Native
Malvaceae	<i>Hibiscus lobatus</i>	Present	Native
Malvaceae	<i>Hibiscus ovalifolius</i>	Present	Native
Malvaceae	<i>Hibiscus rosa-sinensis</i>	Present	Introduced
Malvaceae	<i>Hibiscus sabdariffa</i>	Present	Introduced
Malvaceae	<i>Hibiscus tiliaceus</i>	Present	Native
Malvaceae	<i>Kleinhovia hospita</i>	Present	Introduced
Malvaceae	<i>Malvastrum coromandelianum</i>	Present	Invasive Alien
Malvaceae	<i>Melochia corchorifolia</i>	Present	Native
Malvaceae	<i>Pterospermum acerifolium</i>	Present	Native
Malvaceae	<i>Sida cordata</i>	Present	Native
Malvaceae	<i>Sida cordifolia</i>	Present	Native
Malvaceae	<i>Sida mysorensis</i>	Present	Native
Malvaceae	<i>Sterculia africana</i>	Present	Introduced
Malvaceae	<i>Sterculia foetida</i>	Present	Native
Malvaceae	<i>Sterculia urens</i>	Present	Native
Malvaceae	<i>Thespesia populnea</i>	Present	Native
Malvaceae	<i>Thespesia populneoides</i>	Present	Native
Malvaceae	<i>Triumfetta pentandra</i>	Present	Native
Malvaceae	<i>Triumfetta rhomboidea</i>	Present	Native
Malvaceae	<i>Triumfetta rotundifolia</i>	Present	Native
Malvaceae	<i>Urena lobata</i>	Present	Native
Malvaceae	<i>Waltheria indica</i>	Present	Invasive Alien
Marantaceae	<i>Calathea roseopicta</i>	Present	Introduced
Marantaceae	<i>Maranta arundinacea</i>	Present	Introduced
Martyniaceae	<i>Martynia annua</i>	Present	Invasive Alien
Melastomataceae	<i>Memecylon umbellatum</i>	Addition	Native
Melastomataceae	<i>Osbeckia zeylanica</i>	Addition	Native
Meliaceae	<i>Aglaia elaeagnoidea</i>	Addition	Native
Meliaceae	<i>Aphanamixis polystachya</i>	Addition	Native
Meliaceae	<i>Chukrasia tabularis</i>	Addition	Native
Meliaceae	<i>Dysoxylum alliaceum</i>	Addition	Native To Andamans
Meliaceae	<i>Heynea trijuga</i>	Addition	Native
Meliaceae	<i>Melia dubia</i>	Addition	Native
Meliaceae	<i>Walsura trifoliolata</i>	Addition	Native
Meliaceae	<i>Azadirachta indica</i>	Present	Native
Meliaceae	<i>Melia azedarach</i>	Present	Native
Meliaceae	<i>Soymida febrifuga</i>	Present	Native
Meliaceae	<i>Swietenia macrophylla</i>	Present	Introduced
Meliaceae	<i>Swietenia mahagoni</i>	Present	Introduced
Meliaceae	<i>Toona hexandra</i>	Present	Native
Menispermaceae	<i>Coscinium fenestratum</i>	Addition	Native
Menispermaceae	<i>Pachygone ovata</i>	Addition	Native
Menispermaceae	<i>Tiliacora acuminata</i>	Addition	Native



Family	Scientific Name	Status	Nativity
Menispermaceae	<i>Tinospora crispa</i>	Addition	Native
Menispermaceae	<i>Cissampelos pareira</i>	Present	Native
Menispermaceae	<i>Cocculus hirsutus</i>	Present	Native
Menispermaceae	<i>Tinospora cordifolia</i>	Present	Native
Molluginaceae	<i>Glinus lotoides</i>	Present	Native
Molluginaceae	<i>Glinus oppositifolius</i>	Present	Native
Molluginaceae	<i>Hypertelis cerviana</i>	Present	Native
Molluginaceae	<i>Paramollugo nudicaulis</i>	Present	Native
Molluginaceae	<i>Trigastrotheca pentaphylla</i>	Present	Native
Moraceae	<i>Artocarpus lacucha</i>	Addition	Native
Moraceae	<i>Broussonetia papyrifera</i>	Addition	Native
Moraceae	<i>Ficus amplissima</i>	Addition	Native
Moraceae	<i>Ficus arnottiana</i>	Addition	Native
Moraceae	<i>Ficus auriculata</i>	Addition	Native
Moraceae	<i>Ficus deltoidea</i>	Addition	Introduced
Moraceae	<i>Ficus drupacea</i>	Addition	Native
Moraceae	<i>Ficus lyrata</i>	Addition	Introduced
Moraceae	<i>Ficus microcarpa</i>	Addition	Native
Moraceae	<i>Ficus neriifolia</i>	Addition	Native
Moraceae	<i>Ficus sagittata</i>	Addition	Introduced
Moraceae	<i>Ficus tinctoria</i>	Addition	Native
Moraceae	<i>Ficus virens</i>	Addition	Native
Moraceae	<i>Ficus longifolia</i>	Addition	Introduced
Moraceae	<i>Streblus asper</i>	Addition	Native
Moraceae	<i>Artocarpus heterophyllus</i>	Present	Native
Moraceae	<i>Artocarpus hirsutus</i>	Present	Native
Moraceae	<i>Ficus benghalensis</i>	Present	Native
Moraceae	<i>Ficus benjamina</i>	Present	Native
Moraceae	<i>Ficus carica</i>	Present	Introduced
Moraceae	<i>Ficus elastica</i>	Present	Introduced
Moraceae	<i>Ficus hispida</i>	Present	Native
Moraceae	<i>Ficus natalensis</i>	Present	Introduced
Moraceae	<i>Ficus pumila</i>	Present	Introduced
Moraceae	<i>Ficus racemosa</i>	Present	Native
Moraceae	<i>Ficus religiosa</i>	Present	Native
Moraceae	<i>Morus alba</i>	Present	Introduced
Moringaceae	<i>Moringa oleifera</i>	Present	Native
Moringaceae	<i>Moringa ovalifolia</i>	Present	Introduced
Muntingiaceae	<i>Muntingia calabura</i>	Present	Introduced
Musaceae	<i>Musa paradisiaca</i>	Present	Introduced
Myrtaceae	<i>Callistemon viminalis</i>	Addition	Introduced
Myrtaceae	<i>Melaleuca polandii</i>	Addition	Introduced
Myrtaceae	<i>Melaleuca viminalis</i>	Addition	Introduced
Myrtaceae	<i>Syzygium alternifolium</i>	Addition	Native
Myrtaceae	<i>Syzygium densiflorum</i>	Addition	Native
Myrtaceae	<i>Callistemon citrinus</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Myrtaceae	<i>Callistemon rigidus</i>	Present	Introduced
Myrtaceae	<i>Corymbia citriodora</i>	Present	Introduced
Myrtaceae	<i>Eucalyptus globulus</i>	Present	Introduced
Myrtaceae	<i>Eucalyptus rudis</i>	Present	Introduced
Myrtaceae	<i>Eucalyptus tereticornis</i>	Present	Introduced
Myrtaceae	<i>Psidium guajava</i>	Present	Introduced
Myrtaceae	<i>Syzygium cumini</i>	Present	Native
Myrtaceae	<i>Syzygium jambos</i>	Present	Introduced
Myrtaceae	<i>Syzygium nervosum</i>	Present	Native
Najadaceae	<i>Najas graminea</i>	Present	Native
Nelumbonaceae	<i>Nelumbo nucifera</i>	Present	Native
Nyctaginaceae	<i>Boerhavia repens</i>	Present	Native
Nyctaginaceae	<i>Boerhavia chinensis</i>	Addition	Native
Nyctaginaceae	<i>Bougainvillea buttiana</i>	Addition	Introduced
Nyctaginaceae	<i>Bougainvillea glabra</i>	Addition	Introduced
Nyctaginaceae	<i>Bougainvillea peruviana</i>	Addition	Introduced
Nyctaginaceae	<i>Pisonia umbellifera</i>	Addition	Introduced
Nyctaginaceae	<i>Boerhavia diffusa</i>	Present	Native
Nyctaginaceae	<i>Boerhavia erecta</i>	Present	Introduced
Nyctaginaceae	<i>Bougainvillea spectabilis</i>	Present	Introduced
Nyctaginaceae	<i>Mirabilis jalapa</i>	Present	Introduced
Nyctanthaceae	<i>Nymphaea alba</i>	Addition	Native to Kashmir
Nyctanthaceae	<i>Nyctanthes arbor-tristis</i>	Present	Native
Nymphaeaceae	<i>Victoria amazonica</i>	Addition	Introduced
Nymphaeaceae	<i>Nymphaea nouchali</i>	Present	Native
Nymphaeaceae	<i>Nymphaea pubescens</i>	Present	Native
Oleaceae	<i>Ximenia americana</i>	Addition	Native
Oleaceae	<i>Schrebera swietenoides</i>	Addition	Native
Oleaceae	<i>Jasminum angustifolium</i>	Present	Native
Oleaceae	<i>Jasminum arborescens</i>	Present	Native
Oleaceae	<i>Jasminum auriculatum</i>	Present	Native
Oleaceae	<i>Jasminum calophyllum</i>	Present	Native
Oleaceae	<i>Jasminum grandiflorum</i>	Present	Found in Himalayas
Oleaceae	<i>Jasminum mesnyi</i>	Present	Introduced
Oleaceae	<i>Jasminum multiflorum</i>	Present	Native
Oleaceae	<i>Jasminum officinale</i>	Present	Found in Himalayas
Oleaceae	<i>Jasminum sambac</i>	Present	Native
Onagraceae	<i>Ludwigia perennis</i>	Present	Native
Opiliaceae	<i>Opilia amentacea</i>	Addition	Native
Orobanchaceae	<i>Parasopubia delphiniifolia</i>	Present	Native
Orobanchaceae	<i>Striga angustifolia</i>	Present	Native
Orobanchaceae	<i>Striga asiatica</i>	Present	Native
Orobanchaceae	<i>Striga densiflora</i>	Present	Native
Orobanchaceae	<i>Striga gesnerioides</i>	Present	Native
Oxalidaceae	<i>Averrhoa bilimbi</i>	Addition	Introduced
Oxalidaceae	<i>Averrhoa carambola</i>	Addition	Introduced



