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Urban Green Spaces and Their Ecological Importance in Jaunpur District

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ABSTRACT

Urban green spaces are essential for preserving ecological stability and enhancing the quality of the environment in quickly expanding urban areas. Parks, gardens, roadside plantings, urban forests, university campuses, and riverside vegetation are examples of these areas that offer a variety of ecological, social, and commercial advantages. Environmental sustainability in the Jaunpur district has been impacted by the progressive loss of open green spaces and natural vegetation brought on by growing urbanization and infrastructure development. Urban green spaces have a major impact on temperature regulation, soil conservation, groundwater recharge, air purification, carbon sequestration, biodiversity conservation, and the mitigation of urban heat island effects. Additionally, they enhance psychological well-being and provide recreational places, which benefit public health. These green areas face a number of difficulties despite their ecological significance, including pollution, invasion, inadequate urban planning, and improper upkeep. In order to ensure a healthier and more sustainable urban environment, the current study highlights the ecological significance of urban green spaces in the Jaunpur district and stresses the need for sustainable urban planning, afforestation programs, conservation strategies, and community involvement.

KEYWORDS

Jaunpur District, Urbanization, Climatic Regulation, Green Infrastructure, Ecological Significance, Biodiversity Conservation, Urban Ecology, Sustainability, And Environmental Management.

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1. Introduction

Vegetated areas found in urban settings, such as parks, gardens, roadside plantings, university campuses, urban forests, wetlands, and riverside vegetation, are known as urban green spaces (UGS). In areas that are quickly urbanizing, these areas are crucial to preserving ecological balance and environmental sustainability. Loss of forest cover, habitat fragmentation, air pollution, rising temperatures, and degradation of natural ecosystems are all consequences of India's recent major urbanization (Wolch et al., 2015; Ramaiah & Avtar, 2019). Rapid infrastructure development and population growth have decreased open green spaces and raised environmental strain in medium-sized districts like Jaunpur. Roadside trees, parks, gardens, school campuses, and riverfront vegetation are just a few examples of the urban greenery found in Jaunpur district, which is located along the Gomti River in Uttar Pradesh. Azadirachta indica (neem), Ficus religiosa (peepal), Mangifera indica (mango), and Polyalthia longifolia (Ashoka) are common tree species in the district that greatly enhance ecological stability and the environment.

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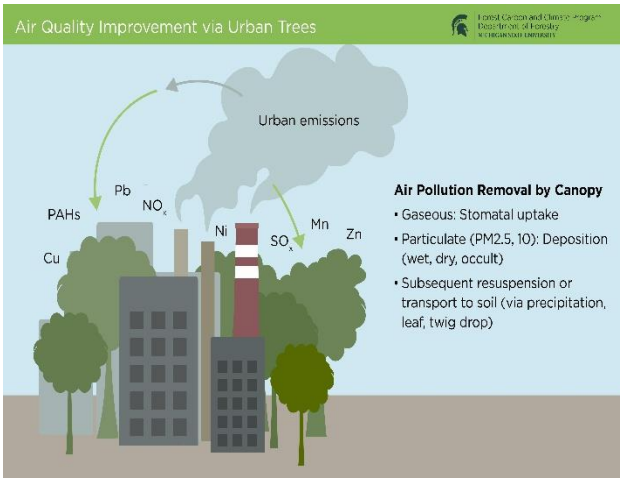
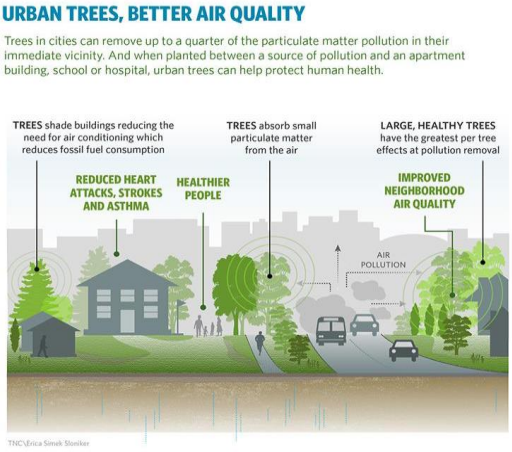
erosion, and promoting groundwater recharge, urban green spaces serve as ecological buffers (Kabisch et al., 2017; Verma, 2020).

