

GIMPSES OF BIODIVERSITY IN PANAJI



Goa State Biodiversity Board

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Corporation of City of Panaji



Goa State
Biodiversity
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FOREWORD



The beauty of the City of Panaji is often appreciated by referring to a book with pictorial presentation of biodiversity richness of Panaji and is always a pleasure beyond just appreciation. It gives feeling of exhilaration that we own so many bioresources. As a Chairman of The Corporation of the City of Panaji Biodiversity Management Committee, it is my pride as well as responsibility to conserve these bioresources.

This book is an excellent compilation of general biodiversity and other components which we generally oversee. This book reassures me that we still have an opportunity to conserve our rich and diverse heritage of Panaji City.

This book does not include any confidential information and will lead to more comprehensive preparation of People's Biodiversity register for CCP.

I congratulate The Goa State Biodiversity Board and the team for this publication and in my capacity as The Chairman of The Corporation of The City of Panaji biodiversity management committee, I would put in my best efforts to conserve the biodiversity of Panaji.

Uday Madkaikar

Mayor, The Corporation of the City of Panaji
The Chairman,
The Corporation of the City of Panaji
Biodiversity Management Committee



FOREWORD



It is a pleasant coincidence that an assignment initiated during my previous tenure as Commissioner of Corporation of the City of Panaji is being completed in my present tenure.

As secretary of Corporation of City of Panaji Biodiversity Management Committee, in addition to this book, we will also ensure completion of People's Biodiversity Register before the stipulated time.

'Glimpses of Biodiversity in Panaji' brought up many hidden aspects of Panaji city showcasing its diverse biodiversity and natural heritage.

The book is specially designed in a coffee table format will be of immense interest to a cross section of society, be it students, residents and visitors of the City. Its pictorial representation of the city's biodiversity especially by professionally taken photographs of reptiles, city flora, butterflies, amphibians, birds etc. is a pleasure to glance at. The list of flora and fauna will really surprise many and indicate a never noticed presence in our neighbourhood. Hope this inspires us to hold hands to enhance our natural habitat and show our concern in this important area of conservation.

Sanjit Rodrigues
Commissioner and Secretary,
Corporation of City of Panaji Biodiversity Management Committee



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ACKNOWLEDGEMENT



The Goa State Biodiversity Board humbly acknowledges the concept and support of Shri. Sanjit Rodrigues, Commissioner, Corporation of the City of Panaji in initiating the idea of Panaji City Biodiversity Inventory and assigning this task to Goa State Biodiversity Board. The Goa State Biodiversity Board takes this opportunity to thank all the former Commissioners, the former Mayors of Corporation of the City of Panaji and all the Councillors of Panaji City for their support and keen interest in inventorying the Biodiversity of Panaji City. In particular we acknowledge the support of the Corporation of the City of Panaji through its funding for conducting the biodiversity inventory study, presented through this book named as “Glimpses of Biodiversity in Panaji”.

We express our gratitude towards Late Shri. Manohar Parrikar, Former Hon'ble. Chief Minister of Goa and Former Chairperson of Goa State Biodiversity Board for his constant support and guidance and specially for his approval to reframe the book from a study report format to the present coffee table book.

We also extend our gratitude to Shri. Pramod Sawant, Hon'ble Chief Minister, Goa State, Former Chairperson, Goa State Biodiversity Board and the present Chairperson of Goa State Biodiversity Board, Shri. Nilesh Cabral, Hon'ble Minister for Environment for their constant support.

We would also take this opportunity to thank the former Chairpersons of Goa State Biodiversity Board Shri. Rajendra Arlekar, Hon'ble former Minister for Panchayats, Forests and Environment and Smt. Alina Saldanha, Hon'ble former Minister for Forest and Environment and the members of Goa State Biodiversity Board for their constant support and guidance while this publication was in process.

We also extend our gratitude to Shri. Atanasio Monseratte, Hon'ble MLA, Panaji for his support.

The Goa State Biodiversity Board would also like to thank the staff of Corporation of the City of Panaji, namely Shri. Shrikant Lawande & Shri. Sachin Ambe for their wholehearted support, the staff of Goa State Biodiversity Board and all those who contributed for the successful completion of publication of this coffee table book.

Dr. Pradip Sarmokadam
Member Secretary,
Goa State Biodiversity Board



BACKGROUND

The world is on the brink of a perplexing ecological crisis, which is brought about by a cumulating cascade of factors such as rapid changes in our natural climatic regimes, environmental degradation brought about by unsustainable production and consumption practices, erosion of environmental and biological resources, and a sharp decline in various indicators of Human well being in particular and Planetary well-being in general. While noting that it is the commission and often times, omissions of our species that have precipitated these looming crises, and hence saving whatever little still remains in a state of criticality is a priority.

It is crucial that we the earth-citizens of our planet should respond with effective measures to mitigate the consequences and adapt to the changes in our natural ecosystems. The ecosystem cannot be left to itself for regeneration. This would require us to pay more attention to the enhancement and maintenance of natural resources and processes as well-functioning ecosystems with the diversity of resources contained therein; so as to enable sustainable production, consumption and related livelihood activities. However, for this intervention a good understanding of the resource base in all its dimensions is a prerequisite. Simply put, a comprehensive database on status of any resource is a prerequisite for effective impact mitigation and management.

One of the core endowments in the basket of Earth Capital of this 'Living Planet' is the biodiversity in all its variety, variability and numbers. Whereas, the country is a 'Mega-diversity' nation, the state has the distinction of being in the catchment of the Western Ghats, a Biodiversity Hot spot. Scientific community in the state have documented a mosaic of ecosystems and the spectre of biodiversity it supports and sustains granting ecological and economic security to the inhabitants of this land. The Goa State Biodiversity Strategy & Action Plan under the aegis of NBSAP has been one such effort in the 90s at understanding the biodiversity of the state, and conservation issues as also interventions. However, this document was largely oriented towards non-urban biodiversity of our wilderness and rustic villages. Today there is an increasing realisation that urban ecosystems can match, if not rival wilderness endowments, with their rich life forms across various taxa of flora and fauna that have settled in urban greenery, living somewhat commensalistically and contribute to ecosystem functioning here.

It is imperative therefore that discussions, interventions and management of biodiversity should now mandate inclusion of these hitherto uncharted urban biodiversity centres and perhaps refuges of secondarily adapted species.

Obviously, this would require inputs from various scientific, technological, and allied academic fields in terms of innovations and radically new ideas; and also partnership from business communities by fostering best practices in the use and disposal of resources and transactions with others in the supply chain; from civil society in fostering responsible stewardship of natural resources and social concerns; and, from governments in terms of development and implementation of appropriate policies that are sensitive to the needs of the diverse sections of the society they govern and the implications of actions by the various stakeholders need to be analysed in a timely, and often in an anticipatory manner to pre-empt a worst case scenario in natural resource management.



INTRODUCTION

City Governments, such as the City Corporation of Panaji (CCP) can contribute more towards implementing the agenda of Conservation of Biological Diversity as the 2020 target to reduce the rate of biodiversity loss, mandated by MoEF & CC, GoI. The necessity for and the role of city governance to tackle the challenges of biodiversity loss has increased as urban populations have increased enormously in the last 2 decades, the net effect being particularly felt in a small state like Goa, where the rural-urban divide is indeed a thin line. Development infrastructure, acute land conversion into human habitable space, the baggage of colonial past and archaic land-use patterns have directly contributed to shrinking biodiversity habitats and their fragmentation and loss. Wherein the Town and Country Planning (TCP) ought to be a key player in green architecture and eco-friendly landscaping, the market demands have remained pivotal in space utilization. Often ecology and biodiversity are viewed as contrary to urban planning and designs, notwithstanding the fact that the way cities are designed, planned, and governed; influence the amount of their direct and indirect impacts on biodiversity. There is a complete dearth of inter- sectoral synergy and complementation.

However, the process of interaction between cities and biodiversity is still not well understood, both in theory and in practice. This gap needs to be addressed if we want to make some head-start on participatory Biodiversity conservation initiatives and involve urban communities, since more than half of the world's population lives in cities today. As cities are the consumption centres of world resources and this proportion will grow in the future, there is no time to lose.

This report is a baseline towards conservation initiatives by the state among cities, local and governance, and biodiversity. Initially, it will examine the range of floral and faunal species associated with urban habitats within the jurisdictional confines of city of Panaji covering various terrestrial, aquatic and amphibious habitats, attempt understanding relationships between cities and biodiversity by looking at the major influences cities can have on biodiversity loss or on conservation within and outside the city boundaries, as well as the benefits of biodiversity conservation for cities, such as the provision of ecosystem services. Based on the preliminary findings; it may transcend the scope to understand the main instruments and governance mechanisms that exist, allowing cities to effectively implement the directives of Conservation of Biodiversity.

Contrary to the underestimated value of urban biodiversity; cities are some of the biggest beneficiaries of biodiversity and ecosystem services, as citizens and economic activities depend on those services. However, reciprocal involvement and commitment of urban stakeholders in the conservation of biodiversity mandate is still limited and unimpressive as compared to their potential contribution and amount of benefits they could gain from biodiversity. There are many conceptual underpinnings, systemic inertia and governance obstacles to overcome, and we need to create new and adapt and integrate existing conservation strategies, as well as city planning and management instruments to deal with urban biodiversity properly. Of course any such ambitious programme shall always begin on a note of documenting the extant biodiversity and assessing their conservation status, and furthering the conservation mandate based on groundtruthing.



Nevertheless, the interest of cities in the biodiversity agenda is moving fast, and there are a lot of opportunities to bring cities to be effective actors in the conservation of Biodiversity. This requires a large effort for collective action to create better governance mechanisms. Good governance at the city level, which indeed can deliver an effective implementation of biodiversity conservation, depends on capacity and coordination and the collective ethos of the urban dwellers. The key point in the governance structure with a biodiversity focus is not only the capacity of individual organisations in private and public sector of our cities, but also the strength of coordination among them. Experience across the world indicates that sustainable biodiversity management and related biodiversity and ecosystem well being fails because of lack of timely and adequate interventions.

Urbanisation has created new challenges for biodiversity conservation consequent of the rural-urban flux, changes in the link between human activities and biodiversity, and consequently in the way we should think about biodiversity conservation policies. Scarce attention has been given to understanding how to make cities more biodiversity-friendly and the city of Panaji and for that matter other cities in the state are no exception.

Panaji is the capital of Goa and headquarters of North Goa District is replete with colonial hangover in realms of landscape, architecture, cuisine and culture. It has hillocks, estuary, backwaters, sea, agro-horticultural plots, sand dunes, lentic, lotic & ephemeral fresh water bodies and intertidal zones to name some of its ecosystems. Not to forget a slice of Western Ghats and the alluvial Plains towards its offshore province. It lies on the bank of Mandovi river estuary in Tiswadi Taluka. It is located at 16°29'56" N and 73°49'40" E and is bound by 2 creeks namely Rua-de-Ourem and St. Inez. Apart from the general Portuguese connection and air of siesta prevailing in the state that attracts tourist, the City of Panaji is perhaps the most visited and loved tourist's destination in Goa, in terms of beaches, churches, carnival and natural beauty. The city also has beautiful landscaped gardens some of which date back to the colonial times and a beautiful promenade on the river front. The suburban landscape is a little different in having rustic natural elements and is fast competing with urban core for concretization. The construction boom of the present times is a definite pressure on the city's fragile urban ecology and shrinking natural habitats. The rising graph of settlement area, domestic and international tourist arrivals, holiday homes, popularity as destination for global film fraternity and the associated type and scale infrastructure is all staring in the eyes of the last few pockets of biodiversity including agro-diversity.

Despite the pressures of development, sizable areas of "green" land still exist within the city. The City of Panaji has rich and diverse ecological communities performing a variety of functions. This urban biodiversity needless to assert, is vulnerable to modification, eradication and local extinction. Any intervention for mitigation and effective sustainable management and conservation shall demand a collective effort from all stakeholders. As has been discussed earlier, such a proposal requisitions a good insight into the existing range, distribution and renewal dynamics of various elements of biodiversity. Such inventorisation and documentation of the biological diversity through exploratory surveys is the need of the hour and the basis of this study. Despite the limited time over which this exercise has been carried out, its value in identifying 'living pockets' of intense anthropogenic stressors need not be overemphasized. Ultimate objective of this study shall be to aid in planning and executing managerial interventions that will foster harmony between man and natural environment. Also, the areas for urgent focus can be prioritized. The data can also be effectively used for stakeholder sensitization programme by the competent state authorities like Goa State Biodiversity Board (GSBB) as also shared with regulatory state agencies like Goa State Expert Appraisal committee for environmental appraisal of developmental projects in the city of Panaji and its surrounding suburban landscape. Thus, the information on habitat and its rich biological resources is needed to be documented in order to increase awareness and conserve the biological diversity and to plan for the future of the city. Perhaps an Urban Biodiversity Interpretation Centre in Panaji could be a novel idea worth giving a try!



