City Biodiversity Index –Srinagar

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MESSAGE - LIEUTENANT GOVERNOR, JAMMU & KASHMIR

LIEUTENANT GOVERNOR
JAMMU & KASHMIR

सत्यमेव जयते

आज़ादी का अमृत महोत्सव

RAJ BHAVAN
JAMMU-180001

I am happy to note that City Biodiversity Index has been developed for the smart city of Srinagar which will help the administration to improve their understanding of its biodiversity wealth.

Srinagar is one of the most beautiful cities in the world. The city is home to an array of floral and faunal species due to the presence of various natural ecosystems including picturesque wetlands, besides having several beautiful gardens, parks, and green spaces that bring the experience of the natural world to the people. We all have a responsibility to protect and improve these biologically diverse areas and to pass them on to future generations.

City Biodiversity Index exemplifies the commitment of the government in mainstreaming biodiversity conservation and to expanding the conservation and environmental management of the city over the years.

The self-assessment tool comprising of three components, native biodiversity, ecosystem services provided by the biodiversity, and its governance & management focuses on all aspects of biodiversity within the city.

The Index will further help to detect the changes in biodiversity over the period of time leading to effective governance mechanism and strategies for biodiversity conservation with the involvement of all stakeholders, especially the people of Srinagar.

We remain committed to conserving our biodiversity and will work actively for the same. I compliment the Jammu and Kashmir Biodiversity Council, UNDP, and ICLEI- Local Governments for Sustainability, South Asia for helping in the development of the City Biodiversity Index of Srinagar.

21st December, 2021
Jammu.

(Manoj Sinha)

MESSAGE - MAYOR, SRINAGAR MUNICIPAL CORPORATION

सत्यमेव जयते

Junaid Azim Mattu
Mayor
Srinagar Municipal Corporation

Message

Urban Biodiversity offers multiple benefits to the residents, and it becomes important to devise conservation strategies for sustainable ecosystem services like mitigation of air and noise pollution, moderation of ambient temperatures and improving the aesthetics. Srinagar with its beautiful landscape and rich native biodiversity demands special attention while implementing various developmental initiatives. The governance and management of natural resources following a proper plan becomes easy once the baseline on important biodiversity indicators is created.

The City Biodiversity Index developed, by J&K Biodiversity Council with support from ICLEI-Local Governments for Sustainability, South-Asia fulfils the objective with its specific indicators that focus on native biodiversity, ecosystem services & governance and management. We are committed to follow the recommendationsmade in the document and take actions to conserve our biodiversity while developing Srinagar as a Smart City.

I take this opportunity to congratulate J&K Biodiversity Council and ICLEI-Local Governments for Sustainability, South-Asia, for highlighting the status of biodiversity and its management in Srinagar. The indicators will be instrumental in analysing the relationship between city governance and biodiversity management and guiding the environment friendly development pathway.

(Junaid Azim Mattu)
Mayor of Srinagar

MESSAGE - CHIEF SECRETARY, JAMMU & KASHMIR

Dr. Arun Kumar Mehta, IAS

Chief Secretary
Jammu & Kashmir

Message

I am pleased to know that Jammu and Kashmir Biodiversity Council is bringing out the City Biodiversity Index for Srinagar city to guide the city administration in making its planning and development eco-friendly and sustainable.

In today's urbanized world, urban bio-diversity is gaining a prominent place in all developmental models. Cities are now, more than ever, assessing their biodiversity wealth and promoting their integration with the governance mechanism. They rely on the City Biodiversity Index (CBI) as a tool to measure and monitor the progress of the city with regard to mainstreaming biodiversity conservation into urban governance.

The smart city of Srinagar is a repository of significant biodiversity. In order to ensure sustainable urban development in the city, we need to proactively conserve our valued biological resources by ensuring sustainable provisioning of diverse critical ecological services.

I congratulate the team of Jammu and Kashmir Biodiversity Council and ICLEI-Local Governments for Sustainability, South Asia, for developing this index for Srinagar. The financial support extended by UNDP through the SECURE Himalaya project for this initiative is also duly acknowledged.

(Dr. Arun Kumar Mehta)

MESSAGE - PRINCIPAL SECRETARY TO GOVERNMENT, DEPARTMENT OF HOUSING & URBAN DEVELOPMENT, J&K

Dheeraj Gupta,
IAS

Pr. Secretary to Government
Department of Housing &
Urban Development

Message

It is generally assumed that cities, being urban areas, are devoid of appreciable biodiversity, which is not true. The ecosystem services that the urban biodiversity of Srinagar provides to the local area are innumerable and often undervalued.

The City Biodiversity Index developed to measure the ecological footprints and benchmark the biodiversity conservation efforts of Srinagar city will play an important role in implementation of various strategies related to biodiversity conservation. This is a welcome step to strike a balance between development activities and biodiversity conservation. The biodiversity conservation guidelines and suggestions given in the document will enable us to improve the scores for various indicators and encourage the administrators to enhance the protection measures for biodiversity conservation. This will consequently help to reduce the rate of loss of biodiversity in urban ecosystem and mitigate the environmental pressures exerted by the process of planned urbanization.

I am hopeful, the City Biodiversity Index will help the City administrators to plan their actions in an informed manner and contribute to long term conservation of biodiversity and development of a sustainable city. I congratulate J&K Biodiversity Council, ICLEI- Local Governments for sustainability, South Asia and UNDP for taking this unique initiative of development of City Biodiversity Index of Srinagar city.

(Dheeraj Gupta) IAS

MESSAGE - COMMISSIONER / SECRETARY TO GOVERNMENT, DEPARTMENT OF FORESTS, ECOLOGY & ENVIRONMENT, J&K

Sanjeev Verma,
IAS

सत्यमेव जयते

Commissioner/ Secretary to Govt.
Department of Forests, Ecology & Environment, J&K

Message

Jammu and Kashmir Biodiversity Council, along with the city administration of Srinagar is committed to conserve the biodiversity in the city; development of the City Biodiversity Index of Srinagar is a key achievement towards our commitment to conserve the natural and biological resources of Smart City. We need to work on the recommendations rendered by ICLEI-Local Governments for Sustainability, South Asia, for each indicator and work actively to improve our score and address the gaps. This will improve biodiversity and its governance in the city, and also help to increase public participation and ownership in conservation of biodiversity of the city. Capturing progress and monitoring, biodiversity conservation efforts, when linked with corresponding individual baseline, would become much easier with the development of this Index. This will certainly help in harmonizing city planning with biodiversity conservation.

I commend J&K Biodiversity Council for this initiative and compliment ICLEI- Local Governments for Sustainability, South Asia and UNDP for developing City Biodiversity Index of Srinagar, and look forward for further collaborations to help restore, protect and sustain the blue-green wealth of Srinagar city.

(Sanjeev Verma)

MESSAGE - PCCF & HoFF, J&K FOREST DEPARTMENT/ CHAIRMAN, J&K BIODIVERSITY COUNCIL

Dr. Mohit Gera,
IFS

PCCF & HoFF, J&K Forest Department /
Chairman, J&K Biodiversity Council

Message

Biodiversity can no longer be seen to be restricted to forests and rural areas. Cities also play a critical role in biodiversity conservation. The spread of urbanisation is creating new challenges for biodiversity conservation. We need to respond to these challenges by rethinking our plans and policies, and by making our cities more biodiversity friendly.

A step has been taken in this direction with the development of City Biodiversity Index for Srinagar which is being developed as Smart City. This will help Srinagar Municipal Corporation in planning and taking informed decisions to effectively support the conservation of biodiversity.

I would like to take this opportunity to thank ICLEI – Local Governments for Sustainability, South Asia for their invaluable assistance and expertise in developing the City Biodiversity Index, as part of the UNDP-MOEFCC- GOI supported SECURE Himalaya project.

I hope that the development of the City Biodiversity Index of Srinagar will inspire other cities in the country to take proactive steps for biodiversity conservation and contribute to Post 2020 Global Biodiversity framework, thus supporting actively in the implementation of the UN Convention on Biological Diversity.

(Dr. Mohit Gera)

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ABBREVIATIONS

BMC	Biodiversity Management Committee of Srinagar
CBD	Convention on Biological Diversity
CBI	City Biodiversity Index
CBSE	Central Board of Secondary Education
C-HED	Centre for Heritage, Environment and Development
COP	Conference of the Parties
GOI	Government of India
ICSE	Indian Certificate of Secondary Education
I&FC	Irrigation and Flood Control Department
IUCN	International Union for Conservation of Nature
J&K	Jammu and Kashmir
J&K Bank	Jammu and Kashmir Bank
LBSAP	Local Biodiversity Strategy and Action Plan
LCMA	J&K Lakes Conservation and Management Authority
LULC	Land Use / Land Cover
MOEFCC	Ministry of Environment, Forests and Climate Change
NBSAP	National Biodiversity Strategy and Action Plan
NGOs	Non-Governmental Organizations
NLCO	Nigeen Lake Conservation Organization
OECM	Other Effective area-based Conservation Measures
PBR	People's Biodiversity Register
PCCF	Principal Chief Conservator of Forests
SCBD	Secretariat for the Convention on Biological Diversity
SDA	Srinagar Development Authority
SKUAST	Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir
SMC	Srinagar Municipal Corporation
SMR	Srinagar Metropolitan Region
SOS	Save Our Souls
SSC	Srinagar Smart City Limited
STP	Sewerage Treatment Plant
UEED	Urban Environmental Engineering Department
UNDP	United Nations Development Programme
URDPFI	Urban and Regional Development Plans Formulation and Implementation Guidelines
USGS	United States Geological Survey
UT	Union Territory

SECTION A: ABOUT CITY BIODIVERSITY INDEX

The City Biodiversity Index (CBI) or the Singapore Index was developed in 2008, when it was acknowledged in the Ninth Biodiversity Conference of Parties (COP) that cities and local bodies can support the implementation of a country's National Biodiversity Strategy and Action Plan (NBSAP). The index consolidates the available biodiversity-related indicators locally, which can help cities evaluate and benchmark their biodiversity conservation efforts.

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 first year is considered the baseline against which cities can then chart their subsequent evolution.

According to the Secretariat for 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".

The CBI of Srinagar was developed by ICLEI- Local Governments for Sustainability, South Asia as part of the UNDP-MOEFCC- GOI supported SECURE Himalaya project.

Summary of the Scores

The CBI of Srinagar, 2021 has been prepared based on the SCBD endorsed user's manual for CBI updated in 2014.[1] The 23 indicators that make up the index are grouped into three main components viz. Native Biodiversity, Ecosystem Services provided by biodiversity and Governance and Management of Biodiversity.

The city scored a total of 45 out 72 for 18 indicators (refer Figure 1). Since this was the baseline year the indicators 4-8 were not considered for the analysis.

- The first section on "Native Biodiversity in the City", contributed to a score of 14 out of 20 as only 5 indicators were taken into consideration. The city scores well in this section, indicating that its complex habitat mosaics support significant biodiversity. A large proportion of this score is due to the wetland ecosystems which the city harbours.
- Indicators 11-14, which relate to "Ecosystem Services provided by Biodiversity in the City" scored 7 out of 16 points. The city scores low here which indicates that although it has a diversity of ecosystems, the health of its ecosystems needs to be improved.
- Indicators 15-23, which correspond to "Governance and Management of Biodiversity in the City" contributed to a score of 24 out of 36 points. This is a good score, indicating that there are some governance mechanisms already in place that may benefit biodiversity and local ecosystems.

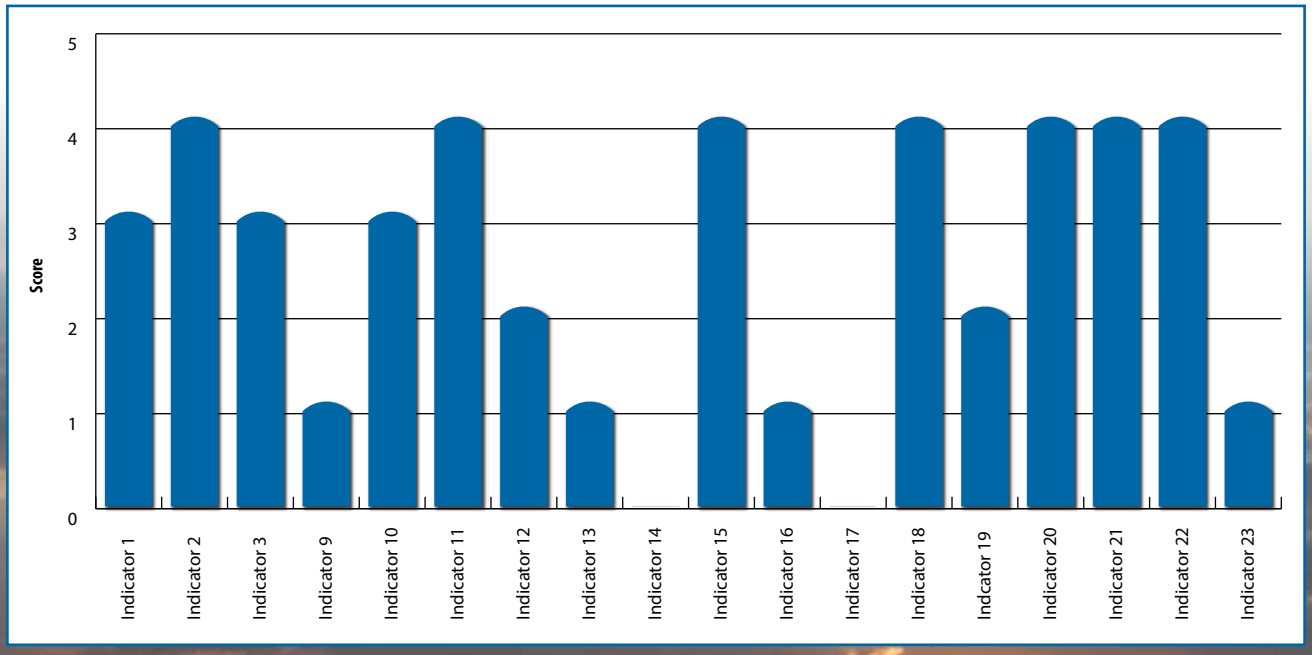


Figure 1: Srinagar City Biodiversity Index 2021 at a Glance

SECTION B: CITY BIODIVERSITY INDEX OF SRINAGAR

Part A: City Profile

Location

The city of Srinagar is the summer capital of the Union Territory (UT) of Jammu and Kashmir. It is also the largest city in the UT, encompassing an area of 246 sq. km[2] and lies in between latitudes 33°59'14" N and 34°12'37" N and longitudes 74°41'06" E and 74°57'27" E.[3]

Srinagar, nestled amidst the Kashmir valley, is characterized by the prevalence of a continental climate (Dfb), as per the Koppen climate classification.[4] The city experiences a warm summer and spring season to a moderate autumn season and heavy snow during the cold winters. The temperature range varies so greatly, reaching 29.5°C in the month of July and dropping below the freezing point in the months of December to February.[5] Srinagar receives precipitation throughout the year with a mean annual rainfall of 721.8 mm.

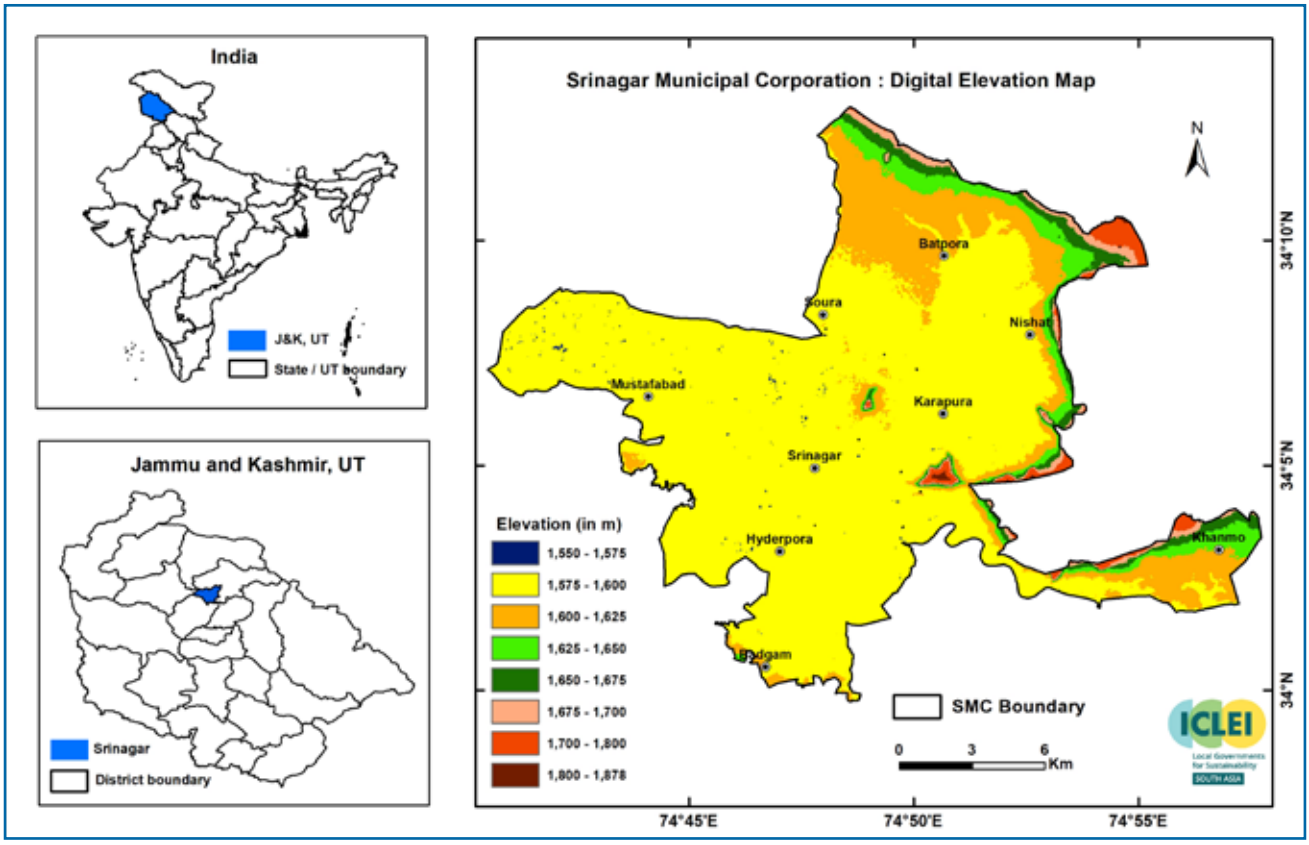


Figure 2: Location Map of Srinagar

Geophysical Characteristics

Srinagar is the northernmost city of India situated at an altitude of 1,588 m above sea level and is located on the banks of River Jhelum, locally known as Vyath, which also serves as a tributary to River Indus.[3] A number of water bodies in the form of lakes, wetlands and swamps such as the Dal, Anchar, Nigeen, Khushalsar, Gilsar and Hokersar exist around the city region of Srinagar.[6] Dal Lake forms the heart of the city.[7] Given the presence of canals namely, the Mar Canal, Srinagar is termed as the 'Venice of the East', although this has changed due to the rapid urban development of the city.

The physiography of the city is unique[7] with steep hills in the east and north-east, agricultural fields in the flood plains of the Jhelum located in the south and west, the Karewas of Budgam in the extreme South and uplands with moderate slopes in the North. Two hillocks, the Shakaracharya Hill or Takht-i-Suleiman and the Hari Parbat or Koh-i-maran are striking elements that make up an important part of the geography of Srinagar.[8]

These geographic features have influenced urban sprawl in the direction of the plains rather than towards the mountains. Srinagar is very vulnerable to earthquakes being located in a severe intensity seismic zone.

Demography

The total population of the city of Srinagar was 1,180,570 in 2011.[9] The number of males constituting the total city population is 618,790 and 561,780 females. The city forms a part of the Urban Agglomeration known as Srinagar Metropolitan Region (SMR) with an overall population of over one million. Given the high rate of urbanization, the total population in the city as well as in Srinagar district is expected to witness an exponential growth in the coming decades.[6]

In terms of religion, Srinagar city comprises of a predominantly Muslim population.[9] 95.97% of the total population follows Islam, followed by Hinduism which is practiced by approximately 2.75% of the total number of people. Other ethnic minority groups include Sikhs (0.92%), Christians (0.21%), Buddhists (0.02%) and Jains (0.01%). In particular, Kashmiri Pandits largely constitute the Hindu population residing in the city of Srinagar.

Economy

Srinagar city is centrally positioned in the UT of Jammu and Kashmir.[10] Given the city is popular for its picturesque landscape, it attracts a large number of tourists and hence, the tourism industry forms the backbone of the city's economy.[11] Other allied businesses related to tourism such as hotels, restaurants, bakery, handloom and handicrafts significantly contribute to the local economy. Given the prevalence of old wood-carving tradition and other skill-based work associated with manufacturing and selling of goods and services including furniture, carpets, shawls and silk items in the Kashmir valley, the city of Srinagar is considered as the major commercial and transportation hub in the UT.

In addition to tourism, agriculture is the main economic activity of the local inhabitants of the city of Srinagar, also enclosing the area under SMR.[6] Major crops cultivated in the region comprise rice, vegetables, fruits, saffron, cereals and pulses. Agro-based industries like horticulture concerned with the production of dried fruits such as almonds and walnuts, apples, peaches and sericulture also assist in enhancing the overall economic potential of the city as well as the UT of Jammu and Kashmir. The presence of water bodies in the city of Srinagar has also facilitated the fisheries sector generating employment opportunities.

Biodiversity

Srinagar city is constituted in the Kashmir valley, which is surrounded by the Himalayan mountain range.[6] Over the course of the millennium, the topography of the region including that of the city of Srinagar, has been shaped by the Glacial Flooding and river Jhelum. This has further led to the formation of a complex network of natural ecosystems in the region including streams, lakes, rivers, wetlands and forests. The Jhelum River, also considered as the backbone of the city's ecology, is connected to the Dal Lake. The Dal Lake outpours into Brari Numbal, Khushalsar and Gilsar. The outlet water from Khushalsar and the Sindh Nallah goes into Lake Anchar. The Sindh Nallah, one of the important water bodies of the region, ultimately joins the river Jhelum. The city of Srinagar thus lies in an ecologically fragile region.