Family	Scientific Name	Status	Nativity
Oxalidaceae	<i>Oxalis latifolia</i>	Addition	Introduced
Oxalidaceae	<i>Biophytum sensitivum</i>	Present	Native
Oxalidaceae	<i>Oxalis corniculata</i>	Present	Invasive Alien
Oxalidaceae	<i>Oxalis debilis</i> var. <i>corymbosa</i>	Present	Introduced
Oxalidaceae	<i>Oxalis dehradunensis</i>	Present	Introduced
Pandanaceae	<i>Pandanus odorifer</i>	Present	Native
Pandanaceae	<i>Pandanus tectorius</i>	Present	Introduced
Panicaceae	<i>Panicum curviflorum</i>	Present	Native
Panicaceae	<i>Panicum maximum</i>	Present	Introduced
Papaveraceae	<i>Argemone mexicana</i>	Present	Invasive Alien
Passifloraceae	<i>Passiflora caerulea</i>	Addition	Introduced
Passifloraceae	<i>Passiflora quadrangularis</i>	Addition	Introduced
Passifloraceae	<i>Passiflora edulis</i>	Present	Introduced
Passifloraceae	<i>Passiflora foetida</i>	Present	Invasive Alien
Passifloraceae	<i>Passiflora holosericea</i>	Present	Introduced
Passifloraceae	<i>Passiflora incarinata</i>	Present	Introduced
Passifloraceae	<i>Turnera ulmifolia</i>	Present	Invasive Alien
Pedaliaceae	<i>Sesamum indicum</i>	Present	Native
Pedaliaceae	<i>Sesamum radiatum</i>	Addition	Introduced
Pedaliaceae	<i>Pedaliium murex</i>	Present	Native
Phyllanthaceae	<i>Bischofia javanica</i>	Addition	Native
Phyllanthaceae	<i>Breynia androgyna</i>	Addition	Native
Phyllanthaceae	<i>Breynia retusa</i>	Addition	Native
Phyllanthaceae	<i>Phyllanthus acidus</i>	Present	Introduced
Phyllanthaceae	<i>Phyllanthus amarus</i>	Present	Introduced
Phyllanthaceae	<i>Phyllanthus debilis</i>	Present	Native
Phyllanthaceae	<i>Phyllanthus emblica</i>	Present	Native
Phyllanthaceae	<i>Phyllanthus maderaspatensis</i>	Present	Native
Phyllanthaceae	<i>Phyllanthus pinnatus</i>	Present	Native
Phyllanthaceae	<i>Phyllanthus reticulatus</i>	Present	Native
Phyllanthaceae	<i>Phyllanthus virgatus</i>	Present	Native
Phytoloccaceae	<i>Rivina humilis</i>	Present	Introduced
Piperaceae	<i>Peperomia caperata</i>	Addition	Introduced
Piperaceae	<i>Peperomia clusifolia</i>	Addition	Introduced
Piperaceae	<i>Peperomia obtusifolia</i>	Addition	Introduced
Piperaceae	<i>Piper betel</i>	Addition	Native
Piperaceae	<i>Piper longum</i>	Present	Native
Pittosporaceae	<i>Pittosporum napaulense</i>	Addition	Native
Plantaginaceae	<i>Angelonia angustifolia</i>	Addition	Introduced
Plantaginaceae	<i>Angelonia grandiflora</i>	Addition	Introduced
Plantaginaceae	<i>Dopatrium junceum</i>	Addition	Native
Plantaginaceae	<i>Limnophila heterophylla</i>	Addition	Native
Plantaginaceae	<i>Limnophila indica</i>	Addition	Native
Plantaginaceae	<i>Lindernia parviflora</i>	Addition	Native
Plantaginaceae	<i>Scoparia dulcis</i>	Addition	Invasive Alien
Plantaginaceae	<i>Bacopa monnieri</i>	Present	Native



Family	Scientific Name	Status	Nativity
Plantaginaceae	<i>Plantago orbignyana</i>	Present	Introduced
Plumbaginaceae	<i>Plumbago indica</i>	Addition	Native
Plumbaginaceae	<i>Plumbago auriculata</i>	Present	Introduced
Plumbaginaceae	<i>Plumbago zeylanica</i>	Present	Native
Poaceae	<i>Arundo donax</i>	Addition	Native
Poaceae	<i>Bambusa balcooa</i>	Addition	Native
Poaceae	<i>Bambusa multiplex</i>	Addition	Introduced
Poaceae	<i>Bambusa tulda</i>	Addition	Native
Poaceae	<i>Bambusa tuldoides</i>	Addition	Introduced
Poaceae	<i>Brachiaria remota</i>	Addition	Native
Poaceae	<i>Chloris montana</i>	Addition	Native
Poaceae	<i>Dendrocalamus gigantea</i>	Addition	Native
Poaceae	<i>Pogonatherum paniceum</i>	Addition	Native
Poaceae	<i>Urochloa kurzii</i>	Addition	Native
Poaceae	<i>Acrachne racemosa</i>	Present	Native
Poaceae	<i>Alloteropsis cimicina</i>	Present	Native
Poaceae	<i>Andropogon pumilus</i>	Present	Native
Poaceae	<i>Apluda mutica</i>	Present	Native
Poaceae	<i>Aristida hystrix</i>	Present	Native
Poaceae	<i>Aristida setacea</i>	Present	Native
Poaceae	<i>Arundinella ciliata</i>	Present	Native
Poaceae	<i>Bambusa bambos</i>	Present	Native
Poaceae	<i>Bambusa vulgaris</i>	Present	Native
Poaceae	<i>Bothriochloa pertusa</i>	Present	Native
Poaceae	<i>Cenchrus hohenackeri</i>	Present	Native
Poaceae	<i>Cenchrus pedicellatus</i>	Present	Native
Poaceae	<i>Chrysopogon fulvus</i>	Present	Native
Poaceae	<i>Chrysopogon zizanioides</i>	Present	Introduced
Poaceae	<i>Coix lacryma-jobi</i>	Present	Native
Poaceae	<i>Cymbopogon caesius</i>	Present	Native
Poaceae	<i>Cymbopogon citratus</i>	Present	Native
Poaceae	<i>Cymbopogon coloratus</i>	Present	Native
Poaceae	<i>Cymbopogon flexuosus</i>	Present	Native
Poaceae	<i>Cymbopogon martini</i>	Present	Native
Poaceae	<i>Cynodon barberi</i>	Present	Native
Poaceae	<i>Cynodon dactylon</i>	Present	Native
Poaceae	<i>Cynodon radiatus</i>	Present	Native
Poaceae	<i>Dactyloctenium aegyptium</i>	Present	Native
Poaceae	<i>Dendrocalamus strictus</i>	Present	Native
Poaceae	<i>Dichanthium caricosum</i>	Present	Native
Poaceae	<i>Digitaria bicornis</i>	Present	Native
Poaceae	<i>Eleusine indica</i>	Present	Native
Poaceae	<i>Eragrostiella bifaria</i>	Present	Native
Poaceae	<i>Eragrostiella brachyphylla</i>	Present	Native
Poaceae	<i>Eragrostis aspera</i>	Present	Native
Poaceae	<i>Eragrostis ciliata</i>	Present	Native