OBJECTIVES

Inventorizing & documenting biodiversity major taxa (flora and fauna) of the city and surrounding suburbs. Documenting significant groves wherever available within the jurisdiction of Panaji.



METHODOLOGY

Study site: City of Panaji, Goa and its suburbs.

Field Protocols

Goa State Biodiversity Board, In-House team of experts, conducted the “Compilation of Inventory of biodiversity of The City of Panaji” for a period of over three seasons after January 2014. The study involved rapid assessment /documentation of various taxa of flora and fauna. The study involved 30 days of field visits, covering all representative ecosystems existing within the precincts of the city of Panaji. No species were collected to uphold conservation ethics; and taxonomy was based on physical examination on site and photo-documentation for floral and faunal species respectively. Wherever feasible, statistical sampling was employed for increasing data confidence.

- The flora was identified. Photo-documentation of floral diversity has been completed. Focus was primarily on Angiosperms, but wherever possible other groups were also documented. Ephemeral flora was also considered for documentation.
- The small mammals were listed by actual sighting, calls, scats/ fecal matter, track marks or other species specific indirect signs as well as road kills.
- The avifaunal diversity (birds) in the city was studied by sighting, calls nests, droppings as well as other indirect signs and road kills along sectors transects.
- The herpetofauna (reptiles and amphibians) were studied by direct sighting and indirect signs like molts, road kills, etc
- The (Lepidopteran) butterflies were studied by direct sightings on food and host plants.
- The other lesser known Fauna were also noted and photo documented.

IMPORTANT HIGHLIGHTS ON FINDINGS OF STUDY

The total number of biodiversity species recorded during the period of study was 404; 46% of which comprised of Flora and 54% comprised of fauna. Among the flora the trees were predominant, while the birds and butterflies were the dominant vertebrate and invertebrate faunal elements.

Interestingly, our survey revealed that the city of Panaji offers refuge to 14 species of fauna and 27 species of flora that are accorded 'protected status' as per the Wildlife Protection Act, 1972 and other laws. This implies that the city not only has a rich biodiversity but also offers a habitat to candidates that have been assessed and found to be having some 'conservation concerns'. This may be viewed in the light of the pressure on their habitat by way of landscape alterations for multiple land use patterns, leading to unfavorable alteration, fragmentation and ultimately loss.

The city might have several fauna visiting it but with fragmentation of habitat the visits must be sporadic. The city can still support a lot of biodiversity but implementing conservation measures is the immediate need. Development is a necessity and will take place with time but one needs to recognize the potential of the city and sustainability of the natural wealth should be given due consideration.

Birds and butterflies rank high in relative contribution to the overall biodiversity of Panaji city and this trend can be attributed to the mobility of these 2 faunal groups. Flight makes an allowance to escape habitat adversities as against species that have restricted mobility. Birds and butterflies therefore do not get influenced by spatial limitations of the habitat, as they can locally migrate and occupy a new habitat. However, creating 'Open Butterfly Gardens' and prioritizing 'Fruit-bearing Trees' for urban plantation drives can enhance habitat value of the city for these 2 groups, both of which attract attention for their colours and flight. The dominance ranking of 3rd place for Ichthyofaunal Diversity (fishes) is explained by the fact that, the city has numerous aquatic habitats including Lentic and Lotic fresh waters, back waters and marine waters. Much needs to be done to address gaps in our understanding of Fish diversity especially in the fresh waters. During the Monsoon Maritime ban, the fresh water fish stocks serve to address the protein security of hinterland population, though outside Panaji.

Herpetofaunal diversity is moderate as these groups are affected by changes in microhabitat and microclimate, barring a few areas, the city with its anthropogenic capital may not offer niches for occupancy to the reptiles, specially snakes, skinks, lizards, terrapins, turtles etc. Also, one has to understand that these groups are more reclusive in their habits as also nocturnal. More intensive surveys are required to update the inventory for this group. Also, in absence of referral database the identification of species becomes difficult and hence reported numbers become an understatement as in case of Amphibians, pointing to the urgent need for local expertise and a collated user friendly database of various groups. It is also pertinent to suggest that the limited time over which this study has been carried out will highlight only seasonal diversity specially of birds (resident and migratory) and butterflies, which indeed is a small fraction of the total diversity.

Among the floral candidates trend of dominance is trees, followed by shrubs and herbs. Good number of climbers have been enumerated and identified. The other groups are parasites, ferns, algae, xerophytes, etc. Trees have a particular role in offering habitat to a range of birds, reptiles and insects. There is a need to make the inventory more comprehensive and add other groups such as Bryophytes etc.



CONSERVATION MEASURES

It is a well accepted norm that the highest form of protection is protecting habitat rather than individual species. Many urban biodiversity habitats are the last reserve of species that have actually been displaced from their natural ranges. Urban landscapes and ecosystems thus have a huge habitat value, there is a great concern over the loss of biological diversity; saving individual species is not an effective method. Protecting the habitat of the species provides a good conservation measure. Habitat is all encompassing ecological entity that besides offering space and resources; allows population interaction, exchange of energy and material exchange. Thus the focus in conservation efforts has to be on preserving integrity of habitat.

During the study the field team has also documented threats to urban biodiversity and as such observed several anthropogenic activities that are not very conducive to conservation. Some of the activities included changes in land-use patterns, occupancy of large tracts by invasive species, deliberate destruction of vegetation to clear up plots for construction, clearing up of deadwood and logs, feral cattle movement, plastic bags and bottle dumping in the vegetated sectors of the city.

On gross assessment the following interventions have been suggested in the existing diversity and increase the city's biodiversity.

1. Exotics despite the visual and aesthetic appeal in landscape planning, it occurs at the cost of native flora. The City has a large variety of exotic species. Though the existing exotic species may be allowed to grow, introducing and patronizing new exotic species specially in construction sector for green belts and avenue plantation should be avoided as the exotic species affect the survival of the native plants.

2. Plantation of the native and local fruit and flower bearing species should be encouraged to increase the insect (butterfly) and bird life. Surveillance for identifying such areas for plantations be carried out and mapped followed up with requisite soil analysis etc. to ascertain compatibility. Moreover, there are some areas in the city specially Altinho hill side where plantation of native species can be undertaken.

3. The area around both the sides of St. Inez Creek can be utilized for avenue plantation (wherever possible) to enhance its eco-tourism value and habitat value.

4. Ribandar area (Ribandar road) has rich mangrove presence and diversity. Mangrove plantation should be undertaken along the intertidal fringe adjoining the road. The already existing mangrove patches should be monitored for growth and conserved; these can be protected by proper live/ biological fences that will help the faunal movement at the same time restrict anthropogenic activities. Stretch of mudflat should be retained along the Ribandar road, as it forms a integral part of feeding of ground for several waders (migratory and resident)
5. There is a potential to develop several interpretation zones e.g. Butterfly zone, herb and shrub zone, bird watching zone, etc. Few Gardens in the city can be utilized for this purpose.
6. The Parade Ground at Campal opposite Bal Bhavan can be enclosed by planting trees on all four sides which can attract bird life.
7. The coast of Panaji City is an economic, biological and social asset and therefore a coastal zone management strategy has to be developed to ensure sustainable management of the coast.
8. The Miramar Beach stretch is diverse in terms of coastal species diversity. However, intensive beach tourism and easy access to this region is ruining the area of its richness and impacting the supralittoral stretch. The Miramar- Dona Paula bypass road along the beach side should be fenced and the area declared Plastic free Zone, disallowing visitors from carrying plastics, soft drinks or alcoholic beverages and littering the place. Miramar beach also consist of excellent sand dunes which need immediate attention and conservation strategy.
9. It has been noticed that there are people who misuse the vegetated patches in isolated locations (Miramar and Altinho) for alcohol parties, and other illicit activities disturbing the ecosystem and its biological endowments. This should be regulated and stopped as the resilience of the ecosystem is at stake.
10. The construction sector is a significant pressure on natural habitats. Careful consideration may be given by the concerned Regulatory Authorities in the state such as SEAC and SEIAA and Environmental Clearances granted only after careful scrutiny and assessment of Impact of the proposal on the local Ecology & Biodiversity. Such statutory regulations establish a precedence of mitigational compliances and lessen the impact. This will not only help in maintaining the biodiversity, but also continue to be an example of for conserving the green cover of the City.
11. The City of Panaji has a mosaic of ecosystems with a rich diversity of biological endowments. The need of the hour is to demystify this information and display it at strategic points in the city. It would be ideal if information/ interpretation panels/ signages are setup at several locations giving information of the flora and fauna throughout the City. This will help in creating awareness amongst both the residents as well as visitors and promote conservation of the flora and fauna in the City.

PROPOSED ACTION PLAN



- 1) **Biodiversity Awareness Campaign:**
 - Through schools by organizing competitions
 - Biodiversity corner on the websites from education sector
 - Develop informative leaflets
 - Incorporate Biodiversity activities/ floats at events such as shigmotsav, carnival, etc.
 - Build on existing environmental education initiatives e.g Awarding/declaring green schools/offices etc.
 - Develop biodiversity centre (in collaboration with school/Goa Science Centre)
 - Update CCP web information currently available
- 2) **Sectoral involvement in Biodiversity issues:**
 - Co-ordinate/ direct construction/builders to develop “green plan” for every project
 - Collaborate with Forest Department to establish nurseries for CCP
 - Award green house/complex/schools
- 3) **Develop interpretation strategy**
 - Place signages /hoardings for public awareness
- 4) **Fill gap on priority species and habitats**
 - Mapping habitats using GIS
- 5) **Planning for Biodiversity**
 - Improve provision of riparian habitats (e.g St. Inez creek)
 - Encourage terrace gardening
 - Plant native tree species
 - Erect bird boxes in suitable areas
 - Clean St. Inez creek and boating facilities may be established
 - Moratorium on Altinho hills specially considering the natural calamities
 - Restoration of Miramar beach
 - Restrict dumping of garbage in mangrove area near Kadamba bus stand and protect the same
 - Adding new exotic species should be avoided

Figure 1 : Chart showing the percent composition of flora and fauna of the Panaji City