Srinagar city and its adjoining areas house various kinds of green landscapes which serve as a habitat to a wide range of flora and fauna.[6] This has been illustrated in the Natural Asset Map developed by ICLEI South Asia for Srinagar Municipal Corporation (SMC). Also known as the city of gardens, Srinagar is well-admired for its Mughal gardens namely, Nishat Bagh, Shalimar Gardens, Chashma Shahi, Indira Gandhi Memorial Tulip Garden and a botanical garden, Jawaharlal Nehru Memorial Botanical Garden. The ecological value of these gardens in Srinagar also contributes to the overall biodiversity in the city. In addition, an abundance of water bodies in the city acts as an ecological haven as well as buffers against floods, preserving the city's ecological heritage against potential damage. Wetlands, marshes and swamps in the city also provide habitat to a rich aquatic biological diversity as well as migratory birds.

Although rich in biodiversity, the city of Srinagar lacks a well-documented biodiversity profile. A brief account of plant and animal species as known from scientific publications and reports is stated here within.

Flora: The city of Srinagar has a plethora of vegetation present as a part of its local geography at Shankaracharya and Hari Parbat hills[12] . Although due to uncontrolled grazing the hills have been mostly denuded, there are still a number of species of grasses, herbs and shrubs constituted at their slopes and base. Herbaceous plants such as *Iris sp., Peganum harmala*, *Thymus serphyllum, Lotus corniculatus, Eryngium billardieri, Urtica dioica*, and *Herniaria hirsuta* is largely found in the Hari Parbat hill whereas vegetation on the Shankaracharya hill is mainly shrubby. Shrubs including *Plectranthus rugosus, Rosa webbiana, Rubus fruticosus, Indigofera gerardiana* and medicinal shrubs like *Ziziphus jujuba* are commonly found in the zone. *Ailanthus altissima*, known as the tree of heaven also forms a part of the overall vegetation of the hill.

Mehraj et al (2018)[13] investigated the plant specimen collections deposited in the KASH herbarium of the Centre for Biodiversity and Taxonomy, Department of Botany, University of Kashmir, Srinagar. Their investigation found that the flora of Srinagar city comprises 920 species, ten subspecies and seven varieties from 496 genera and 103 families. 669 species grow as wild, 237 species being cultivated, and 31 species growing in wild as well as being cultivated in the Srinagar city. Overall, 98% of the species were angiosperms and merely 2% (19) were gymnosperms. Asteraceae is the largest family followed by Poaceae and Fabaceae.

Owing to the temperate climatic conditions in and around the city of Srinagar, a vast expanse of fruit orchards and gardens comprising of favourable tree species is present in the region.[12] Some of them are *Platanus orientalis* (chinar), *Populus alba* (poplars), *Salix acmophylla* (willow), *Morus alba* (mulberry) and *Grevellia robusta* (silver oak). Other fruit trees grown in the region include *Malus sylvestris* (apple), *Pyrus communis* (pear), *Prunus avium* (cherry), *Prunus armeniaca* (apricot), *Prunus cerasifera* (alu-bukhara) and *Juglans regia* (walnut).

Aquatic vegetation in Dal and Nageen lakes forms a substantial proportion of flora existing in the city of Srinagar.[12] Species of aquatic herbaceous plants such as *Nymphoides peltatum*, *Trapa natans* and *Sagittaria sagittifolia* dominate the floristic composition of the lakes. A number of species of water lilies have also been introduced in the lakes, viz. *Nymphaea mexicana*. In addition, floating gardens and stabilized islands artificially made up of reeds are used for cultivating vegetables like sweet-corn, cucumbers, and radish.

Marshes, lagoons and swamps in and around the city limits of Srinagar including the Hokersar wetland, a Ramsar site, are covered with wet meadow herbs such as *Ranunculus aquatilis*, *Lythrum salicaria* and *Acorus calamus*.[12]

In a study[14] conducted to document the floristic diversity along roadsides in the city of Srinagar, a total of 206 species of vascular plants belonging to 139 genera and 53 families were recorded. Out of this, alien species constituted about 52% of the total number and Asteraceae was found to be the most common family. Another study[15] found that of the 325 introduced (alien) species they recorded in Srinagar, 157 species were under cultivation, while 168 species were growing in the wild (i.e., outside cultivation). Mehraj et al. (2021)[16] documented 342 plant species from the green spaces of Srinagar, predominantly represented by 245 introduced species of which 133 species are exclusively under cultivation (non-escapes) and 112 species grow in the wild (cultivation escapes and accidentally introduced species).

Fauna: Srinagar has vast reserves of natural wealth in the form of lakes, orchards and forests.[7] The dense forests in the region also inhabit a wide variety of birds and animals such as in the Dachigam National Park. Although the National Park is situated outside the city limits of Srinagar, the biodiversity present there is assumed representative of Kashmir valley region including Srinagar city. The Park is an abode to over 150 species of birds and 20 species of mammals viz. Hangul (*Cervus elaphus hangul*), Himalayan brown bear (*Ursus arctos isabellinus*), Himalayan black bear (*Ursus thibetanus lanige*), Himalayan Grey Langur (*Semnopithecus ajax*), long-tailed marmot (*Marmota caudata*) and Leopard (*Panthera pardus*).

The city of Srinagar has rich avifaunal diversity.[17] About 54 bird species are reported to have been found within the city's jurisdiction. Out of this, 25 species of birds were identified as residents and 29 species were found to be migrants. The citizen science platform eBird, developed by the Cornell Lab of Ornithology*, records the presence of more than 222 birds from the city.

As per the District Census Handbook of Srinagar[10], there are no zoos established in Kashmir. However, a number of protected areas in and around the city of Srinagar such as Dachigam National Park, Khimber/

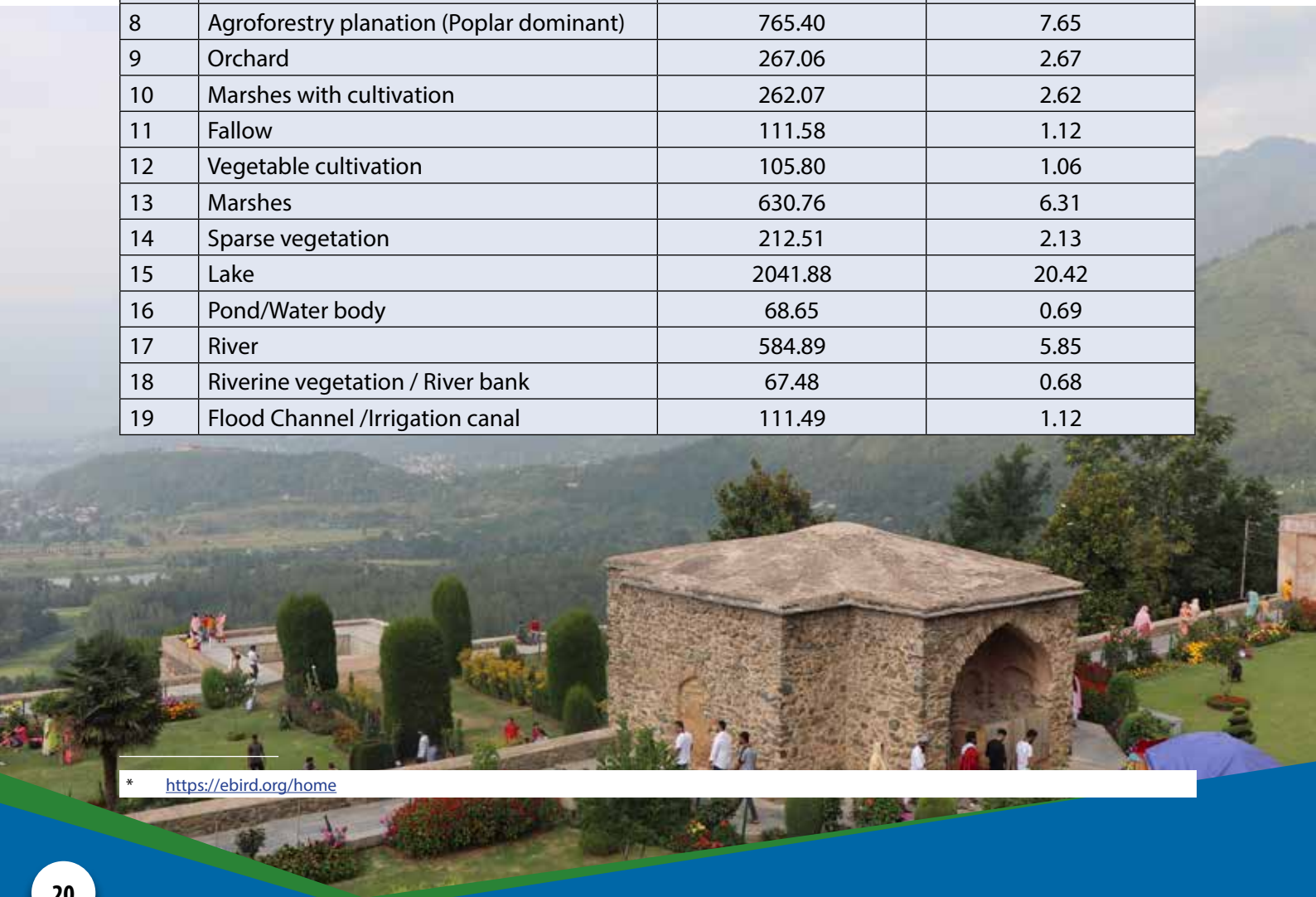
Dara/Sharazbal Conservation reserve, Brein Nishat Conservation Reserve constitute a myriad of faunal diversity.[18] Animals found in the area include Snow leopard (*Unica unica*), Leopard cat (*Felis bengalensis*), Red fox (*Vulpes vulpes*), Golden jackal (*Canis aureus*) and Asiatic ibex (*Capra sibrica*).

In a study[19] conducted to mark the current status of fish fauna in Dal lake and Jhelum river, a total of 14 fish species were recorded. Some of the fish species abundantly found in river Jhelum are *Schizothorax esocinus* (Chhurru), *Schizothorax curvifrons* (Satter gad) and *Triplophysia kashmirensis* (Ara gurun). Other species of fish found in the Dal Lake include *Carassius carassius* (Gang gad), *Botia birdi* (Rama gurun) and *Puntius conchonius* (Rosy barb).

Natural Asset Map: The natural asset map of Srinagar city (area under the jurisdiction of SMC) has been developed by ICLEI South Asia (Figure 2). Table 1 provides details of each land class.

Table 1: Area wise distribution of natural assets of Srinagar city

S.No.	Land Class	Area (In ha)	Area (In sq.km.)
1	Open ground	318.22	3.18
2	Park/ Garden	300.44	3.00
3	Golf course	106.79	1.07
4	Avenue tree cover	102.26	1.02
5	Paddy cultivation	4566.81	45.67
6	Terrace cultivation	475.68	4.76
7	Agricultural plantation (fruit tree)	2072.88	20.73
8	Agroforestry planation (Poplar dominant)	765.40	7.65
9	Orchard	267.06	2.67
10	Marshes with cultivation	262.07	2.62
11	Fallow	111.58	1.12
12	Vegetable cultivation	105.80	1.06
13	Marshes	630.76	6.31
14	Sparse vegetation	212.51	2.13
15	Lake	2041.88	20.42
16	Pond/Water body	68.65	0.69
17	River	584.89	5.85
18	Riverine vegetation / River bank	67.48	0.68
19	Flood Channel /Irrigation canal	111.49	1.12



* https://ebird.org/home

S.No.	Land Class	Area (In ha)	Area (In sq.km.)
20	Graveyard	40.04	0.40
21	Scrub forest	122.01	1.22
22	Forest / Natural vegetation	545.48	5.46
	Total	**13880.19**	**138.80**

Administration of Biodiversity

In India, there are five commonly employed models of biodiversity governance which can be broadly classified into state driven and community-based conservation.[20] State driven conservation models include protected areas and territorial forests while community-based conservation includes models like autonomous community efforts, co-management of forests and decentralized governance of biodiversity. Most protected areas such as Dachigam National Park (22km from Srinagar), Khimber/Dara/Sharazbal Conservation reserve, Brein Nishat Conservation Reserve (13km from Srinagar), Khonmoh Conservation Reserve, Hokersar Wetland Conservation Reserve and Shallabugh Wetland Conservation reserve have very small areas that fall within the boundary of Srinagar City or fall just outside the boundary of Srinagar city.

In the city of Srinagar, biodiversity is administered by the following territorial and city level organizations.

Jammu and Kashmir Forest Department: This Department headed by the Principal Chief Conservator of Forests (PCCF) deals with the protection, management and conservation of forests in the UT of Jammu and Kashmir. Under the Srinagar circle of Kashmir region, the department is responsible for the management of forests falling under the jurisdiction of city of Srinagar. For more information, please visit: http://www.jkforest.gov.in/

Jammu and Kashmir Biodiversity Council: The Government of Jammu and Kashmir set up a biodiversity council to document the biodiversity of the UT. The biodiversity council which functions in consultation with National Biodiversity Authority is headed by the PCCF of the UT, comprising a total of ten members. The council will maintain a People's Biodiversity Register (PBR) in every Panchayat and Municipal Council/ Corporation of the UT of Jammu and Kashmir.

Floriculture, Gardens and Parks Department: This Department which comes under the jurisdiction of the Government of UT of Jammu and Kashmir is responsible for the management of parks and gardens in the city of Srinagar. Parks and gardens such as Tulip Garden, Shalimar Garden and Bagh-e-Bahu are maintained by the department. For more information, please visit: http://jkfloriculture.nic.in/

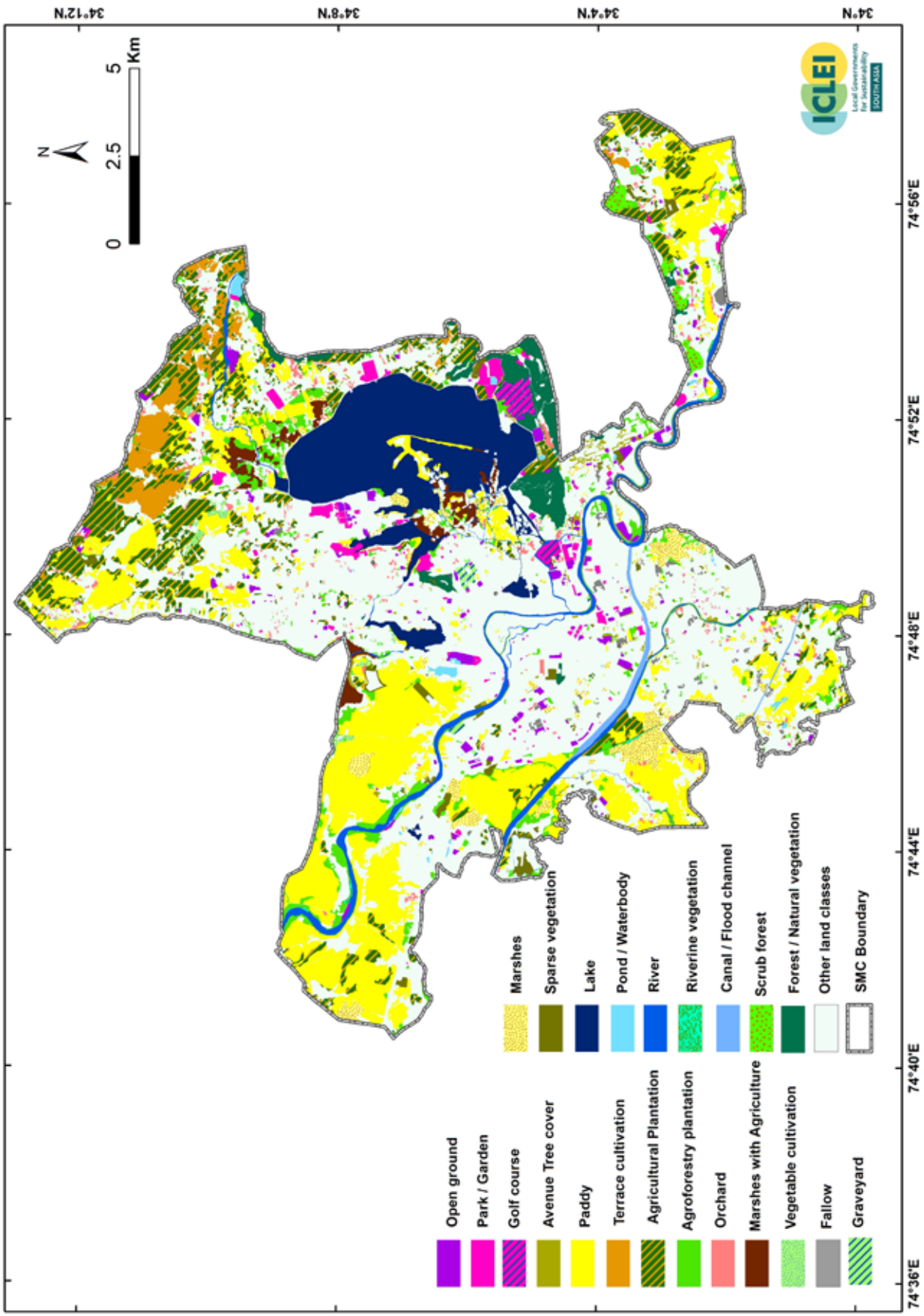


Figure 3: Natural Asset Map of Srinagar City

Urban Environmental Engineering Department (UEED): Jammu and Kashmir UEED is responsible for undertaking the works of construction of sewerage and drainage as well as the protection of environment against natural disasters and anthropogenic pressure in the urban areas of the UT including the city of Srinagar. The UEED is also concerned with the construction of sewerage treatment plants (STP) to ensure flow of treated and unpolluted water into the local water bodies. For more information, please visit: http://jkhudd.gov.in/ueedcontent.html

J&K Lakes Conservation and Management Authority (LCMA): The Authority is in charge of promoting sustainable development as well as conservation and management of Dal Lake, Anchar lake, Nigeen lake and other water bodies in the city of Srinagar. It is also concerned with the rehabilitation and resettlement of lake dwellers. For more information, please visit: http://jklda.org/

Srinagar Municipal Corporation (SMC): In general, the Municipal Corporations in India are assigned a multifarious range of functions including urban forestry, sanitation, planning and development. However, given maximum civic functions are discharged by the Government of Jammu and Kashmir, the SMC is allocated limited duties of sewerage and drainage, water works, street lighting and revenue. For more information, please visit: https://smcsrinagar.in/

Srinagar Biodiversity Management Committee (BMC): 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. SMC with support from the J&K Biodiversity Council has formed a BMC in October 2020. Details of the BMC are in Table 2.

Table 2: BMC members of Srinagar

Name	Designation	Category
Mr. Junaid Azim Matoo	Hon'ble Mayor	Ex-Officio Chairman
Prof. Irshad Ahmad Nawchoo	Dean Faculty of Biological Sciences, University of Kashmir	Member
Mr. Syed Abul Qasim	Joint Commissioner	Member Secretary
Mrs. Nighat Ara	ZEO, Batamaloo	Women/ST
Mr. Zahoor Ahmad Shah	Floriculture Officer SMC	Member
Dr. Shanaz Yousuf	Agriculture Extension Assistant	Women

Srinagar Development Authority: The Authority is responsible for the preparation and implementation of Master Plan for robust physical and social infrastructure development in the SMR including the city of Srinagar. The Master Plan also takes into cognizance the conservation of local ecology and environment, natural features such as River Jhelum, Hokersar wetland, city forests and gardens. For more information, please visit: http://www.sdasrinagar.com/

Srinagar Smart City Limited (SSCL): This Special Purpose Vehicle aims to transform the city of Srinagar into an environment-friendly, resilient and vibrant city through conservation of its natural and cultural heritage/tourism. Some of the green projects proposed by SSCL include green space development underneath flyovers, development of green spaces in Bemina region and River Jhelum waterfront development in the city of Srinagar. For more information, please visit: https://www.srinagarsmartcity.in/

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
(Total area of natural, restored and naturalised areas) ÷ (Total area of city) × 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
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 access to these areas cannot be completely restricted.

To calculate the proportion of natural areas in the city, a natural asset map (Figure 2) of Srinagar was prepared and referred to. Table 3 shows the various natural classes that have been identified in the natural asset map of Srinagar that apply to the calculation of this indicator. Anthropogenically created land classes such as Open ground, Park/ Garden, Golf course, Avenue tree cover, Paddy cultivation, Terrace cultivation, Agricultural plantation (fruit trees), Agroforestry planation (Poplar dominant), Orchards, Fallow land, Vegetable cultivation, Flood Channel /Irrigation canal, and Graveyard were not considered.

Table 3: Natural assets used in the calculation of indicator 1 (inside SMC boundary)

Sl. No.	Land Class	Area in sq. m.
1	Marshes with cultivation	2.62
2	Marshes	6.31
3	Sparse vegetation	2.13
4	Lake	20.42
5	Pond/Water body	0.69

Sl. No.	Land Class	Area in sq. m.
6	River	5.85
7	Riverine vegetation / River bank	0.68
8	Scrub forest	1.22
9	Forest / Natural vegetation	5.46
	Total	**45.38**

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

Total area of natural, restored and naturalised areas = 45.38 sq. km. (calculations include the total area of the river and other water bodies within the city limits)

Total area of the city = 246 sq. km.

RESULT: 18.5%

SCORE: 3

Recommendations to Improve Score

Srinagar scores well under this indicator because of its network of wetlands and water bodies. However, several of these wetlands such as Kushalsar and Gilsar, though considered natural for the purpose of this indicator, are eutrophied and vulnerable to encroachment. At the same time, agencies such as LCMA and I&FC are continually working to improve the health of lake ecosystems by dredging and removing weeds. However, a more holistic strategy, building on a greater number of partnerships that includes SMC is required. UT agencies and local bodies must look beyond beautification, into ecological restoration to improve the health of Srinagar's wetlands and water bodies. The city can improve the score by focussing its efforts on enhancing and connecting its blue-green network. Identifying the extent of and status of its unique ecosystems such as the scrub forests, grasslands, wetlands, Srinagar can tailor restoration strategies for each type through its Local Biodiversity Strategy and Action Plan (LBSAP). The city can also put greater emphasis on use of Nature based Solutions for ecological restoration.