Family	Scientific Name	Status	Nativity
Poaceae	<i>Eragrostis coarctata</i>	Present	Native
Poaceae	<i>Eragrostis gangetica</i>	Present	Native
Poaceae	<i>Eragrostis unioides</i>	Present	Native
Poaceae	<i>Eragrostis viscosa</i>	Present	Native
Poaceae	<i>Eriochloa procera</i>	Present	Native
Poaceae	<i>Heteropogon contortus</i>	Present	Native
Poaceae	<i>Ischaemum rugosum</i>	Present	Native
Poaceae	<i>Iseilema antheplioroides</i>	Present	Native
Poaceae	<i>Iseilema prostratum</i>	Present	Native
Poaceae	<i>Leersia hexandra</i>	Present	Native
Poaceae	<i>Leptochloa chinensis</i>	Present	Native
Poaceae	<i>Lophopogon tridentatus</i>	Present	Native
Poaceae	<i>Melanocentris jacquemontii</i>	Present	Native
Poaceae	<i>Melanocentris rothiana</i>	Present	Native
Poaceae	<i>Microchloa indica</i>	Present	Native
Poaceae	<i>Mnesithea granularis</i>	Present	Native
Poaceae	<i>Oplismenus burmannii</i>	Present	Native
Poaceae	<i>Oropetium thomaeum</i>	Present	Native
Poaceae	<i>Oryza rufipogon</i>	Present	Native
Poaceae	<i>Oryza sativa</i>	Present	Introduced
Poaceae	<i>Panicum repens</i>	Present	Native
Poaceae	<i>Panicum sumatrense</i>	Present	Native
Poaceae	<i>Paspalum scrobiculatum</i>	Present	Native
Poaceae	<i>Setaria intermedia</i>	Present	Native
Poaceae	<i>Setaria italica</i>	Present	Introduced
Poaceae	<i>Setaria punctata</i>	Present	Native
Poaceae	<i>Setaria verticillata</i>	Present	Native
Poaceae	<i>Thysanolaena latifolia</i>	Present	Native
Poaceae	<i>Tragus mongolorum</i>	Present	Native
Poaceae	<i>Urochloa distachya</i>	Present	Native
Poaceae	<i>Urochloa ramosa</i>	Present	Native
Poaceae	<i>Imperata cylindrica</i>	Present	Introduced
Poaceae	<i>Cenchrus purpureum</i>	Addition	Invasive Alien
Poaceae	<i>Dichanthium annulatum</i>	Addition	Introduced
Poaceae	<i>Melinis repens</i>	Addition	Invasive Alien
Poaceae	<i>Paspalum notatum</i>	Addition	Introduced
Poaceae	<i>Aristida adscensionis</i>	Present	Native
Poaceae	<i>Aristida funiculata</i>	Present	Native
Poaceae	<i>Arthraxon lanceolatus</i>	Present	Native
Poaceae	<i>Arthraxon lancifolius</i>	Present	Native
Poaceae	<i>Brachiaria eruciformis</i>	Present	Native
Poaceae	<i>Brachiaria mutica</i>	Present	Introduced
Poaceae	<i>Cenchrus ciliaris</i>	Present	Native
Poaceae	<i>Cymbopogon winterianus</i>	Present	Introduced
Poaceae	<i>Dichanthium foveolatum</i>	Present	Native
Poaceae	<i>Digitaria ciliaris</i>	Present	Native



Family	Scientific Name	Status	Nativity
Poaceae	<i>Digitaria longiflora</i>	Present	Native
Poaceae	<i>Dimeria avenacea</i>	Present	Native
Poaceae	<i>Echinochloa colona</i>	Present	Introduced
Poaceae	<i>Echinochloa crus-galli</i>	Present	Introduced
Poaceae	<i>Echinochloa oryzoides</i>	Present	Introduced
Poaceae	<i>Leptochloa fusca</i>	Present	Native
Poaceae	<i>Paspalidium flavidum</i>	Present	Native
Poaceae	<i>Paspalidium geminatum</i>	Present	Native
Poaceae	<i>Paspalum distichum</i>	Present	Introduced
Poaceae	<i>Pennisetum glaucum</i>	Present	Introduced
Poaceae	<i>Pennisetum setaceum</i>	Present	Introduced
Poaceae	<i>Perotis indica</i>	Present	Native
Poaceae	<i>Rottboellia cochinchinensis</i>	Present	Native
Poaceae	<i>Sehima nervosum</i>	Present	Native
Poaceae	<i>Setaria pumila</i>	Present	Native
Poaceae	<i>Sorghum halepense</i>	Present	Native
Poaceae	<i>Themeda triandra</i>	Present	Native
Polemoniaceae	<i>Phlox drummondii</i>	Present	Introduced
Polygalaceae	<i>Polygala arvensis</i>	Present	Native
Polygalaceae	<i>Polygala erioptera</i>	Present	Native
Polygalaceae	<i>Polygala persicariifolia</i>	Present	Native
Polygalaceae	<i>Polygala elongata</i>	Present	Introduced
Polygonaceae	<i>Persicaria glabra</i>	Present	Native
Polygonaceae	<i>Rumex nigricans</i>	Addition	Native
Polygonaceae	<i>Antigonon leptopus</i>	Present	Introduced
Polygonaceae	<i>Coccoloba uvifera</i>	Present	Introduced
Polygonaceae	<i>Muehlenbeckia platyclados</i>	Present	Introduced
Polygonaceae	<i>Polygonum plebeium</i>	Present	Native
Polygonaceae	<i>Rumex vesicarius</i>	Present	Native
Pontederiaceae	<i>Pontederia vaginalis</i>	Addition	Native
Pontederiaceae	<i>Eichhornia crassipes</i>	Present	Invasive Alien
Portulacaceae	<i>Portulaca wightiana</i>	Present	Native
Portulacaceae	<i>Portulaca tuberosa</i>	Addition	Native
Portulacaceae	<i>Portulaca grandiflora</i>	Present	Introduced
Portulacaceae	<i>Portulaca oleracea</i>	Present	Introduced
Portulacaceae	<i>Portulaca pilosa</i>	Present	Introduced
Portulacaceae	<i>Portulaca quadrifida</i>	Present	Native
Potamogetonaceae	<i>Potamogeton nodosus</i>	Present	Native
Primulaceae	<i>Embelia tsjeriam-cottam</i>	Addition	Native
Primulaceae	<i>Anagallis pumila</i>	Present	Native
Primulaceae	<i>Bonellia macrocarpa</i>	Present	Introduced
Proteaceae	<i>Grevillea pteridifolia</i>	Present	Introduced
Proteaceae	<i>Grevillea robusta</i>	Present	Introduced
Putranjivaceae	<i>Putranjiva roxburghii</i>	Present	Native
Ranaunculaceae	<i>Clematis terniflora</i>	Present	Introduced
Ranaunculaceae	<i>Consolida ajacis</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Ranaunculaceae	<i>Nigella sativa</i>	Present	Introduced
Ranunculaceae	<i>Clematis zeylanica</i>	Addition	Native
Ranunculaceae	<i>Clematis gouriana</i>	Present	Native
Ranunculaceae	<i>Clematis heynei</i>	Present	Native
Rhamnaceae	<i>Ventilago denticulata</i>	Addition	Native
Rhamnaceae	<i>Ventilago maderaspatana</i>	Addition	Native
Rhamnaceae	<i>Ziziphus abyssinica</i>	Addition	Introduced
Rhamnaceae	<i>Ziziphus glabrata</i>	Addition	Native
Rhamnaceae	<i>Ziziphus jujuba</i>	Addition	Introduced
Rhamnaceae	<i>Ziziphus mauritiana</i>	Present	Native
Rhamnaceae	<i>Ziziphus nummularia</i>	Present	Native
Rhamnaceae	<i>Ziziphus oenoplia</i>	Present	Native
Rhamnaceae	<i>Ziziphus xylopyrus</i>	Present	Native
Rosaceae	<i>Rosa canina</i>	Present	Introduced
Rosaceae	<i>Rosa chinensis</i>	Present	Introduced
Rosaceae	<i>Rosa damascena</i>	Present	Introduced
Rosaceae	<i>Rosa multiflora</i>	Present	Introduced
Rosaceae	<i>Rosa setigera</i>	Present	Introduced
Rubiaceae	<i>Gardenia gummifera</i>	Addition	Native
Rubiaceae	<i>Gardenia latifolia</i>	Addition	Native
Rubiaceae	<i>Gardenia resinifera</i>	Addition	Native
Rubiaceae	<i>Mussaenda erythrophylla</i>	Addition	Introduced
Rubiaceae	<i>Paederia foetida</i>	Addition	Native
Rubiaceae	<i>Adina cordifolia</i>	Present	Native
Rubiaceae	<i>Canthium coromandelicum</i>	Present	Native
Rubiaceae	<i>Catunaregam spinosa</i>	Present	Native
Rubiaceae	<i>Gardenia jasminoides</i>	Present	Native
Rubiaceae	<i>Hymenodictyon orixense</i>	Present	Native
Rubiaceae	<i>Ixora brachiata</i>	Present	Native
Rubiaceae	<i>Ixora coccinea</i>	Present	Native
Rubiaceae	<i>Ixora pavetta</i>	Present	Native
Rubiaceae	<i>Mitragyna parvifolia</i>	Present	Native
Rubiaceae	<i>Mussaenda frondosa</i>	Present	Native
Rubiaceae	<i>Mussaenda incana</i>	Present	Assam
Rubiaceae	<i>Neolamarckia cadamba</i>	Present	Native
Rubiaceae	<i>Oldenlandia corymbosa</i>	Present	Native
Rubiaceae	<i>Oldenlandia herbacea</i>	Present	Native
Rubiaceae	<i>Spermacoce articularis</i>	Present	Native
Rubiaceae	<i>Spermacoce lasiocarpa</i>	Present	Native
Rubiaceae	<i>Spermadictyon suaveolens</i>	Present	Native
Rubiaceae	<i>Spermacoce hispida</i>	Present	Native
Rubiaceae	<i>Ixora singaporensis</i>	Addition	Native
Rubiaceae	<i>Cerisoides turgida</i>	Present	Native
Rubiaceae	<i>Dentella repens</i>	Present	Native
Rubiaceae	<i>Hamelia patens</i>	Present	Introduced
Rubiaceae	<i>Hedyotis cyanantha</i>	Present	Native