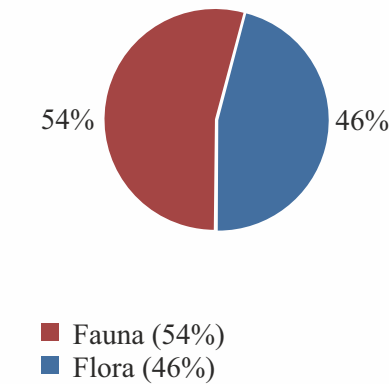


Figure 2 : Chart showing the percent faunal composition of the Panaji City

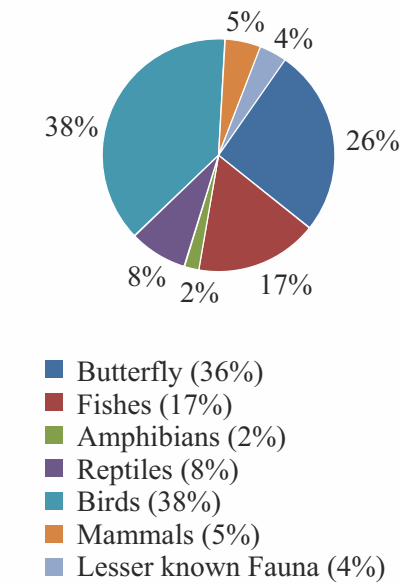
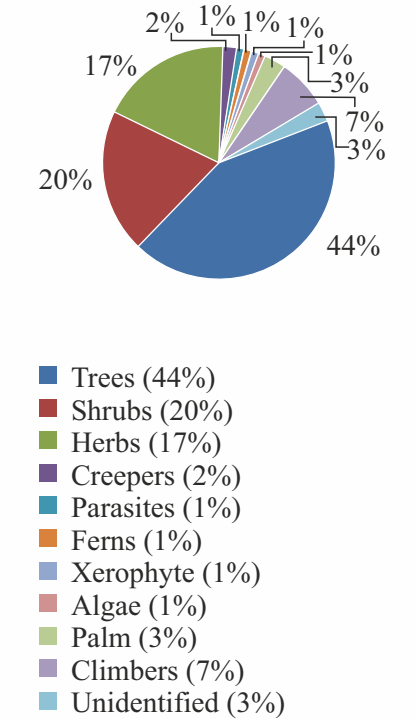
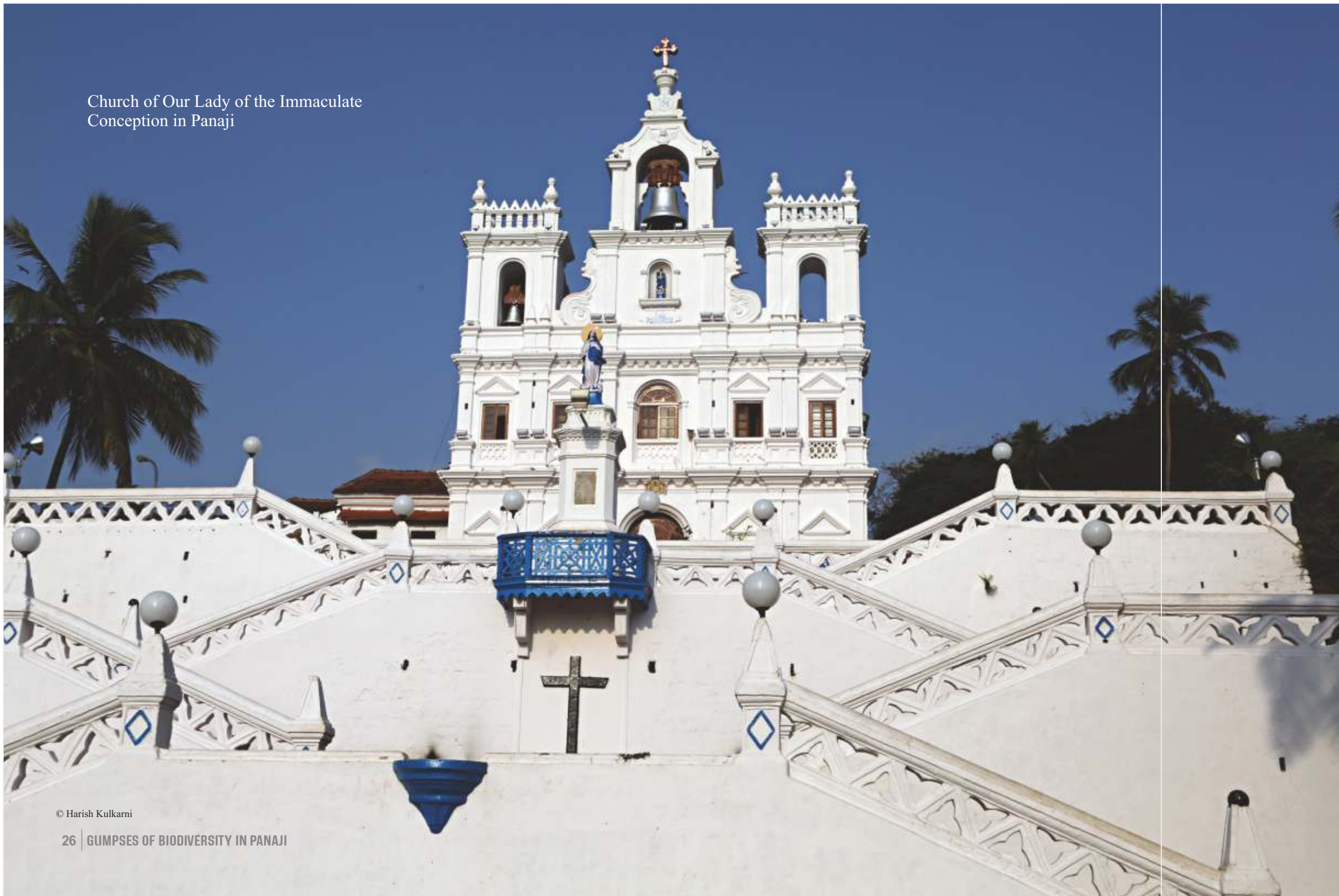


Figure 3 : Chart showing the percent floral composition of the Panaji City



Church of Our Lady of the Immaculate Conception in Panaji



PANAJI CITY'S UNIQUE HERITAGE



Mahalaxmi Temple







© Harish Kulkarni



Dona Paula Beach

© Harish Kulkarni



OVERVIEW OF CITY HABITATS

Forests - Costal Region - Mangroves - Wetlands





View of Altinho (Hill)- Panaji



Sand dune ecosystem- Miramar Beach



Beach ecosystem- Miramar



View of Mala Lake – Panaji



Sand dune formation on Miramar beach



Casuarina plantation along Miramar Beach



Khazan ecosystem- Ribandar



Paddy fields



Prominent coastal feature observed along Dona Paula cliff



Picturesque view of Caranzalem Beach



Flock of sea gulls seen feeding at Caranzalem beach



St. Inez Creek- upstream, Panaji



Estuary- Dona Paula



Salt Pans- Patto, Ribandar



Lush green mangroves fringing the river inlet- Patto, Ribandar



St. Inez Creek- downstream, Panaji



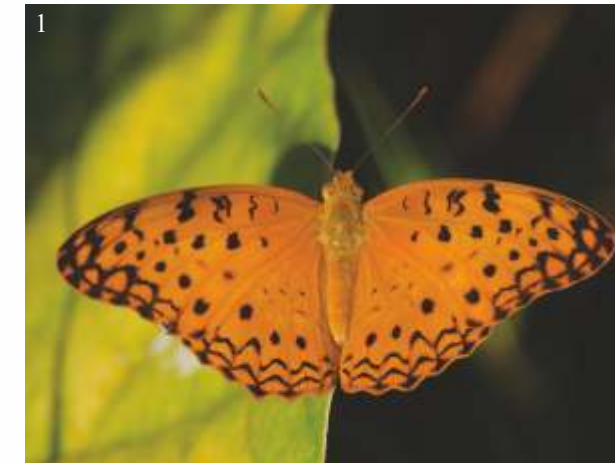
Fresh water spring at Mala

Oriental Magpie Robin
Copsychus saularis



OVERVIEW OF CITY FAUNA

Birds - Butterflies - Reptiles & Amphibians - Mammals



1. Common Leopard *Phalanta phalantha* 2. Hanuman Langur *Semnopithecus entellus*
3. Green Keelback *Macropisthodon plumbicolor* 4. Forest Calotes *Calotes rouxi*



White-checked Barbet
Megalaima viridis

© Raman Kulkarni

BIRDS



Orange-headed Thrush *Zosterops citrina*



Painted Stork
Mycteria leucocephala



1. Red-vented Bulbul *Pycnonotus cafer* 2. Coppersmith Barbet *Megalaima haemacephala*
3. Oriental White-eye *Zosterops palpebrosus*

Intermediate Egret
Mesothoix intermedia



1. Cattle Egret *Bubulcus ibis* 2. Striated Heron *Butorides striata* 3. Little Cormorant *Phalacrocorax niger*
4. Purple Swamphen *Porphyrio porphyrio*



Black-headed Gull
Chroicocephalus ridibundus



1. Red-wattled Lapwing *Vanellus indicus* 2. Pallas's Gull *Ichthyaetus ichthyaetus*
3. Black-winged Stilt *Himantopus himantopus* 4. Woolly-necked Stork *Ciconia episcopus*



Indian Roller
Coracias benghalensis



1. Green Bee-eater *Merops orientalis* 2. Jungle Myna *Acridotheres fuscus* 3. Indian Robin *Saxicoloides fulicata*
4. Common Kingfisher *Alcedo atthis*

Tamil Lacewing *Cethosia nietneri*



BUTTERFLIES



Common Indian Crow *Euploea core*

One Spot Grass Yellow
Eurema andersoni



1. Blue Mormon *Papilio polymnestor* 2. Psyche *Leptosia nina* 3. Common Sailer *Neptis hylas*
4. Mottled Emigrant *Catopsilia pyranthe*



Common Bluebottle
Graphium sarpedon



1. Common Wanderer *Pareronia valeria* 2. Common (Lemon) Emigrant *Catopsilia pomona*
3. Grey Count *Tanaecia lepidea* 4. Tailed Jay *Graphium agamemnon*



Acampe praemorsa

OVERVIEW OF CITY FLORA

Trees - Shrubs - Herbs - Climbers



1



2



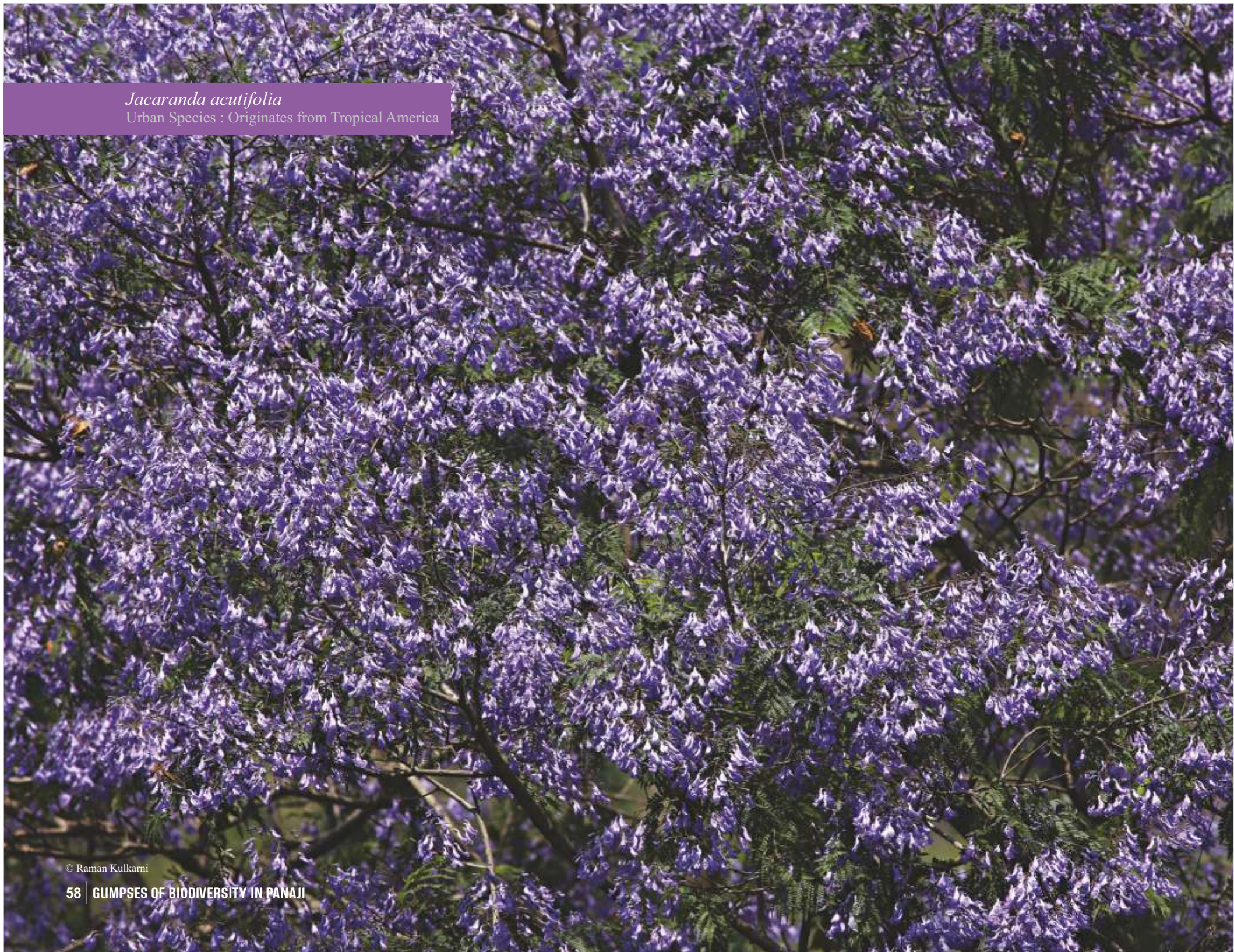
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4

