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# PLANT SPECIES POPULATION IN BIODIVERSITY PARKS OF VISAKHAPATNAM

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**ABSTRACT**

***Biodiversity parks help in the conservation and protection of plant species, especially in urban areas. This study focuses on the plant species population in biodiversity parks of Visakhapatnam. The parks have a wide variety of plants including medicinal plants, ornamental plants, trees, shrubs, climbers, and aquatic plants. Many native and some exotic species are grown and supported for conservation and educational purposes. The study shows that biodiversity parks play a prominent role in preserving plant diversity, improving environmental awareness, and supporting ecological balance in the city. Proper management of these parks helps in conservation of rare and useful plant species for future generations.***

***KEYWORDS:*** ***Biodiversity parks, plant species population, medicinal plants, urban biodiversity, conservation.***

## INTRODUCTION

Visakhapatnam Biodiversity Park, located within the premises of the Kani Charitable Trust (KCT) Government Hospital in Visakhapatnam, Andhra Pradesh, is one of the most important urban green spaces dedicated to plant conservation and biodiversity education. The park covers about three acres and hosts over 2,000 plant species, making it a valuable living collection of diverse flora in the region.Biodiversity refers to the variety of living organisms present in a particular ecosystem, including plants, animals, and microorganisms. Among these, plants play a vital role in keeping ecological balance, supporting wildlife, and improving environmental quality. In rapidly growing urban areas, biodiversity parks have become important spaces for conserving plant diversity and protecting natural ecosystems. The study of plant species populations in biodiversity parks helps in understanding plant diversity, abundance, and ecological roles. It also helps to identify rare or endangered species and provides useful information for conservation planning. In addition, biodiversity parks improve air quality, reduce pollution,

regulate temperature, and create awareness among the public about the importance of protecting nature.Therefore, studying plant species in biodiversity parks of Visakhapatnam is essential for promoting environmental sustainability, conserving plant diversity, and supporting ecological balance in urban areas.

**Eastern Ghats Biodiversity Centre (EGBC)-** This is a large biodiversity centre developed near PM Palem junction close to Kambalakonda Wildlife Sanctuary area in Visakhapatnam. It showcases the rich biodiversity of the Eastern Ghats region and includes several themed parks such as Aushadha Vanam (Medicinal Plant Zone), Karitha Vanam, and Rashi Vanam. The centre also features an orchidarium and offers educational displays about the ecosystems and endangered species of the Eastern Ghats.**Kambalakonda Wildlife Sanctuary / Ecotourism Park-** A natural forest area with native plant species and wildlife.**Kondakarla Ava Wetland (near Visakhapatnam)-** An important wetland supporting aquatic plants and biodiversity.These parks help in plant conservation, environmental education, and urban biodiversity protection.

## NEED OF STUDY

The study of plant species in biodiversity parks of Visakhapatnam is needed to conserve plants, support biodiversity and make the city healthier and more sustainable.

- Protect local and rare species from urbanisation and habitat loss.
- Maintain genetic diversity for future ecological stability.
- Biodiversity parks in Visakhapatnam conserve a wide variety of plant species including native and medicinal plants.
- Studying these populations helps protect rare flora, maintain ecological balance and support birds, butterflies and other organisms.
- It also improves urban health by reducing pollution and heat while serving as a living classroom for students and researchers.
- Such studies guide sustainable city planning and raise community awareness about the importance of biodiversity.

## METHODS AND MATERIALS

Study Area:Visakhapatnam Biodiversity Park – approximately 3 acres with more than 2000 plant species.

### Field Equipment

- Quadrant frames for sampling plant density and frequency
- Measuring tapes and GPS for plot layout and mapping
- Plant identification guides and herbarium sheets
- Digital cameras
- Soil testing kits (pH, moisture, nutrients)
- Field notebooks and data-sheets
- Mobile apps for biodiversity recording
- Statistical software tools (e.g., Excel, R) for population analysis

**Study Objectives**

1. Inventory
2. Population
3. Conservation
4. Ecology
5. Benefits
6. Awareness

## STUDY

**Study of plants =Inventory + Population + Conservation + Ecology + Benefits + Awareness**

The study of plant species in biodiversity parks is important for protecting nature, improving city life and inspiring people.The study of plant species populations in Visakhapatnam's biodiversity parks focuses on documenting the diversity, abundance, and ecological roles of native and exotic plants. By recording species inventories, analysing population dynamics and showing rare or endangered flora, the study provides essential data for conservation planning.It highlights how plants support ecological balance by sustaining pollinators, birds, and butterflies, while also improving environmental health through air purification,carbon sequestration, and microclimate regulation.