The ecological significance of urban green infrastructure has been emphasized by a number of research carried out after 2015. According to Ramaiah and Avtar (2019), urban green areas lessen ecological degradation and enhance environmental quality in quickly urbanizing cities. According to Kabisch et al. (2017), urban greenery increases ecosystem resilience and reduces heat stress, both of which aid in climate adaptation. According to Nath et al. (2018), urban green areas help biodiversity conservation by providing habitats for pollinators, birds, and insects. In a similar vein, urban parks are hotspots for biodiversity that promote urban ecological sustainability, according to Gupta and Kumar (2018). By absorbing carbon dioxide, sulfur dioxide, nitrogen oxides, and particulate matter from the atmosphere, urban vegetation also contributes to the reduction of pollution. Urban green belts greatly improve air quality in densely populated urban areas, according to Bhardwaj et al. (2021). According to Kumar and Verma (2021), locations with more vegetation cover have lower temperatures because of evapotranspiration and shade, which lessens the impact of the urban heat island. The contribution of urban forests to carbon sequestration and climate change mitigation was further emphasized by Miller et al. (2016).





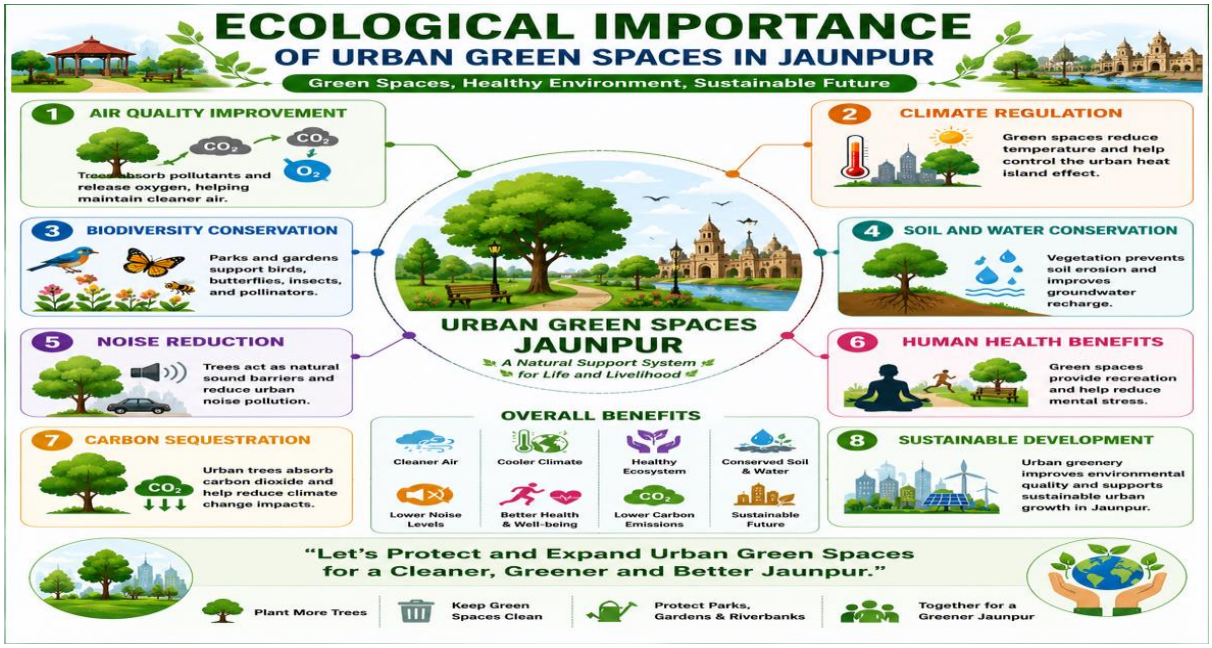
Additionally, research has demonstrated that urban green areas enhance people's physical and mental wellbeing. According to Wolch et al. (2015), being around greenery encourages physical activity and lowers stress. Jabbar et al. (2022) further highlighted the positive relationship between urban parks and mental health. Additionally, riverbank vegetation and green corridors support soil conservation, flood control, and groundwater recharge (Singh et al., 2021). Long-term ecological protection depends on community involvement in plantation drives and urban forestry initiatives, according to Das and Das (2019).