Family	Scientific Name	Status	Nativity
Rubiaceae	<i>Ixora chinensis</i>	Present	Introduced
Rubiaceae	<i>Kohautia aspera</i>	Present	Native
Rubiaceae	<i>Macrosphyra longistyla</i>	Present	Introduced
Rubiaceae	<i>Oldenlandia affinis</i>	Present	Native
Rubiaceae	<i>Oldenlandia biflora</i>	Present	Native
Rubiaceae	<i>Oldenlandia diffusa</i>	Present	Native
Rubiaceae	<i>Oldenlandia pumila</i>	Present	Native
Rubiaceae	<i>Oldenlandia umbellata</i>	Present	Native
Rubiaceae	<i>Pentas lanceolata</i>	Present	Introduced
Rutaceae	<i>Atalantia monophylla</i>	Addition	Native
Rutaceae	<i>Glycosmis pentaphylla</i>	Addition	Native
Rutaceae	<i>Pamburus missionis</i>	Addition	Native
Rutaceae	<i>Zanthoxylum armatum</i>	Addition	Native
Rutaceae	<i>Zanthoxylum rhetsa</i>	Addition	Native
Rutaceae	<i>Aegle marmelos</i>	Present	Native
Rutaceae	<i>Chloroxylon swietenia</i>	Present	Native
Rutaceae	<i>Citrus aurantiifolia</i>	Present	Introduced
Rutaceae	<i>Citrus limon</i>	Present	Introduced
Rutaceae	<i>Citrus maxima</i>	Present	Introduced
Rutaceae	<i>Citrus medica</i>	Present	Introduced
Rutaceae	<i>Limonia acidissima</i>	Present	Native
Rutaceae	<i>Murraya koenigii</i>	Present	Native
Rutaceae	<i>Murraya paniculata</i>	Present	Native
Rutaceae	<i>Citrus aurantium</i>	Present	Introduced
Rutaceae	<i>Citrus reticulata</i>	Present	Introduced
Rutaceae	<i>Ravenia spectabilis</i>	Present	Introduced
Rutaceae	<i>Ruta graveolens</i>	Present	Introduced
Saccharaceae	<i>Saccharum officinarum</i>	Present	Introduced
Saccharaceae	<i>Saccharum spontaneum</i>	Present	Native
Salicaceae	<i>Casearia tomentosa</i>	Addition	Native
Salicaceae	<i>Xylosma longifolia</i>	Addition	Native
Salicaceae	<i>Flacourtia indica</i>	Present	Native
Salicaceae	<i>Oncoba spinosa</i>	Present	Introduced
Santalaceae	<i>Santalum album</i>	Present	Native
Sapindaceae	<i>Allophylus serratus</i>	Addition	Native
Sapindaceae	<i>Lepisanthes tetraphylla</i>	Addition	Native
Sapindaceae	<i>Sapindus emarginatus</i>	Addition	Native
Sapindaceae	<i>Sapindus saponaria</i>	Addition	Introduced
Sapindaceae	<i>Schleichera oleosa</i>	Addition	Native
Sapindaceae	<i>Cardiospermum halicacabum</i>	Present	Native
Sapindaceae	<i>Dodonaea viscosa</i>	Present	Native
Sapindaceae	<i>Filicium decipiens</i>	Present	Native
Sapotaceae	<i>Xantolis tomentosa</i>	Addition	Native
Sapotaceae	<i>Madhuca longifolia</i>	Present	Native
Sapotaceae	<i>Manilkara hexandra</i>	Present	Native
Sapotaceae	<i>Mimusops elengi</i>	Present	Native



Family	Scientific Name	Status	Nativity
Sapotaceae	<i>Manilkara kauki</i>	Present	Introduced
Scrophulariaceae	<i>Buddleja asiatica</i>	Addition	Native
Scrophulariaceae	<i>Leucophyllum frutescens</i>	Addition	Introduced
Scrophulariaceae	<i>Antirrhinum majus</i>	Present	Introduced
Scrophulariaceae	<i>Russelia equisetiformis</i>	Present	Introduced
Scrophulariaceae	<i>Russelia sarmentosa</i>	Present	Introduced
Simaroubaceae	<i>Ailanthus triphysa</i>	Addition	Native
Simaroubaceae	<i>Brucea mollis</i>	Addition	Introduced
Simaroubaceae	<i>Ailanthus excelsa</i>	Present	Native
Simaroubaceae	<i>Simarouba amara</i>	Present	Introduced
Simmondsiaceae	<i>Simmondsia chinensis</i>	Present	Introduced
Solanaceae	<i>Solanum nigrum</i>	Addition	Native
Solanaceae	<i>Cestrum diurnum</i>	Present	Introduced
Solanaceae	<i>Cestrum nocturnum</i>	Present	Introduced
Solanaceae	<i>Cestrum parqui</i>	Present	Introduced
Solanaceae	<i>Solanum melongena</i>	Present	Introduced
Solanaceae	<i>Solanum violaceum</i>	Present	Native
Solanaceae	<i>Solanum virginianum</i>	Present	Native
Solanaceae	<i>Withania somnifera</i>	Present	Native
Solanaceae	<i>Petunia axillaris</i>	Addition	Introduced
Solanaceae	<i>Petunia grandiflora</i>	Addition	Introduced
Solanaceae	<i>Petunia integrifolia</i>	Addition	Introduced
Solanaceae	<i>Petunia violacea</i>	Addition	Introduced
Solanaceae	<i>Physalis pruinosa</i>	Addition	Invasive Alien
Solanaceae	<i>Brugmansia candida</i>	Present	Introduced
Solanaceae	<i>Brunfelsia americana</i>	Present	Introduced
Solanaceae	<i>Brunfelsia pauciflora</i>	Present	Introduced
Solanaceae	<i>Capsicum annum</i>	Present	Introduced
Solanaceae	<i>Datura innoxia</i>	Present	Invasive Alien
Solanaceae	<i>Datura metel</i>	Present	Invasive Alien
Solanaceae	<i>Nicotiana plumbaginifolia</i>	Present	Introduced
Solanaceae	<i>Nicotiana tabacum</i>	Present	Introduced
Solanaceae	<i>Petunia atkinsiana</i>	Present	Introduced
Solanaceae	<i>Physalis angulata</i>	Present	Introduced
Solanaceae	<i>Solanum americanum</i>	Present	Invasive Alien
Solanaceae	<i>Solanum erianthum</i>	Present	Introduced
Solanaceae	<i>Solanum lycopersicum</i>	Present	Introduced
Solanaceae	<i>Solanum rudepannum</i>	Present	Introduced
Solanaceae	<i>Solanum seaforthianum</i>	Present	Introduced
Solanaceae	<i>Solanum tuberosum</i>	Present	Introduced
Sporobolaceae	<i>Sporobolus coromandelianus</i>	Present	Native
Sporobolaceae	<i>Sporobolus virginicus</i>	Present	Native
Sporobolaceae	<i>Sporobolus diandrus</i>	Present	Native
Sporobolaceae	<i>Sporobolus tenuissimus</i>	Present	Introduced
Stemonaceae	<i>Stemona tuberosa</i>	Addition	Native
Strelitziaceae	<i>Ravenala madagascariensis</i>	Present	Introduced