Presently SMC's focus is mostly around the provision of urban services like solid waste management, sewerage and drainage, water works, and street lighting. It would be beneficial for the city to develop its own biodiversity wing or forge strong partnerships with relevant research and UT agencies like the Forest Department, J&K Biodiversity Council, local universities and NGOs to improve the extent and health of the natural assets of the city.

Indicator 2: Connectivity Measures or Ecological Networks to Counter Fragmentation

Methodology

As per the CBI user manual

Principle for calculation of the indicator

$$\frac{1}{A_{total}} * \left(A_1^2 + A_2^2 + A_3^2 + \ldots + A_n^2\right)$$

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

The patches associated with the land classes used to calculate indicator 1 i.e., forest, scrub forest, lake, marshes, river, riverine vegetation and water bodies have been considered in this calculation. In reality, manmade landscapes represented in Srinagar by the land classes- orchard, fallow land, agroforestry plantations, tree patches 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.

316 polygons (patches) were merged with the land classes lake and river and considered a single unit, as per the 100 m proximity rule. Therefore, the total area of this big patch (A_1) was determined as 3,727.72 ha (Annexure 1, Table 5).

There are 116 polygons (patches) which are outside the 100m buffer of this big patch. As per the 100m proximity rule, these 116 patches are inter-merged into 87 patches (A_2 – A_{88}). The total number of patches is as shown in Table 5.

A_{total} = 4358.16 ha

As per the final calculation

Indicator 2 = 1/4358.16 ha X (13919111.16 ha ^{2}) = 3,193.80 ha

RESULT: 3,193.80 ha

SCORE: 4

Recommendations to Maintain Score

The aquatic connectivity of Srinagar's network of wetlands is the main reason for the high score (refer patch A_1 in Figure 3). These natural areas should receive protection through a local legislative framework. The LBSAP (presently under development) can also help develop an action plan for the same and identify ways to connect the blue with the green.

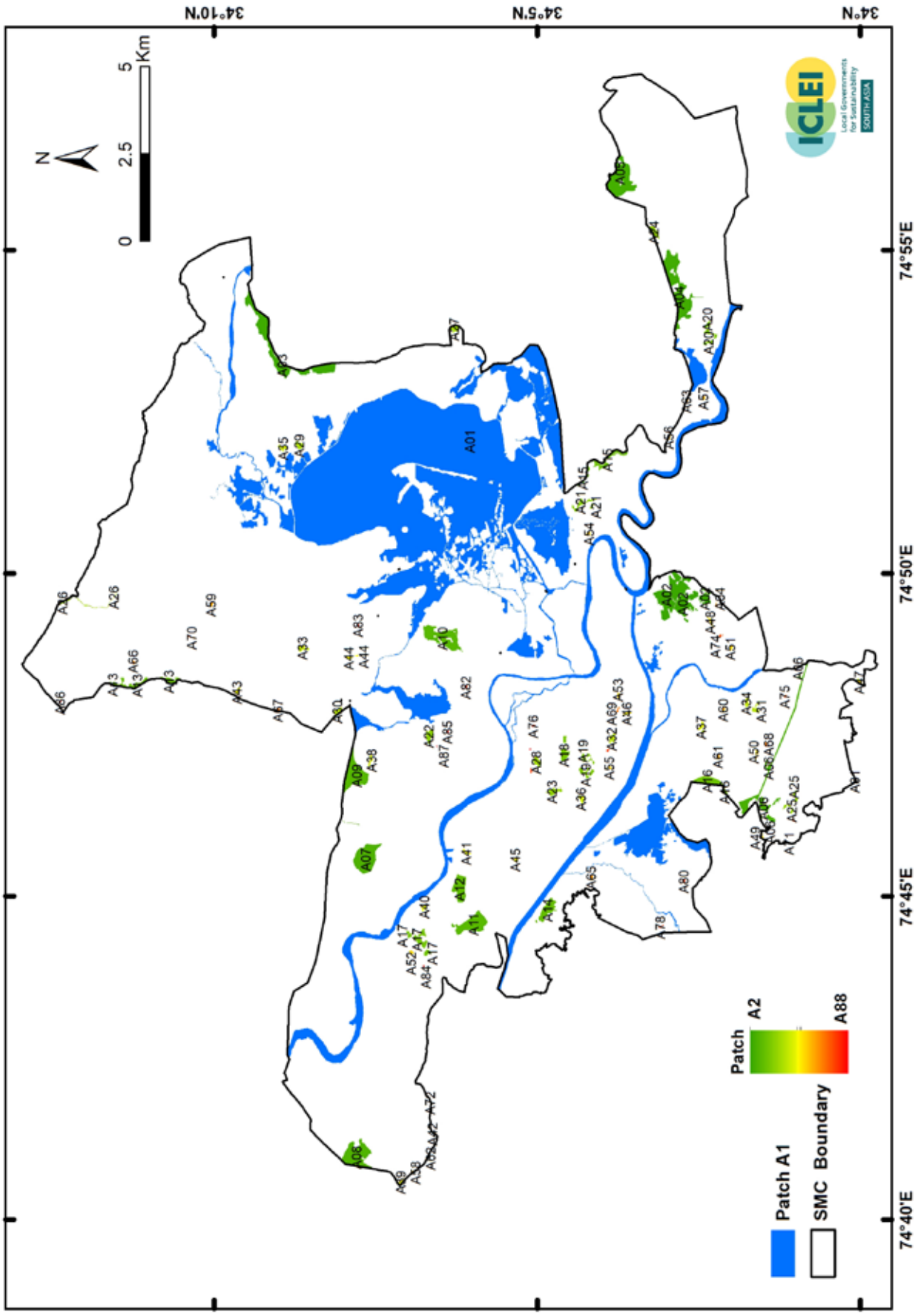


Figure 4: Connectivity patches of natural areas within the boundary of SMC

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

Secondary data available on citizen science platforms such as eBird (2021) developed by Cornell Lab of Ornithology, and scientific publications[17] were referred to for this indicator. Birds sighted within the municipal corporation limits were considered. Sightings from natural areas considered in indicator 1, were excluded which is possible using eBird's mapping tool. The list developed was then vetted by local birder Mr. Intesar Suhail, Founding Member of Kashmir Birdwatch and Wildlife Warden, Department of Wildlife Protection, J&K.

Of the 172 bird species that were recorded from the city, 79 species are resident species of which 49 occur within anthropogenically altered spaces of the city. The native bird diversity within the city is high because of mosaic of ecosystems in the city. The list of the birds considered for calculation of this indicator is provided in Annexure 2, Table 6.

RESULT: 49 Species

SCORE: 3

Recommendations to Improve Score

Being an area with a temperate climate, the bird diversity in Srinagar is lower than Jammu. This said, Srinagar has a complex mosaic of habitats that support a significant amount of biodiversity. Historically wooded areas such as coniferous forests around Zabarwan Forest Range may improve the local bird population. Identifying, recognizing and maintaining grassland areas will also support avifauna that depend on these habitats. Increasing organized green spaces and greening the same with native conifers and other native evergreens will have two-fold benefits as not only will it support recreation but also habitat alternatives for local wildlife. Hokersar Wetland on the fringes of the city is an important ecosystem supporting at least half a million migratory and water birds. The wetland faces challenges and needs protection measures set out as preconditions to a flood management programme. SMC has already initiated measure to protect wetlands falling under its jurisdiction. Local policies and laws may be drafted to afford further protected to these ecosystems. Finally, Srinagar's agricultural and horticultural areas should also be preserved as they act as wildlife corridors and support local food webs.

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

For the indicators 4-8, information was sourced from scientific publications, government reports, white papers, and citizen science platforms like eBird and iNaturalist*. Taxa experts were consulted with at the final stage of the list development.

In the case of indicator 4, the list of plants was compiled from Mufazar et al. (2018), Mehraj et al. (2021); Mehraj et al. (2017a;b); and the information.[13-16] Dr. Anzar Khuroo, Assistant Professor and Incharge, Centre for Biodiversity & Taxonomy, Department of Botany, University of Kashmir, was consulted for the purpose of vetting the plant list. Indicator 5 was compiled from eBird (2021)** and Kait et al. (2014)[17] and validated

* https://www.inaturalist.org/places/srinagar

** eBird. 2021. The Cornell Lab of Ornithology. https://ebird.org/region/IN-JK-SR Accessed on August 9, 2021.

by local birder Mr. Intesar Suhail, Founding Member of Kashmir Birdwatch. Indicator 6 was compiled from iNaturalist (2021), Qureshi *et al*. (2013) and Sheikh *et al* (2021)[21, 22] and vetted by Dr. Aijaz Qureshi, Research Officer, Islamic University of Science and Technology.

For indicators 7 and 8, two additional taxonomic groups of Freshwater Fish and Mammals, respectively were chosen. Indicator 7 was compiled from Bhat et al. (2020)[23], Ahmed et al. (2017)[19] and vetted by Dr. Feroz Ahmad Bhat, Associate Professor cum Senior Scientist of Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST) while Indicator 8 was compiled from IUCN's database (https://www.iucnredlist.org/resources/spatial-data-download) and the J&K Forest Department and vetted by Dr. Khursheed Ahmad, Assistant Professor-cum-Scientist, SKUAST.

These lists will form the baseline for comparison when the index is revisited by the city, after 5 years. Annexure 2 provides details of the species lists that have been considered for indicators 4-8.

RESULT: Since this is the baseline year for the species count, the city will not receive any score on the indicators 4-8 and the same will be excluded from the overall calculation.

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
Srinagar District has the following protected areas which are administered to by the J&K Forest Department- Dachigam National Park, Brain-Nishat Conservation Reserve, Khimber/Dara/Sharazbal Conservation Reserve. These fall outside the city's boundary and cannot be considered for the purpose of this indicator. Hokersar Wetland Reserve or Hokera Wetland, is an important habitat for migratory birds which fly to Kashmir Valley via the Central Asian Flyway. The wetland is a Ramsar site but once again falls outside the city's boundary.

Within the city, Hari Parbat Hill falls under undemarcated forest and receives some measure of protection from the Forest Department. The area under this is 32.6 ha. Shankaracharya Hill and Zabarwan are reserve forests with an area of 141 ha and 660 ha, respectively.

Area of protected or secured natural areas = 32.6+141+660 ha = 833.6 ha or 8.34 sq km

Total area of the city = 246 sq.km

Proportion of Protected Natural Area = 8.34÷ 246 × 100% = 3.39%

RESULT: 3.39%

SCORE: 1

Recommendations to Improve Score

To improve this score, the protection status of Shankaracharya hill and Hari Parbat can be strengthened. Given the heritage and religious significance of both these areas, community-based conservation models can be explored. The city administration must consider designating more wetland reserves since a large proportion of the city is made up of wetlands. Further, the J&K Biodiversity Council through the BMC can identify other biodiversity rich sites and propose them for inclusion as Biodiversity Heritage Sites under the Biological Diversity Act, 2002. The city and J&K Biodiversity Council can also look at considering declaring some of the suitable sites as Other Effective area-based Conservation Measures (OECM). The OECM categories for India have recently been finalized by the Ministry of Environment, Forest and Climate Change, Government of India.

Indicator 10: Proportion of Invasive Alien Species

Methodology

How to calculate indicator
(Number of invasive alien species) ÷ (Number of native species) × 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
The taxa for which information on alien species is most easily available is terrestrial plants. Mehraj et al. (2018)[15] found that of the 325 introduced (alien) species they recorded in Srinagar, 157 species were under cultivation, while 168 species were growing in the wild (i.e., outside cultivation). The study demonstrated that alien flora of Srinagar comprises 10 invasive, 12 naturalised, 8 casual, 4 cultivated plant species. Muzafar et al. (2018)[14] recorded 108 introduced species growing along Srinagar roadsides of which 24 were invasive, 44 naturalized, 12 casual and 23 cultivated. Mehraj et al. (2021)[16] documented 342 plant species from the green spaces of Srinagar, predominantly represented by 245 introduced species of which 133 species are exclusively under cultivation (non-escapes) and 112 species grow in the wild (cultivation escapes and accidentally introduced species). Among these 112 species 51 were naturalised, 39 casual and 22 invasive.

A total of 26 invasive alien terrestrial plant species were identified in the city. The total number of native vascular plant species in the city is 357.

Total Number of Invasive Alien Species = 26

Total Number of Native Species = 357 (Annexure 2, Table 7)

Proportion of Invasive Alien Species = (26÷357) × 100 = 7.28%

RESULT: 7.28%

SCORE: 3

Recommendations to Improve Score

Distribution mapping and risk assessment of the alien invasive species that come through this documentation needs to be conducted. The risk assessment will help to understand the threat (high, medium, low and insignificant) that the invasive alien species pose to the ecosystems. This assessment will also help to develop strategies to control the spread of invasive species. Action points in this regard and the implementation of the same can be identified in the LBSAP of the city.

Indicator 11: Regulation of Quantity of Water

Methodology

How to calculate indicator
(Total permeable area) ÷ (Total terrestrial area of the city) × 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
At the city-level, data on permeable/non-permeable spaces is absent, and hence a permeability map (Figure 4) was prepared by ICLEI South Asia for the purpose of calculating this indicator. Sentinel 2A data was extracted from the Copernicus program of the European Space Agency for the analysis of the SMC Area. Land use classes of Water Body, Bare Land, Forest, Scrub Forest, Marshes, Agroforestry, Paddy, and Urban built-ups were utilized for the classification. After the LULC classification, the respective land classes were merged and permeability map was prepared.

Total Terrestrial Area of the city = 218.47 sq.km. (excluding area of water bodies)

Total Permeable Area (+ area of water bodies) = 136.04+28.2= 164.24 sq.km.

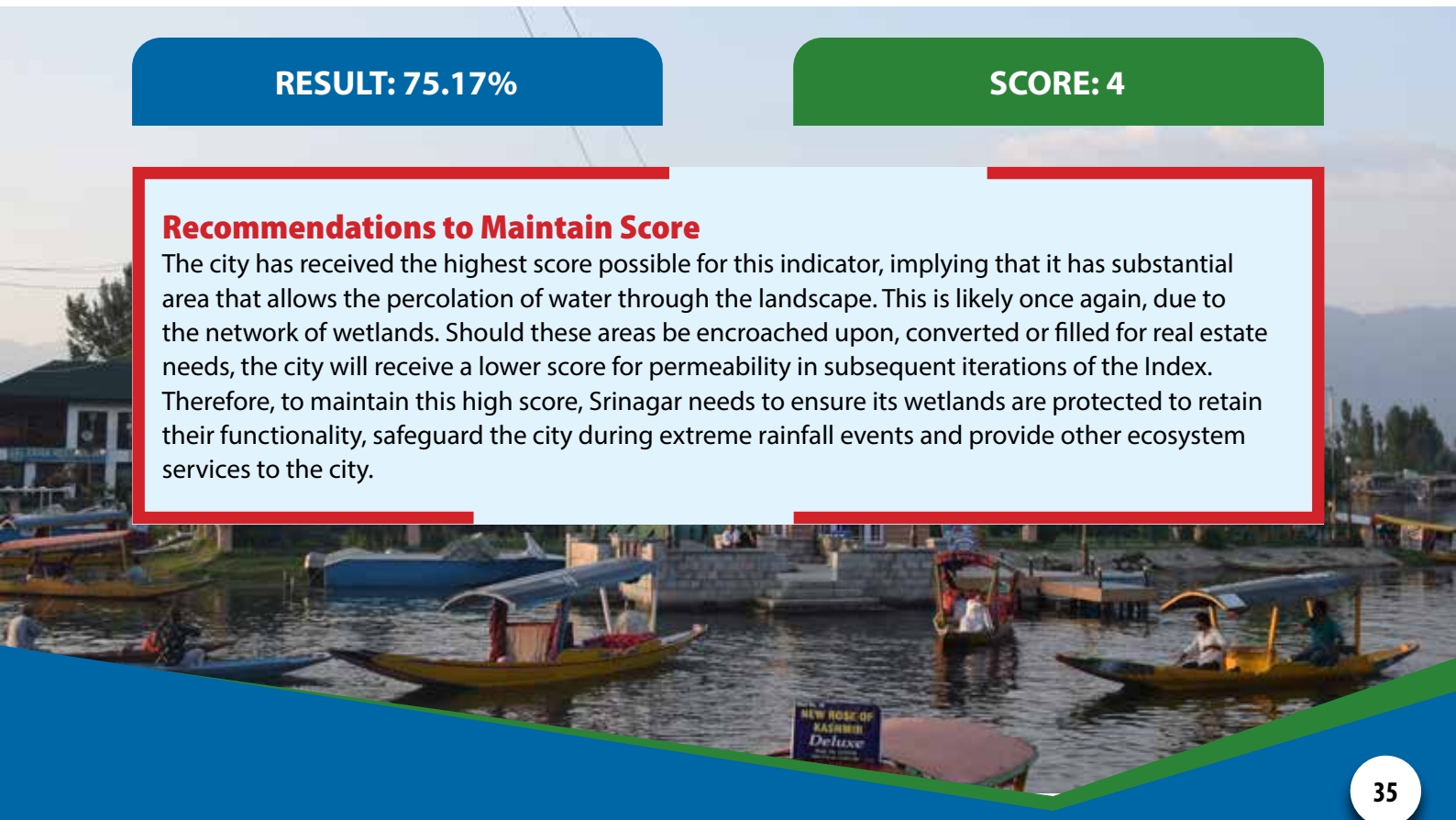
Regulation of Quantity of Water= (164.24 ÷ 218.47) × 100%

RESULT: 75.17%

SCORE: 4

Recommendations to Maintain Score

The city has received the highest score possible for this indicator, implying that it has substantial area that allows the percolation of water through the landscape. This is likely once again, due to the network of wetlands. Should these areas be encroached upon, converted or filled for real estate needs, the city will receive a lower score for permeability in subsequent iterations of the Index. Therefore, to maintain this high score, Srinagar needs to ensure its wetlands are protected to retain their functionality, safeguard the city during extreme rainfall events and provide other ecosystem services to the city.



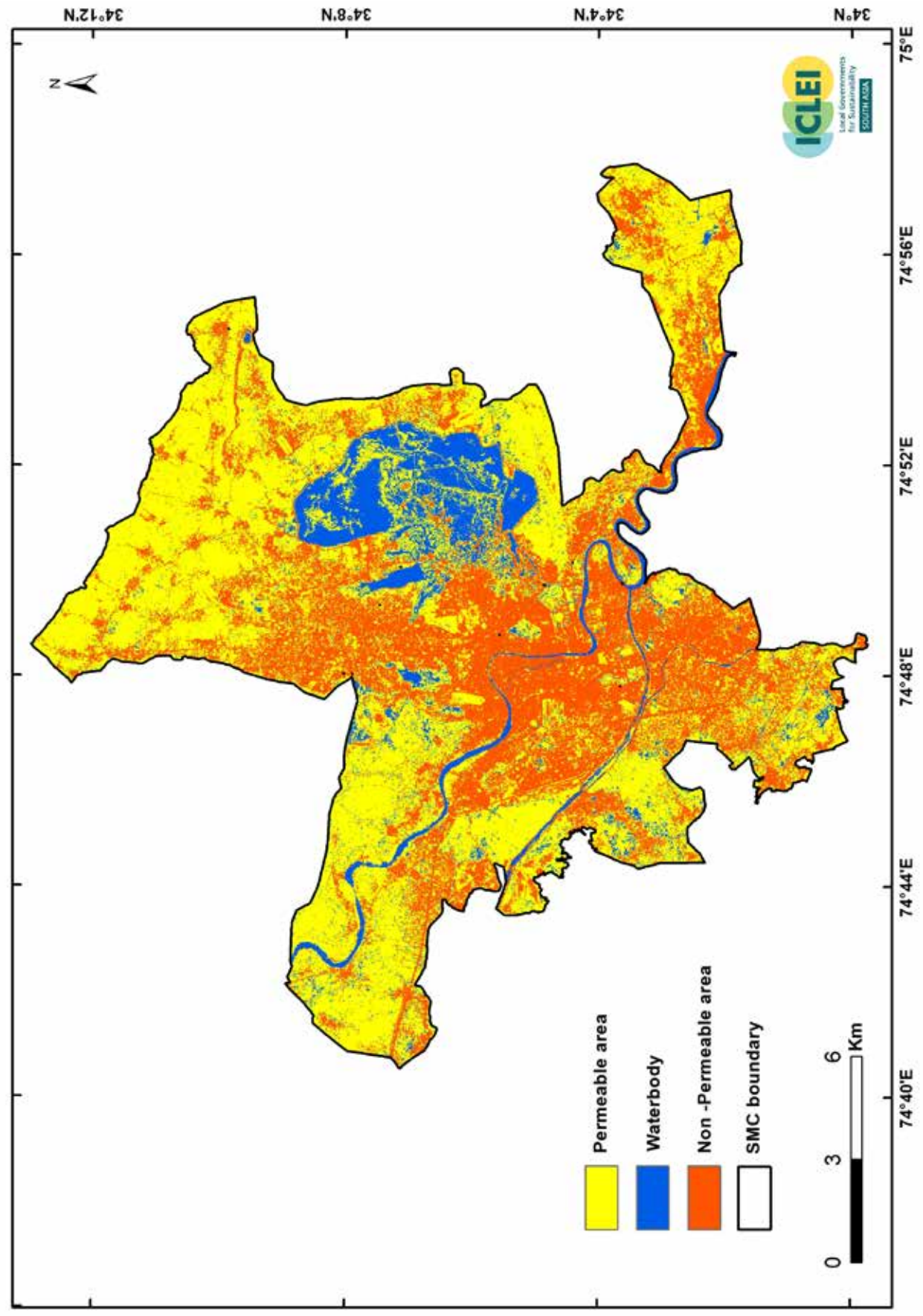


Figure 5: Map showing permeable areas of SMC

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

Methodology

How to calculate indicator
(Tree canopy cover) ÷ (Total terrestrial area of the city) × 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
In order to calculate indicator 12, a tree cover map (Figure 5) was developed using Sentinel satellite imagery (10 m resolution). The data was extracted from the Copernicus program of the European Space Agency for the analysis of the SMC Area. Area. Sentinel-2 Level 2 products with a cloud cover of less than 10% comprising the study region (Tile Number - T43SDT) acquired on 16 July 2020 were downloaded from USGIS Earth Explorer. Land use classes of Forest, Scrub Forest, Parks and Agroforestry were utilized in the supervised classification. After the LULC classification, the respective land classes were merged and tree cover map was prepared.