Urban green spaces in Jaunpur district suffer obstacles such encroachment, pollution, inadequate upkeep, and uncontrolled urban expansion despite their ecological significance. According to Sharma and Chaudhary (2020), Uttar Pradesh's growing urbanization has a detrimental impact on vegetative diversity. In order to preserve and increase urban greenery in the area, sustainable urban design, plantation drives, natural vegetation conservation, and community involvement are crucial. Urban green spaces are essential for ecological sustainability, biodiversity protection, climate regulation, pollution management, and the enhancement of urban environmental quality, as the reviewed literature makes abundantly evident.

Ecological Importance of Urban Green Spaces in Jaunpur

In Jaunpur, urban greenery promotes sustainable urban expansion and enhances environmental quality.In Jaunpur, urban green areas are crucial for preserving ecological equilibrium and environmental sustainability.

By releasing oxygen into the atmosphere and absorbing contaminants, they enhance the quality of the air.Green areas promote groundwater recharge, lower noise pollution, and control urban temperature. Birds, butterflies, insects, and other pollinators find a home in parks, gardens, and roadside plantings.In the Jaunpur district, these green spaces also promote sustainable urban growth, biodiversity preservation, and human health.



Materials and Methods

1. Study Region

The study was carried out in the Jaunpur area of Uttar Pradesh with an emphasis on urban green spaces, including gardens, roadside plantations, parks, institutional campuses, and vegetation along the Gomti River.

2. Materials Used

For ecological observation and data collection, field survey instruments such as notebooks, GPS-enabled cell phones, cameras, measuring tape, and questionnaires were utilized.

3. Method of Field Survey

In order to observe the plant cover, tree diversity, ecological conditions, and maintenance status of urban green spaces in various Jaunpur district areas, direct field visits were carried out.

4. Analysis of Vegetation

To evaluate biodiversity and green cover, common plant species like neem (Azadirachta indica), peepal (Ficus religiosa), mango (Mangifera indica), and ashoka (Polyalthia longifolia) were identified and documented.

5. Interview and Questionnaire Methods

To learn more about public awareness and the ecological and social significance of urban green areas, informal interviews and questionnaires were sent to locals.

6. Gathering Secondary Data

To gather supporting data on urban ecology, research papers, government reports, census records, satellite photos, and environmental publications published after 2015 were examined.