Family	Scientific Name	Status	Nativity
Strelitziaceae	<i>Strelitzia reginae</i>	Present	Introduced
Strychnaceae	<i>Strychnos potatorum</i>	Present	Native
Talinaceae	<i>Talinum portulacifolium</i>	Addition	Native
Tamaricaceae	<i>Tamarix dioica</i>	Present	Native
Triticaceae	<i>Triticum aestivum</i>	Present	Native
Triticaceae	<i>Triticum turgidum</i>	Present	Introduced
Tropaeolaceae	<i>Tropaeolum majus</i>	Present	Introduced
Typhaceae	<i>Typha domingensis</i>	Present	Native
Ulmaceae	<i>Holoptelea integrifolia</i>	Present	Native
Urticaceae	<i>Pilea depressa</i>	Present	Introduced
Urticaceae	<i>Pilea cadieri</i>	Addition	Introduced
Urticaceae	<i>Pilea involucrata</i>	Addition	Introduced
Urticaceae	<i>Pilea microphylla</i>	Present	Introduced
Urticaceae	<i>Pouzolzia zeylanica</i>	Present	Introduced
Verbenaceae	<i>Stachytarpheta urticifolia</i>	Present	Introduced
Verbenaceae	<i>Clerodendrum volubile</i>	Addition	Introduced
Verbenaceae	<i>Lantana montevidensis</i>	Addition	Introduced
Verbenaceae	<i>Citharexylum spinosum</i>	Present	Introduced
Verbenaceae	<i>Clerodendrum chinense</i>	Present	Introduced
Verbenaceae	<i>Clerodendrum splendens</i>	Present	Introduced
Verbenaceae	<i>Clerodendrum thomsoniae</i>	Present	Introduced
Verbenaceae	<i>Duranta erecta</i>	Present	Introduced
Verbenaceae	<i>Glandularia bipinnatifida</i>	Present	Introduced
Verbenaceae	<i>Lantana camara</i>	Present	Invasive Alien
Verbenaceae	<i>Lantana indica</i>	Present	Native
Verbenaceae	<i>Lantana veronicifolia</i>	Present	Native
Verbenaceae	<i>Lippia javanica</i>	Present	Introduced
Verbenaceae	<i>Petrea volubilis</i>	Present	Introduced
Verbenaceae	<i>Phyla nodiflora</i>	Present	Introduced
Verbenaceae	<i>Stachytarpheta jamaicensis</i>	Present	Introduced
Verbenaceae	<i>Stachytarpheta mutabilis</i>	Present	Introduced
Verbenaceae	<i>Verbena officinalis</i>	Present	Introduced
Violaceae	<i>Afrohybanthus enneaspermus</i>	Present	Native
Vitaceae	<i>Leea indica</i>	Addition	Native
Vitaceae	<i>Ampelocissus latifolia</i>	Present	Native
Vitaceae	<i>Causonis trifolia</i>	Present	Native
Vitaceae	<i>Cayratia pedata</i>	Present	Native
Vitaceae	<i>Cissus quadrangularis</i>	Present	Native
Vitaceae	<i>Cissus repanda</i>	Present	Native
Vitaceae	<i>Leea macrophylla</i>	Present	Native
Vitaceae	<i>Vitis vinifera</i>	Present	Introduced
Xanthorrhoeaceae	<i>Aloe perfoliata</i>	Present	Introduced
Xanthorrhoeaceae	<i>Aloe vera</i>	Present	Introduced
Xyridaceae	<i>Xyris pauciflora</i>	Present	Native
Zeaceae	<i>Zea mays</i>	Present	Introduced
Zingiberaceae	<i>Alpinia calcarata</i>	Addition	Native



Family	Scientific Name	Status	Nativity
Zingiberaceae	<i>Curcuma caesia</i>	Addition	Native
Zingiberaceae	<i>Alpinia zerumbet</i>	Present	Introduced
Zingiberaceae	<i>Curcuma longa</i>	Present	Native
Zingiberaceae	<i>Zingiber officinale</i>	Present	Native
Zingiberaceae	<i>Alpinia purpurata</i>	Addition	Introduced
Zingiberaceae	<i>Zingiber parishi</i>	Addition	Introduced
Zingiberaceae	<i>Alpinia vittata</i>	Present	Introduced
Zygophyllaceae	<i>Guaiacum officinale</i>	Addition	Introduced
Zygophyllaceae	<i>Tribulus terrestris</i>	Present	Native