Tree cover = 47.51 sq.km.

Total terrestrial area of the city= 218.47 sq.km.

RESULT: 21.75%

SCORE: 2

Recommendations to Improve Score

The tree cover assessment shows the city's northern and western fringes have a higher density of tree cover which can be attributed to agroforestry and horticulture plantations as well as some natural green spaces like the Zabarwan and Shankaracharya forests (refer Natural Asset Map). To improve this indicator, the city should look into developing native tree green belts along roadsides and other available spaces. The office complexes of educational and other institutions/organisations can also be included in the greening programme. The BMC, in collaboration with SMC, J&K Biodiversity Council and other NGOs can play a significant role in the same.

The Chinar trees of the city, although not native, have a heritage and historical significance. An action plan to support and enhance these can be developed in partnership with the J&K Biodiversity Council and Forest Department.

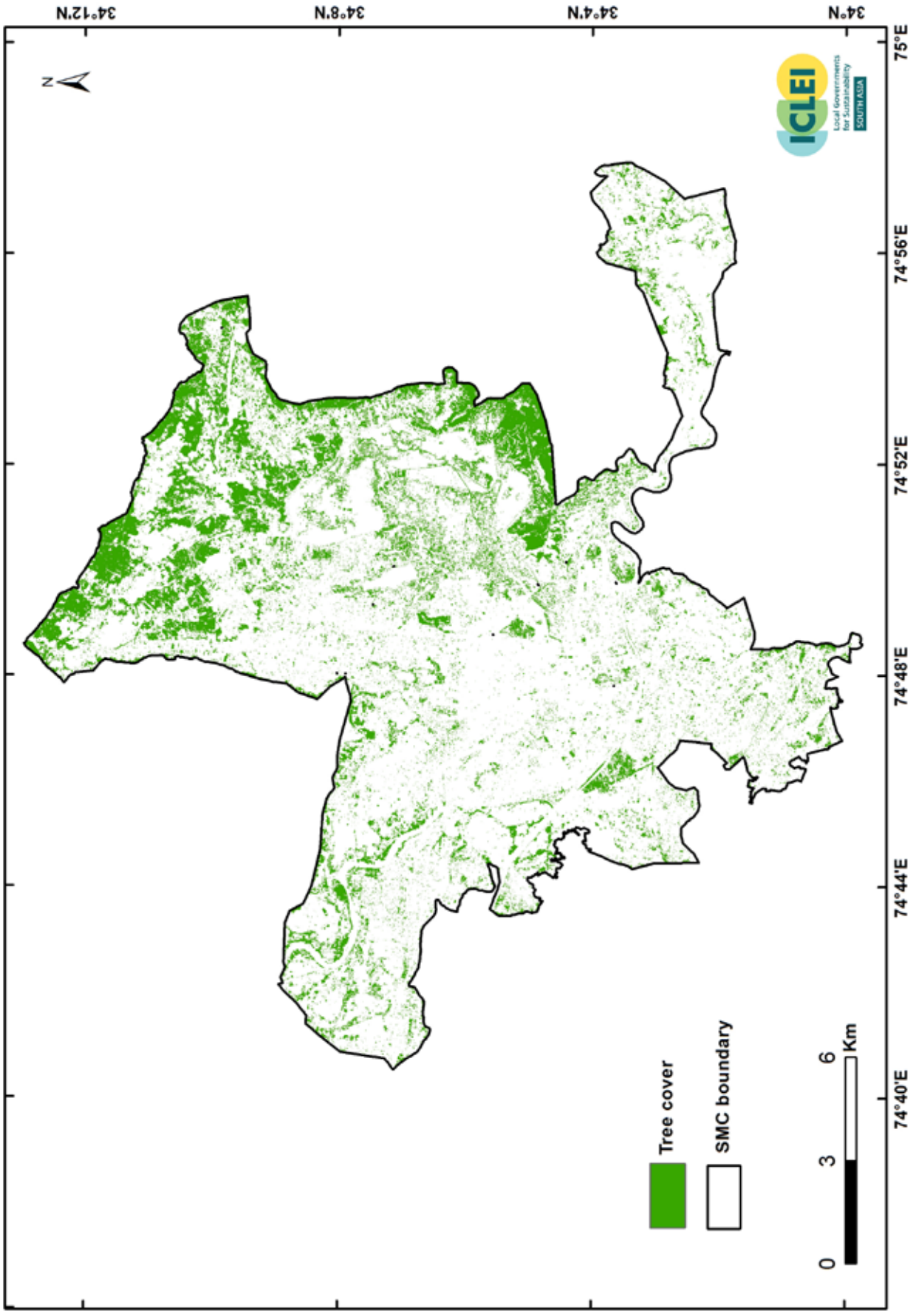


Figure 6: Map showing the Tree Cover of Srinagar City

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
The main agencies that manage and develop parks in the city are SMC and the State Floriculture Department. SMC manages a total of 139 parks which make up a total of 13.9 ha (Annexure 3). The Floriculture Department together with state level agencies maintains and manages 28 of the major public parks such as the Mughal Gardens of Shalimar, Nishat, Cheshmashai, Tulip Garden and so on. Two parks, Badamwari Park and Iqbal Park, are managed by J&K Bank.

Total area of parks (n=139) in Srinagar managed by SMC = 13.90 ha

Total area of parks in Srinagar managed by the Floriculture Department (n=20), various UT agencies (n= 7) and JK Bank (n=2) = 201.6 ha

Hariparbat Hill and Shankaracharya Hill also have heritage and religious significance and are visited by locals and tourists alike. The total area under green cover for these is 173.6 ha

Other natural recreational spaces include the Dal and Nigeen Lakes (2507 ha), however these being blue spaces, cannot be taken into account for this indicator.

Recreational Services = 389.1/1000

RESULT: 0.39 ha/1000 persons

SCORE: 1

Recommendations to Improve Score

Srinagar lacks sufficient organized green spaces, as pointed out in the Master Plan 2035 of Srinagar Metropolitan Region.[24] According to the Master Plan 2035, the city has lost many historic gardens like Dewan Bagh, Baghi Ali Mardan, Baghi Dilawar Khan, due to various reasons.

Taking into account the data shared by the city and the Floriculture Department, Srinagar only has 215.5 ha of recreational green space which is 354.5 ha less than the minimum standard of 570 ha as provided in the Urban and Regional Development Plans Formulation and Implementation (URDPFI, Vol. I) Guidelines, 2015.[25] The Master Plan 2035 lists several strategies to improve the city's organized green spaces which can be implemented by the city and other relevant agencies. The city also needs to concentrate on these activities through action points in the LBSAP (which is presently under development).

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
Discussions with officials of Srinagar Municipal Corporation and other stakeholders yielded the information that park visits are not mandatory for schools as per the set curriculum. However, schools do voluntarily organize these visits, in accordance with their schedule.

Therefore, no formal educational visits per child below 16 years take place to parks with natural areas or protected or secured natural areas per year.

RESULT: No formal educational visit

SCORE: 0

Recommendations to Improve Score

Though the city administration does not have any influence on the curriculum of the various boards followed by schools in the city, they can give an advisory to all schools to include such visits as part of environment awareness. A suggestion for the same can also be sent by the city government (through the UT government) to all the boards of secondary and senior secondary level education.

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
The following budget allocations in the municipal budget for the financial year 2021-22 contribute to biodiversity conservation.

1. Roadside plantation = 8 million INR
2. Development of Doonipora Park Alamgari Baaar = 18.5 million INR
3. Development of green space near J&K Bank Baghi Mehtab Srinagar= 20 million INR
4. Improvements to Children's Park near Iqbal Park Srinagar = 4.7 million INR
5. Open Green Space Development at Bemina = 30 million INR

Total Budget of Srinagar Municipal Corporation= 920 million INR

Total Budget Allocated for Biodiversity = (81.2) ÷ (920) × 100

RESULT: 8.83%

SCORE: 4

Recommendations to Maintain Score

Presently most of the budget allocated under parks development and maintenance and some plantation has been identified as budget allocations towards biodiversity. The city must take up a more active role in biodiversity governance, through its LBSAP and incorporating a meaningful financial commitment in the annual municipal budget for initiatives proposed in the LBSAP.

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
Srinagar city is implementing the following projects and programmes related to biodiversity in the year 2021-2022 with support from other government bodies, NGOs and the private sector:

1) Preparation of People's Biodiversity Register- With support from the J&K Biodiversity Council, the Biodiversity Management Committee of Srinagar has prepared the People's Biodiversity Register.
2) City Biodiversity Index (CBI): The CBI is being prepared by ICLEI – Local Governments for Sustainability, South Asia to consolidate the available biodiversity-related local level data, which could then help to evaluate and benchmark their biodiversity conservation efforts.
3) LBSAP: ICLEI – Local Governments for Sustainability, South Asia is developing the LBSAP for the city which will provide guidance and direction to the city to sustainably manage and conserve its biodiversity.
4) Park Development: SMC is responsible for the development and maintenance of 139 parks in the city. Additionally, it is presently developing Doonipora Park at Alamgari Baaar, a green space near J&K Bank at Baghi Mehtav and is making improvements to Children's Park near Iqbal Park.
5) Maintenance of City Forests
6) Nursery Development
7) Green Srinagar Initiative: Plantation of (50,000) saplings was undertaken where 200 schools and 50 police stations were covered. Another 0.5 million trees are being planted together with the Forest Department for the year 2021-22.
8) Rejuvenation of Khushalsar/ Gilsar Lake: Assisting LCMA, Irrigation and Flood Control (IFC) Departments with removal and disposal of muck/garbage/weeds collected from Khushalsar and Gilsar Lakes. SMC is also supporting further efforts for the rejuvenation and restoration of these water bodies.

9) Conservation of Dal/Nigeen Lakes: As part of the conservation plan for the Dal and Nigeen Lakes, SMC manages the waste of the peripheries of these lakes.

10) Sunday4Srinagar Programme: Under the initiative, sanitation and cleanliness drives are conducted every Sunday in the city. The focus of the drives is cleaning of water bodies and have included Shalimar Khul, water channels from Chowdary Bagh to Mir Behri Dal, stream from Harwan Garden to Shalimar and so forth.

11) Hokersar Wetland Sanitation Drive: Large scale sanitation drives around the wetland were organised on 5th June 2021, World Environment Day 23rd June 2021 and 22nd August 2021 in addition to weekly clean ups by local officials.

12) The 6R Campaign: An anti-polythene campaign which focuses on 6Rs or Reduce, Reuse, Recycle, Remove, Refuse, Report at the citizen level. This is primarily awareness based and focuses on sensitizing the locals while also banning plastic use within the city.

13) Maintenance of Green bays under flyovers

14) Stray Dog Sterilization: A partnership with the Animal Welfare Board and SKUAST, SMC is establishing multiple animal birth control and anti-rabies centres across the city.

15) Biotoilets: Installation of portable bio digesters in the Srinagar city at various locations where there is shortage of toilet facilities, greater footfall of the tourists and other customers is expected to also reduce the burden on the city's water bodies.

16) Baba Demb Lake Rejuvenation: Under the SMART city project the city will be focussing on improving the water quality of Baba Demb Lake while also landscaping and greening the area.

RESULT: 16 programmes/projects

SCORE: 1

Recommendations to Improve Score

The city, through its LBSAP and can take up meaningful activities that will enhance its biodiversity, through partnerships with State agencies, local NGOs, academic institutions and the private sector.

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

Methodology

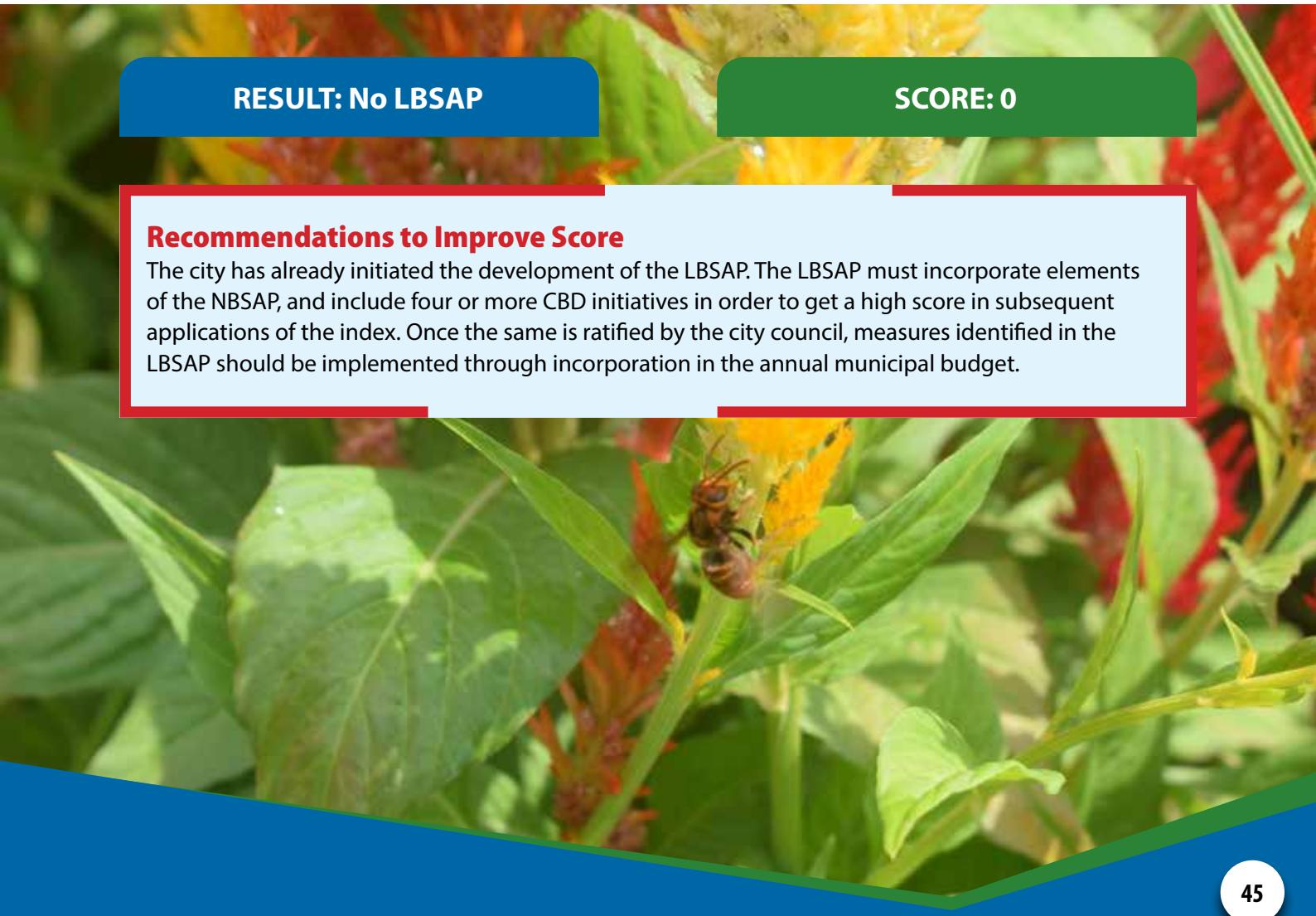
How to calculate indicator
Status of LBSAP (or any equivalent plan); number of associated CBD initiatives.

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
The LBSAP of Srinagar city is presently being developed under the Integrated sub-national action for biodiversity: Supporting implementation of National Biodiversity Strategy and Action Plans (INTERACT-Bio) Project in conjunction with ICLEI South Asia.



RESULT: No LBSAP

SCORE: 0

Recommendations to Improve Score

The city has already initiated the development of the LBSAP. The LBSAP must incorporate elements of the NBSAP, and include four or more CBD initiatives in order to get a high score in subsequent applications of the index. Once the same is ratified by the city council, measures identified in the LBSAP should be implemented through incorporation in the annual municipal budget.

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

Srinagar has the following biodiversity functions within its boundaries

- Jawaharlal Nehru Memorial Botanical Garden
- Kashmir University Botanical Garden
- Herbarium of the University of Kashmir
- Botanical Museum at University of Kashmir
- Zoological Museum at University of Kashmir
- Aquarium cum Awareness Centre, Gagribal

RESULT: 6

SCORE: 4

Recommendations to Maintain Score

The city has a large number of biodiversity functions, a high proportion of which are located in educational institutions like University of Kashmir. The city in association with schools and eco clubs should encourage educational visits from local schools to these facilities. This will help the students to develop a 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
Biodiversity issues are cross-sectorial and, require inter-agency efforts. Srinagar Municipal Corporation works in close association with various local, district and state government agencies. Given below are various local government agencies that are involved in matters related to biodiversity conservation in the city.

- Srinagar Municipal Corporation (SMC)
- Biodiversity Management Committee of Srinagar (BMC)
- Srinagar Smart City Development Limited (SSCL)
- Srinagar Development Authority (SDA)

RESULT: 4

SCORE: 2

Recommendations to Improve Score

To improve this score the city administration can look at establishing an outreach organisation of the corporation, which will be registered separately and will function independently. This organisation will assist the city corporation in undertaking and monitoring projects and programmes related to biodiversity conservation. The city can study the example of the Centre for Heritage, Environment and Development (c-hed), established by Kochi Municipal Corporation in this regard.

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
Srinagar Municipal Corporation has commenced public outreach and consultation through social media platforms as part of its Smart City efforts under an initiative called My city-My ideas. This is therefore a formal process which is being implemented as part of the routine process.

Thus, formal or informal process exists as part of the routine process.

RESULT: Formal or Informal Process Exist

SCORE: 3

Recommendations to Improve Score

The city administration should regularly follow this process of participatory governance and institutionalise this as part of the routine process to increase its score. To make this more robust, citizens should be taken consistently on-board during planning of biodiversity projects.

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

Srinagar Municipal Corporation already partners with 20 NGOs working on community composting, door to door delivery of plants as well as some sanitation related programmes such as clean-up drives. The following are other agencies with whom the Municipal Corporation is partnering with for biodiversity-related activities, projects, and programmes.

1. ICLEI - Local Governments for Sustainability, South Asia for development of the City Biodiversity Index and the Local Biodiversity Strategy and Action Plan
2. Wildlife SOS for wildlife rescues and relocation
3. J&K Forest Department on the Green Srinagar Initiative
4. I&FC, LDA and Nigeen Lake Conservation Organisation (NLCO) on the Khushalsar/Gilsar Lake Rejuvenation
5. LDA on maintenance of Dal Lake, specifically management of a transfer station at the lake
6. J&K Bank for maintenance of Hazuribagh Iqbal Park
7. SKUAST and Animal Welfare Board of India for Sterilisation of Stray Dogs

RESULT: 27

SCORE: 4

Recommendations to Maintain Score

Presently, SMC primarily works on projects that indirectly impact biodiversity conservation i.e., improving sanitation and waste disposal. The city can further reinforce and maintain this high score by instating partnerships that directly benefit biodiversity conservation and related environmental issues such as removal of invasive alien plants within areas like Zabarwan, Hari Parbat; enhancing its green-blue networks, ecological restoration of Dal Lake through community and other NGO partnerships, promotion of urban gardens with native species, among others. Partnerships with UT agriculture, horticulture and animal husbandry departments can also help to maintain this score. The city should also look into to undertaking collaborative work with the academic institutions like University of Kashmir, SKUAST etc.

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

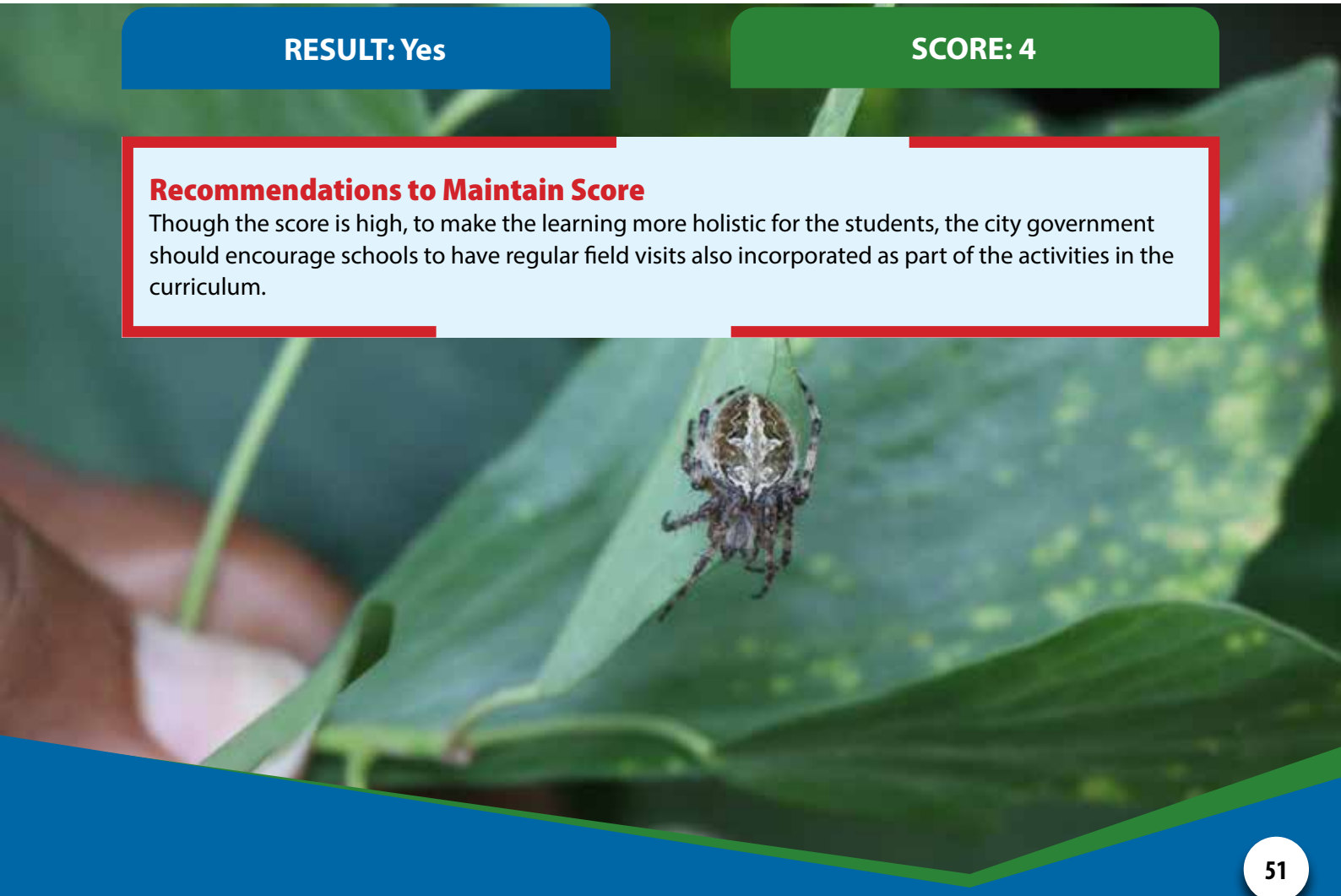
City Data
The schools within the city follow the curriculum of various boards such as the J&K State Board, Central Board of Secondary Education (CBSE) and Indian Certificate of Secondary Education (ICSE). All these boards have included biodiversity and nature awareness in various subjects like Biology, Geography and Environmental Sciences. Therefore, biodiversity or elements of it are included in the school curriculum. Eco-clubs under National Green Corps Programme which aim at building cadres of young students working towards environmental conservation are also registered in the city.

