**A Study on Tree Diversity of City Park in Jammu**

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**ABSTRACT:** Parks or gardens are an important feature of landscape in all ancient human civilisations. The term garden and park are used interchangeably. The meaning of park as per Oxford dictionary is ‘large public garden in a town for recreation.’ City parks are of a significant importance for the quality of life of our increasingly urbanized society. Besides aiding in services such as air and water purification, wind and noise filtering, they also provide social and psychological services, which are of crucial significance for the liveability of modern cities and the well being of city dwellers. A park experience may help reduce stress,rejuvenate the city dweller, and provide a sense of peacefulness and tranquillity.

**Key words**: *Tree diversity, city parks, phyto-sociological status.*

**1. INTRODUCTION**

Vegetation is an assemblage of plant species. Trees serve variety of purposes. They give us fruits, wood, herbs and many things of commercial value. They are home to numerous birds, insects and animals. They provide shade and prevent drought and cause rainfall. They help in checking environmental pollution. They give us oxygen to breathe in and absorb the carbon dioxide.  Trees are also good sources of medicinal herbs and raw materials for many industries. The city parks apart from providing green and open space for recreational purposes also provide a number of ecosystem services. According to Bolund and Hunhammar (1999), trees in city parks offer a variety of ecosystem services like air and water purification, biodiversity conservation, microclimate stabilization, noise filtration and rain water recharge. City parks constitute green spaces managed largely for recreational purposes, and form the largest proportion of publicly available green space for city dwellers (Oleyar *et al*. 1992). For many city residents in developing countries , city parks may provide the only reference to nature that they will ever experience, providing important social and psychological functions that subsequently improve the quality of city life (Chaudhary and Tewari, 2010; Aminzadeh and Khansefid, 2010). In the light of the importance of city parks, present study was carried out in a city park in Jammu district of Jammu and Kashmir UT namely Maharaja Hari Singh Ji Park. The recently developed Maharaja Hari Singh Ji Park is located on the northern bank of river Tawi. The area of park is around 2 ha. Evergreen tree fondly planted at various locations in City of temples stands planted in the park.

**Objectives of the study**

* To assess the tree diversity.
* To analyse their phyto-sociological status.
* To provide possible suggestions for improvement of city parks for the sustenance of biodiversity.

**2. METHODOLOGY**

A total of 10 sample plots of 10m x 10m size were randomly selected and data was recorded by laying quadrants. The different phyto-sociological parameters such as frequency, density, abundance and IVI were analysed using the following formulae mentioned below:

**Frequency:**

 Frequency is the number of sampling units (as percent) in which a particular species occurred.

Frequency = Number of sample plots in which species occurred × 100

Total number of sample plots studied

**Density:**

 Density represents the number of individuals of the species in a unit area.

Density = Total number of individuals of species in all plots

 Total number of sample plots studied

**Abundance:**

Abundance represents the number of individual of any species per sampling unit of occurrence.

Abundance = Total number of individuals of species in all plots

 Total number of plots in which species occurred

**IVI:**

Using the following formulae the importance value index of species was calculated