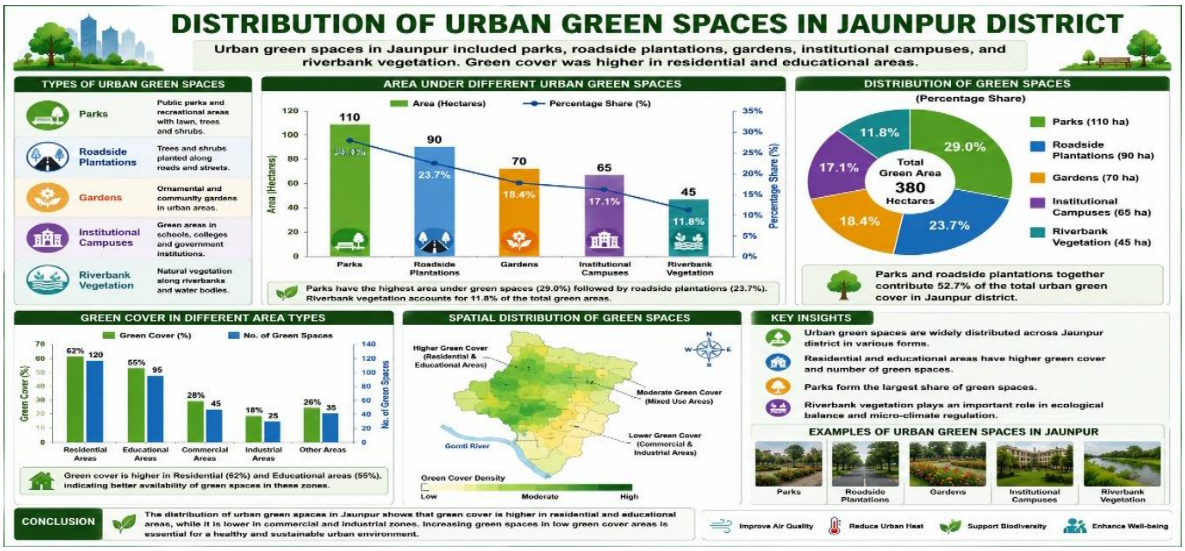
7. Analysis of Data

The ecological importance of urban green spaces in biodiversity conservation, pollution control, climate regulation, and environmental sustainability was assessed by descriptive analysis of the collected data.

Result and Discussion

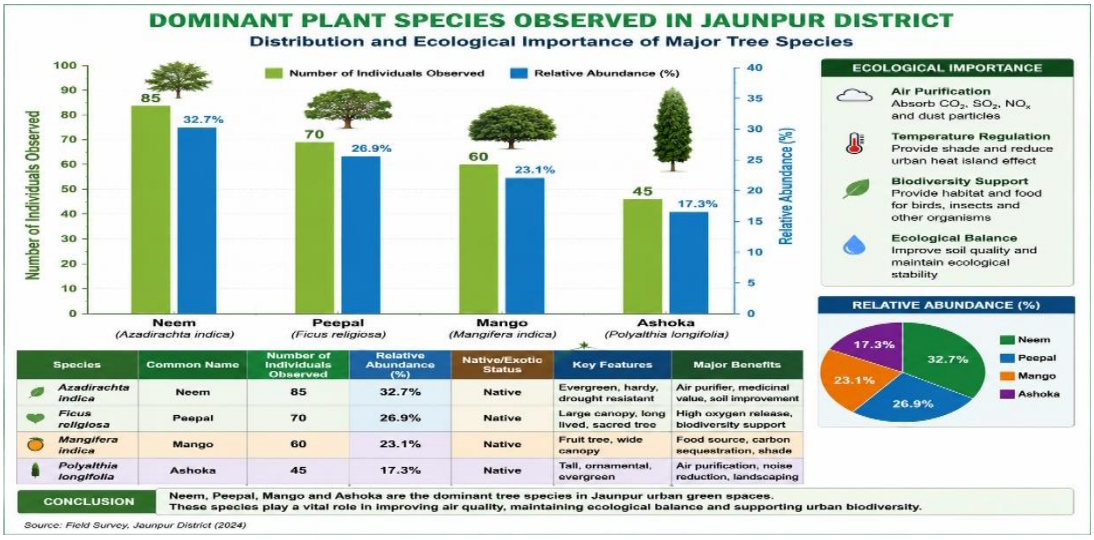
1. Urban Green Space Distribution

Jaunpur's urban green spaces comprised gardens, roadside plantings, parks, university campuses, and riverbank vegetation. Residential and educational sectors had more green cover.