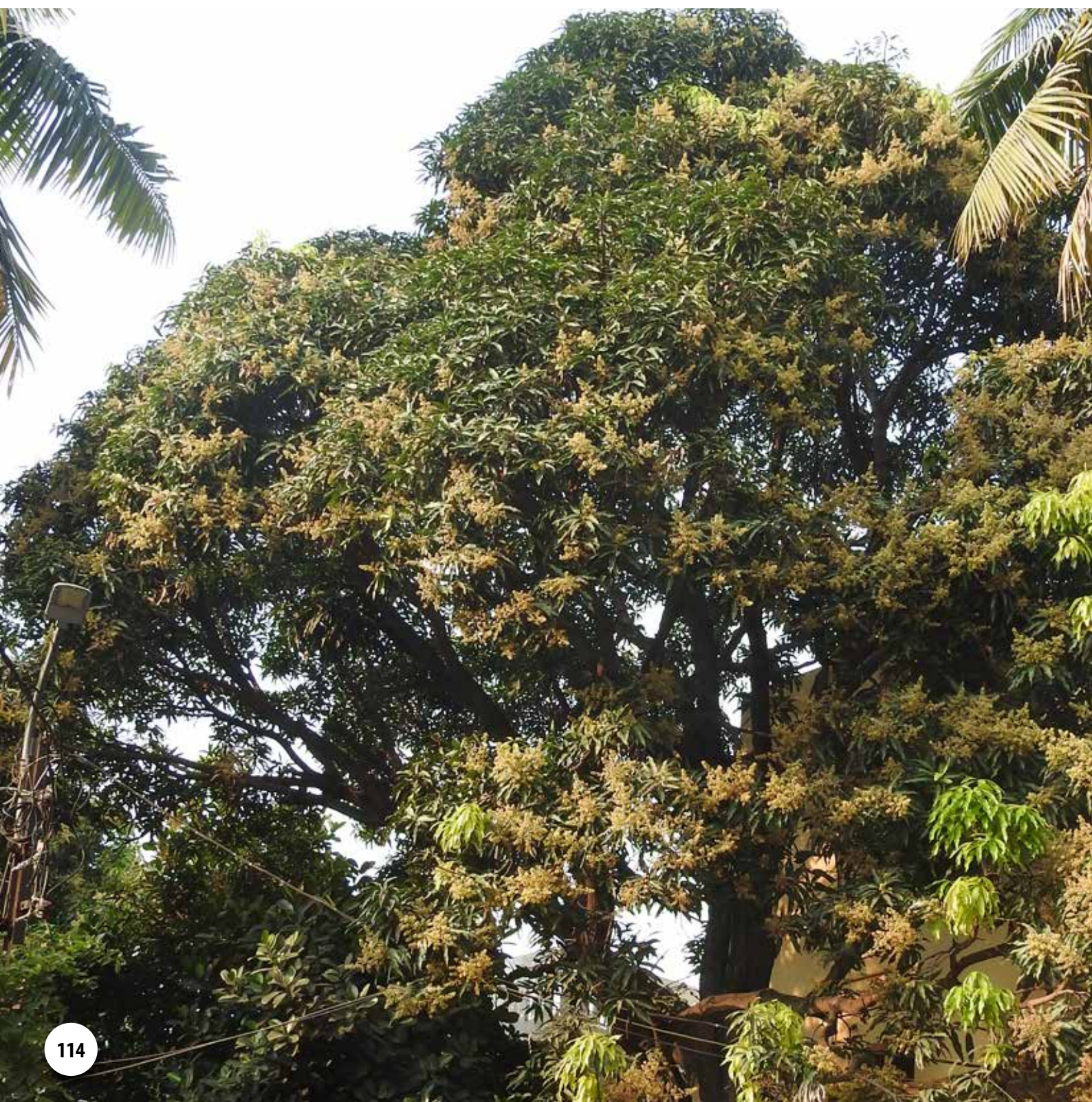


Table 12: List of Butterflies considered in the calculation of Indicator 6

Family	Common Name	Scientific Name	Status	Nativity
Papilionidae	Common Rose	<i>Pachliopta aristolochiae</i>	Present	Native
Papilionidae	Crimson Rose	<i>Pachliopta hector</i>	Present	Native
Papilionidae	Common Mime	<i>Papilio clytia</i>	Present	Native
Papilionidae	Tailed Jay	<i>Graphium agamemnon</i>	Present	Native
Papilionidae	Common Jay	<i>Graphium doson</i>	Present	Native
Papilionidae	Common Bluebottle	<i>Graphium sarpedon</i>	Present	Native
Papilionidae	Spot Swordtail Butterfly	<i>Graphium nominus</i>	Present	Native
Papilionidae	Common Banded Peacock	<i>Papilio crino</i>	Present	Native
Papilionidae	Lime Butterfly	<i>Papilio demoleus</i>	Present	Native
Papilionidae	Common Mormon	<i>Papilio polytes</i>	Present	Native
Papilionidae	Blue Mormon	<i>Papilio polymnestor</i>	Present	Native
Papilionidae	Red Helen	<i>Papilio helenus</i>	Addition	Native
Pieridae	Common Albatross	<i>Appias albina</i>	Present	Native
Pieridae	Western Striped Albatross	<i>Appias libythea</i>	Present	Native
Pieridae	Indian Pioneer	<i>Belenois aurota</i>	Present	Native
Pieridae	African Emigrant	<i>Catopsilia florella</i>	Addition	Introduced
Pieridae	Mottled Emigrant	<i>Catopsilia pyranthe</i>	Present	Native
Pieridae	Common Emigrant	<i>Catopsilia pomona</i>	Present	Native
Pieridae	Common Gull	<i>Cepora nerissa</i>	Present	Native
Pieridae	Small Salmon Arab	<i>Colotis amata</i>	Present	Native
Pieridae	Crimson Tip	<i>Colotis danae</i>	Present	Native
Pieridae	Indian Little Orange-Tip	<i>Colotis etrida</i>	Present	Native
Pieridae	Sulphur Orange Tip	<i>Colotis eucharis</i>	Present	Native
Pieridae	Large Salmon Arab	<i>Colotis fausta</i>	Present	Native
Pieridae	Common Jezebel	<i>Delias eucharis</i>	Present	Native
Pieridae	Painted Jezebel	<i>Delias hyparete</i>	Present	Native
Pieridae	Small Grass Yellow	<i>Eurema brigatta</i>	Present	Native
Pieridae	Common Grass Yellow	<i>Eurema hecabe</i>	Present	Native
Pieridae	Spotless Grass Yellow	<i>Eurema laeta</i>	Present	Native
Pieridae	Great Orange Tip	<i>Hebomoia glaucippe</i>	Present	Native
Pieridae	White Orange Tip	<i>Ixias marianne</i>	Present	Native
Pieridae	Yellow Orange Tip	<i>Ixias pyrene</i>	Present	Native
Pieridae	Psyche	<i>Leptosia nina</i>	Present	Native
Pieridae	Malayan Wanderer	<i>Pareronia valeria</i>	Present	Native
Nymphalidae	Tawny Coster	<i>Acraea terpsicore</i>	Present	Native
Nymphalidae	Indian Fritillary	<i>Argyreus hyperbius</i>	Absent	Native
Nymphalidae	Angled Castor	<i>Ariadne ariadne</i>	Present	Native
Nymphalidae	Common Castor	<i>Ariadne merione</i>	Present	Native

Family	Common Name	Scientific Name	Status	Nativity
Nymphalidae	Common Sergeant	<i>Athyma perius</i>	Present	Native
Nymphalidae	Spotted Joker	<i>Byblia lithyia</i>	Present	Native
Nymphalidae	Tawny Rajah	<i>Charaxes bernardus</i>	Present	Native
Nymphalidae	Black Rajah	<i>Charaxes solon</i>	Present	Native
Nymphalidae	Plain Tiger	<i>Danaus chrysippus</i>	Present	Native
Nymphalidae	Common Tiger	<i>Danaus genutia</i>	Present	Native
Nymphalidae	Common Palmfly	<i>Elymnias hypermnestra</i>	Present	Native
Nymphalidae	Common Crow	<i>Euploea core</i>	Present	Native
Nymphalidae	Brown King Crow	<i>Euploea klugii</i>	Present	Native
Nymphalidae	Double-Branded Crow	<i>Euploea sylvester</i>	Present	Native
Nymphalidae	Common Baron	<i>Euthalia aconthea</i>	Present	Native
Nymphalidae	Baronette	<i>Euthalia nais</i>	Present	Native
Nymphalidae	Great Eggfly	<i>Hypolimnas bolina</i>	Present	Native
Nymphalidae	Danaid Eggfly	<i>Hypolimnas misippus</i>	Present	Native
Nymphalidae	Peacock Pansy	<i>Junonia almana</i>	Present	Native
Nymphalidae	Grey Pansy	<i>Junonia atlites</i>	Present	Native
Nymphalidae	Yellow Pansy	<i>Junonia hierta</i>	Present	Native
Nymphalidae	Chocolate Pansy	<i>Junonia iphita</i>	Present	Native
Nymphalidae	Lemon Pansy	<i>Junonia lemonias</i>	Present	Native
Nymphalidae	Blue Pansy	<i>Junonia orithya</i>	Present	Native
Nymphalidae	Bamboo Treebrown	<i>Lethe europa</i>	Present	Native
Nymphalidae	Common Treebrown	<i>Lethe rohria</i>	Present	Native
Nymphalidae	Common Evening Brown	<i>Melanitis leda</i>	Present	Native
Nymphalidae	Commander	<i>Moduza procris</i>	Present	Native
Nymphalidae	Dark Brand Bush Brown	<i>Mycalesis mineus</i>	Present	Native
Nymphalidae	Dingy Bushbrown	<i>Mycalesis perseus</i>	Present	Native
Nymphalidae	Long-Brand Bushbrown	<i>Mycalesis visala</i>	Present	Native
Nymphalidae	Common Sailor	<i>Neptis hylas</i>	Present	Native
Nymphalidae	Nigger	<i>Orsotriaena medus</i>	Present	Native
Nymphalidae	Common Lascar	<i>Pantoporia hordonia</i>	Present	Native
Nymphalidae	Glassy Tiger	<i>Parantica aglea</i>	Present	Native
Nymphalidae	Short Banded Sailer	<i>Phaedyma columella</i>	Present	Native
Nymphalidae	Spotted Rustic	<i>Phalanta phalantha</i>	Present	Native
Nymphalidae	Anomalous Nawab	<i>Polyura agraria</i>	Absent	Native
Nymphalidae	Common Nawab	<i>Polyura athamas</i>	Present	Native
Nymphalidae	Blue Tiger	<i>Tirumala limniace</i>	Present	Native
Nymphalidae	Dark Blue Tiger	<i>Tirumala septentrionis</i>	Addition	Native
Nymphalidae	Painted Lady	<i>Vanessa cardui</i>	Present	Cosmopolitan
Nymphalidae	Common Three-Ring	<i>Ypthima asterope</i>	Present	Native
Riodinidae	Plum Judy	<i>Abisara echerius</i>	Present	Native
Riodinidae	Dark Judy	<i>Abisara fylla</i>	Addition	Native