**Benefits**: the study contributes to scientific knowledge, supports sustainable infrastructure, and serves as a living classroom for education and public awareness. It also preserves cultural and medicinal plant traditions, strengthening community engagement with biodiversity.

- Plants take oxygen from air to do photosynthesis.
- In this process they take in carbon dioxide ($CO_2$) and water ($H_2O$), use sunlight and release oxygen ($O_2$).
- Big trees (like Neem, Banyan, Mango) give more $O_2$ because they have more leaves.
- Small plants like Tulsi, Mint, Hibiscus also give $O_2$ but in smaller amounts.

Grasses and aquatic plants like Bamboo, Lotus, Hydrilla together add a lot of $O_2$ to air and water.Plants are bioengineered purification systems, transforming pollutants into usable resources and maintaining ecological balance. Their role in biodiversity parks is critical for urban sustainability, public health, and environmental resilience.

**Purification**:

Plants - (Air $CO_2$ + pollutants) + (Water nutrients & metals) + (Soil)

Soil purification - roots stabilise soil and remove harmful substances.

Air purification- Plants absorb $CO_2$, trap dust, and release $O_2$.

Water purification → roots filter nutrients, heavy metals, and toxins.

**Strategies to Save Biodiversity Parks**

Urbanisation puts pressure on biodiversity parks in Visakhapatnam by cutting down green trees, increasing pollution, and disturbing natural habitats.To protect plant species in these parks several simple actions can be taken.

Conservation- Always protect plants – simple actions to keep plants safe from urban damage.

Saving plant species - Efforts to prevent rare and native plants from disappearing.

Protecting biodiversity parks – steps taken to conserve green areas in cities.

Plant conservation – planning protection and growth of plant life.

Safeguarding green parks – keeping parks healthy for future generations.

Urban growth and plant safety – managing city development without harming nature.

Protecting nature in cities – balancing buildings with green spaces.

**Role of GVMC (Greater Visakhapatnam Municipal Corporation)**

Looks after city parks and green spaces, keeps the area clean, stops illegal activities, plants trees, and spreads awareness among people so that plants are protected from urban growth.

**Our Roles as Humans**

We must protect biodiversity in Visakhapatnam by not cutting trees, avoiding littering in parks, saving water, planting native trees, and respecting protected areas.We should reduce plastic use, report illegal dumping or construction near green spaces, and join tree planting and cleanliness drives. Teaching children and neighbours about nature also helps keep plants and animals safe for the future.

**Role of Plants in Reducing Pollution**

Protecting biodiversity helps control pollution. Trees and plants clean the air by absorbing smoke and dust and giving out oxygen. Green trees reduce heat and keep the city cooler. Plant roots hold soil and stop dust and dirty water from spreading.When people avoid plastic, do not litter, and plant trees, air and water pollution are reduced. So, caring for plants and nature keeps Visakhapatnam cleaner and healthier.

## CONCLUSION

The study of plant species populations in biodiversity parks shows their vital role as natural purifiers and ecological stabilisers.By absorbing carbon dioxide, releasing oxygen, filtering pollutants, and supporting diverse organisms, plants contribute directly to environmental health and urban sustainability.Such research not only strengthens conservation strategies but also enhances scientific knowledge, public awareness, and cultural value.They also contribute significantly to environmental protection by improving air quality, reducing pollution, regulating temperature, and supporting wildlife such as birds, butterflies, and other beneficial organisms. Through processes like photosynthesis and natural filtration, plants help purify air, water, and soil, thereby promoting a healthier urban environment.In addition, biodiversity parks serve as valuable centers for education, research, and public awareness. They encourage people to understand the importance of nature conservation and promote sustainable environmental practices.Overall, protecting and properly managing biodiversity parks is essential for preserving plant diversity, supporting ecological stability, and ensuring a cleaner and healthier environment for future generations.

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