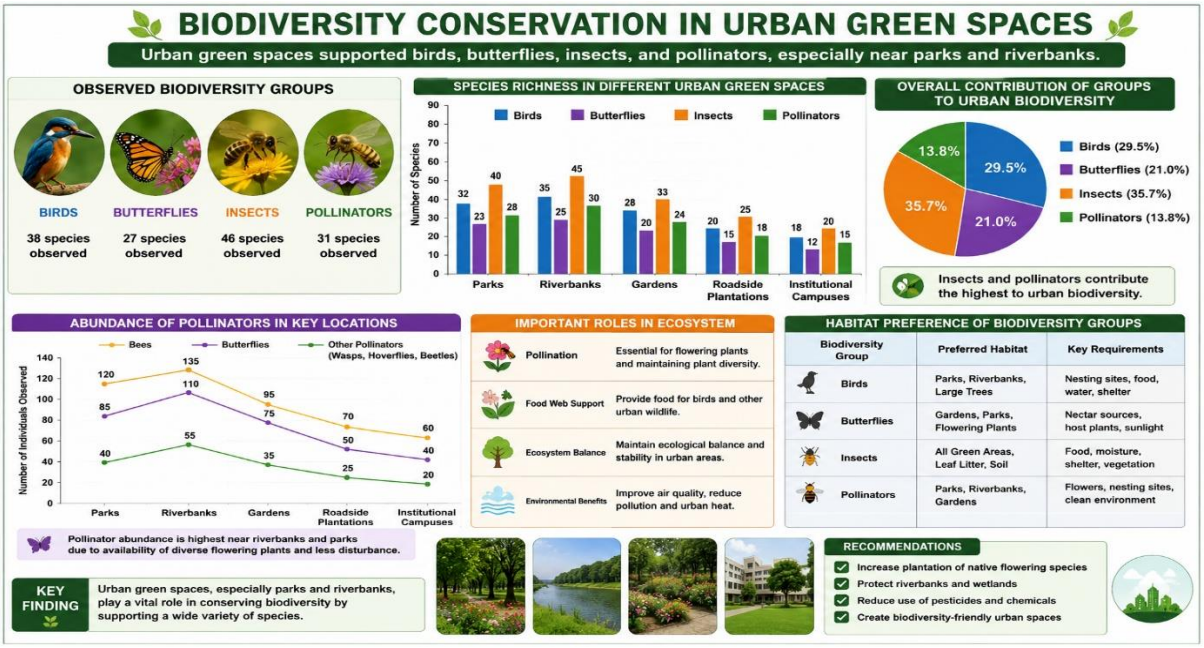
2. Predominant Plant Species

Neem (Azadirachta indica), Peepal (Ficus religiosa), Mango (Mangifera indica), and Ashoka (Polyalthia longifolia) were the main plant species found. These species contributed to better air quality and ecological equilibrium.



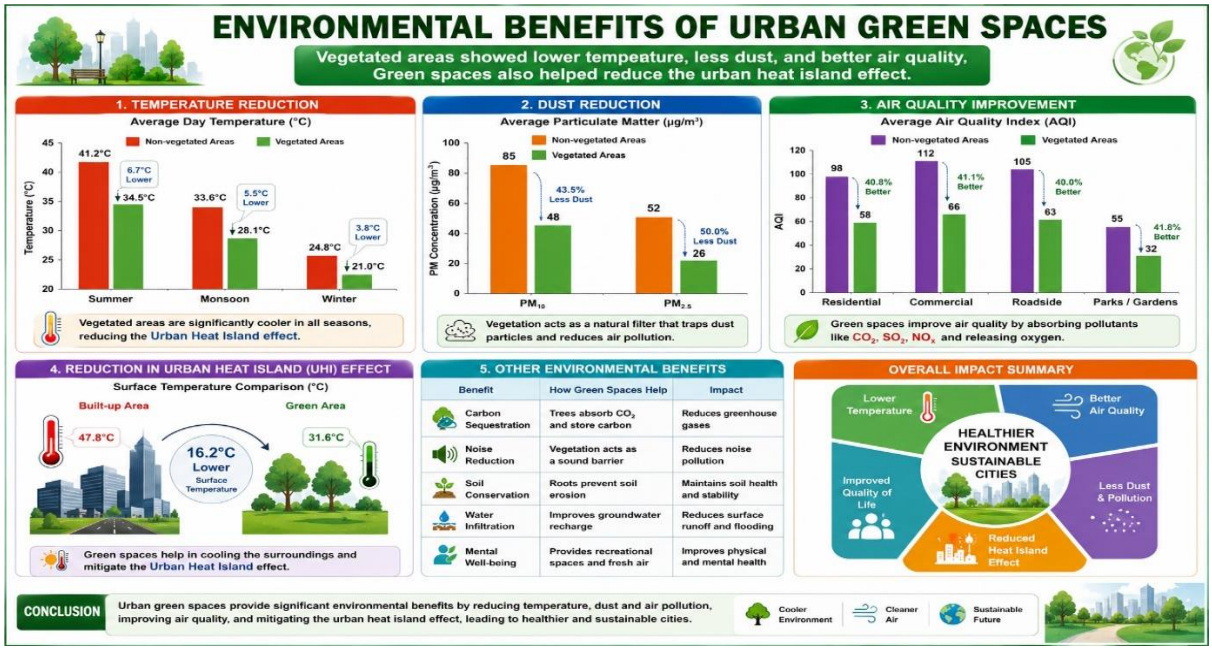
3. Preservation of Biodiversity

Birds, butterflies, insects, and pollinators were all supported by urban green areas, particularly those that were close to parks and riverbanks.