 IVI = Relative density + Relative frequency + Relative dominance

Where,

Relative density = Density of the species ×100

 Total density of all species

Relative frequency = Frequency of the species ×100

 Total frequency of all species

Relative dominance = Dominance of the species ×100

 Total dominance of all species

**3. OBSERVATION**

**Table 3.1: Phyto-sociological parameters of trees in the study area**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Name of species** | **D. Tree/ha** | **F.** **%** | **A.** | **R.D.** **%** | **R.F.** **%** | **R.d.** **%** | **IVI** |
| *Syzygium cumini*  | 0.4 | 30 | 1.33 | 0.15 | 0.18 | 0.15 | 0.47 |
| *Alstonia scholaris*  | 0.1 | 10 | 1 | 0.04 | 0.06 | 0.04 | 0.14 |
| *Pterospermum acerifolium* | 0.1 | 10 | 1 | 0.04 | 0.06 | 0.04 | 0.14 |
| *Ficus* *benjamin* | 0.1 | 10 | 1 | 0.04 | 0.06 | 0.04 | 0.14 |
| *Bauhinia variegate* | 0.1 | 10 | 1 | 0.04 | 0.06 | 0.04 | 0.14 |
| *Anthocephalus cadamba* | 0.2 | 10 | 2 | 0.07 | 0.06 | 0.07 | 0.2 |
| *Roystonea regia* | 0.4 | 20 | 2 | 0.15 | 0.12 | 0.15 | 0.41 |
| *Michelia champaca* | 0.6 | 30 | 2 | 0.22 | 0.18 | 0.22 | 0.62 |
| *Cycas**revolute* | 0.1 | 10 | 1 | 0.04 | 0.06 | 0.04 | 0.14 |
| *Plantanus orientalis* | 0.2 | 20 | 1 | 0.07 | 0.12 | 0.07 | 0.26 |
| *Polyalthia longifolia* | 0.4 | 10 | 4 | 0.15 | 0.06 | 0.15 | 0.36 |

**D. =Density F.= Frequency A.= Abundance R.D.= Relative Density**

**R.F.= Relative frequency R.d.= Relative dominance IVI= Importance value index**

**4. RESULT AND DISCUSSION**

Out of the 11 species reported from the study area 5 were native to the study area and 6 were exotic. Different species encountered are *Syzygium cumini, Michelia champaca, Polyalthia longifolia, Alstonia scholaris, Roystonea regia*, etc.

To find the tree diversity in the city parks of the study area, phyto-sociological analysis was carried out and the results pertaining to different parameters such as density, frequency, abundance, IVI were calculated and tabulated in table 3.1.

According to table 3.1, *Syzygium cumini* and *Michelia champaca*, were found to be the most frequent species with frequency value 30 percent followed by *Roystonea regia* and *Plantanus orientalis* with frequency value 20 percent. Density of the species *Michelia champaca* was found to be highest which is 0.6 followed by that of *Syzygium cumini, Roystonea regia* and *Polyalthia longifolia* which is 0.4.

The result of the study further reveals that *Polyalthia longifolia* was the most abundant species with abundance value 4 followed by *Anthocephalus cadamba, Roystonea regia* and *Michelia champaca* having abundance value 2. The Importance Value Index (IVI) was highest for species *Michelia champaca* (0.62) with the share of relative density, relative frequency and relative dominance as 0.22, 0.18 and 0.22 respectively. The highest value of IVI for *Michelia champaca* can be attributed to being an evergreen tree and known for its fragrant flowers. It has strongly fragrant flowers in varying shades of cream to yellow which bloom during June to September. The flowers are primarily used in worship ceremonies and more generally worn in hair by girls and women as means of beauty ornament as well as natural perfume. The next highest value for IVI was observed for *Syzygium cumini* (0.47) and relative density, relative frequency and relative dominance of 0.15, 0.18 and 0.15 respectively.

SUGGESTIONS

* While planting the trees in the parks, instead of planting a single species, variety of different species should be planted.
* Encourage indigenous tree species plantation.
* There can be extensive tree plantation along the roads in the study area.
* Selection of trees is very important. Priority must be given to the trees which have large canopy.
* Health and maintenance of the trees should be taken care of. Cutting and beheading of trees should be prohibited.
* Proper disposal of solid waste should be done and more number of dustbins should be installed in the parks. Composting should be done for decomposition of organic waste i.e. twigs, fallen leaves, grass shreds etc to obtain manure which can be further used in the parks.
* People should keep the parks clean and green.
* Fine should be imposed, which would be paid by anyone who is found throwing garbage or polluting the area.
* Clean drinking water facility should be available in the park.
* Toilets should be constructed and maintained properly.

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