RESULT: Yes

SCORE: 4

Recommendations to Maintain Score

Though the score is high, to make the learning more holistic for the students, the city government should encourage schools to have regular field visits also incorporated as part of the activities in the curriculum.



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

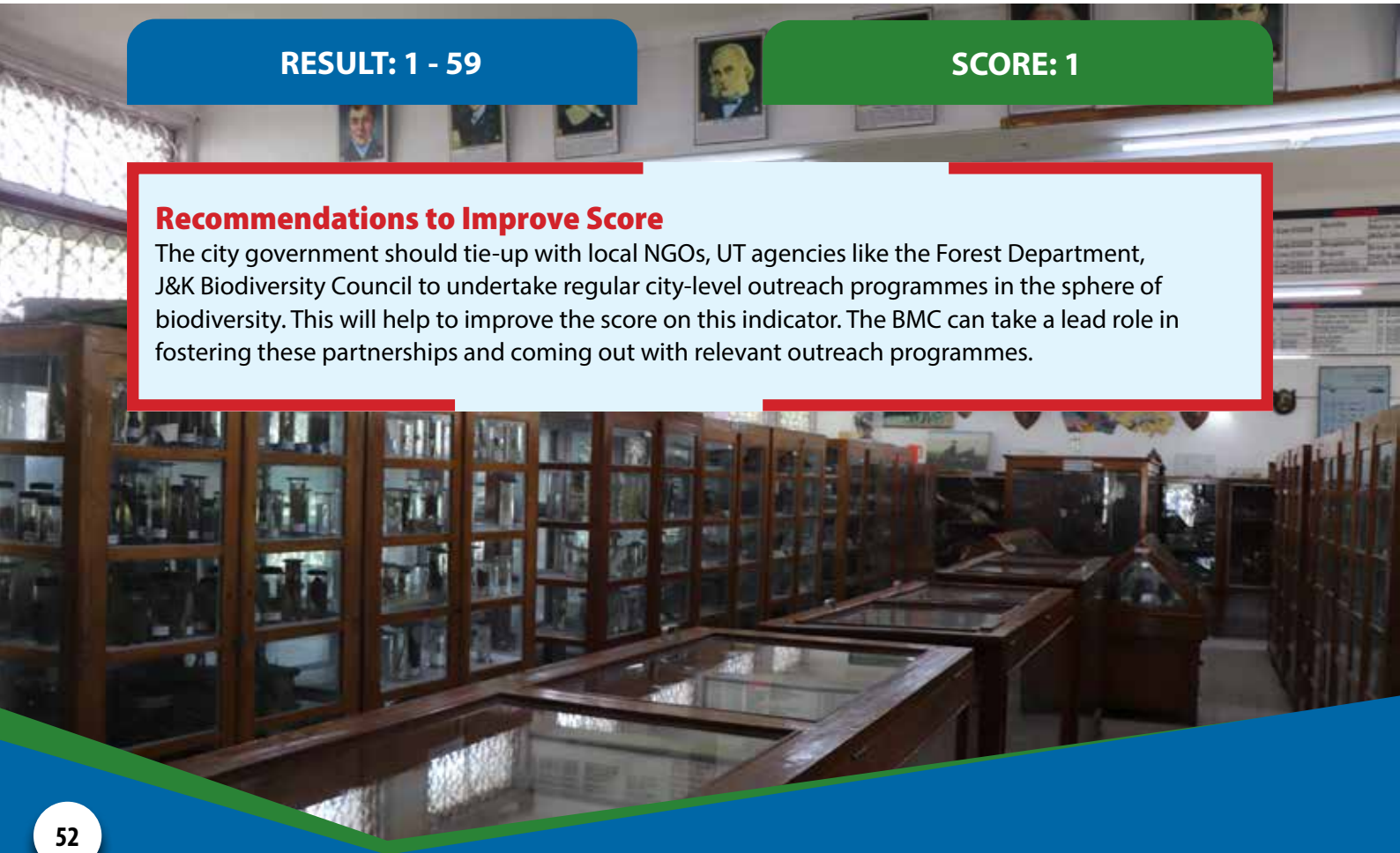
Methodology

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

The major outreach programmes instituted by Srinagar Municipal Corporation include the 6R Campaign under which activities like a Marathon called Run for Polythene Free Srinagar, Battle of the Bands, Exhibition on Polythene Alternatives, Awareness cum control Programs through anti-polythene check posts, Daily awareness through print and electronic media/hoardings, Awareness through Sundays from Srinagar clean up drives, Awareness through Market Associations, Awareness through jingles and PA systems in addition to other Swachh Bharat Mission awareness programmes that make citizens aware of the adverse impacts of improper waste management on the local ecosystem. Plantation Drives and Awareness programmes are also held through the year, encouraging public participation.



RESULT: 1 - 59

SCORE: 1

Recommendations to Improve Score

The city government should tie-up with local NGOs, UT agencies like the Forest Department, J&K Biodiversity Council to undertake regular city-level outreach programmes in the sphere of biodiversity. This will help to improve the score on this indicator. The BMC can take a lead role in fostering these partnerships and coming out with relevant outreach programmes.

Table 4: Summary of the Points

	Maximum Score	Srinagar's Score
Component – Native Biodiversity		
Indicators		
1. Proportion of Natural Areas in the City	4 points	3 points
2. Connectivity Measures	4 points	4 points
3. Native Biodiversity in Built Up Areas (Bird Species)	4 points	3 points
4. Change in Number of Vascular Plant Species	4 points	NA
5. Change in Number of Bird Species	4 points	NA
6. Change in Number of Freshwater fish Species	4 points	NA
7. Change in Number of Species (Odonates)	4 points	NA
8. Change in Number of Species (Amphibians)	4 points	NA
9. Proportion of Protected Natural Areas	4 points	1 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	4 points
12. Climate Regulation: Carbon Storage and Cooling Effect of Vegetation	4 points	2 points
13. Recreation and Education: Area of Parks with Natural Areas	4 points	1 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	4 points
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	2 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	4 points
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	1 point
Component – Native Biodiversity in the City (Sub-total for indicators 1-10)*		**14 / 20 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)		**24 / 36 points**
Total		**45 / 72 points**

*A total of 20 points for this section is only considered since this is the baseline assessment and hence the indicators 4-8 cannot be considered.

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ANNEXURE 1 – CALCULATION OF CONNECTIVITY AREAS

Table 5: Number and Area of patches used in the calculation of Indicator 2

Patch ID	Area in ha (patch size)	Area * Area (sq. ha.)
A01	3727.72	13895896.40
A02	78.45	6154.15
A03	60.75	3690.88
A04	55.66	3097.82
A05	43.79	1917.37
A06	37.42	1400.59
A07	35.13	1234.05
A08	34.55	1193.81
A09	34.36	1180.54
A10	33.13	1097.48
A11	27.03	730.44
A12	18.70	349.63
A13	13.78	189.80
A14	13.16	173.22
A15	12.97	168.33
A16	12.86	165.45
A17	10.65	113.42
A18	7.52	56.60
A19	7.50	56.23
A20	5.54	30.71
A21	5.04	25.36
A22	4.47	20.02
A23	4.22	17.81
A24	4.11	16.90
A25	3.73	13.91
A26	3.72	13.81

Patch ID	Area in ha (patch size)	Area * Area (sq. ha.)
A27	3.70	13.67
A28	3.69	13.62
A29	2.85	8.11
A30	2.61	6.83
A31	2.48	6.17
A32	2.39	5.72
A33	2.37	5.63
A34	2.09	4.35
A35	2.07	4.30
A36	2.04	4.17
A37	1.97	3.87
A38	1.88	3.54
A39	1.47	2.17
A40	1.41	1.98
A41	1.40	1.96
A42	1.20	1.45
A43	1.18	1.38
A44	1.15	1.33
A45	0.98	0.95
A46	0.97	0.94
A47	0.96	0.93
A48	0.96	0.91
A49	0.95	0.91
A50	0.95	0.91
A51	0.94	0.88
A52	0.90	0.80

Patch ID	Area in ha (patch size)	Area * Area (sq. ha.)
A53	0.84	0.70
A54	0.83	0.68
A55	0.74	0.55
A56	0.71	0.51
A57	0.71	0.50
A58	0.67	0.45
A59	0.66	0.43
A60	0.62	0.39
A61	0.61	0.38
A62	0.61	0.37
A63	0.57	0.33
A64	0.54	0.29
A65	0.53	0.28
A66	0.49	0.24
A67	0.49	0.24
A68	0.48	0.23
A69	0.48	0.23
A70	0.46	0.22
A71	0.44	0.19

Patch ID	Area in ha (patch size)	Area * Area (sq. ha.)
A72	0.43	0.19
A73	0.43	0.19
A74	0.43	0.18
A75	0.41	0.17
A76	0.40	0.16
A77	0.37	0.14
A78	0.36	0.13
A79	0.35	0.12
A80	0.31	0.10
A81	0.31	0.09
A82	0.29	0.08
A83	0.21	0.04
A84	0.21	0.04
A85	0.20	0.04
A86	0.19	0.04
A87	0.14	0.02
A88	0.12	0.01
Total	**4358.16**	**13919111.16**

ANNEXURE 2 – LIST OF SPECIES

Table 6: Species list used in the calculation of Indicators 3 and 5

Family	Common Name	Scientific Name	Status	Urban
WaterFowl				
Anatidae	Northern Shoveler	*Spatula clypeata*	Migrant	
Anatidae	Mallard	*Anas platyrhynchos*	Migrant	
Anatidae	Tufted Duck	*Aythya fuligula*	Migrant	
Anatidae	Gadwall	*Mareca strepera*	Migrant	
Anatidae	Common Pochard	*Aythya ferina*	Migrant	
Anatidae	Ferruginous Duck	*Aythya nyroca*	Migrant	
Anatidae	Northern Pintail	*Anas acuta*	Migrant	
Anatidae	Garganey	*Spatula querquedula*	Migrant	
Anatidae	Green-winged Teal	*Anas crecca*	Migrant	
Anatidae	Red-crested Pochard	*Netta rufina*	Migrant	
Anatidae	Eurasian Wigeon	*Mareca penelope*	Migrant	
Grebes				
Podicipedidae	Little Grebe	*Tachybaptus ruficollis*	Migrant	
Pigeons and Doves				
Columbidae	Rock Pigeon	*Columba livia*	Resident	Yes
Columbidae	Oriental Turtle-Dove	*Streptopelia orientalis*	Migrant	No
Columbidae	Eurasian Collared-Dove	*Streptopelia decaocto*	Migrant	No
Columbidae	Spotted Dove	*Spilopelia chinensis*	Resident	Yes
Cuckoos				
Cuculidae	Asian Koel	*Eudynamys scolopaceus*	Migrant	
Cuculidae	Common Cuckoo	*Cuculus canorus*	Migrant	
Cuculidae	Himalayan Cuckoo	*Cuculus saturatus*	Migrant	
Cuculidae	Pied Cuckoo	*Clamator jacobinus*	Migrant	
Swifts				
Apodidae	Common Swift	*Apus apus*	Migrant	
Rails, Gallinules, and Allies				
Rallidae	Eurasian Moorhen	*Gallinula chloropus*	Resident	Yes
Rallidae	Eurasian Coot	*Fulica atra*	Resident	Yes
Rallidae	Gray-headed Swamphen	*Porphyrio poliocephalus*	Resident	Yes
Rallidae	Ruddy-breasted Crake	*Porzana fusca*	Resident	Yes
Rallidae	Water Rail	*Rallus aquaticus*	Migrant	
Shorebirds				
Charadriidae	Red-wattled Lapwing	*Vanellus indicus*	Resident	Yes
Jacanidae	Pheasant-tailed Jacana	*Hydrophasianus chirurgus*	Resident	No
Scolopacidae	Common Sandpiper	*Actitis hypoleucos*	Migrant	
Scolopacidae	Green Sandpiper	*Tringa ochropus*	Migrant	
Scolopacidae	Eurasian Curlew	*Numenius arquata*	Migrant	
Recurvirostridae	Black-winged Stilt	*Himantopus himantopus*	Migrant	

Family	Common Name	Scientific Name	Status	Urban
Gulls, Terns, and Skimmers				
Laridae	Black-headed Gull	*Chroicocephalus ridibundus*	Migrant	
Laridae	Brown-headed Gull	*Chroicocephalus brunnicephalus*	Migrant	
Laridae	Whiskered Tern	*Chlidonias hybrida*	Migrant	
Cormorants and Anhingas				
Phalacrocoracidae	Great Cormorant	*Phalacrocorax carbo*	Migrant	
Herons, Ibis, and Allies				
Ardeidae	Gray Heron	*Ardea cinerea*	Resident	No
Ardeidae	Little Egret	*Egretta garzetta*	Resident	Yes
Ardeidae	Indian Pond-Heron	*Ardeola grayii*	Resident	Yes
Ardeidae	Black-crowned Night-Heron	*Nycticorax nycticorax*	Resident	Yes
Ardeidae	Little Bittern	*Ixobrychus minutus*	Migrant	
Ardeidae	Great Egret	*Ardea alba*	Resident	Yes
Ardeidae	Cattle Egret	*Bubulcus ibis*	Resident	Yes
Threskiornithidae	Glossy Ibis	*Plegadis falcinellus*	Migrant	
Vultures, Hawks, and Allies				
Pandionidae	Osprey	*Pandion haliaetus*	Migrant	
Accipitridae	Hen Harrier	*Circus cyaneus*	Migrant	
Accipitridae	Black Kite	*Milvus migrans*	Resident	Yes
Accipitridae	Long-legged Buzzard	*Buteo rufinus*	Resident	Yes
Accipitridae	Pallas's Fish-Eagle	*Haliaeetus leucoryphus*	Resident	No
Accipitridae	Bonelli's Eagle	*Aquila fasciata*	Migrant	
Accipitridae	Shikra	*Accipiter badius*	Resident	Yes
Accipitridae	Eurasian Sparrowhawk	*Accipiter nisus*	Resident	Yes
Accipitridae	Himalayan Buzzard	*Buteo refectus*	Migrant	Yes
Accipitridae	Mountain Hawk-Eagle	*Nisaetus nipalensis*	Resident	No
Accipitridae	Eurasian Marsh-Harrier	*Circus aeruginosus*	Migrant	
Owls				
Strigidae	Collared Owlet	*Glaucidium brodiei*	Resident	No
Strigidae	Long-eared Owl	*Asio otus*	Migrant	
Strigidae	Tawny Owl	*Strix aluco*	Resident	Yes
Tytonidae	Barn Owl	*Tyto alba*	Resident	Yes
Hoopoes				
Upupidae	Eurasian Hoopoe	*Upupa epops*	Migrant	
Kingfishers				
Alcedinidae	White-throated Kingfisher	*Halcyon smyrnensis*	Resident	Yes
Alcedinidae	Pied Kingfisher	*Ceryle rudis*	Resident	No
Alcedinidae	Common Kingfisher	*Alcedo atthis*	Resident	Yes
Alcedinidae	Crested Kingfisher	*Megaceryle lugubris*	Resident	No
Bee-eaters, Rollers, and Allies				
Coraciidae	European Roller	*Coracias garrulus*	Migrant	
Meropidae	European Bee-eater	*Merops apiaster*	Migrant	
Barbets and Toucans				
Megalaimidae	Great Barbet	*Psilopogon virens*	Resident	Yes
Woodpeckers				

Family	Common Name	Scientific Name	Status	Urban
Picidae	Brown-fronted Woodpecker	*Dendrocoptes auriceps*	Resident	Yes
Picidae	Eurasian Wryneck	*Jynx torquilla*	Migrant	
Picidae	Himalayan Woodpecker	*Dendrocopos himalayensis*	Resident	No
Picidae	Scaly-bellied Woodpecker	*Picus squamatus*	Resident	No
Picidae	Speckled Piculet	*Picumnus innominatus*	Resident	No
Falcons and Caracaras				
Falconidae	Eurasian Kestrel	*Falco tinnunculus*	Resident	Yes
Falconidae	Eurasian Hobby	*Falco subbuteo*	Migrant	
Falconidae	Peregrine Falcon	*Falco peregrinus*	Resident	Yes
Parrots, Parakeets, and Allies				
Psittaculidae	Alexandrine Parakeet	*Psittacula eupatria*	Resident	Yes
Psittaculidae	Rose-ringed Parakeet	*Psittacula krameri*	Resident	Yes
Cuckooshrikes				
Campephagidae	Long-tailed Minivet	*Pericrocotus ethologus*	Migrant	
Old World Orioles				
Oriolidae	Indian Golden Oriole	*Oriolus kundoo*	Migrant	
Drongos				
Dicruridae	Ashy Drongo	*Dicrurus leucophaeus*	Migrant	
Shrikes				
Laniidae	Long-tailed Shrike	*Lanius schach*	Resident	Yes
Jays, Magpies, Crows, and Ravens				
Corvidae	Large-billed Crow	*Corvus macrorhynchos*	Resident	Yes
Corvidae	Eurasian Jackdaw	*Coloeus monedula*	Resident	Yes
Corvidae	Yellow-billed Blue-Magpie	*Urocissa flavirostris*	Resident	No
Corvidae	House Crow	*Corvus splendens*	Resident	Yes
Corvidae	Black-headed Jay	*Garrulus lanceolatus*	Resident	No
Tits, Chickadees, and Titmice				
Paridae	Fire-capped Tit	*Cephalopyrus flammiceps*	Migrant	
Paridae	Coal Tit	*Periparus ater*	Resident	Yes
Paridae	Rufous-naped Tit	*Periparus rufonuchalis*	Resident	No
Paridae	Green-backed Tit	*Parus monticolus*	Resident	Yes
Paridae	Cinereous Tit	*Parus cinereus*	Resident	Yes
Reedwarblers and Allies				
Acrocephalidae	Clamorous Reed Warbler	*Acrocephalus stentoreus*	Migrant	
Martins and Swallows				
Hirundinidae	Barn Swallow	*Hirundo rustica*	Migrant	
Bulbuls				
Pycnonotidae	Himalayan Bulbul	*Pycnonotus leucogenys*	Resident	Yes
Pycnonotidae	Black Bulbul	*Hypsipetes leucocephalus*	Resident	Yes
Leaf Warblers				
Phylloscopidae	Lemon-rumped Warbler	*Phylloscopus chloronotus*	Migrant	
Phylloscopidae	Tickell's Leaf Warbler	*Phylloscopus affinis*	Migrant	
Phylloscopidae	Common Chiffchaff	*Phylloscopus collybita*	Migrant	
Phylloscopidae	Western Crowned Warbler	*Phylloscopus occipitalis*	Migrant	
Phylloscopidae	Gray-hooded Warbler	*Phylloscopus xanthoschistos*	Resident	No
Phylloscopidae	Tytler's Leaf Warbler	*Phylloscopus tytleri*	Migrant	