1. *Careya arboea* 2. *Helicteres isora* 3. *Mimosa pudica* 4. *Capparis zeylanica*

Jacaranda acutifolia
Urban Species : Originates from Tropical America



Delonix regia
Urban Species : Originates from Madagascar



TREE



1 & 2. *Ficus microcarpa* (Nandruk), 3. *Persea americana* (Avocado), 4 & 5. *Millingtonia hortensis*- Neem Chameli (Indian Cork tree)



Gliricidia sepium
Urban Species : Originates from South America

© Trupti Jadhav



Spathodea campanulata
Urban Species : Originates from Africa

© Dr. S. R. Yadav



Cassia fistula

© Raman Kulkarni



1. *Garcinia indica*



2. *Syzygium cumini*



3. *Mangifera indica*



4. *Artocarpus heterophyllus*

Lagerstroemia reginae



1. *Butea monosperma* 2. *Calycopteris floribunda* 3. *Saraca asoca* 4. *Erythrina stricta*

Bauhinia purpurea



1. *Holarrhena pubescens* 2. *Ziziphus mauritiana* 3. *Gmelina arborea* 4. *Tectona grandis*



1. *Rauvolfia serpentina* 2. *Urena lobata* 3. *Acanthus ilicifolius* 4. *Ixora coccinea-visoiflora* 5. *Nyctanthes arbor-tristis*



6. *Solanum torvum* 7. *Eranthemum roseum* 8. *Lantana camara* 9. *Ixora coccinea* 10. *Calotropis gigantea*



1. *Cleome viscosa* 2. *Cleome rutidosperma* 3. *Tridax procumbens* 4. *Celosia argentea*

5. *Physalis minima* 6. *Andrographis paniculata* 7. *Portulaca oleracea* 8. *Amorphophallus paeonifolius*



Gloriosa superba



Ipomoea obscura



Common Langur
Presbytis entellus



M A M M A L S



Three-striped Palm Squirrel *Funambulus palmarum*

SOME BEAUTIFUL INSECTS



Crimson Marsh Glider
Trithemis aurora



1. Green Marsh Hawk *Orthetrum sabina*
2. Pied Paddy Skimmer *Neurothemis tullia*

SPIDERS

Two-striped Jumper
Telamonia dimidiata

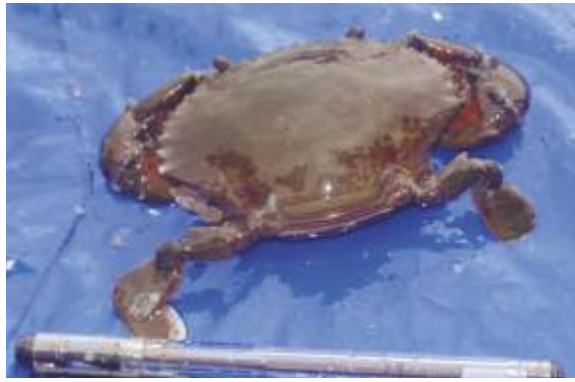


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1. Two-striped Jumper *Telamonia dimidiata* 2. Salticidae *Chrysilla* Sp. 3. Black Wood Spider *Nephila kuhlii*

© Raman Kulkarni



Kulli



Kulli



Waghi



Sungat



Dodiyaro



Shetuk



Sangat



Ukir



Snapper



Tilapia



Palu



Gibber



Karkaro



Mudoshi



Tonki



Lep



Karchani



Motiyali

English Name: **Common Vine Snake**
Scientific Name: *Ahaetulla nasuta*
Local Name: Haryali, Chuttisorop



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REPTILES & AMPHIBIANS



English Name: **Indian Rock Python**
Scientific Name: *Python molurus*
Local Name: Azgar, Har

© Dr. Nitin Sawant

English Name : **Beaked Worm Snake**
Scientific Name : *Grypotyphlops acutus*
Local Name : Telyo, Tel sorop or Sulo



English Name : **Indian Rat Snake**
Scientific Name : *Ptyas mucosa*
Local Name : Divod



English Name: **Spectacled Cobra**
Scientific Name: *Naja naja*
Local Name: Nag, Nagin, parro, Jagyacho, Motelo, Pandro, Wodlo, Sorop.



English Name: **Russell's viper**
Scientific Name: *Daboia russelii*
Local Name: Agyomandol, Ghonos, Kusdo



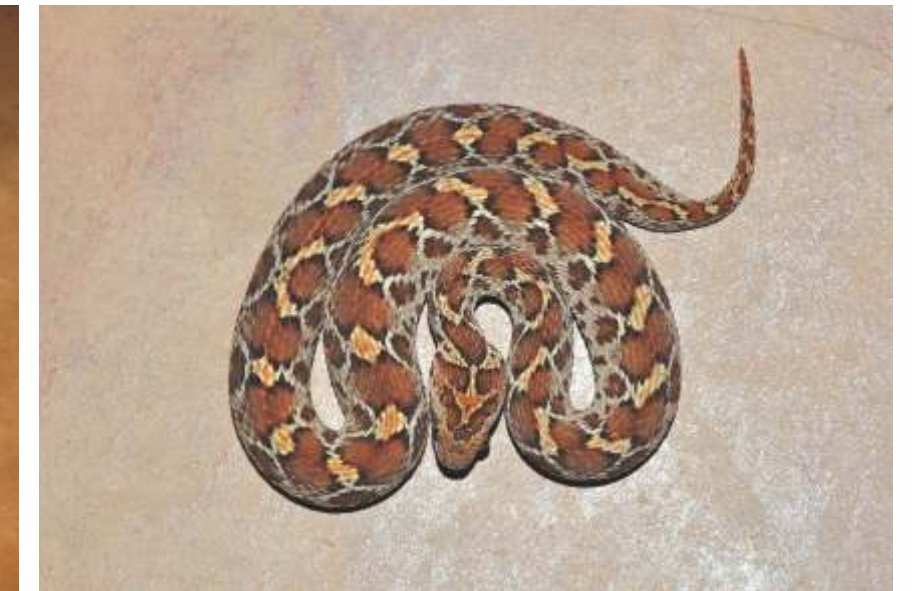
English Name : **Checked Keelback Water Snake**
Scientific Name: *Xenochrophis piscator*
Local Name: Yevale, Levale, Panghonos



English Name : **Common Wolf Snake**
Scientific Name : *Lycodon aulicus*
Local Name : Not known



English Name: **Common Indian Krait**
Scientific Name: *Bungarus caeruleus*
Local Name: Kaner



English Name: **Saw Scaled Viper**
Scientific Name: *Echis carinatus*
Local Name: Furshe



Common Garden Lizard
Calotes versicolor



Roux's Forest Lizard
Calotes rouxii

Common Skittering Frog
Euphlyctis cyanophlyctis



Indian Bull Frog *Hoplobatrachus tigerinus*
Common Indian Toad *Duttaphyrnus melanostictus*

Table 1: Reptilian diversity existing in the City of Panaji

No	Scientific Name	English Name	Local Name	IUCN
1	<i>Ahaetulla nasuta</i>	Green Vine Snake	Hariyali	LC
2	<i>Amphiesma beddomei</i>	Beddome's Keelback	Yevale	LC
3	<i>Bungarus caeruleus</i>	Common Krait	Kaner	LC
4	<i>Calliophis castoe</i>	Castoe's Coral Snake	Raktmaindol	DC
5	<i>Calotes rouxii</i>	Forest Calotes	Shedo	LC
6	<i>Calotes versicolor</i>	Common Calotes	Sherdo	
7	<i>Cerberus rynchops</i>	Dog-faced water Snake	Panghonas	LC
8	<i>Dendrelaphis tristis</i>	Bronzeback Tree Snake	Nanati	LC
9	<i>Echis carinatus</i>	Saw-scaled Viper	Phurse	
10	<i>Eutropis carinata</i>	Brahminy skink	Shirli	LC
11	<i>Gongylorhynchus conicus</i>	Common Sand Boa	Malun	
12	<i>Hemidactylus brookii</i>	Brook's Gecko	Pal	
13	<i>Hemidactylus frenatus</i>	House Gecko	Pal	LC
14	<i>Lissemys punctata</i>	Indian Flap-shelled Turtle	Tupo Kasav	LC
15	<i>Lycodon aulicus</i>	Common Wolf Snake	Pasko	
16	<i>Lygosoma goaensis</i>	Goan supple skink	Shirli	DC
17	<i>Mabuya carinata</i>	Common Skink	Shirli	DC
18	<i>Melanochelys trijuga</i>	Indian Black Turtle	Jaddo Kasav, Hagro Kasav	NT
19	<i>Naja naja</i>	Common Cobra	Nag, Parro	DD
20	<i>Natrix piscator</i>	Checkered Keelback	Yevale	
21	<i>Ptyas mucosus</i>	Rat Snake	Dhivad	
22	<i>Python molurus</i>	Indian Rock Python	Har, Azgar	
23	<i>Typhlina acutus</i>	Blind or Beaked Worm Snake	Telyo	
24	<i>Typhlina bramina</i>	Blind or Common Worm Snake	Telyo	LC
25	<i>Varanus bengalensis</i>	Common Indian Monitor Lizard	Gaar, Ghorpad	
26	<i>Vipera russelli</i>	Russell's Viper	Ghonus, Agio, Kusdo, Maindo	

*LC- Least concern *DD- Data deficient *NT- Near threatened

Table 2: Mammalian diversity existing in the City of Panaji

No	Scientific Name	English Name	Local Name	WLPA Schedule/ IUCN
1	<i>Bandicota indica</i>	Bandicoot Rat	Kohinoor, Koloundir	Sch.IV
2	<i>Bubalus bubalis</i>	Water buffalo	Redo	
3	<i>Cyanopterus sphinx</i>	Short-nosed Fruit Bat	Vaghul	LC
4	<i>Delphinus delphin</i>	Common Dolphin		LC
5	<i>Felis catus</i>	House Cat	Manjar	

6	<i>Funambulus palmarum</i>	Three-striped Palm Squirrel	Khar, Chani	
7	<i>Herpestes edwardsi</i>	Common Grey Mongoose	Mungoos, mungas	Sch. IV/LC
8	<i>Hyaena hyaena</i>	Striped hyena	Yeul	Sch. III/NT
9	<i>Hystrix indica</i>	Indian Porcupine	Sheval, Sal	Sch. IV/LC
10	<i>Lepus nigricollis</i>	Indian hare	Soso	Sch. IV
11	<i>Lutrogale perspicillata</i>	Smooth-coated otter	Udh	Sch. II
12	<i>Macaca radiata</i>	Bonnet macaque	Khete	
13	<i>Megaderma spasma</i>	Lesser false vampire bat	Vaghul	
14	<i>Mus booduga</i>	Field mouse	Udir	
15	<i>Pipistrellus sps.</i>	Bat	Pako	
16	<i>Paradoxurus hermaphroditus</i>	Common Palm Civet	Katanor, katandoor	Sch. II
17	<i>Presbytis entellus</i>	Common Langur	Wanar, Wanor	Sch. II
18	<i>Pteropus giganteus</i>	Indian Flying Fox	Vatwagul, Pako	Sch. V
19	<i>Rattus rattus</i>	Common House Rat	Udir	Sch. V
20	<i>Rhinolophus rouxii</i>	Rufous horseshoe bat	Vaghul	
21	<i>Rousettus leschenaulti</i>	Fulvous Fruit Bat	Vatvaghul, Vaghul	Sch. V
22	<i>Scotophilus kuhlii</i>	Lesser Asiatic yellow bat	Vaghul	
23	<i>Suncus murinus</i>	House Shrew	Chichundri	
24	<i>Sus domesticus</i>	Domestic pig	Ducar	
25	<i>Taphozous melanopogon</i>	Black-bearded tomb bat	Vaghul	