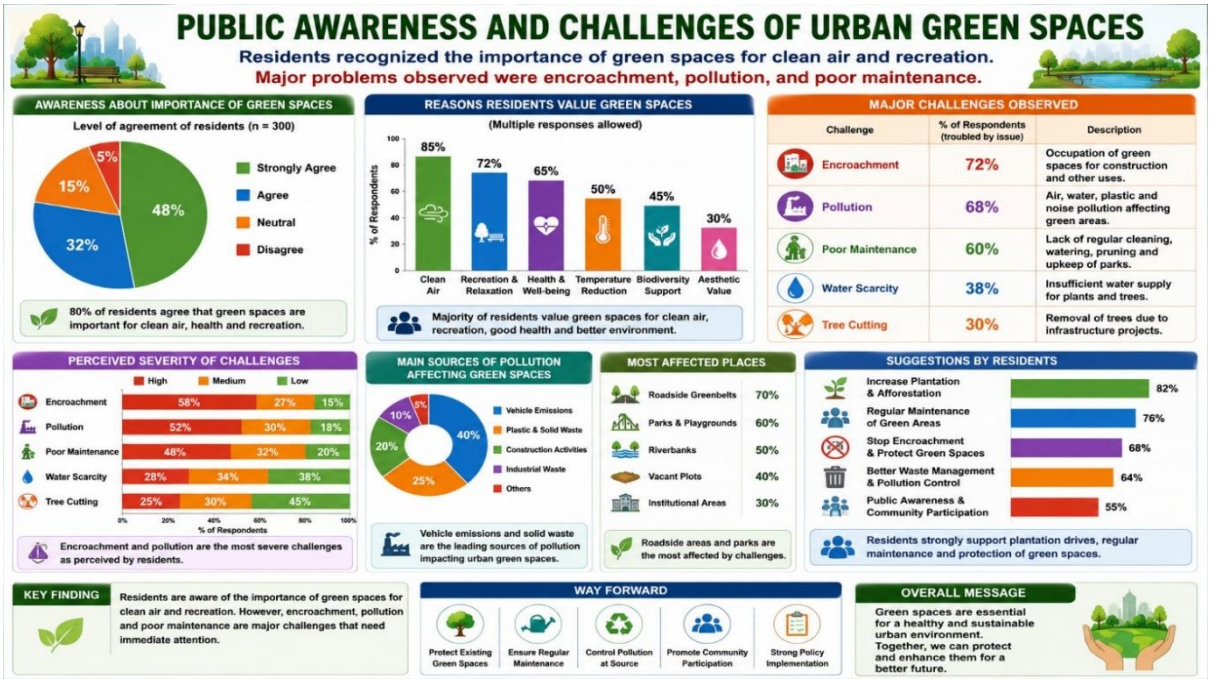
4. Advantages for the Environment

The temperature was lower, there was less dust, and the air quality was higher in vegetated regions. The urban heat island effect was also lessened by green areas.



5. Public Knowledge and Difficulties

The value of green areas for pleasure and pure air was acknowledged by the locals. Poor maintenance, pollution, and encroachment were the main issues noted.



6. Overall Discussion

According to the study, urban green areas are crucial for the preservation of biodiversity, pollution reduction, climate regulation, and environmental sustainability in the Jaunpur district.

Conclusion

In the Jaunpur district, urban green areas are essential for preserving ecological balance and enhancing environmental quality.They aid in groundwater recharge, air purification, biodiversity preservation, climate regulation, and mitigation of the effects of urban heat islands.The study also found that riverside vegetation, roadside plantations, and parks promote human well-being and environmental sustainability. Therefore, maintaining and growing urban green spaces in Jaunpur requires careful urban design, consistent plantation programs, and community involvement.

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