Family	Common Name	Scientific Name	Status	Urban
Phylloscopidae	Sulphur-bellied Warbler	*Phylloscopus griseolus*	Migrant	
Phylloscopidae	Greenish Warbler	*Phylloscopus trochiloides*	Migrant	
Bush Warblers and Allies				
Cettiidae	Brownish-flanked Bush Warbler	*Horornis fortipes*	Migrant	
Long-tailed Tits and Bushtit				
Aegithalidae	White-throated Tit	*Aegithalos niveogularis*	Resident	No
Sylviid Warblers				
Sylviidae	Lesser Whitethroat	*Curruca curruca*	Migrant	
White-eyes, Yuhinas, and Allies				
Zosteropidae	Indian White-eye	*Zosterops palpebrosus*	Resident	Yes
Laughingthrushes and Allies				
Leiothrichidae	Streaked Laughingthrush	*Trochalopteron lineatum*	Resident	Yes
Leiothrichidae	Variegated Laughingthrush	*Trochalopteron variegatum*	Resident	No
Kinglets				
Regulidae	Goldcrest	*Regulus regulus*	Resident	No
Treecreepers				
Certhiidae	Bar-tailed Treecreeper	*Certhia himalayana*	Resident	No
Wrens				
Troglodytidae	Eurasian Wren	*Troglodytes troglodytes*	Resident	Yes
Dippers				
Cinclidae	Brown Dipper	*Cinclus pallasii*	Resident	No
Starlings and Mynas				
Sturnidae	Common Myna	*Acridotheres tristis*	Resident	Yes
Sturnidae	European Starling	*Sturnus vulgaris*	Migrant	
Sturnidae	Rosy Starling	*Pastor roseus*	Migrant	
Thrushes				
Turdidae	Scaly Thrush	*Zoothera dauma*	Resident	No
Turdidae	Gray-winged Blackbird	*Turdus boulboul*	Resident	Yes
Turdidae	Tickell's Thrush	*Turdus unicolor*	Migrant	
Turdidae	Chestnut Thrush	*Turdus rubrocanus*	Resident	No
Turdidae	Black-throated Thrush	*Turdus atrogularis*	Migrant	
Turdidae	Mistle Thrush	*Turdus viscivorus*	Resident	No
Old World Flycatchers				
Muscicapidae	Bluethroat	*Luscinia svecica*	Migrant	
Muscicapidae	Blue Whistling-Thrush	*Myophonus caeruleu*	Resident	Yes
Muscicapidae	Spotted Forktail	*Enicurus maculatus*	Resident	No
Muscicapidae	Slaty-blue Flycatcher	*Ficedula tricolor*	Migrant	
Muscicapidae	Ultramarine Flycatcher	*Ficedula superciliaris*	Migrant	
Muscicapidae	White-capped Redstart	*Chaimarrornis leucocephalus*	Resident	No
Muscicapidae	Blue-capped Redstart	*Phoenicurus caeruleocephala*	Resident	No
Muscicapidae	Blue Rock-Thrush	*Monticola solitarius*	Migrant	
Muscicapidae	Siberian Stonechat	*Saxicola maurus*	Migrant	
Muscicapidae	Gray Bushchat	*Saxicola ferreus*	Resident	No
Muscicapidae	Pied Bushchat	*Saxicola caprata*	Migrant	

Family	Common Name	Scientific Name	Status	Urban
Muscicapidae	Chestnut-bellied Rock-Thrush	*Monticola rufiventris*	Resident	Yes
Muscicapidae	Verditer Flycatcher	*Eumyias thalassinus*	Migrant	
Muscicapidae	Indian Blue Robin	*Larvivora brunnea*	Migrant	
Muscicapidae	Himalayan Rubythroat	*Calliope pectoralis*	Migrant	
Muscicapidae	Himalayan Bluetail	*Tarsiger rufilatus*	Resident	No
Muscicapidae	Rusty-tailed Flycatcher	*Ficedula ruficauda*	Migrant	
Muscicapidae	Kashmir Flycatcher	*Ficedula subrubra*	Migrant	
Muscicapidae	Blue-fronted Redstart	*Phoenicurus frontalis*	Migrant	
Muscicapidae	Plumbeous Redstart	*Rhyacornis fuliginosa*	Resident	Yes
Muscicapidae	Blue-capped Rock-Thrush	*Monticola cinclorhynchus*	Migrant	
Muscicipidae	Rufous-bellied Niltava	*Niltava sundara*	Migrant	
Accentors				
Prunellidae	Rufous-breasted Accentor	*Prunella strophiata*	Resident	No
Prunellidae	Black-throated Accentor	*Prunella atrogularis*	Migrant	
Old World Sparrows				
Passeridae	House Sparrow	*Passer domesticus*	Resident	Yes
Passeridae	Russet Sparrow	*Passer cinnamomeus*	Resident	Yes
Wagtails and Pipits				
Monarchidae	Indian Paradise-Flycatcher	*Terpsiphone paradisi*	Migrant	
Motacillidae	Gray Wagtail	*Motacilla cinerea*	Migrant	
Motacillidae	White Wagtail	*Motacilla alba*	Migrant	
Motacillidae	Tree Pipit	*Anthus trivialis*	Migrant	
Motacillidae	Citrine Wagtail	*Motacilla citreola*	Migrant	
Motacillidae	Rosy Pipit	*Anthus roseatus*	Migrant	
Motacillidae	Olive-backed Pipit	*Anthus hodgsoni*	Migrant	
Motacillidae	Water Pipit	*Anthus spinoletta*	Migrant	
Finches, Euphonias, and Allies				
Fringillidae	Black-and-yellow Grosbeak	*Mycerobas icterioides*	Resident	No
Fringillidae	Common Rosefinch	*Carpodacus erythrinus*	Migrant	
Fringillidae	Pink-browed Rosefinch	*Carpodacus rodochroa*	Migrant	
Fringillidae	Orange Bullfinch	*Pyrrhula aurantiaca*	Resident	No
Fringillidae	Yellow-breasted Greenfinch	*Chloris spinoides*	Migrant	
Fringillidae	European Goldfinch	*Carduelis carduelis*	Migrant	
Fringillidae	Brambling	*Fringilla montifringilla*	Migrant	
Old World Buntings				
Emberizida	Chestnut-eared Bunting	*Emberiza fucata*	Resident	Yes
Emberizidae	Rock Bunting	*Emberiza cia*	Resident	Yes
Emberizidae	White-capped Bunting	*Emberiza stewarti*	Migrant	
Emberizidae	Pine Bunting	*Emberiza leucocephalos*	Migrant	

Table 7: Plants of Srinagar used in the calculation of Indicator 4 and 10

Family	Scientific Name	Status
Caprifoliaceae	*Abelia grandiflora*	Introduced
Pinaceae	*Abies pindrow*	Native
Malvaceae	*Abutilon theophrasti*	Introduced
Sapindaceae	*Acer caesium*	Native
Sapindaceae	*Acer palmatum*	Introduced
Sapindaceae	*Acer negundo*	Introduced
Asteraceae	*Achillea millefolium*	Native
Amaranthaceae	*Achyranthes aspera*	Native
Acoraceae	*Acorus calamus*	Native
Ranunculaceae	*Actaea spicata*	Native
Ranunculaceae	*Adonis aestivalis*	Native
Poaceae	*Aegilops tauschii*	Native
Fabaceae	*Aeschynomene indica*	Native
Sapindaceae	*Aesculus indica*	Native
Asteraceae	*Ageratum conyzoides*	Introduced
Rosaceae	*Agrimonia eupatoria*	Introduced
Rosaceae	*Agrimonia pilosa*	Native
Poaceae	*Agrostis stolonifera*	Native
Simaroubaceae	*Ailanthus altissima*	Invasive
Fabaceae	*Albizia julibrissin*	Native
Malvaceae	*Alcea lavateriflora*	Introduced
Malvaceae	*Alcea rosea*	Invasive
Amaryllidaceae	*Allium cepa*	Introduced
Amaryllidaceae	*Allium sativum*	Introduced
Amaryllidaceae	*Allium rosenbachianum*	Introduced
Betulaceae	*Alnus nitida*	Native
Poaceae	*Alopecurus aequalis*	Invasive
Poaceae	*Alopecurus arundinaceus*	Invasive
Amaranthaceae	*Alternanthera caracasana*	Introduced
Amaranthaceae	*Alternanthera sessilis*	Invasive
Brassicaceae	*Alyssum desertorum*	Native
Amaranthaceae	*Amaranthus blitum*	Introduced
Amaranthaae	*Amaranthus caudatus*	Invasive
Amaranthaceae	*Amaranthus hypochondriacus*	Introduced
Amaranthaceae	*Amaranthus hybridus*	Invasive
Amaranthaceae	*Amaranthus viridis*	Introduced
Amaranthaceae	*Amaranthus spinosus*	Invasive
Amaranthaceae	*Amaranthus graecizans*	Native
Lythraceae	*Ammannia auriculata*	Invasive
Apiaceae	*Ammi majus*	Introduced
Fabaceae	*Amorpha fruticosa*	Introduced
Primulaceae	*Anagallis arvensis*	Native
Boraginaceae	*Anchusa azurea*	Native
Boraginaceae	*Anchusa arvensis*	Native
Ranunculaceae	*Anemone coronaria*	Introduced
Ranunculaceae	*Anemone obtusiloba*	Native

Family	Scientific Name	Status
Ranunculaceae	*Anemone falconeri*	Native
Ranunculaceae	*Anemone tschernjaewii*	Native
Apiaceae	*Angelica glauca*	Native
Asteraceae	*Anthemis cotula*	Invasive
Plantaginaceae	*Antirrhinum majus*	Introduced
Ranunculaceae	*Aquilegia fragrans*	Native
Ranunculaceae	*Aquilegia vulgaris*	Introduced
Brassicaceae	*Arabidopsis thaliana*	Native
Brassicaceae	*Arabis amplexicaulis*	Native
Brassicaceae	*Arabis nova*	Introduced
Brassicaceae	*Arabis pterosperma*	Native
Araliaceae	*Aralia cashemirica*	Native
Araliaceae	*Arctium lappa*	Native
Caryophyllaceae	*Arenaria neelgherrensis*	Native
Caryophyllaceae	*Arenaria serpyllifolia*	Native
Araceae	*Arisaema flavum*	Native
Araceae	*Arisaema jacquemontii*	Native
Boraginaceae	*Arnebia benthami*	Native
Asteraceae	*Artemisia absinthium*	Invasive
Asteraceae	*Artemisia dracunculus*	Native
Asteraceae	*Artemisia indica*	Native
Asteraceae	*Artemisia japonica*	Native
Asteraceae	*Artemisia parviflora*	Native
Asteraceae	*Artemisia scoparia*	Native
Asteraceae	*Artemisia tournefortiana*	Native
Asteraceae	*Artemisia vulgaris*	Native
Poaceae	*Arthraxon prionodes*	Native
Poaceae	*Arundo donax*	Native
Asparagaceae	*Asparagus filicinus*	Native
Asparagaceae	*Asparagus officinalis*	Introduced
Boraginaceae	*Asperugo procumbens*	Native
Rubiaceae	*Asperula cynanchica*	Introduced
Fabaceae	*Astragalus grahamianus*	Native
Campanulaceae	*Asyneuma thomsonii*	Native
Solanaceae	*Atropa acuminata*	Native
Garryaceae	*Aucuba japonica*	Introduced
Poaceae	*Avena fatua*	Native
Poaceae	*Avena sativa*	Introduced
Brassicaceae	*Barbarea intermedia*	Native
Brassicaceae	*Barbarea vulgaris*	Native
Amaranthaceae	*Bassia scoparia*	Introduced
Asteraceae	*Bellis perennis*	Introduced
Berberidaceae	*Berberis aquifolium*	Introduced
Berberidaceae	*Berberis lycium*	Native
Saxifragaceae	*Bergenia ciliata*	Native
Elatinaceae	*Bergia ammannioides*	Native

Family	Scientific Name	Status
Apiaceae	*Berula erecta*	Native
Amaranthaceae	*Beta vulgaris*	Introduced
Asteraceae	*Bidens bipinnata*	Introduced
Asteraceae	*Bidens biternata*	Native
Asteraceae	*Bidens cernua*	Native
Asteraceae	*Bidens tripartita*	Native
Poaceae	*Bothriochloa ischaemum*	Native
Poaceae	*Bothriochloa pertusa*	Native
Brassicaceae	*Brassica juncea*	Introduced
Brassicaceae	*Brassica napus*	Introduced
Brassicaceae	*Brassica nigra*	Native
Brassicaceae	*Brassica oleracea*	Introduced
Brassicaceae	*Brassica rapa*	Introduced
Poaceae	*Bromus arvensis*	Introduced
Poaceae	*Bromus catharticus*	Introduced
Poaceae	*Bromus inermis*	Native
Poaceae	*Bromus japonicus*	Native
Poaceae	*Bromus mollis*	Introduced
Scrophulariaceae	*Buddleja alternifolia*	Introduced
Scrophulariaceae	*Buddleja davidii*	Introduced
Scrophulariaceae	*Buddleja parviflora*	Introduced
Boraginaceae	*Buglossoides arvensis*	Native
Araliaceae	*Buxus sempervirens*	Introduced
Asteraceae	*Calendula officinalis*	Introduced
Plantaginaceae	*Callitriche palustris*	Native
Ranunculaceae	*Caltha palustris*	Native
Theaceae	*Camellia japonica*	Introduced
Campanulaceae	*Campanula medium*	Introduced
Bignoniaceae	*Campsis grandiflora*	Introduced
Bignoniaceae	*Campsis radicans*	Introduced
Fabaceae	*Campylotropis stenocarpa*	Native
Cannaceae	*Canna indica*	Introduced
Cannabaceae	*Cannabis sativa*	Introduced
Brassicaceae	*Capsella bursa-pastoris*	Native
Solanaceae	*Capsicum annuum*	Introduced
Brassicaceae	*Cardamine flexuosa*	Introduced
Brassicaceae	*Cardamine hirsuta*	Native
Brassicaceae	*Cardamine impatiens*	Native
Asteraceae	*Carduus edelbergii*	Native
Asteraceae	*Carduus onopordioides*	Introduced
Asteraceae	*Carduus nutans*	Introduced
Cyperaceae	*Carex alta*	Introduced
Cyperaceae	*Carex curaica*	Introduced
Cyperaceae	*Carex diluta*	Native
Cyperaceae	*Carex dimorpholepis*	Introduced
Cyperaceae	*Carex fedia*	Introduced

Family	Scientific Name	Status
Cyperaceae	*Carex wallichiana*	Native
Asteraceae	*Carpesium abrotanoides*	Native
Asteraceae	*Carpesium cernuum*	Native
Asteraceae	*Carpesium nepalense*	Native
Asteraceae	*Carthamus lanatus*	Invasive
Fagaceae	*Castanea sativa*	Introduced
Bignoniaceae	*Catalpa bignonioides*	Introduced
Bignoniaceae	*Catalpa speciosa*	Introduced
Poaceae	*Catapodium rigidum*	Introduced
Pinaceae	*Cedrus deodara*	Native
Amaranthaceae	*Celosia argentea*	Introduced
Cannabaceae	*Celtis australis*	Introduced
Asteraceae	*Centaurea iberica*	Native
Gentianaceae	*Centaurium pulchellum*	Native
Caryophyllaceae	*Cerastium arvense*	Introduced
Caryophyllaceae	*Cerastium tomentosum*	Introduced
Ceratophyllaceae	*Ceratophyllum demersum*	Introduced
Fabaceae	*Cercis siliquastrum*	Introduced
Rosaceae	*Chaenomeles speciosa*	Introduced
Rosaceae	*Chaenomeles japonica*	Introduced
Rosaceae	*Chaenomeles lagenaria*	Introduced
Fabaceae	*Chamaecrista mimosoides*	Native
Amaranthaceae	*Chenopodium album*	Invasive
Amaranthaceae	*Chenopodium glaucum*	Native
Amaranthaceae	*Chenopodium hybridum*	Introduced
Amaranthaceae	*Chenopodium murale*	Native
Calycanthaceae	*Chimonanthus praecox*	Introduced
Asteraceae	*Chondrilla graminea*	Native
Brassicaceae	*Chorispora tenella*	Native
Euphorbiaceae	*Chrozophora tinctoria*	Native
Asteraceae	*Chrysanthemum maximum*	Introduced
Asteraceae	*Chrysanthemum morifolium*	Introduced
Asteraceae	*Cichorium intybus*	Native
Asteraceae	*Cirsium arvense*	Native
Asteraceae	*Cirsium wallichii*	Native
Asteraceae	*Cirsium vulgare*	Native
Cucurbitaceae	*Citrullus lanatus*	Introduced
Onagraceae	*Clarkia amoena*	Introduced
Onagraceae	*Clarkia pulchella*	Introduced
Ranunculaceae	*Clematis gouriana*	Native
Ranunculaceae	*Clematis grata*	Native
Brassicaceae	*Clematis jackmanii*	Introduced
Cleomaceae	*Cleome spinosa*	Introduced
Lamiaceae	*Clinopodium vulgare*	Native
Lamiaceae	*Clinopodium umbrosum*	Native
Colchicaceae	*Colchicum luteum*	Native

Family	Scientific Name	Status
Apiaceae	*Conium maculatum*	Invasive
Ranunculaceae	*Consolida ajacis*	Native
Orchidaceae	*Convallaria majalis*	Introduced
Convolvulaceae	*Convolvulus arvensis*	Native
Asteraceae	*Coreopsis grandiflora*	Introduced
Apiaceae	*Coriandrum sativum*	Introduced
Coriariaceae	*Coriaria nepalensis*	Native
Brassicaceae	*Coronopus didymus*	Introduced
Papaveraceae	*Corydalis hookeri*	Introduced
Papaveraceae	*Corydalis diphylla*	Native
Asteraceae	*Cosmos bipinnatus*	Introduced
Asteraceae	*Cousinia microcarpa*	Native
Rosaceae	*Crataegus laevigata*	Introduced
Rosaceae	*Crataegus songarica*	Native
Asteraceae	*Crepis sancta*	Native
Iridaceae	*Crocosmia aurea*	Introduced
Iridaceae	*Crocus sativus*	Introduced
Iridaceae	*Crocus vernus*	Introduced
Cupressaceae	*Cryptomeria japonica*	Introduced
Cucurbitaceae	*Cucumis melo*	Introduced
Cupressaceae	*Cupressus cashmeriana*	Introduced
Cupressaceae	*Cupressus lusitanica*	Introduced
Cupressaceae	*Cupressus sempervirens*	Introduced
Cupressaceae	*Cupressus torulosa*	Native
Convolvulaceae	*Cuscuta europaea*	Native
Asteraceae	*Cyanus segetum*	Introduced
Rosaceae	*Cydonia oblonga*	Introduced
Plantaginaceae	*Cymbalaria muralis*	Introduced
Apocynaceae	*Cynanchum jacquemontianum*	Native
Asteraceae	*Cynara scolymus*	Introduced
Asteraceae	*Cynara cardunculus*	Introduced
Poaceae	*Cynodon dactylon*	Native
Boraginaceae	*Cynoglossum lanceolatum*	Native
Boraginaceae	*Cynoglossum wallichii*	Native
Cyperaceae	*Cyperus difformis*	Native
Cyperaceae	*Cyperus glomeratus*	Native
Cyperaceae	*Cyperus iria*	Native
Cyperaceae	*Cyperus rotundus*	Native
Fabaceae	*Cytisus scoparius*	Introduced
Poaceae	*Dactylis glomerata*	Native
Orchidaceae	*Dactylorhiza incarnata*	Introduced
Asteraceae	*Dahlia coccinea*	Introduced
Asteraceae	*Dahlia pinnata*	Introduced
Thymelaeaceae	*Daphne oleoides*	Introduced
Datiscaceae	*Datisca cannabina*	Native
Solanaceae	*Datura innoxia*	Introduced

Family	Scientific Name	Status
Solanaceae	*Datura stramonium*	Invasive
Apiaceae	*Daucus carota*	Invasive
Ranunculaceae	*Delphinium roylei*	Native
Orchidaceae	*Dendrobium aphyllum*	Introduced
Orchidaceae	*Dendrobium falconeri*	Introduced
Brassicaceae	*Descurainia sophia*	Native
Fabaceae	*Desmodium elegans*	Native
Hydrangeaceae	*Deutzia gracilis*	Introduced
Caryophyllaceae	*Dianthus barbatus*	Introduced
Caryophyllaceae	*Dianthus caryophyllus*	Introduced
Caryophyllaceae	*Dianthus chinensis*	Introduced
Caryophyllaceae	*Dianthus plumarius*	Introduced
Caryophyllaceae	*Dianthus deltoides*	Introduced
Plantaginaceae	*Digitalis grandiflora*	Introduced
Plantaginaceae	*Digitalis purpurea*	Introduced
Poaceae	*Digitaria ciliaris*	Native
Poaceae	*Digitaria cruciata*	Native
Poaceae	*Digitaria nodosa*	Introduced
Dioscoriaceae	*Dioscorea deltoidea*	Native
Ebenaceae	*Diospyros lotus*	Native
Polypodiaceae	*Dryopteris barbigera*	Native
Rosaceae	*Duchesnea indica*	Native
Amaranthaceae	*Dysphania botrys*	Native
Amaranthaceae	*Dysphania ambrosioides*	Invasive
Poaceae	*Echinochloa colona*	Native
Poaceae	*Echinochloa crusgalli*	Native
Elaeagnaceae	*Elaeagnus umbellata*	Native
Elatinaceae	*Elatine triandra*	Introduced
Cyperaceae	*Eleocharis palustris*	Introduced
Cyperaceae	*Eleocharis uniglumis*	Introduced
Poaceae	*Eleusine indica*	invasive
Poaceae	*Elymus semicostatus*	Native
Onagraceae	*Epilobium hirsutum*	Native
Onagraceae	*Epilobium laxum*	Native
Equisetaceae	*Equisetum arvense*	Native
Poaceae	*Eragrostis minor*	Native
Poaceae	*Eragrostis pilosa*	Native
Ranunculaceae	*Eranthis hyemalis*	Introduced
Asphodelaceae	*Eremurus himalaicus*	Native
Asteraceae	*Erigeron bonariensis*	Introduced
Asteraceae	*Erigeron canadensis*	Invasive
Asteraceae	*Erigeron poncinsii*	Native
Asteraceae	*Erigeron rufescens*	Introduced
Rosaceae	*Eriobotrya japonica*	Introduced
Geraniaceae	*Erodium cicutarium*	Native
Brassicaceae	*Erophila verna*	Native