*LC- Least concern *DD- Data deficient *NT- Near threatened *VU- Vulnerable

Table 3: Butterfly Diversity existing in the City of Panaji

No	Scientific Name	English Name	WLPA Schedule
1	<i>Abisara echerius</i>	Plum Judy	
2	<i>Acraea violae</i>	Tawny Coster	
3	<i>Ariadne aridne</i>	Angled Castor	
4	<i>Ariadne merione</i>	Common Castor	
5	<i>Athyma perius</i>	Common Sergent	
6	<i>Atrophaneura aristolochiae</i>	Common Rose	
7	<i>Atrophaneura hector</i>	Crimson Rose	Sch. I
8	<i>Caleta caleta</i>	Angled Pierrot	
9	<i>Castalius rosimon</i>	Common Pierrot	Sch. I
10	<i>Catopsilia pomona</i>	Common Emigrant	
11	<i>Catopsilia pyranthe</i>	Mottled Emigrant	
12	<i>Cepora nedina</i>	Lesser Gull	
13	<i>Cepora nerissa</i>	Common Gull	
14	<i>Cethosia nietheri</i>	Tamil Lacewing	

15	<i>Chilades pandava</i>	Plains Cupid	
16	<i>Chilasa clytia</i>	Common Mime	
17	<i>Colotis amata</i>	Small Salmon Arab	
18	<i>Curetis thetis</i>	Indian Sun Beam	
19	<i>Danaus chrysippus</i>	Plain Tiger	Sch. I
20	<i>Danaus genutia</i>	Striped Tiger	
21	<i>Delias eucharis</i>	Common Jezebel	
22	<i>Elymnias hypermnestra</i>	Common Palmfly	
23	<i>Euploea core</i>	Common Crow	
24	<i>Eurema andersoni</i>	Once Spot Grass Yellow	
25	<i>Eurema brigitta</i>	Small Grass Yellow	
26	<i>Eurema hecabe</i>	Common Grass Yellow	
27	<i>Euthelia aconthea</i>	Common Baron	
28	<i>Freyeria trochylus</i>	Grass Jewel	
29	<i>Gangara thrysis</i>	Gaint Red Eye	
30	<i>Graphium agamemnon</i>	Tailed Jay	
31	<i>Graphium doson</i>	Common Jay	
32	<i>Graphium sarpedon</i>	Common Blue Bottle	
33	<i>Hebomoia glaucippe</i>	Great Orange Tip	
34	<i>Hypolimnas bolina</i>	Great Egg Fly	
35	<i>Hypolimnas misippus</i>	Danaid Egg Fly	
36	<i>Jamides celeno</i>	Common Ceruleam	
37	<i>Junonia almanac</i>	Peacock Pansy	
38	<i>Junonia atlites</i>	Grey Pansy	
39	<i>Junonia iphita</i>	Chocolate Pansy	
40	<i>Junonia lemonias</i>	Lemon Pansy	
41	<i>Lampides boeticus</i>	Pea Blue	
42	<i>Leptosia nina</i>	Psyche	
43	<i>Melanitis leda</i>	Common Evening Brown	
44	<i>Mycalesis perseus</i>	Common Bushbrown	
45	<i>Neptis hylas</i>	Common Sailor	
46	<i>Oriens glider</i>	Common Dartlet	
47	<i>Orsotriaena medus</i>	Nigger	
48	<i>Papilio demoleus</i>	Lime Butterfly	
49	<i>Papilio helenus</i>	Red Helen	
50	<i>Papilio polymnestor</i>	Blue Mormon	
51	<i>Papilio polytes</i>	Common Mormon	
52	<i>Parantica aglea</i>	Glassy Tiger	
53	<i>Pareronia ceylanica</i>	Dark Wanderer	
54	<i>Pareronia valeria</i>	Common Wanderer	
55	<i>Phalanta phalantha</i>	Common Leopard	

56	<i>Rapala manea</i>	Slate Flesh	
57	<i>Spialia galba</i>	Indian Skipper	
58	<i>Surendra quercetorum</i>	Common Acacia Blue	
59	<i>Talicauda nyseus</i>	Red Pierrot	
60	<i>Tanaecia lepidea</i>	Grey Count	
61	<i>Taractrocera ceramas</i>	Tamil Grass Dart	
62	<i>Troides minos</i>	Southern Birdwing	
63	<i>Vanessa cardui</i>	Painted lady	

Table 4: Amphibian Diversity existing in the City of Panaji

No	Scientific Name	English Name	Local name
1	<i>Duttaphrynus melanostictus</i>	Common Indian Toad	Manki
2	<i>Euphyctis cyanophlyctis</i>	Skittering frog	
3	<i>Euphyctis sp.</i>		
4	<i>Hylarana malabarica</i>	Fungoid Frog	Bebki
5	<i>Hoplobatrachus tigerinus</i>	Indian Bull Frog	Bebo
6	<i>Hylarana temporalis</i>	Bronze Frog	Bebki
7	<i>Indirana sp.</i>	Indian Frog	
8	<i>Microhyla sp.</i>	Narrow-mouthed Frog	

Table 5: Invertebrate diversity existing in the City of Panaji

No	Scientific Name	English Name	Local name
1	<i>Buthoscorpion politus</i>	Scorpion	Vinchu
2	<i>Charybdis affinis</i>	Crab	Kulli
3	<i>Charybdis annulata</i>	Crab	Kulli
4	<i>Charybdis callianssa</i>	Crab	Kulli
5	<i>Cormocephalus Westwoodi</i>	Centipede	Wagoni
6	<i>Digitipes barnabasi</i>	Centipede	Wagoni
7	<i>Diogenes affinis</i>	Hermit crab	Kulli
8	<i>Ethmostigmus sp.</i>	Centipede	Wagoni
9	<i>Eurycarcinus orientalis</i>	Mud crab	Kulli
10	<i>Grapsus albolineatus</i>	Crab	Kulli
11	<i>Hottentota pachyurus</i>	Scorpion	Vinchu
12	<i>Macrobrachium dayanum</i>	Prawn	Sungat
13	<i>Macrobrachium idella</i>	Prawn	Sungat
14	<i>Macrobrachium malcomsonil</i>	Prawn	Sungat
15	<i>Matuta victor</i>	Crab	Kulli
16	<i>Diplopoda</i>	Millipede	Ghotalli
17	<i>Pilipede glomeris Sp.</i>	Pill milipede	Waghachi Ui

18	<i>Portunus pelagicus</i>	Mud Crab	Kulli
19	<i>Scolopendra hardwickei</i>	Tiger Centipede	Kakon Gom
20	<i>Scylla serrata</i>	Giant Mud Crab	Kulli
21	<i>Scylla tranquebarica</i>	Purple Mud Crab	Kulli
22	<i>Uca lactea</i>	Fiddler Crab	Kulli
23	<i>Varuna litterata</i>	Crab	Kulli
24	<i>Crassostrea sp.</i>	Rock Oyster	Kalva

Table 6: Fish Diversity existing in the City of Panaji

No	Scientific Name	English Name	Local name
1	<i>Ambassis gymnocephalus</i>	Bald Glassy Perchlet	Kapyo, buranto
2	<i>Arius thalassinus</i>	Catfish	Sangat
3	<i>Belone cancila</i>	Freshwater Garfish	Toki
4	<i>Chaetodon vittatus</i>	Blacktail butterfly fish	Kombo
5	<i>Chanos chanos</i>	Milkfish /White Mullet	Gholshi
6	<i>Chrysophrys berda</i>	Perch	Palu
7	<i>Chrysophrys datnia</i>	Perch	Palu
8	<i>Coilia dussumieri</i>	Gold Spotted Anchovy	Capsali
9	<i>Equula blochii</i>	Bloch's pony fish	Khapi
10	<i>Equula daura</i>	Gold striped Pony fish	Khapi
11	<i>Equula dussumieri</i>	Dussumier's pony fish	Khapi
12	<i>Equula ruconius</i>	Deep Pugnose Ponyfish	Khapi
13	<i>Etrouss uratensis</i>	Pearl Spot	Kalundra
14	<i>Gerres lucidus</i>	Saddleback silver biddy	Karchani
15	<i>Gerres sp.</i>	Butter fish	Karchani
16	<i>Hemiramphus cantori</i>	Gar fish	Toki
17	<i>Lates calcarifer</i>	Giant Sea Perch	Chonak
18	<i>Lutianus johnii</i>	Mangrove Red Snapper	Tambaso
19	<i>Megalops cyprinoids</i>	Ox-eye herring	Ker
20	<i>Mugil cephalus</i>	Flathead Grey Mullet	Polaye shevtali
21	<i>Mugil parsia</i>	Gold Spot mullet	Kali shevtali
22	<i>Mystus gulio</i>	Long-whiskered catfish	
23	<i>Ostracion cornutus</i>	Longhorn Cowfish	Bonkocho
24	<i>Platycephalus scaber</i>	Rough Flathead	Bhuyari
25	<i>Plotosus arab</i>	Striped Eel Catfish	Kodem
26	<i>Polynemus tetradactylus</i>	Indian Salmon	Rawas
27	<i>Pseudorhombus javanicus</i>	Javanese flounder	Leph
28	<i>Pseudorhombus triocellatus</i>	Flounder	Kurapani Leph
29	<i>Scatophagus argus</i>	Spotted butterflyfish	Mutre
30	<i>Scorpaenopsis oxycephala</i>		Hukir

31	<i>Serranus diacanthus</i>	Reef Cod	Gobro
32	<i>Serranus sexfasciatus</i>	Cod	Gobro
33	<i>Sillago sihama</i>	Silver Shillago/Whiting	Mudoshi
34	<i>Solea ovata</i>	Ovate Sole fish	Leph
35	<i>Synaptura commersoniana</i>	Commerson's sole	Leph
36	<i>Therapon jarbua</i>	Tiger bass/ crescent perch	Karkaro
37	<i>Trygon imbricata</i>	Ray Fish	Waghole
38	<i>Trygon sephen</i>	Kite or Ray Fish	Waghole
39	<i>Trypauchen vagina</i>	Ribbon Fish	Tambdehalle
40	<i>Umbrina dussumieri</i>	Bearded Croaker	Dodyaro, Hodki

Table 7: Avian diversity existing in the City of Panaji

No	Scientific Name	English Name	Local name
1	<i>Accipiter badius</i>	Shikra	
2	<i>Acridotheres fuscus</i>	Jungle Myna	Salori
3	<i>Aegithina tiphia</i>	Common Iora	
4	<i>Alcedo atthis</i>	Common Kingfisher	Kirkiro
5	<i>Amaurornis phoenicurus</i>	White-Breasted Waterhen	Kuakombdi
6	<i>Anastomus oscitans</i>	Asian Openbill	
7	<i>Anhinga melanogaster</i>	Darter or snake bird	
8	<i>Ardea cinerea</i>	Grey Heron	Boke
9	<i>Ardea purpurea</i>	Purple Heron	Boke, Kesar
10	<i>Ardeola grayii</i>	Indian Pond Heron	Boke
11	<i>Ardeola striatus</i>	Little Green Heron	
12	<i>Artamus fuscus</i>	Ashy Wood swallow	
13	<i>Athene brama</i>	Spotted Owlet	Natuk
14	<i>Butorides striatus</i>	Little Heron	
15	<i>Bubulcus ibis</i>	Cattle Egret	Baglo
16	<i>Casmerodius albus</i>	Great Egret	Baglo
17	<i>Celeus brachyurus</i>	Rufous Woodpecker	Sutarpakshi
18	<i>Centropus sinensis</i>	Greater Coucal	Kucho-kombod
19	<i>Charadrius dubius</i>	Little Ringed Plover	
20	<i>Ciconia ciconia</i>	Woolly-Necked Stork	
21	<i>Columba livia</i>	Rock Pigeon	Kabutar, Parvo
22	<i>Copsychus saularis</i>	Oriental Magpie Robin	Dhobi
23	<i>Coracias benghalensis</i>	Indian Roller	
24	<i>Corvus splendens</i>	House Crow	Kavlo
25	<i>Dendrocitta vagabunda</i>	Rufous Treepie	
26	<i>Dendrocygna javanica</i>	Lesser Whistling Duck	Badak
27	<i>Dendronanthus indicus</i>	Forest Wagtail	