Family	Common Name	Scientific Name	Status	Nativity
Riodinidae	Punchinello	<i>Zemeros flegyas</i>	Addition	Native
Lycaenidae	Common Hedge Blue	<i>Acytolepis puspa</i>	Present	Native
Lycaenidae	African Babul Blue	<i>Azonus jesous</i>	Present	Native
Lycaenidae	Bright Babul Blue	<i>Azonus ubaldus</i>	Present	Native
Lycaenidae	Indian Babul Blue	<i>Azonus uranus</i>	Present	Native
Lycaenidae	Angled Pierrot	<i>Caleta caleta</i>	Present	Native
Lycaenidae	Common Pierrot	<i>Castalius rosimon</i>	Present	Native
Lycaenidae	Forget-Me-Not	<i>Catochrysops strabo</i>	Present	Native
Lycaenidae	Lime Blue	<i>Chilades lajus</i>	Present	Native
Lycaenidae	Plains Cupid	<i>Chilades pandava</i>	Present	Native
Lycaenidae	Grass Jewel	<i>Chilades trochylus</i> <i>Synonym of Freyeria trochilus</i>		
Lycaenidae	Indian Sunbeam	<i>Curetis thetis</i>	Present	Native
Lycaenidae	Common Guava Blue	<i>Virachola isocrates</i>	Present	Native
Lycaenidae	Gram Blue	<i>Euchrysops cnejus</i>	Present	Native
Lycaenidae	Indian Cupid	<i>Everes lacturnus</i>	Present	Native
Lycaenidae	Grass Jewel	<i>Freyeria trochylus</i>	Present	Native
Lycaenidae	Metallic Cerulean	<i>Jamides alecto</i>	Present	Native
Lycaenidae	Dark Cerulean	<i>Jamides bochus</i>	Present	Native
Lycaenidae	Common Cerulean	<i>Jamides celeno</i>	Present	Native
Lycaenidae	Pea Blue	<i>Lampides boeticus</i>	Present	Native
Lycaenidae	Zebra Blue	<i>Leptotes plinius</i>	Present	Native
Lycaenidae	Yamfly	<i>Loxura atymnus</i>	Present	Native
Lycaenidae	Tailless Lineblue	<i>Prosotas dubiosa</i>	Present	Native
Lycaenidae	Common Lineblue	<i>Prosotas nora</i>	Present	Native
Lycaenidae	Tiny Grass Blue	<i>Zizula hylax</i>	Present	Native
Lycaenidae	Pale Grass Blue	<i>Pseudozizeeria maha</i>	Present	Native
Lycaenidae	Indian Red Flash	<i>Rapala iarbus</i>	Present	Native
Lycaenidae	Slate Flash	<i>Rapala manea</i>	Present	Native
Lycaenidae	Monkey Puzzle	<i>Rathinda amor</i>	Present	Native
Lycaenidae	Apefly	<i>Spalgis epius</i>	Present	Native
Lycaenidae	Common Shot Silverline	<i>Spindasis ictis</i>	Present	Native
Lycaenidae	Common Silverline	<i>Cigaritis vulcanus</i>	Present	Native
Lycaenidae	Peacock Royal	<i>Tajuria cippus</i>	Present	Native
Lycaenidae	Plains Blue Royal	<i>Tajuria jehana</i>	Present	Native
Lycaenidae	Red Pierrot	<i>Talicauda nyseus</i>	Present	Native
Lycaenidae	Striped Pierrot	<i>Tarucus nara</i>	Present	Native
Lycaenidae	Dark Grass Blue	<i>Zizeeria karsandra</i>	Present	Native
Lycaenidae	Lesser Grass Blue	<i>Zizina otis</i>	Present	Native
Hesperiidae	Bush Hopper	<i>Ampittia dioscorides</i>	Addition	Native
Hesperiidae	Tricolour Pied Flat	<i>Coladenia indrani</i>	Present	Native
Hesperiidae	Giant Redeye	<i>Gangara thyrasis</i>	Present	Native



Family	Common Name	Scientific Name	Status	Nativity
Hesperiidae	Common Banded Awl	<i>Hasora chromus</i>	Present	Native
Hesperiidae	Chestnut Bob	<i>Iambrix salsala</i>	Addition	Native
Hesperiidae	Common Redeye	<i>Parnara bada</i>	Absent	Native
Hesperiidae	African Straight Swift	<i>Parnara bada</i>	Absent	Native
Hesperiidae	Beavan's Swift	<i>Borbo bevani</i>	Present	Native
Hesperiidae	Indian Grizzled Skipper	<i>Spialia galba</i>	Present	Native
Hesperiidae	Indian Palm Bob	<i>Suastus gremius</i>	Present	Native
Hesperiidae	Suffused Snow Flat	<i>Tagiades gana silvia</i>	Addition	Native
Hesperiidae	Pale Palm Dart	<i>Telicota colon</i>	Addition	Native

Table 13: List of Reptiles considered in the calculation of Indicator 7

Common Name	Scientific Name	Status since 2012	Nativity	Remarks
Green Vine Snake	<i>Ahaetulla oxyrhyncha</i>	Present	Native	
Buff Striped Keelback	<i>Amphiesma stolatum</i>	Present	Native	
Banded Racer	<i>Argyrogena fasciolata</i>	Present	Native	
Comon Cat Snake	<i>Boiga trigonata</i>	Addition	Native	
Indian Egg-Eating Snake	<i>Boiga westermanni</i>	Addition	Native	
Common Krait	<i>Bungarus caeruleus</i>	Present	Native	
Garden Lizard	<i>Calotes versicolor</i>	Present	Native	
Indian Chameleon	<i>Chamaeleo zeylanicus</i>	Present	Native	
Ornate Flying Snake	<i>Chrysopelea ornata</i>	Addition	Native	
Trinket Snake	<i>Coelognathus helena</i>	Present	Native	
Mugger	<i>Crocodylus palustris</i>	Present	Native	
Russell's Viper	<i>Daboia russelii</i>	Present	Native	
Common Bronzeback	<i>Dendrelaphis tristis</i>	Present	Native	
Vellore Bridal Snake	<i>Dryocalamus nympha</i>	Addition	Native	
Saw-Scaled Viper	<i>Echis carinatus</i>	Present	Native	
Indian Sand Boa	<i>Eryx johnii</i>	Present	Native	
Keeled Indian Mabuya	<i>Eutropis carinata</i>	Present	Native	
Bronze Grass Skink	<i>Eutropis macularia</i>	Present	Native	
Sharma's Mabuya	<i>Eutropis nagarjunensis</i>	Addition	Native	
Checkered Keelback	<i>Fowlea piscator</i>	Present	Native	
Indian Star Tortoise	<i>Geochelone elegans</i>	Present	Native	
Russell's Boa	<i>Gongylophis conicus</i>	Present	Native	
Beaked Worm Snake	<i>Gryptotyphlops acutus</i>	Present	Native	
Brooke's House Gecko	<i>Hemidactylus brookii</i>	Absent		Taxonomic change-not found in india
Yellow-Belly Gecko	<i>Hemidactylus flaviviridis</i>	Present	Native	
Common House Gecko	<i>Hemidactylus frenatus</i>	Present	Native	
Gleadow's House Gecko	<i>Hemidactylus gleadowi</i>	Addition	Native	
Giant Leaf-Toed Gecko	<i>Hemidactylus giganteus</i>	Present	Native	
Leschenault's Leaf-Toed Gecko	<i>Hemidactylus leschenaultii</i>	Present	Native	



Common Name	Scientific Name	Status since 2012	Nativity	Remarks
Reticulate Leaf-Toed Gecko	<i>Hemidactylus reticulatus</i>	Present	Native	
Treutler's Gecko	<i>Hemidactylus treutleri</i>	Addition	Native	
Termite Hill Gecko	<i>Hemidactylus triedrus</i>	Present	Native	
Brahminy Blind Snake	<i>Indotyphlops braminus</i>	Present	Native	
Indian Flapshell Turtle	<i>Lissemys punctata</i>	Present	Native	
Slender Wolf Snake	<i>Lycodon anamallensis</i>	Addition	Native	
Indian Wolf Snake	<i>Lycodon aulicus</i>	Present	Native	
Yellow-Collared Wolfsnake	<i>Lycodon flavicollis</i>	Addition	Native	
Northern Wolf Snake	<i>Lycodon striatus</i>	Present	Native	
Indian Black Turtle	<i>Melanochelys trijuga</i>	Present	Native	
Indian Cobra	<i>Naja naja</i>	Present	Native	
Common Kukri Snake	<i>Oligodon arnensis</i>	Present	Native	
Pangshura Tecta	<i>Pangshura tecta</i>	Present	Native	
Nagarjuna Sagar Racer	<i>Platyceps bholanathi</i>	Addition	Native	
Blandford's Rock Agama	<i>Psammophilus blandfordanus</i>	Present	Native	
Peninsular Rock Agama	<i>Psammophilus dorsalis</i>	Present	Native	
Stout Sandsnake	<i>Psammophis longifrons</i>	Addition	Native	
Indian Rat Snake	<i>Ptyas mucosa</i>	Present	Native	
Indian Rock Python	<i>Python molurus</i>	Present	Native	
Green Keelback	<i>Rhabdophis plumbicolor</i>	Present	Native	
Common Dotted Garden Skink	<i>Riopa punctata</i>	Present	Native	
Dumeril's Black-Headed Snake	<i>Sibynophis subpunctatus</i>	Addition	Native	
Fan-Throated Lizard	<i>Sitana spinaecephalus</i>	Present	Native	Incorrectly labelled ponticeriana
Bengal Monitor	<i>Varanus bengalensis</i>	Present	Native	
Red-Eared Slider	<i>Trachemys scripta elegans</i>	Addition	Introduced	