Family	Scientific Name	Status
Brassicaceae	*Eruca vesicaria*	Introduced
Apiaceae	*Eryngium billardieri*	Introduced
Apiaceae	*Eryngium caeruleum*	Native
Apiaceae	*Eryngium planum*	Introduced
Brassicaceae	*Erysimum hieraciifolium*	Introduced
Brassicaceae	*Erysimum perofskianum*	Introduced
Brassicaceae	*Erysimum altaicum*	Introduced
Brassicaceae	*Erysimum cheiri*	Introduced
Papaveraceae	*Eschscholzia californica*	Introduced
Brassicaceae	*Euclidium syriacum*	Native
Celastraceae	*Euonymus hamiltonianus*	Native
Celastraceae	*Euonymus japonicus*	Introduced
Euphorbiaceae	*Euphorbia hispida*	Native
Euphorbiaceae	*Euphorbia falcata*	Native
Euphorbiaceae	*Euphorbia helioscopia*	Native
Euphorbiaceae	*Euphorbia lathyris*	Introduced
Euphorbiaceae	*Euphorbia hirta*	Introduced
Euphorbiaceae	*Euphorbia peplus*	Native
Euphorbiaceae	*Euphorbia prolifera*	Native
Convolvulaceae	*Evolvulus alsinoides*	Native
Moraceae	*Ficus carica*	Native
Moraceae	*Ficus palmata*	Native
Cyperaceae	*Fimbristylis dichotoma*	Native
Cyperaceae	*Fimbristylis quinquangularis*	Introduced
Cyperaceae	*Fimbristylis squarrosa*	Native
Apiaceae	*Foeniculum vulgare*	Native
Oleaceae	*Forsythia viridissima*	Introduced
Oleaceae	*Forsythia intermedia*	Introduced
Rosaceae	*Fragaria nubicola*	Native
Rosaceae	*Fragaria vesca*	Introduced
Oleaceae	*Fraxinus excelsior*	Introduced
Liliaceae	*Fritillaria imperialis*	Native
Papaveraceae	*Fumaria indica*	Native
Liliaceae	*Gagea dschungarica*	Introduced
Liliaceae	*Gagea gageoides*	Native
Liliaceae	*Gagea lutea*	Native
Asteraceae	*Gaillardia pulchella*	Introduced
Asteraceae	*Gaillardia grandiflora*	Introduced
Amaryllidaceae	*Galanthus nivalis*	Introduced
Asteraceae	*Galinsoga parviflora*	Invasive
Rubiaceae	*Galium aparine*	Native
Rubiaceae	*Galium ghilanicum*	Native
Asteraceae	*Gazania linearis*	Introduced
Asteraceae	*Gazania rigens*	Introduced
Gentianaceae	*Gentiana kurroo*	Native
Geraniaceae	*Geranium nepalense*	Native

Family	Scientific Name	Status
Geraniaceae	*Geranium pusillum*	Native
Geraniaceae	*Geranium wallichianum*	Native
Rosaceae	*Geum urbanum*	Introduced
Ginkgoaceae	*Ginkgo biloba*	Introduced
Iridaceae	*Gladiolus hybridus*	Introduced
Fabaceae	*Gleditsia triacanthos*	Introduced
Fabaceae	*Glycine max*	Introduced
Amaranthaceae	*Gomphrena globosa*	Introduced
Amaranthaceae	*Gomphrena haageana*	Introduced
Malvaceae	*Gossypium arboreum*	Introduced
Caryophyllaceae	*Gypsophila elegans*	Introduced
Plantaginaceae	*Hebe speciosa*	Introduced
Araliaceae	*Hedera canarensis*	Introduced
Araliaceae	*Hedera helix*	Introduced
Araliaceae	*Hedera nepalensis*	Native
Asteraceae	*Helianthus annuus*	Introduced
Asteraceae	*Helianthus tuberosus*	Introduced
Asteraceae	*Helichrysum bracteatum*	Introduced
Boraginaceae	*Heliotropium europaeum*	Introduced
Asphodelaceae	*Hemerocallis fulva*	Introduced
Caryophyllaceae	*Herniaria hirsuta*	Native
Caryophyllaceae	*Herniaria incana*	Introduced
Brassicaceae	*Hesperis matronalis*	Introduced
Malvaceae	*Hibiscus syriacus*	Introduced
Malvaceae	*Hibiscus trionum*	Native
Asteraceae	*Hieracium umbellatum*	Native
Asteraceae	*Himalaiella heteromalla*	Native
Poaceae	*Hordeum murinum*	Native
Asparagaceae	*Hosta sieboldii*	Introduced
Cannabaceae	*Humulus lupulus*	Introduced
Asparagaceae	*Hyacinthus orientalis*	Introduced
Hydrangeaceae	*Hydrangea heteromalla*	Introduced
Hydrangeaceae	*Hydrangea macrophylla*	Introduced
Hydrocharitaceae	*Hydrilla verticillata*	Native
Hydrocharitaceae	*Hydrocharis dubia*	Native
Hypericaceae	*Hypericum hookerianum*	Introduced
Hypericaceae	*Hypericum oblongifolium*	Native
Hypericaceae	*Hypericum perforatum*	Native
Asteraceae	*Hypochaeris radicata*	Introduced
Brassicaceae	*Iberis amara*	Introduced
Brassicaceae	*Iberis umbellata*	Introduced
Balsaminaceae	*Impatiens balsamina*	Introduced
Balsaminaceae	*Impatiens brachycentra*	Native
Balsaminaceae	*Impatiens glandulifera*	Native
Balsaminaceae	*Impatiens thomsonii*	Native
Balsaminaceae	*Impatiens edgeworthii*	Native

Family	Scientific Name	Status
Poaceae	*Imperata cylindrica*	Introduced
Fabaceae	*Indigofera heterantha*	Native
Convolvulaceae	*Ipomoea eriocarpa*	Native
Convolvulaceae	*Ipomoea purpurea*	Introduced
Iridaceae	*Iris crocea*	Native
Iridaceae	*Iris ensata*	Introduced
Iridaceae	*Iris kashmiriana*	Native
Iridaceae	*Iris latifolia*	Introduced
Iridaceae	*Iris spuria*	Introduced
Iridaceae	*Iris variegata*	Introduced
Iridaceae	*Iris versicolor*	Introduced
Iridaceae	*Iris germanica*	Introduced
Iridaceae	*Iris decora*	Native
Iridaceae	*Iris reticulata*	Introduced
Iridaceae	*Iris xiphium*	Introduced
Lamiaceae	*Isodon rugosus*	Native
Asteraceae	*Ixeris polycephala*	Native
Ixioliriaceae	*Ixiolirion tataricum*	Native
Oleaceae	*Jasminum humile*	Native
Oleaceae	*Jasminum mesnyi*	Introduced
Oleaceae	*Jasminum nudiflorum*	Introduced
Oleaceae	*Jasminum officinale*	Native
Juglandaceae	*Juglans regia*	Native
Juncaceae	*Juncus articulatus*	Native
Cupressaceae	*Juniperus horizontalis*	Introduced
Rosaceae	*Kerria japonica*	Introduced
Asphodelaceae	*Kniphofia uvaria*	Introduced
Cyperaceae	*Kobresia laxa*	Native
Poaceae	*Koeleria macrantha*	Native
Sapindaceae	*Koelreuteria paniculata*	Introduced
Fabaceae	*Laburnum anagyroides*	Introduced
Asteraceae	*Lactuca serriola*	Native
Asteraceae	*Lactuca dissecta*	Native
Lythraceae	*Lagerstroemia indica*	Introduced
Lamiaceae	*Lamium album*	Native
Lamiaceae	*Lamium amplexicaule*	Native
Aizoaceae	*Lampranthus multiradiatus*	Introduced
Boraginaceae	*Lappula echinophora*	Introduced
Asteraceae	*Lapsana communis*	Native
Fabaceae	*Lathyrus aphaca*	Native
Fabaceae	*Lathyrus odoratus*	Introduced
Lauraceae	*Laurus nobilis*	Introduced
Lamiaceae	*Lavandula angustifolia*	Introduced
Malvaceae	*Lavatera cashemiriana*	Native
Malvaceae	*Lavatera trimestris*	Introduced

Family	Scientific Name	Status
Urticaceae	*Lecanthus peduncularis*	Native
Brassicaceae	*Lepidium didymum*	Introduced
Brassicaceae	*Lepidium latifolium*	Native
Brassicaceae	*Lepidium sativum*	Native
Brassicaceae	*Lepidium virginicum*	Introduced
Fabaceae	*Lespedeza elegans*	Native
Asteraceae	*Leucanthemum vulgare*	Introduced
Amaryllidaceae	*Leucojum aestivum*	Introduced
Oleaceae	*Ligustrum lucidum*	Introduced
Oleaceae	*Lingustrum japonicum*	Introduced
Oleaceae	*Ligustrum ovalifolium*	Introduced
Oleaceae	*Ligustrum sinense*	Introduced
Oleaceae	*Ligustrum vulgare*	Introduced
Liliaceae	*Lilium regale*	Introduced
Liliaceae	*Lilium lancifolium*	Introduced
Plantaginaceae	*Linaria dalmatica*	Introduced
Plantaginaceae	*Linaria incarnata*	Introduced
Plantaginaceae	*Linaria vulgaris*	Introduced
Linderniaceae	*Lindernia dubia*	Introduced
Boraginaceae	*Lithospermum officinale*	Native
Brassicaceae	*Lobularia maritima*	Introduced
Poaceae	*Lolium perenne*	Native
Poaceae	*Lolium persicum*	Native
Poaceae	*Lolium temulentum*	Native
Caprifoliaceae	*Lonicera japonica*	Introduced
Caprifoliaceae	*Lonicera nitida*	Introduced
Caprifoliaceae	*Lonicera quinquelocularis*	Native
Fabaceae	*Lotus corniculatus*	Native
Brassicaceae	*Lunaria annua*	Introduced
Fabaceae	*Lupinus polyphyllus*	Introduced
Juncaceae	*Luzula pallescens*	Native
Lamiaceae	*Lycopus europaeus*	Native
Amaryllidaceae	*Lycoris radiata*	Introduced
Lythraceae	*Lythrum salicaria*	Native
Magnoliaceae	*Magnolia kobus*	Introduced
Magnoliaceae	*Magnolia grandiflora*	Introduced
Magnoliaceae	*Magnolia liliiflora*	Introduced
Magnoliaceae	*Magnolia stellata*	Introduced
Magnoliaceae	*Magnolia soulangeana*	Introduced
Berberidaceae	*Mahonia aquifolium*	Introduced
Berberidaceae	*Mahonia borealis*	Native
Berberidaceae	*Mahonia duclouxiana*	Native
Brassicaceae	*Malcolmia maritima*	Introduced
Brassicaceae	*Malcolmia africana*	Native
Rosaceae	*Malus baccata*	Native
Rosaceae	*Malus domestica*	Introduced

Family	Scientific Name	Status
Rosaceae	*Malus sylvestris*	Introduced
Rosaceae	*Malus purpurea*	Introduced
Malvaceae	*Malva neglecta*	Native
Malvaceae	*Malva sylvestris*	Native
Malvaceae	*Malva verticillata*	Native
Lamiaceae	*Marrubium vulgare*	Native
Brassicaceae	*Matthiola incana*	Introduced
Asteraceae	*Matricaria matricarioides*	Introduced
Mazaceae	*Mazus pumilus*	Native
Fabaceae	*Medicago lupulina*	Native
Fabaceae	*Medicago minima*	Native
Fabaceae	*Medicago sativa*	Introduced
Fabaceae	*Medicago polymorpha*	Native
Meliaceae	*Melia azedarach*	Native
Poaceae	*Melica persica*	Native
Fabaceae	*Melilotus albus*	Native
Fabaceae	*Melilotus indicus*	Native
Lamiaceae	*Mentha aquatica*	Native
Lamiaceae	*Mentha arvensis*	Native
Lamiaceae	*Mentha spicata*	Native
Lamiaceae	*Mentha × piperita*	Introduced
Lamiaceae	*Mentha longifolia*	Native
Nyctaginaceae	*Mirabilis jalapa*	Introduced
Moraceae	*Morus alba*	Introduced
Moraceae	*Morus nigra*	Introduced
Asparagaceae	*Muscari neglectum*	Introduced
Asparagaceae	*Muscari botryoides*	Introduced
Boraginaceae	*Mysotis scorpioides*	Native
Boraginaceae	*Myosotis arvensis*	Native
Boraginaceae	*Myosotis laxa*	Native
Asteraceae	*Myriactis nepalensis*	Native
Asteraceae	*Myriactis wallichii*	Native
Haloragaceae	*Myriophyllum aquaticum*	Invasive
Haloragaceae	*Myriophyllum spicatum*	Native
Myrtaceae	*Myrtus communis*	Introduced
Berberidaceae	*Nandina domestica*	Introduced
Amaryllidaceae	*Narcissus jonquilla*	Introduced
Amaryllidaceae	*Narcissus poeticus*	Introduced
Amaryllidaceae	*Narcissus pseudonarcissus*	Introduced
Amaryllidaceae	*Narcissus tazetta*	Introduced
Amaryllidaceae	*Narcissus incomparabilis*	Introduced
Amaryllidaceae	*Narcissus medioluteus*	Introduced
Amaryllidaceae	*Narcissus odorus*	Introduced
Brassicaceae	*Nasturtium officinale*	Native
Lamiaceae	*Nepeta cataria*	Native

Family	Scientific Name	Status
Apocynaceae	*Nerium oleander*	Native
Brassicaceae	*Neslia paniculata*	Introduced
Solanaceae	*Nicotiana suaveolens*	Introduced
Ranunculaceae	*Nigella damascena*	Introduced
Onagraceae	*Oenothera rosea*	Introduced
Onagraceae	*Oenothera biennis*	Introduced
Onagraceae	*Oenothera glazioviana*	Introduced
Asteraceae	*Onopordum acanthium*	Native
Lamiaceae	*Origanum vulgare*	Native
Asparagaceae	*Ornithogalum umbellatum*	Introduced
Orobanchaceae	*Orobanche alba*	Introduced
Poaceae	*Oryza sativa*	Introduced
Oxalidaceae	*Oxalis corniculata*	Introduced
Oxalidaceae	*Oxalis debilis*	Introduced
Paeoniaceae	*Paeonia suffruticosa*	Introduced
Papaveraceae	*Papaver bracteatum*	Introduced
Papaveraceae	*Papaver dubium*	Native
Papaveraceae	*Papaver rhoeas*	Native
Papaveraceae	*Papaver somniferum*	Introduced
Papaveraceae	*Papaver macrostomum*	Native
Hamamelidaceae	*Parrotiopsis jacquemontiana*	Native
Asteraceae	*Parthenium hysterophorus*	Introduced
Vitaceae	*Parthenocisus quinquefolia*	Introduced
Vitaceae	*Parthenocisus tricuspidata*	Introduced
Paulowniaceae	*Paulownia tomentosa*	Introduced
Passifloraceae	*Passiflora caerulea*	Introduced
Nitrariaceae	*Peganum harmala*	Native
Geraniaceae	*Pelargonium graveolens*	Introduced
Geraniaceae	*Pelargonium zonale*	Introduced
Poaceae	*Pennisetum flaccidum*	Native
Poaceae	*Pennisetum glaucum*	Introduced
Polygonaceae	*Persicaria hydropiper*	Native
Solanaceae	*Petunia hybrida*	Introduced
Poaceae	*Phalaris arundinacea*	Native
Poaceae	*Phalaris minor*	Native
Fabaceae	*Phaseolus vulgaris*	Introduced
Hydrangeaceae	*Philadelphus incanus*	Introduced
Poaceae	*Phleum pratense*	Native
Polemoniaceae	*Phlox drummondii*	Introduced
Polemoniaceae	*Phlox paniculata*	Introduced
Poaceae	*Phragmites australis*	Native
Solanaceae	*Physalis longifolia*	Introduced
Asteraceae	*Picris hieracioides*	Native
Pinaceae	*Pinus halepensis*	Introduced
Pinaceae	*Pinus wallichiana*	Native
Fabaceae	*Pisum sativum*	Introduced

Family	Scientific Name	Status
Plantaginaceae	*Plantago lanceolata*	Native
Plantaginaceae	*Plantago major*	Native
Platanaceae	*Platanus orientalis*	Introduced
Cupressaceae	*Platycladus orientalis*	Introduced
Platanaceae	*Platanus occidentalis*	Introduced
Poaceae	*Poa angustifolia*	Native
Poaceae	*Poa annua*	Native
Poaceae	*Poa pratensis*	Native
Poaceae	*Poa bulbosa*	Native
Poaceae	*Poa palustris*	Introduced
Polygalaceae	*Polygala sibirica*	Native
Asparagaceae	*Polygonatum verticillatum*	Native
Polygonaceae	*Polygonum plebeium*	Native
Polygonaceae	*Polygonum aviculare*	Native
Rutaceae	*Poncirus trifoliata*	Introduced
Salicaceae	*Populus alba*	Native
Salicaceae	*Populus deltoides*	Introduced
Salicaceae	*Populus nigra*	Introduced
Portuculaceae	*Portulaca grandiflora*	Introduced
Portuculaceae	*Portulaca oleracea*	Introduced
Rosaceae	*Potentilla reptans*	Native
Rosaceae	*Potentilla sericea*	Introduced
Verbenaceae	*Priva grandiflora*	Introduced
Primulaceae	*Primula vulgaris*	Introduced
Lamiaceae	*Prunella vulgaris*	Native
Rosaceae	*Prunus armeniaca*	Introduced
Rosaceae	*Prunus avium*	Introduced
Rosaceae	*Prunus cerasifera*	Introduced
Rosaceae	*Prunus cerasus*	Introduced
Rosaceae	*Prunus domestica*	Introduced
Rosaceae	*Prunus dulcis*	Introduced
Rosaceae	*Prunus glandulosa*	Introduced
Rosaceae	*Prunus laurocerasus*	Introduced
Rosaceae	*Prunus persica*	Introduced
Rosaceae	*Prunus prostrata*	Introduced
Rosaceae	*Prunus tomentosa*	Introduced
Lythraceae	*Punica granatum*	Introduced
Rosaceae	*Pyrus malus*	Introduced
Rosaceae	*Pyrus communis*	Introduced
Fagaceae	*Quercus robur*	Introduced
Lamiaceae	*Rabdosia rugosa*	Native
Ranunculaceae	*Ranunculus laetus*	Introduced
Ranunculaceae	*Ranunculus aquatilis*	Introduced
Ranunculaceae	*Ranunculus arvensis*	Native
Ranunculaceae	*Ranunculus distans*	Native
Ranunculaceae	*Ranunculus lingua*	Native

Family	Scientific Name	Status
Ranunculaceae	*Ranunculus muricatus*	Native
Ranunculaceae	*Ranunculus sceleratus*	Native
Brassicaceae	*Raphanus raphanistrum*	Introduced
Fabaceae	*Robinia pseudoacacia*	Introduced
Brassicaceae	*Rorippa indica*	Native
Brassicaceae	*Rorippa islandica*	Introduced
Brassicaceae	*Rorippa sylvestris*	Native
Rosaceae	*Rosa damascena*	Introduced
Rosaceae	*Rosa banksiae*	Introduced
Rosaceae	*Rosa brunonii*	Native
Rosaceae	*Rosa indica*	Introduced
Rosaceae	*Rosa multiflora*	Introduced
Rosaceae	*Rosa moschata*	Introduced
Rosaceae	*Rosa chinensis*	Introduced
Rosaceae	*Rosa corymbifera*	Introduced
Rosaceae	*Rosa foetida*	Introduced
Rosaceae	*Rosa laevigata*	Introduced
Rosaceae	*Rosa webbiana*	Native
Lamiaceae	*Rosmarinus officinalis*	Introduced
Poaceae	*Rostraria cristata*	Native
Lythraceae	*Rotala densiflora*	Native
Lythraceae	*Rotala indica*	Native
Lythraceae	*Rotala mexicana*	Introduced
Rubiaceae	*Rubia cordifolia*	Native
Rosaceae	*Rubus niveus*	Native
Rosaceae	*Rubus ulmifolius*	Introduced
Asteraceae	*Rudbeckia fulgida*	Introduced
Asteraceae	*Rudbeckia hirta*	Introduced
Polygonaceae	*Rumex crispus*	Native
Polygonaceae	*Rumex dentatus*	Native
Polygonaceae	*Rumex hastatus*	Native
Polygonaceae	*Rumex patientia*	Native
Caryophyllaceae	*Sagina apetala*	Introduced
Caryophyllaceae	*Sagina procumbens*	Introduced
Caryophyllaceae	*Sagina saginoides*	Native
Salicaceae	*Salix aegyptiaca*	Introduced
Salicaceae	*Salix alba*	Introduced
Salicaceae	*Salix babylonica*	Introduced
Salicaceae	*Salix caprea*	Introduced
Salicaceae	*Salix matsudana*	Introduced
Salicaceae	*Salix disperma*	Native
Salicaceae	*Salix fragilis*	Introduced
Salicaceae	*Salix viminalis*	Introduced
Lamiaceae	*Salvia glutinosa*	Introduced
Lamiaceae	*Salvia splendens*	Introduced
Lamiaceae	*Salvia viridis*	Introduced

Family	Scientific Name	Status
Lamiaceae	*Salvia moorcroftiana*	Native
Viburnaceae	*Sambucus nigra*	Introduced
Rosaceae	*Sanguisorba minor*	Native
Apiaceae	*Sanicula elata*	Native
Asteraceae	*Santolina chamaecyparissus*	Introduced
Caryophyllaceae	*Saponaria ocymoides*	Introduced
Caryophyllaceae	*Saponaria calabrica*	Introduced
Asteraceae	*Saussurea albescens*	Native
Apiaceae	*Scandix pecten-veneris*	Native
Scrophulariaceae	*Scrophularia decomposita*	Native
Scrophulariaceae	*Scrophularia lucida*	Introduced
Lamiaceae	*Scutellaria galericulata*	Native
Asteraceae	*Senecio nudicaulis*	Introduced
Asteraceae	*Senecio vulgaris*	Introduced
Poaceae	*Setaria viridis*	Native
Malvaceae	*Sidalcea malviflora*	Introduced
Asteraceae	*Sigesbeckia orientalis*	Native
Caryophyllaceae	*Silene armeria*	Introduced
Caryophyllaceae	*Silene coeli-rosa*	Introduced
Caryophyllaceae	*Silene conoidea*	Native
Caryophyllaceae	*Silene coronaria*	Native
Caryophyllaceae	*Silene vulgaris*	Native
Caryophyllaceae	*Silene schafta*	Introduced
Asteraceae	*Silybum marianum*	Native
Berberidaceae	*Sinopodophyllym hexandrum*	Native
Brassicaceae	*Sisymbrium irio*	Native
Brassicaceae	*Sisymbrium officinale*	Invasive
Brassicaceae	*Sisymbrium loeselii*	Native
Apiaceae	*Sium latijugum*	Native
Solanaceae	*Solanum lycopersicum*	Introduced
Solanaceae	*Solanum melongena*	Introduced
Solanaceae	*Solanum tuberosum*	Introduced
Solanaceae	*Solanum americanum*	Introduced
Boraginaceae	*Solenanthus circinnatus*	Native
Asteraceae	*Solidago gigantea*	Introduced
Asteraceae	*Solidago virga-aurea*	Native
Asteraceae	*Sonchus arvensis*	Invasive
Asteraceae	*Sonchus asper*	Native
Asteraceae	*Sonchus oleraceus*	Invasive
Asteraceae	*Sonchus tenerrimus*	Introduced
Fabaceae	*Sophora japonica*	Introduced
Rosaceae	*Sorbaria tomentosa*	Native
Poaceae	*Sorghum halepense*	Native
Asteraceae	*Sphaeranthus indicus*	Introduced
Typhaceae	*Sparganium erectum*	Introduced
Fabaceae	*Spartium junceum*	Introduced