28	<i>Dicrurus aeneus</i>	Bronzed Drongo	
29	<i>Dicrurus leucophaeus</i>	Ashy Drongo	
30	<i>Dicrurus macrocercus</i>	Black Drongo	Kalpiti
31	<i>Dinopium benghalense</i>	Black-rumped Flameback	
32	<i>Dinopium javanense</i>	Common Flameback	Sutarpakshi
33	<i>Egretta garzetta</i>	Little Egret	Balar, Baglo
34	<i>Egretta gularis</i>	Western Reef Egret	Balar
35	<i>Elanus caeruleus</i>	Black shouldered Kite	
36	<i>Eudynamis scolopacea</i>	Asian Koel	Kogul, kokila
37	<i>Fulica atra</i>	Common Coot	
38	<i>Gelochelidon nilotica</i>	Gullbilled Tern	
39	<i>Halcyon capensis</i>	Stork-Billed Kingfisher	Kirkiro
40	<i>Halcyon smyrnensis</i>	White-Throated Kingfisher	Kirkiro
41	<i>Haliastur indus</i>	Brahminy Kite	Ghond, Ghar
42	<i>Haliaeetus leucogaster</i>	White bellied Sea Eagle	Ghar
43	<i>Himantopus himantopus</i>	Black-Winged Stilt	
44	<i>Hirundo daurica</i>	Red-rumped Swallow	
45	<i>Hirundo rustica</i>	Barn Swallow	
46	<i>Hirundo smithii</i>	Wire-tailed Swallow	
47	<i>Ixobrychus cinnamomeus</i>	Cinnamon Bittern	
48	<i>Larus brunnicephalus</i>	Brown-Headed Gull	
49	<i>Larus ridibundus</i>	Black-Headed Gull	
50	<i>Lonchura striata</i>	White-Rumped Munia	
51	<i>Meleagris gallopavo</i>	Black turkey	
52	<i>Megalaima haemacephala</i>	Coppersmith Barbet	
53	<i>Megalaima viridis</i>	White-Cheeked Barbet	Kuturgo
54	<i>Megalaima zeylanica</i>	Brown-Headed Barbet	Sutarpakshi
55	<i>Merops orientalis</i>	Green Bee-eater	Kirato
56	<i>Mesophoyx intermedia</i>	Intermediate Egret	Baglo
57	<i>Metopidius indicus</i>	Bronze- Winged Jacana	
58	<i>Milvus migrans</i>	Black Kite	
59	<i>Nectarinia lotenia</i>	Loten's Sunbird	
60	<i>Nectarinia minima</i>	Crimson-backed Sunbird	
61	<i>Nectarinia zeylonica</i>	Purple-rumped Sunbird	
62	<i>Numenius arquata</i>	Eurasian Curlew	
63	<i>Numenius phaeopus</i>	Whimbrel	
64	<i>Nycticorax nycticorax</i>	Black Crowned Night Heron	
65	<i>Oriolus oriolus</i>	Eurasian Golden Oriole	
66	<i>Orthotomus sutorius</i>	Tailor bird	Shimpi pakshi
67	<i>Pandion haliaetus</i>	Osprey	
68	<i>Passer domesticus</i>	House Sparrow	Chimani

69	<i>Pavo cristatus</i>	Indian Peafowl	Mor
70	<i>Phalacrocorax pygmeus</i>	Little Cormorant	Budeli
71	<i>Platalea leucorodia</i>	Eurasian Spoonbill	
72	<i>Ploceus philippinus</i>	Baya Weaver	
73	<i>Porphyrio porphyrio</i>	Purple Swamp hen	Telkombo
74	<i>Prinia socialis</i>	Ashy Prinia	
75	<i>Psittacula cyanocephala</i>	Plum-headed Parakeet	Kir, popat
76	<i>Psittacula krameri</i>	Rose-ringed Parakeet	Kir, popat
77	<i>Pucnonotus jocosus</i>	Red-whiskered Bulbul	Pitkoli
78	<i>Pycnonotus cafer</i>	Red-vented Bulbul	Buchudi
79	<i>Pycnonotus luteolus</i>	White-browed Bulbul	
80	<i>Sarkidiornis melanotos</i>	Comb Duck	Badak
81	<i>Saxicoloides fulicata</i>	Indian Robin	
82	<i>Streptopelia chinensis</i>	Spotted Dove	Kavdo
83	<i>Sterna aurantia</i>	River tern	
84	<i>Terpsiphone paradise</i>	Asian Paradise-Flycatcher	
85	<i>Threskiornis melanocephalus</i>	Balck-Headed Ibis	
86	<i>Tringa hypoleucos</i>	Common Sandpiper	
87	<i>Tringa nebularia</i>	Common Greenshank	
88	<i>Tringa stagnatilis</i>	Marsh Sandpiper	
89	<i>Tringa totanus</i>	Common Redshank	
90	<i>Turdoides striatus</i>	Jungle Babbler	
91	<i>Tyto alba</i>	Barn Owl	Ghubad
92	<i>Upupa epops</i>	Common Hoopoe	
93	<i>Vanellus indicus</i>	Red-Wattled Lapwing	Chitapoi, Titvi, Titapoi
94	<i>Zoothera citrina</i>	Orange-Headed Thrush	
95	<i>Apus apus</i>	Swift	
96	<i>Rhipidura sp.</i>	Fantail	

Table 8: Floral Diversity existing in the City of Panaji

No	Scientific Name	English Name	Local Name	IUCN Status	Type
1	<i>Abelmoschus manihot</i>	Wild lady finger	Ran Bhendi		Shrub
2	<i>Abrus precatorius</i>	Coral beed vine	Gunj	NT	Climber
3	<i>Acacia auriculiformis</i>	Australian wattle	Australian babul		Tree
4	<i>Acacia mangium</i>	Brown salwood			Tree
5	<i>Acacia planifrons</i>	Umbrella thorn			Tree
6	<i>Acanthus ilicifolius</i>	Holy leaved acanthus	Marandi	LC 3.1	Shrub
7	<i>Achras sapota</i>	Chiku tree	Chiko		Tree
8	<i>Achyranthes aspera</i>	Prickly Chaff Flower	Bello		Herb
9	<i>Acrostichum aureum</i>	Golden Leather Fern	Aakur		Herb

10	<i>Adenanthera pavonia</i>	Red bead tree		NE	Tree
11	<i>Adiantum lonulatum</i>	Maidenhair fern	Ghodayachi pavlan		Herb
12	<i>Adhatoda zeylanica</i>	Malabar nut	Adulsa		Shrub
13	<i>Aegle marmelos</i>	Stone apple tree	Bel	V	Tree
14	<i>Aerides maculosum</i>				Orchid
15	<i>Aerva javanica</i>	Desert cotton		NE	Shrub
16	<i>Aerva lanata</i>	Mountain knot grass			Herb
17	<i>Agave sp.</i>				Xerophyte
18	<i>Ageratum conyzoides</i>	Goat weed	Ghanerem	NE	Herb
19	<i>Agiceros corniculatum</i>	Goat's horn mangrove	Kangala	LC	Tree
20	<i>Albizia lebbek</i>	Lebbek tree	Shireesh	NE 3.1	Tree
21	<i>Allamanda cathartica</i>	Golden trumpet vine	Pivlee ghanti		Shrub
22	<i>Allium cepa</i>	Onion	Kanda	NE	Herb
23	<i>Alstonia scholaris</i>	Devil's tree	satvin	LC 2.3	Tree
24	<i>Aloe vera</i>	Aloe	Katekuvar	NE	Herb
25	<i>Alternanthera sessilis</i>	Sessile joyweed	Tangal mat		Herb
26	<i>Alysicarpus glumaceus</i>	Bracted Alyce Clover			Herb
27	<i>Amorphophallus commutatus</i>	Dragon stalk yarn	Vazramuth	LR	Herb
28	<i>Amaranthus viridis</i>	Green amaranth	Ranbhaji	LC	Herb
29	<i>Ammannia baccifera</i>	Monarch redstem		LC	Herb
30	<i>Amorphophallus paeoniifolius</i>	Elephant foot yam	Suran	V	Herb
31	<i>Anacardium occidentale</i>	Cashew	Kaju		Tree
32	<i>Andrographis paniculata</i>	King of bitters	Kirayate	LC	Herb
33	<i>Annona reticulata</i>	Bull's heart	Ram phal	NE	Tree
34	<i>Annona squamosa</i>	Custard apple	Sita phal	NE	Tree
35	<i>Ananus comosus</i>	Pine apple	Ananus	LC	Herb
36	<i>Antigonon leptopus</i>	Ice cream creeper			Climber
37	<i>Araucaria columnaris</i>	Christmas tree	Christmas tree	LC	Tree
38	<i>Areca catechu</i>	Betel nut palm	Supari, Fofal		Palm
39	<i>Aristolochia indica</i>	Indian birthwort	Sapoor		Climber
40	<i>Artocarpus heterophyll</i>	Jackfruit	Fanus	NE	Tree
41	<i>Artocarpus hirsutus</i>	Wild jack			Tree
42	<i>Artocarpus incisus</i>	Breadfruit	Nirphanus	NE	Tree
43	<i>Arundinella pumila</i>				Herb
44	<i>Athyrium hohenackeranum</i>		Ghodyachi gibli		Herb
45	<i>Averrhoa bilimbi</i>	Cucumber tree	Bimbala	NE	Tree
46	<i>Avicennia marina</i>			LC	Tree
47	<i>Avicennia officinalis</i>	Indian mangrove	Chip		Tree
48	<i>Azadirachta indica</i>	Neem tree, Indian lilac	Kadu limbo	NE	Tree
49	<i>Azanza lampas</i>	Common mallow	Ran Bhendi		Shrub
50	<i>Barleria cristata lavender</i>	Blue bell barleria	Gotli		Shrub

51	<i>Barleria involucrate</i>	Blue bell barleria	Gotli		Shrub
52	<i>Barleria prattensis</i>	Blue bell barleria	Gotli		Shrub
53	<i>Bambusa polymorpha</i>		Bambu		Shrub
54	<i>Bauhinia purpurea</i>	Butterfly tree	Rakta chandan	LC 3.1	Tree
55	<i>Bauhinia racemosa</i>	Bidi leaf tree	Apto	LC 3.1	Tree
56	<i>Bauhinia variegata</i>	Butterfly tree	Kanaraj	LC 3.1	Tree
57	<i>Biophytum sensitivum</i>		Satri, maad		Herb
58	<i>Bixa orrellana</i>	Lipstick tree		NE	Shrub
59	<i>Bombax ceiba</i>	Silk cotton tree	Savar	NE	Tree
60	<i>Borassus flabellifer</i>	Toddy palm	Targula		Palm
61	<i>Bruguiera cylindrica</i>			LC	Tree
62	<i>Bougainvillea glabra</i>	Paper flower	Petroli	NE	Shrub
63	<i>Bougainvillea spectabilis</i>	Paper flower	Petroli	NE	Shrub
64	<i>Bryophyllum pinnatum</i>	Sprout leaf plant	Panfuti	LC	Herb
65	<i>Butea monosperma</i>	Flame of the forest	Palas	DD 2.3	Tree
66	<i>Caesalpinia pulcherrima</i>	Peacock flower	Shankar	NE	Shrub
67	<i>Cajanus scarabaeoides</i>	Peanut grass		LC	Twiner
68	<i>Calotropis gigantea</i>	Gaint milk weed	Ruhi	NE	Shrub
69	<i>Calliandra haematocephala</i>	Powder puff tree			Shrub
70	<i>Callistemon citrinus</i>	Bottle brush			Tree
71	<i>Calycopteris floribunda</i>	Paper flower climber	Uski		Climber
72	<i>Canarium strictum</i>	Black dammer	Dhup tree		Tree
73	<i>Canna indica</i>	Canna	Kele phool	NE	Herb
74	<i>Capparis zeylanica</i>	Caper bush	Urfati kati		Shrub
75	<i>Capsicum annum</i>	Chilli	Mirchi		Shrub
76	<i>Careya arborea</i>	Wild guava	Kumbyo, kumyo	LC 3.1	Tree
77	<i>Carica papaya</i>	Papaya	Popay		Tree
78	<i>Carissa carandas</i>	Bengal currant	Karwand		Shrub
79	<i>Caryota urens</i>	Fishtail palm	Bhirlo maad	LC 3.1	Tree
80	<i>Cascabela thevetia</i>		Kanya		Shrub
81	<i>Cassia alata</i>	Candle bush			Tree
82	<i>Cassia fistula</i>	Golden Shower tree	Balo,baio	NE 3.1	Tree
83	<i>Cassia grandis</i>	Pink shower tree		NE	Tree
84	<i>Cassia indigo</i>				Shrub
85	<i>Cassia occidentalis</i>	Stinking Weed			Shrub
86	<i>Cassia siamea</i>	Cassod tree			Tree
87	<i>Cassia tora</i>	Foetid cassia	Taikilo		Herb
88	<i>Casuarina equisetifolia</i>	Whistling pine	suru		Tree
89	<i>Catharanthus roseus</i>	Periwinkle	Sadaphuli	LC	Herb
90	<i>Cayratia trifoliata</i>				Creeper
91	<i>Ceiba pentandra</i>	White seed cotton tree	Kapus		Tree