Table 14: List of Fish considered in the calculation of Indicator 8

Common Name	Scientific Name	Status since 2012	Nativity	Remarks
Mola Carplet	<i>Amblypharyngodon mola</i>	Present	Native	
	<i>Opsarius bendelisis</i>	Present	Native	
Indian Carp	<i>Labeo catla</i>	Present	Native	
Elongate Glassy Perchlet	<i>Chanda nama</i>	Present	Native	
Dwarf Snakehead	<i>Channa gachua</i>	Present	Native	
Bullseye Snakehead	<i>Channa marulius</i>	Present	Native	
Spotted Snakehead	<i>Channa punctata</i>	Present	Native	
Snakehead Murrel	<i>Channa striata</i>	Present	Native	
Silver Hatchet Chela	<i>Chela cachius</i>	Present	Native	



Common Name	Scientific Name	Status since 2012	Nativity	Remarks
Mrigal Carp	<i>Cirrhinus cirrhosus</i>	Present	Native	
Mrigal Carp	<i>Cirrhinus mrigala</i>	Present	Native	
Reba Carp	<i>Cirrhinus reba</i>	Present	Native	
Walking Catfish	<i>Clarias batrachus</i>	Absent		Taxonomic change
African Catfish	<i>Clarias gariepinus</i>	New	Exotic	
Magur	<i>Clarias magur</i>	Addition	Native	
Grass Carp	<i>Ctenopharyngodon idella</i>	New	Exotic	
European Carp	<i>Cyprinus carpio</i>	Present	Exotic	
Zebrafish	<i>Danio rerio</i>	Present	Native	
Filament Barb	<i>Dawkinsia filamentosa</i>	Present	Native	
Giant Danio	<i>Devario aequipinnatus</i>	Present	Native	
Malabar Danio	<i>Devario malabaricus</i>	absent		Restricted to West coast
Indian Flying Barb	<i>Esomus danrica</i>	Present	Native	
Green Chromide	<i>Etroplus suratensis</i>	Present	Native	
Western Mosquitofish	<i>Gambusia affinis</i>	Present	Exotic	
Sucker Head	<i>Garra gotyla</i>	Present	Native	
Sucker Fish	<i>Garra mullya</i>	Present	Native	
Tank Goby	<i>Glossogobius giuris</i>	Present	Native	
Asian Stinging Catfish	<i>Heteropneustes fossilis</i>	Present	Native	
Congaturi Halfbeak	<i>Hyporhamphus limbatus</i>	Addition	Native	
Silver Carp	<i>Hypophthalmichthys molitrix</i>	New	Exotic	
Big-Head Carp	<i>Hypophthalmichthys nobilis</i>	New	Exotic	
Suckermouth Catfish	<i>Hypostomus plecostomus</i>	Absent	Exotic	
	<i>Hypseobarbus kolus</i>	Present	Native	
Minor Carp	<i>Labeo boggut</i>	Present	Native	
Orangefin Labeo	<i>Labeo calbasu</i>	Present	Native	
Fringed-Lipped Peninsula Carp	<i>Labeo fimbriatus</i>	Present	Native	
Deccan Labeo	<i>Labeo potail</i>	Present	Native	
Rohu	<i>Labeo rohita</i>	Present	Native	
Guntea Loach	<i>Lepidocephalichthys guntea</i>	Present	Native	
Indian Spiny Eel	<i>Macrognathus pancalus</i>	Present	Native	
Zig-Zag Eel	<i>Mastacembelus armatus</i>	Present	Native	
Gangetic Mystus	<i>Mystus cavasius</i>	Present	Native	
Striped Dwarf Catfish	<i>Mystus vittatus</i>	Present	Native	
Bronze Featherback	<i>Notopterus synurus</i>	Present	Native	Taxonomic change from <i>N. notopterus</i>
Butter Catfish	<i>Ompok bimaculatus</i>	Present	Native	
Mozambique Tilapia	<i>Oreochromis mossambicus</i>	Present	Exotic	
Giant Gourami	<i>Osphronemus goramy</i>	New	Exotic	
Cotio	<i>Osteobrama cotio</i>	Absent		Replaced with <i>Osteobrama peninsula</i>
Peninsular Osteobrama	<i>Osteobrama peninsularis</i>	Addition	Native	
Godavari Osteobrama	<i>Osteobrama vigorsii</i>	Present	Native	



Common Name	Scientific Name	Status since 2012	Nativity	Remarks
Indian Glassy Fish	<i>Parambassis ranga</i>	Present	Native	
Guppy	<i>Poecilia reticulata</i>	Present	Exotic	
Orange Chromide	<i>Pseudotroplus maculatus</i>	Present	Native	
Scarlet-Banded Barb	<i>Puntius amphibius</i>	Present	Native	
Swamp Barb	<i>Puntius chola</i>	Present	Native	
Rosy Barb	<i>Pethia conchonius</i>	Present	Native	
Long-Snouted Barb	<i>Puntius dorsalis</i>	Present	Native	
Olive Barb	<i>Systemus sarana</i>	Present	Native	
Pool Barb	<i>Puntius sophore</i>	Present	Native	
Onespot Barb	<i>Puntius terio</i>	Absent		Not found in Hyderabad
Ticto Barb	<i>Pethia ticto</i>	Present	Native	
Black-Line Rasbora	<i>Rasbora daniconius</i>	Present	Native	
Seluang Fish	<i>Rasbora rasbora</i>	Present	Native	
Large Razorbelly Minnow	<i>Salmostoma bacaila</i>	Present	Native	
Long-Whiskered Catfish	<i>Sperata aor</i>	Present	Native	
Sandkhol Carp	<i>Thynnichthys sandkhol</i>	Present	Native	
Deccan Mahseer	<i>Tor khudree</i>	Present	Native	
Helicopter Catfish	<i>Wallago attu</i>	Present	Native	
Freshwater Garfish	<i>Xenetodon cancila</i>	Present	Native	



ANNEXURE 3 – GREEN COVER ESTIMATION

Estimation of the green cover of GHMC has been carried out through object-based manual visual interpretation of the WebGIS high-resolution satellite data (google map satellite data) of June 2019. Green cover refers to the area covered by crown of trees that is greater than 0.01 ha, identified through manual visual interpretation of remote sensing data at mapping scale 1:5000. The detailed methodology is provided below:

Step 1: Georeferenced GHMC boundary layer and ward layers were prepared from the secondary data.

Step 2: Sample location coordinates of the areas with trees or land classes which have considerable tree coverage were collected through a detailed GPS survey using handheld Garmin eTrex 30.

Step 3: The surveyed sample GPS locations of tree cover area were consolidated and brought in to Quantum GIS (QGIS version 3.14) platform with google satellite image as the background and identified the pattern of the area.

Step 4: Tree cover polygons of the GHMC vectorised with cross refereeing the field sampling data and identified pattern at 1:5000 mapping scale. For this purpose Geoweb satellite image of June 2019 and QGIS was used. WGS 1984 spatial projection was followed in the vectorisation process, and the shapefiles are re-projected to WGS 1984 - 43 N at the time of calculation.

Step 5: The ward wise tree cover was estimated using spatial analyst function of Arc GIS by INTERSECT overlay analysis of the tree cover polygon layer of entire GHMC.

The green cover map (Figure 7) has been prepared using Arc GIS 9.3 version. Overall GHMC has a green cover of 15.08 percent.