Family	Scientific Name	Status
Caryophyllaceae	*Spergularia rubra*	Introduced
Rosaceae	*Spiraea bella*	Native
Rosaceae	*Spiraea canescens*	Native
Rosaceae	*Spiraea cantoniensis*	Introduced
Rosaceae	*Spiraea prunifolia*	Introduced
Rosaceae	*Spiraea japonica*	Introduced
Rosaceae	*Spiraea vanhouttei*	Introduced
Poaceae	*Sporobolus piliferus*	Introduced
Lamiaceae	*Stachys sericea*	Introduced
Caryophyllaceae	*Stellaria media*	Native
Caryophyllaceae	*Stellaria aquatica*	Native
Amaryllidaceae	*Sternbergia lutea*	Introduced
Amaryllidaceae	*Sternbergia vernalis*	Introduced
Acanthaceae	*Strobilanthes urticifolia*	Native
Fabaceae	*Styphnolobium japonicum*	Introduced
Boraginaceae	*Symphytum officinale*	Introduced
Oleaceae	*Syringa persica*	Native
Orchidaceae	*Syringa vulgaris*	Introduced
Asteraceae	*Tagetes erecta*	Introduced
Asteraceae	*Tagetes minuta*	Introduced
Asteraceae	*Tagetes tenuifolia*	Introduced
Tamaricaceae	*Tamarix parviflora*	Introduced
Asteraceae	*Taraxacum officinale*	Introduced
Ranunculaceae	*Thalictrum minus*	Native
Ranunculaceae	*Thalictrum pedunculatum*	Native
Poaceae	*Themeda anathera*	Native
Brassicaceae	*Thlaspi arvense*	Native
Lamiaceae	*Thymus mongolicus*	Introduced
Lamiaceae	*Thymus linearis*	Native
Malvaceae	*Tilia rubra*	Introduced
Malvaceae	*Tilia platyphyllos*	Introduced
Apiaceae	*Torilis japonica*	Native
Apiaceae	*Torilis leptophylla*	Introduced
Anacardiaceae	*Toxicodendron grandiflorum*	Introduced
Arecaceae	*Trachycarpus fortunei*	Introduced
Commelinaceae	*Tradescantia bracteata*	Introduced
Commelinaceae	*Tradescantia virginiana*	Introduced
Asteraceae	*Tragopogon dubius*	Native
Asteraceae	*Tragopogon kashmirianus*	Native
Lythraceae	*Trapa natans*	Native
Zygophyllaceae	*Tribulus terrestris*	Native
Fabaceae	*Trifolium dubium*	Introduced
Fabaceae	*Trifolium fragiferum*	Native
Fabaceae	*Trifolium alexandrinum*	Introduced
Fabaceae	*Trifolium pratense*	Native
Fabaceae	*Trifolium repens*	Native

Family	Scientific Name	Status
Poaceae	*Triticum aestivum*	Native
Tropaeolaceae	*Tropaeolum majus*	Introduced
Amaryllidaceae	*Tulbaghia violacea*	Introduced
Liliaceae	*Tulipa clusiana*	Native
Asteraceae	*Tussilago farfara*	Native
Ulmaceae	*Ulmus villosa*	Native
Ulmaceae	*Ulmus wallichiana*	Native
Urticaceae	*Urtica dioica*	Native
Lentibulariaceae	*Utricularia flexuosa*	Introduced
Caryophyllaceae	*Vaccaria hispanica*	Native
Caprifoliaceae	*Valeriana hardwickii*	Native
Caprifoliaceae	*Valeriana jatamansi*	Native
Caprifoliaceae	*Valerianella dentata*	Native
Scrophulariaceae	*Verbascum thapsus*	Native
Verbenaceae	*Verbena bonariensis*	Introduced
Verbenaceae	*Verbena officinalis*	Native
Verbenaceae	*Verbena hybrida*	Introduced
Plantaginaceae	*Veronica anagallis-aquatica*	Native
Plantaginaceae	*Veronica arvensis*	Native
Plantaginaceae	*Veronica beccabunga*	Native
Plantaginaceae	*Veronica biloba*	Native
Plantaginaceae	*Veronica laxa*	Native
Plantaginaceae	*Veronica persica*	Introduced
Plantaginaceae	*Veronica polita*	Native
Plantaginaceae	*Veronica serpyllifolia*	Native
Plantaginaceae	*Veronica peregrina*	Introduced
Viburnaceae	*Viburnum grandiflorum*	Native
Viburnaceae	*Viburnum opulus*	Introduced
Fabaceae	*Vicia cracca*	Introduced
Fabaceae	*Vicia hirsuta*	Native
Fabaceae	*Vicia sativa*	Native
Fabaceae	*Vigna aconitifolia*	Native
Fabaceae	*Vigna mungo*	Native
Fabaceae	*Vigna radiata*	Native
Apocynaceae	*Vinca major*	Introduced
Santalaceae	*Viscum album*	Native
Violaceae	*Viola tricolor*	Introduced
Violaceae	*Viola odorata*	Introduced
Violaceae	*Viola x wittrockiana*	Native
Vitaceae	*Vitis vinifera*	Introduced
Caprifoliaceae	*Weigela florida*	Introduced
Fabaceae	*Wisteria sinensis*	Introduced
Solanaceae	*Withania somnifera*	Native
Asteraceae	*Xanthium strumarium*	Invasive
Asteraceae	*Xanthium spinosum*	Invasive
Asteraceae	*Xerochrysum bracteatum*	Introduced

Family	Scientific Name	Status
Asteraceae	*Youngia japonica*	Native
Asparagaceae	*Yucca aloifolia*	Introduced
Araceae	*Zantedeschia aethiopica*	Introduced
Poaceae	*Zea mays*	Introduced
Amaryllidaceae	*Zephyranthes candida*	Introduced
Amaryllidaceae	*Zephyranthes rosea*	Introduced
Asteraceae	*Zinnia angustifolia*	Introduced
Asteraceae	*Zinnia elegans*	Introduced

Table 8: Butterfly List identified for Indicator 6

Family	Scientific name	Common name
Hesperiidae	*Carcharodus alceae*	Plain Marbled Skipper
Hesperiidae	*Pelopidas mathias*	Small Branded Swift
Hesperiidae	*Parnara guttata*	Common Straight Swift
Pieridae	*Pieris brassicae*	Large Cabbage White
Pieridae	*Pieris canidia*	Asian Cabbage White
Pieridae	*Pontia daplidice*	Bath White
Pieridae	*Colias erate*	Pale Clouded Yellow
Pieridae	*Gonepteryx rhamni*	Common Brimstone
Pieridae	*Aporia saracto*	Himalayan Black Vein
Pieridae	*Colias fieldii*	Dark Clouded Yellow
Pieridae	*Pontia edusa*	Eastern Bath White
Lycaenidae	*Lycaena phlaeas*	Small Copper
Lycaenidae	*Lampides boeticus*	Pea Blue
Lycaenidae	*Tarucus indica*	Indian Pierrot
Lycaenidae	*Tarucus venosus*	Himalayan Pierrot
Lycaenidae	*Everes huegelii*	Dusky-blue Cupid
Lycaenidae	*Talicada nyseus*	Red Pierrot
Lycaenidae	*Aricia agestis*	Orange-bordered Argus
Lycaenidae	*Heliophorus sena*	Sorrel Sapphire
Lycaenidae	*Rapala nissa*	Common Flash
Lycaenidae	*Celastrina argiolus*	Holly Blue
Lycaenidae	*Glaucopsyche alexis*	Green-underside Blue
Nymphalidae	*Danaus chrysippus*	Plain Tiger
Nymphalidae	*Libythea lepita*	Common Beak
Nymphalidae	*Argynnis jainadeva*	Himalayan Highbrown Silverspot
Nymphalidae	*Aglais caschmirensis*	Kashmir Tortoiseshell
Nymphalidae	*Argyreus hyperbius*	Indian Fritillary
Nymphalidae	*Argynnis childreni*	Large Silverstripe
Nymphalidae	*Cynthia cardui*	Painted Lady
Nymphalidae	*Hypolimnas misippus*	Danaid Eggfly
Nymphalidae	*Issoria gemmata*	Gem Silverspot
Nymphalidae	*Issoria lathonia*	Queen of Spain Fritillary
Nymphalidae	*Junonia orithya*	Blue Pansy
Nymphalidae	*Kaniska canace*	Blue Admirable
Nymphalidae	*Neptis hylas*	Common Sailor

Family	Scientific name	Common name
Nymphalidae	*Phalanta phalanta*	Common Leopard
Nymphalidae	*Vanessa indica*	Indian Red Admirable
Nymphalidae	*Aulocera brahminus*	Great Satyr
Nymphalidae	*Aulocera padma*	Narrow Banded Satyr
Nymphalidae	*Paralasa mani*	Yelow Argus
Nymphalidae	*Callerebia nirmala*	Common Satyr
Nymphalidae	*Neptis saphho*	Pallas Sailor
Nymphalidae	*Pararge eversmanii*	Yellow Wall
Papilionidae	*Papilio machaon*	Common Yellow Swallowtail
Papilionidae	*Parnassius chaltronius*	Regal Apollo

Table 9: Fish List identified for Indicator 7

Scientific Name	Common Name	Local Name
Schizothorax esocinus	Chirruh snowtrout	Churru
Schizothorax curvifrons	Sattar snowtrout	Sattar gaad
Schizothorax plagiostomus		Khont
Schizothorax labiatus	Kunar snowtrout	Chosh
Schizothorax niger	Common snowtrout	Alae gaad
*Cyprinus carpio var. Communis**	Scale carp	Common carp
*Cyprinus carpio var. specularis**	Mirror carp	Common carp
Triplophysa kashmirensis		Aara gurun
Triplophysa marmorata		Aara gurun
Crossocheilus diplocaulus		Tethur
Carassius carassius	Crucian carp	Gaang gaad
Puntius conchonius	Rosy barb	Safaid bacha
Gambusia holbrooki	Eastern mosquitofish	Mahi gaad
Botia birdi	Birdi loach	Rama gorun
Bangan dipostoma		Roput
*Ctenopharyngodon idella**	Grass carp	Grass carp

**Found in captivity also*

Table 10: Mammal list identified for Indicator 8

Family	Common name	Scientific Name
Felidae	Jungle Cat	*Felis chaus*
Canidae	Jackal	*Canis aureus*
Mustelidae	Eurasian otter	*Lutra lutra*
Sciuridae	Kashmir flying squirrel	*Eoglaucomys fimbriatus*
Ursidae	Asian black bear	*Ursus thibetanus*
Vespertilionidae	Indian pipistrelle	*Pipistrellus coromandra*
Canidae	Red fox	*Vulpes vulpes*
Muridae	House mouse	*Mus musculus*
Cercopithecidae	Rhesus macaque	*Macaca mulatta*
Hystricidae	Indian porcupine	*Hystrix indica*
Mustelidae	Yellow-throated marten	*Martes flavigula*
Soricidae	Asian house shrew	*Suncus murinus*
Mustelidae	Siberian weasel	*Mustela sibirica*

ANNEXURE 3 – LIST OF PARKS FOUND IN SRINAGAR CITY

Table 11: List of Parks in Srinagar city maintained by SMC

Sl. No.	Name of the Park	Area of Park in (ha)	Name of the Agency Maintaining the Park
1	Public Park Shalimar	0.1025	SMC
2	Baba Ghulamu-din Pard	0.15	SMC
3	Alamdar Park	0.052	SMC
4	Sonawar Park-A	0.10	SMC
5	Sonawar Park-B	0.1	SMC
6	Nehru Park	0.35	SMC
7	Lake view Park	0.15	SMC
8	Maisuma Park	0.34	SMC
9	Maisuma Park	0.023	SMC
11	Ranawari Park	0.1	SMC
12	Saida Kadal Park	0.1	SMC
13	Motiyar Pandithpora	0.335	SMC
14	Safar Park Rainawari	0.121	SMC
15	Gadoodbagh A&B	0.2515	SMC
16	Basant Bagh	0.026	SMC
17	Ghat Park	0.006	SMC
18	Sathu Bala Park	0.024	SMC
19	Bhagwanpora Park	0.04	SMC
20	Basant Bagh Near Girls School	0.026	SMC
21	Baghi Dilawar Khan Near ITI	0.92	SMC
22	Ganikhan Park	0.035	SMC
23	Babeemb Park	0.066	SMC
24	Sakidaffar Parks A&B	0.102	SMC
25	Kawdara Park	0.056	SMC
26	Arampora Gratibal	0.007	SMC
27	Namchabal Parks	0.009	SMC
28	Feteh Kadal Parks A&B	0.055	SMC
29	S.R. Gunj Park	0.102	SMC
30	Khankahimoula Park	0.25	SMC
31	Langoo Park	0.15	SMC
32	Khanyar Park	0.002	SMC
33	Gousia Park	0.205	SMC
34	Central Jail Park	0.35	SMC
35	Shaheed Park Dasgeer Sahib	0.25	SMC
36	Madina Sahib park	0.2515	SMC
37	Kawdara park A&B	0.001	SMC
38	Arampora park	0.057	SMC
39	Wantpora Park	0.055	SMC
40	Gazidoora park	0.3	SMC
41	Sazgaripora park	0.058	SMC

Sl. No.	Name of the Park	Area of Park in (ha)	Name of the Agency Maintaining the Park
42	Gazidoori Zadibal	0.15	SMC
43	Donipora Hawal	0.127	SMC
44	Sazgaripora Hawal	0.083	SMC
45	Jenab Sahib park	0.3	SMC
46	Dulbagh Park	0.25	SMC
47	Buchpora Park	0.25	SMC
48	Housing colony park Soura/Buchpora	0.007	SMC
49	Housing Colony park Soura/Buchpora	0.008	SMC
50	Housing Colony park Soura/Buchpora	0.008	SMC
51	Housing Colony park Soura/Buchpora	0.05	SMC
52	Housing Colony park Soura/Buchpora	0.005	SMC
53	Housing Colony park Soura/Buchpora	0.0065	SMC
54	Housing Colony park Soura/Buchpora	0.0065	SMC
55	Housing Colony park Soura/Buchpora	0.0065	SMC
56	Housing Colony park Soura/Buchpora	0.006	SMC
57	Housing Colony park Soura/Buchpora	0.006	SMC
58	Housing Colony park Soura/Buchpora	0.007	SMC
59	Housing Colony park Soura/Buchpora	0.007	SMC
60	Housing Colony park Soura/Buchpora	0.0065	SMC
61	Housing Colony park Soura/Buchpora	0.007	SMC
62	Housing Colony park Soura/Buchpora	0.006	SMC
63	Housing Colony park Soura/Buchpora	0.006	SMC
64	Housing Colony park Soura/Buchpora	0.006	SMC
65	Housing Colony park Soura/Buchpora	0.0055	SMC
66	Housing Colony park Soura/Buchpora	0.007	SMC
67	Housing Colony park Soura/Buchpora	0.0075	SMC
68	Awantibhawan Park	0.101	SMC
69	Housing Colony park Soura/Buchpora	0.004	SMC
70	Housing Colony park Soura/Buchpora	0.008	SMC
71	Housing Colony park Soura/Buchpora	0.0065	SMC
72	Shaipora Nowshera	0.0037	SMC
73	Mandibal Nowshera	0.05	SMC
74	Noorbagh Bhagwanpora	0.41	SMC
75	Sathu Bhagwanpora Noorbagh	0	SMC
76	Wanyar Parks A&B	0.055	SMC
77	Sakidafar Park near Square crossing	0.021	SMC
78	Sakidafar park adjacent to Graveyard near Unani Hospital	0.009	SMC
80	Ganderpora Park	0.0065	SMC
81	Noorbagh Bagwanpora near DSP Gh. Rasool	0.046	SMC
82	Gasi Mohalla Park	0.255	SMC
83	Reshanhar Parks A&B	0.151	SMC
84	Noorbagh Park	0.056	SMC
85	Kanimazar near Womens College	0.053	SMC
86	Kak Sahib Jamallata Nawakadal	0.087	SMC

Sl. No.	Name of the Park	Area of Park in (ha)	Name of the Agency Maintaining the Park
87	Kutubdinpora Aalikadal	0.537	SMC
88	Sheshiyar Park	0.0159	SMC
89	Zaldagar Park	0.0045	SMC
90	Sona Masjid Park	0.0086	SMC
91	Urdu Bazar Islam Yarbal	0.036	SMC
92	Tilvandori Kazgari Masjid	0.138	SMC
93	Zandaar Mohalla Park	0.012	SMC
94	Karfalli Mohalla Park	0.042	
95	Khanwari along with Katikol near ahlihadees Masjid	0.023	SMC
96	Zaldagar Park along with Katikol near Ahlihadees Masjid	0.0277	SMC
97	Tankipora along river jehlum	0.0133	SMC
98	Chattabal near Old Police Station	0.23	SMC
99	Shutrashahi behind Secretariate	0.006	SMC
100	Shutrashahi near Naaz Hotel	0.154	SMC
101	Shutrashahi near Boys School	0.041	SMC
102	Shutrashahi Inside Mohalla	0.048	SMC
103	Shutrashahi Inside Mohalla adjacent to Mashid Mustafa	0.023	SMC
104	Kaka Sarie Park	0.0525	SMC
105	Karanagar Park	0.1	SMC
106	Baghi Nand Singh adjacent to Vegetable Market	0	SMC
107	Tattoo Ground infront of Municipal Complex	0.009	SMC
108	Kashi mohallah Batamaloo	0.008	SMC
109	Batmaloo Park A&B	0.304	SMC
110	Public Park, Jawahar Nagar	0.103	SMC
111	Public Park, Jawahar Nagar	0.3	SMC
112	Public Park, Jawahar Nagar	0.151	SMC
113	Public Park, Jawahar Nagar	0.053	SMC
114	Public Park, Jawahar Nagar	0.103	SMC
115	Public Park, Jawahar Nagar	0.102	SMC
116	Public Park, Jawahar Nagar	0.053	SMC
117	Public Park, Jawahar Nagar	0.053	SMC
118	Public Park, Jawahar Nagar	0.051	SMC
119	Public Park, Jawahar Nagar	0.15	SMC
120	Public Park, Jawahar Nagar	0.052	SMC
121	Public Park, Jawahar Nagar	0.3	SMC
122	Public Park, Jawahar Nagar	0.1	SMC
123	Public Park, Jawahar Nagar	0.2	SMC
124	Public Park, Jawahar Nagar	0.1	SMC
125	Public Park, Jawahar Nagar	0.05	SMC
126	Public Park, II Jawahar Nagar	0.1005	SMC
127	Public Park, Jawahar Nagar	0.053	SMC
128	Public Park, Jawahar Nagar	0.1	SMC
130	Batapora Chanapora	0.276	SMC

Sl. No.	Name of the Park	Area of Park in (ha)	Name of the Agency Maintaining the Park
131	Lal Nagar park	0.1025	SMC
132	Firdous Colony	0.01	SMC
133	Gurduwara park A&B	0.15	SMC
134	Housing Colony Park	0.05	SMC
135	Batpora Park	0.15	SMC
136	Baghimehtaab Park	0.157	SMC
137	Chanapora Park	0.15	SMC
138	Mehjoor park Panthachowk	0.263	SMC
139	Baghi Mehtaab Park	0.25	SMC
	Total	**13.9027 (ha.) 278.054 (Kannals)**	

Table 12: List of Parks in Srinagar city maintained by agencies other than SMC

Sl. No.	Name of the Park	Area of Park (Ha)	Name of the Agency Maintaining the Park
1	Children Park	2.17	Floriculture
2	New Kashmir Park	1.67	State/Floriculture
3	Jogger's Park	2.52	Floriculture
4	Sanat Nagar Park	0.56	State/Housing
5	Rose Garden	5.05	State
6	MIG Colony Park	0.76	Floriculture
7	New Sectt. Lawns and Assembly Lawns	2.88	State
8	High Court Lawns	1.21	State
9	Owaisabad Bemina	0.76	Housing Board
10	Sadder Court Lawns	0.76	State
11	Iddgah Park	4.55	Floriculture
12	Hazratbal Park	2.33	Floriculture
13	Pologround Park	6.82	Floriculture
14	Sheri Kashmir Park	1.31	SMC
15	Emporium Garden	3.95	Floriculture
16	MG Shalimar	14.48	Floriculture
17	MG Nishat	20.23	Floriculture
18	MG Cheshmashahi	6.07	Floriculture
19	MG Parimahal	1.67	Floriculture
20	Greenpark, Harwan	6.58	Floriculture
21	Nehru Guest House	2.53	Floriculture
22	VIP Garden Dachigam	4.55	Floriculture
23	NMBG Cheshmashahi	55.24	Floriculture
24	Tulip Garden S. Bagh	30.45	Floriculture
25	Char Chinari Park	0.05	Floriculture
26	Jamia Lawns	1.02	State
27	GunjBaksh	1.37	Floriculture
28	Badamwari Park	14.21	J&K Bank
29	Iqbal Park	5.31	J&K Bank
	Total	**201.6 ha**	

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