92	<i>Celosia argentea</i>	Princes feathers	Kuduk	NE	Herb
93	<i>Chamaerops sps</i>				Palm
94	<i>Chromolaena odorata</i>	Common floss flower			Shrub
95	<i>Cissamplos sps.</i>				
96	<i>Cinnamum verum</i>	Cinnamon	Tikhi		Tree
97	<i>Citrus limon</i>	Lemon	Limbu	NE	Shrub
98	<i>Citrus maxima</i>	Pomelo	Toring		Tree
99	<i>Cleome rutidosperma</i>	Fringed spider flower	Kanphuti		Herb
100	<i>Clerodendrum inerme</i>	Glory bower	Siritmari		Shrub
101	<i>Clerodendrum paniculatum</i>	Pagoda flower	Turo		Shrub
102	<i>Clerodendron thompsonii</i>	Bleeding heart			Climber
103	<i>Cleome viscosa</i>	Yellow spider flower	Kanphuti		Herb
104	<i>Clitoria biflora</i>			LR	Herb
105	<i>Coccinia grandis</i>	Ivy gourd	Tendli		Climber
106	<i>Cocus nucifera</i>	Coconut tree	Maad	NE	Palm
107	<i>Colocasia esculenta</i>	Elephant ear	Aloo		Herb
108	<i>Colocasia sp.</i>		Aloo		Herb
109	<i>Commelina cyanea</i>	Scurvy weed			Herb
110	<i>Commelina forskoolii</i>	Bearded commelina			Herb
111	<i>Cordia myxa</i>	Assyrian plum			Tree
112	<i>Cordia sebestena</i>	Scarlet cordia		V	Tree
113	<i>Cordia sp.</i>	Fragrant manjack			Tree
114	<i>Costus speciosus</i>	Spiral zinger		NE	Herb
115	<i>Couroupita guianensis</i>	Cannon ball tree		LC	Tree
116	<i>Crenum sp.</i>	Colocassia			Herb
117	<i>Crossandra undulifolia</i>	Firecracker flower	Aaboli		Shrub
118	<i>Crotalaria sp.</i>	Rattlebox	Bhat ghagar		Herb
119	<i>Cucumis melo var agrestis</i>	Wild musk melon	Chibdin		Creeper
120	<i>Cucumis maderaspatanus</i>	Madras pea pumpkin			Creeper
121	<i>Cucumis sativus</i>	Garden cucumber	Tavshe		Creeper
122	<i>Cucurbita maxima</i>	Pumpkin	Dudhi		Creeper
123	<i>Cucurbita pepo</i>	Summer squash	Varshbhogi		Creeper
124	<i>Curcuma domestica</i>	Indian saffron	Turmeric		Herb
125	<i>Curcuma pseudomontana</i>	Hill turmeric	Raan Halad		Herb
126	<i>Cuscuta sp.</i>				Parasite
127	<i>Cyanotis cristata</i>	Crested catears			Herb
128	<i>Cyclea peltata</i>		Pad vel		Climber
129	<i>Cynodon dactylon</i>	Durva grass	Haryali		Grass
130	<i>Cyperus sp.</i>	Flatsedges			Grass
131	<i>Cyperus sp.</i>		Bimblo		Grass
132	<i>Dactyloctenium aegyptium</i>	Crowfoot grass			Grass

133	<i>Datura metel</i>	Downy thorn-apple	Dhuro		Shrub
134	<i>Derris trifoliata</i>	Common derris	Karanjvel		Climber
135	<i>Desmodium heterocarpon</i>	Carpon desmodium			Shrub
136	<i>Delonix regia</i>	Royal Poinciana	Gulmohar	LC 3.1	Tree
137	<i>Digitaria ciliaris</i>	Southern crabgrass			Grass
138	<i>Dioscorea bulbifera</i>	Air potato	Karande		Climber
139	<i>Drynaria sp</i>	Basket ferns			Fern
140	<i>Durata erecta</i>	Golden dew drop		NE	Shrub
141	<i>Dryopteris sp.</i>				Fern
142	<i>Durata plumari</i>	Golden dew drops, Sky flower			Shrub
143	<i>Dyssodia tenuifolia</i>	Daisy			Herb
144	<i>Emblica officinalis</i>	Indian gooseberry	Avala		Tree
145	<i>Eichhornia crassipes</i>	Water hyacinth			Herb
146	<i>Elephantopus scaber</i>		Sashache kan		Herb
147	<i>Emilia sonchifolia</i>	Tassel flower	Hundrache kan		Herb
148	<i>Enteromorpha sp.</i>	Sea lettuce			Algae
149	<i>Epaltes divaricata</i>				
150	<i>Epipremnum aureum</i>	Money Plant			Climber
151	<i>Eragrostis uniloides</i>	Love grass	Kavleache fav		Herb
152	<i>Eranthemum roseum</i>		Dasmuli	NA	Herb
153	<i>Erythrina stricta</i>	Corky coral tree	Pongaro		Tree
154	<i>Erythrina variegata</i>	Indian Coral tree	Pongaro	LC 3.1	Tree
155	<i>Eucalyptus globules</i>	Nilgiri	Nilgiri	NE	Tree
156	<i>Eugenia jambolana</i>	Black plum	Jambul		Tree
157	<i>Euphorbia hirta</i>	Asthma herb	Dudurli		Herb
158	<i>Euphorbia lactea</i>	Mottled Spurge			Succulent
159	<i>Euphorbia neriifolia</i>	Hedge euphorbia	Nival kati		Succulent
160	<i>Euphorbia royleana</i>	Sullu Spurge			Succulent
161	<i>Euphorbia sp.</i>				Herb
162	<i>Excoecaria agallocha</i>	Blinding tree	Uro	LC	Tree
163	<i>Ficus asperrima</i>	Forest sandpaper fig	Kharvat		Tree
164	<i>Ficus benjamina</i>	Weeping fig			Tree
165	<i>Ficus benghalensis</i>	Indian fig	Vad		Tree
166	<i>Ficus carica</i>	Common fig	Anjir	LC	Tree
167	<i>Ficus elastica</i>	Rubber tree			Tree
168	<i>Ficus glomerata</i>	Cluster fig tree	Rumad	LC	Tree
169	<i>Ficus mysorensis</i>	Mysore fig	Dhavo vad		Creeper
170	<i>Ficus pumila</i>	Creeping fig			Tree
171	<i>Ficus religiosa</i>	Sacred fig	Peepal	NE	Tree
172	<i>Ficus sp.</i>		Kharvat		Tree
173	<i>Flacourtia jangomas</i>	Indian cherry	Jagma		Tree

174	<i>Garcinia indica</i>	kokum	Kokam, bhinda	NE	Tree
175	<i>Gliricidia maculata</i>	Mata Roton	Mata raton		Tree
176	<i>Gliricidia sepium</i>	Mexican lilac		NE	
177	<i>Gloriosa superba</i>	Glory lily	Wagh chapko	E	Creep
178	<i>Gmelina arborea</i>	Beech wood	Shivan	NE	Tree
179	<i>Gonatanthus pumilus</i>	Dwarf gonatanthus			Herb
180	<i>Gossypium malabarica</i>	Cotton tree	Kapus		Tree
181	<i>Gossypium sp.</i>				Tree
182	<i>Grewia asiatica</i>		Phalsi	NE	Shrub
183	<i>Grewia nervosa</i> Panigrahi		Aasale		Shrub
184	<i>Grewia tiliifolia</i>		Dhaman		Tree
185	<i>Haplanthodes plumose</i>			LR	Herb
186	<i>Hedychium coronarium</i>	White ginger lily	Sontaka		Herb
187	<i>Helicteres isora</i>	Indian screw tree	Murud sheng	LC 3.1	Shrub
188	<i>Heliotropium indicum</i>	Indian heliotrope	Ajeru		Herb
189	<i>Hemidesmus indicus</i>	Indian sarsaparilla			Creep
190	<i>Hibiscus mutabilis</i>	Confederate rose	Bhendigulab	NE	Shrub
191	<i>Hibiscus rosa sinensis</i>	China rose	Shoeflower	LC	Shrub
192	<i>Holarrhena pubescens</i>	Fever pod	Pandharakuda	LC 3.1	Shrub
193	<i>Holoptelea integrifolia</i>	Indian elm	Vamvlo		Tree
194	<i>Holostemma annulare</i>				Creep
195	<i>Hydrangea macrophylla</i>	French hydrangea			Shrub
196	<i>Hydrocotyle asiatica</i>	Indian pennywort	Brahmi	LC	Herb
197	<i>Hypoxis aurea</i>	Golden star grass			Herb
198	<i>Ipomoea biloba</i>	Beach morning glory	Bangda vel		Creep
199	<i>Ipomoea carnea</i>	Bush morning glory			Climber
200	<i>Ipomoea hederifolia</i>	Scarlet morning glory			Creep
201	<i>Ipomoea obscura</i>	Wild petunia		NE	Climber
202	<i>Ipomoea vitifolia</i>				Climber
203	<i>Impatiens pulcherrima</i>	Western hill balsam	Chiddo		Herb
204	<i>Impatiens oppositifolia</i>	Opposite leaved balsam	Chiddo		Herb
205	<i>Ixora coccinea</i>	Ixora	Pitkoli	NE	Shrub
206	<i>Jacaranda mimosifolia</i>	Blue Jacaranda			Tree
207	<i>Jasminum grandiflorum</i>	Spanish jasmine	Mogra		Shrub
208	<i>Jasminum malabaricum</i>	Malabar Jasmine	Kusdi		Climber
209	<i>Jatropha glandulifera</i>	Glandular jatropha			Shrub
210	<i>Jatropha gossypifolia</i>	Bellyache bush			Shrub
211	<i>Kandelia candel</i>			LC	Tree
212	<i>Kigelia africana</i>	Sausage tree			Tree
213	<i>Lagerstroemia flosreginae</i>	Queens crape myrtle	Taman		Tree
214	<i>Lannea coromandelica</i>	Indian ash tree	Moi	NE	Tree

215	<i>Lantana camara</i>	Lantana	Ghaneri	NE	Shrub
216	<i>Lawsonia inermis</i>	Henna plant	Mehendi	NE	Shrub
217	<i>Leea indica</i>	Bandicoot berry	Jino		Shrub
218	<i>Leucus aspera</i>	Common leucas	Tumbo	LC	Herb
219	<i>Loranthus sps.</i>	Mistletoe			Parasite
220	<i>Luffa acutangula</i>	Ribbed Sponge Gourd	Ghosale		Creep
221	<i>Lygodium flexuosum</i>	Climbing fern	Ramachi bota		Creep
222	<i>Macaranga peltata</i>	Chandada	Chandado		Tree
223	<i>Malachra capitata</i>	Brazil jute			Herb
224	<i>Mammea suriga</i>		Surangi		Tree
225	<i>Mangifera indica</i>	Mango	Ammo	DD2.3	Tree
226	<i>Manihot sp.</i>				Shrub
227	<i>Manilkara zapota</i>	Sapodilla	Chicoo		Tree
228	<i>Melastoma melabatricum</i>	Blue tongue			Shrub
229	<i>Melia azadarach</i>	China berry tree			Tree
230	<i>Memecylon umbellatum</i>	Iron wood	Anjani	NE	Tree
231	<i>Michelia champaca</i>	Champak	Son chafa	NE	Tree
232	<i>Millingtonia hortensis</i>	Indian cork tree	Akasimb		Tree
233	<i>Mimosa pudica</i>	Touch me not	Lazari	LC 3.1	Herb
234	<i>Mimusops elengii</i>	Spanish cherry	Oval	NE	Tree
235	<i>Moringa oleifera</i>	Drumstick tree	Mashing, shegul	NE	Tree
236	<i>Mucuna pruriens</i>	Buffalo beans	Khaskuli	NE	Climber
237	<i>Murraya koenigii</i>	Curry leaves	Karvill, kadipatta		Tree
238	<i>Mussaenda glabrata</i>	White flag	Sharwad	NE	Shrub
239	<i>Mussa paradisiaca</i>	Banana	Kele		Tree
240	<i>Naregamia alata</i>	Goanese ipecac	Pitmari		Herb
241	<i>Neolamarckia cadamba</i>	Bur flower	Kadamb		Tree
242	<i>Nephrolepis sps</i>				Ferns
243	<i>Nerium indicum</i>	Indian oleander	Kaner		Shrub
244	<i>Nerium oleander</i>	Oleander	Kaner		
245	<i>Nyctanthes arbor-tristis</i>	Sad tree	Parijatak	NE	Tree
246	<i>Nymphaea alba</i>	European white water lily	Salak		Herb
247	<i>Nymphaea pubescens</i>	Hairy water lily	Salak		Herb
248	<i>Ocimum basilicum</i>	Sweet basil	Sabja	NE	Herb
249	<i>Ocimum tenuiflorum</i>	Holy basil	Tulas	NE	Herb
250	<i>Opuntia cochenilli</i>				Shrub
251	<i>Opuntia elatior</i>	Prickly pear			Xerophyte
252	<i>Oreodoxa regia</i>	Royal palm		LC 3.1	Palm
253	<i>Pachystachys spicata</i>				Shrub
254	<i>Pandanus sp.</i>	Screw pine	Haato		Palm
255	<i>Parkinsonia aculeata</i>	Wonder tree	Vilayati babul		Shrub

256	<i>Parthenium hysterophorus</i>	Congress grass			Shrub
257	<i>Pelatiidium barteriodies</i>		False Barleria		Shrub
258	<i>Peltophorum ferruginea</i>				Tree
259	<i>Peltophorum inerme</i>	Copper pod	Peela gulmohar		Tree
260	<i>Peltophorum pterocarpum</i>	Copper pod		NE	Tree
261	<i>Phoenix sps</i>		Khajur		Palm
262	<i>Pennisetum setaceum</i>				
263	<i>Phoenix dactylifera</i>	Date palm	Khajur		Palm
264	<i>Phyllanthus acidus</i>	Star gooseberry	Raj avalo		Tree
265	<i>Physalis minima</i>	Ground cherry	Chirput		Herb
266	<i>Piper longum</i>	Black Pepper	Mirya		Climber
267	<i>Pithecellobium dulce</i>	Manila tamarind	Vilayati chinch	NE	Tree
268	<i>Plumbago zeylanica</i>	White plumbago			Climber
269	<i>Plumeria acutifolia</i>		Chafa		Tree
270	<i>Plumeria alba</i>	Pagoda tree	Pandhara chafa	NE	Shrub
271	<i>Plumeria rosa</i>				Tree
272	<i>Plumeria rubra</i>	Temple tree	Chafa	NE	Tree
273	<i>Polyalthia longifolia</i>	False Ashoka	Ashok	NE	Tree
274	<i>Pongamia pinnata</i>	Indian beech tree		LC 3.1	Tree
275	<i>Portulaca oleracea</i>	Purslane			Creep
276	<i>Pseuderanthemum reticulatum</i>	Golden pseuderanthemum	Shit mogri		Shrub
277	<i>Psidium guajava</i>	Guava	Peru		Tree
278	<i>Punica granatum</i>	Pomegranate	Dalim		Shrub
279	<i>Quisqualis indica</i>	Rangoon creeper	Madhu malati		Climber
280	<i>Rauvolfia serpentina</i>	Indian snakeroot	Sargandha, adaki		Herb
281	<i>Rhizophora apiculata</i>			LC	Tree
282	<i>Rhizophora mucronata</i>	Red mangrove	Kandalam		Tree
283	<i>Rhynchostylis retusa</i>	Foxtail Orchid	Sitechi veni		Orchid
284	<i>Rhynchospora wightiana</i>	Wright's beaksedge	Bhilmad		Grass
285	<i>Ricinus communis</i>	Castor oil plant	Aerand		Shrub
286	<i>Rosa damascene</i>		Gulab		Shrub
287	<i>Ruellia tuberosa</i>	Fever root	Ruwel	LC 3.1	Herb
288	<i>Russilea juncea</i>	Fire cracker plant			Shrub
289	<i>Saccharum officinarum</i>	Sugarcane	Uus		Shrub
290	<i>Salvinia molesta</i>	Giant salvinia			Fern
291	<i>Salvadora persica</i>	Mustard tree			Tree
292	<i>Samanea saman</i>	Rain tree		NE	Tree
293	<i>Sansevieria trifasciata</i>	Mother-in-laws tongue			Herb
294	<i>Sapindus laurifolius</i>	Soap nut tree	Ritha		Tree
295	<i>Saraca asoca</i>	Sorrowless tree	Sita ashok	VBI+2C 23	Tree
296	<i>Sauropus androgynus</i>	Katuk	Mutivitamin		

297	<i>Selaginella sp.</i>		Mhatarechi bondra		Shrub
298	<i>Semecarpus anacardium</i>	Marking nut	Bibba		Tree
299	<i>Senecio belgaumensis</i>		Harne		Herb
300	<i>Sesamum indicum</i>	Sesame	Til		Herb
301	<i>Sesuvium portulacastrum</i>	Sea purslane			Herb
302	<i>Sida acuta</i>	Wire weed		NE	Herb
303	<i>Sida rhombifolia</i>	Arrow leaf	Tabkadi		Herb
304	<i>Smilax zeylanica</i>		Ghotwel		Climber
305	<i>Solanum anguivi</i>	African eggplant	Ran vaingi		Herb
306	<i>Solanum melongena</i>	Egg plant	Vaingi		Herb
307	<i>Solanum torvum</i>	Turkey berry			Shrub
308	<i>Sonneratia alba</i>	Mangrove apple	Pandhari chipi	LC 3.1	Tree
309	<i>Sonneratia caseolaris</i>	Crabapple		LC	Tree
310	<i>Spathodea companulata</i>	Fountain tree	Jivan putra	NE	Tree
311	<i>Spinifex sp.</i>				Grass
312	<i>Spondia pinnata</i>	Indian Hog Plum	Ambado		Tree
313	<i>Stachytarpheta jamaicensis</i>	Jamaican blue spike			Herb
314	<i>Sterculia africana</i>	Mopo paja tree			Tree
315	<i>Sterculia foetida</i>	Indian Almond	Jangali badam	NE	Tree
316	<i>Sterculia urens</i>	Ghost tree	Pandrukh	NE	Tree
317	<i>Strychnos mux-vomica</i>	Poison nut	Kajro	LC	Tree
318	<i>Syngonium philodendrons</i>				Herb
319	<i>Syzygium cumini</i>	Java plum	Jambal	NE	Tree
320	<i>Syzygium samarangense</i>	Java apple tree	Jaam		Tree
321	<i>Tabebuia rosea</i>	Pink trumpet tree	Gulabi tabubia	NE	Tree
322	<i>Taberneamontana citrifolia</i>	Common milkhood	Anant		Shrub
323	<i>Tacca leontopetaloides</i>	Polynesian arrowroot	Naalbonde		Herb
324	<i>Tagetes sp.</i>	Marigold	Rosan		Herb
325	<i>Tamarindus indica</i>	Tamarind tree	Chinch	NE	Tree
326	<i>Tecoma stans</i>	Yellow bells		NE	Shrub
327	<i>Tectona grandis</i>	Teak wood tree	Saylo	NE	Tree
328	<i>Terminalia arjuna</i>	Arjun tree	Arjun	NT	Tree
329	<i>Terminalia catappa</i>	Indian Almond	Badam	NE	Tree
330	<i>Termanalia paniculata</i>	Kindal tree	Kindal		Tree
331	<i>Thespesia populnea</i>	Indian tulip tree	Bhendi	NE	Tree
332	<i>Thunbergia fragrans</i>	Bengal clock wine		NE	Climber
333	<i>Thunbergia grandiflora</i>	Bengal clockwise		NE	Climber
334	<i>Tricholepis amplexicaulis</i>		Dahan		Herb
335	<i>Trichosanthes anguina</i>	Snake gourd	Padval		Climber
336	<i>Trichosanthes kirilowii</i>			NE	Climber
337	<i>Tridax procumbens</i>	Coat button		NE	Herb

338	<i>Triumfetta rhomboidea</i>	Burweed		NE	Shrub
339	<i>Urena lobata</i>	Aramina plant	Van bhendi		Shrub
340	<i>Vanda tessellate</i>				Orchid
341	<i>Vigna radiata</i>	Green gram	Mung		Shrub
342	<i>Vinca alba</i>	Vinca	Sadaphuli		Herb
343	<i>Vinca rosea</i>	Vinca	Sadaphuli		Herb
344	<i>Vitex negundo</i>	Chaste tree	Nirgundi	NE	Shrub
345	<i>Wattakaka volubilis</i>	Sneeze wort		NE	Climber
346	<i>Woodfordia fruticosa</i>	Fire flame bush	Dhauri	LC 2.3	Shrub
347	<i>Zanthoxylum rhetsa</i>	Indian pepper	Triphala		Tree
348	<i>Zea mays</i>	Corn	Moko		Herb
349	<i>Zizyphus jujuba</i>	Indian date	Boran	LC 3.1	Tree
350	<i>Zizyphus mauritiana</i>	Indian plum	Bora	NE	Tree
351	<i>Zizyphus oenoplia</i>	Jackal jujube	Kaneran		Shrub
352	<i>Zizyphus rugosa</i>	Wild jujube	Chunna		Shrub

Table 9: Marine algal diversity existing in the City of Panaji

No	Scientific Name	Common Name
1	<i>Acanthophora spicifera</i>	Spiny seaweed
2	<i>Caulerpa peltata</i>	
3	<i>Caulerpa racemosa</i>	Sea grapes
4	<i>Caulerpa scalpelliformis</i>	
5	<i>Caulerpa sertulariodes</i>	Green feather algae
6	<i>Chaetomorpha media</i>	
7	<i>Cladophora prolifera</i>	
8	<i>Dictyopteris australis</i>	
9	<i>Dictyota bartayresiana</i>	
10	<i>Dictyota dichotoma</i>	
11	<i>Enteromorpha intestinalis</i>	Gut weed
12	<i>Gelidiella sp</i>	
13	<i>Gelidium sp.</i>	
14	<i>Gracilaria corticata</i>	
15	<i>Gracilaria verrucosa</i>	
16	<i>Hypnea musiformis</i>	
17	<i>Padina tetrastrumatica</i>	Potato algae
18	<i>Porphyra sp.</i>	Nori, Laver
19	<i>Sargassum ilicifolium</i>	
20	<i>Sargassum tenerrimum</i>	
21	<i>Sargassum prismaticum</i>	Gulf weed
22	<i>Stoechospermum marginatum</i>	

23	<i>Ulva fasciata</i>	Sea Lettuce
24	<i>Ulva lactuca</i>	Sea Lettuce
25	<i>Ulva reticulata</i>	Ribbon Sea Lettuce

Table10: Mushroom diversity existing in the City of Panaji

No	Scientific Name	Common Name
1	<i>Agaricus augustus</i>	The Prince
2	<i>Boletus goanensis</i>	
3	<i>Bovista plumbea</i>	Puff Ball
4	<i>Chlorophyllum molybdites</i>	Green Spored Parasol
5	<i>Clitocybe gibba</i>	Funnel Cap
6	<i>Collybia dryophila</i>	Common Collybia
7	<i>Coprinus comatus</i>	Shaggy Mane
8	<i>Ganoderma appalnatum</i>	Artist Conk
9	<i>Ganoderma lucidium</i>	Varnished Conk
10	<i>Lepiota cristata</i>	Brown Eyed Parasol
11	<i>Macrolepiota rhacodes</i>	Shaggy Parasol
12	<i>Mycena leianade</i>	
13	<i>Phallus impudicus</i>	Stink Horn
14	<i>Pisolithus albus</i>	Puff Ball
15	<i>Pleurotus cystidiosus</i>	Oyster Mushroom
16	<i>Polyporus arcularis</i>	Fringed Polypore
17	<i>Schizophyllum commune</i>	Split Gill
18	<i>Termitomyces clypeatus</i>	
19	<i>Thelophora palmata</i>	Fetid False Coral
20	<i>Volvariella volvaceae</i>	Straw Mushroom

