

# Examining Recreational Activities in UNESCO-listed Botanical Gardens: Kew, Singapore, and Padova

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## Abstract

Botanical gardens have been significant spaces for biodiversity conservation, education, and recreation, playing a crucial role in public engagement. This study examines the recreational opportunities employed by three iconic UNESCO-listed botanical gardens: the Royal Botanic Gardens, Kew (UK), the Singapore Botanic Gardens, and the Orto Botanico di Padova (Italy). While Kew Gardens integrates structured visitor management, dynamic seasonal events, and inclusivity programs, Singapore Botanic Gardens emphasizes accessible, family-friendly experiences and eco-education within an urban context. Conversely, the Orto Botanico di Padova offers contemplative recreation rooted in its historical design, complemented by modern ecological exhibits. By comparing these gardens, this research highlights the approach they employ to balance recreation with their core missions of conservation and education. Findings highlight the importance of sustainable visitor management practices and the need to address site-specific challenges in botanical gardens.

## INTRODUCTION

Botanical gardens have long been recognized as vital spaces for the conservation of plant species. They have played a central role in preserving biodiversity and providing resources for scientific research (Wyse Jackson & Sutherland, 2000; Borsch & Löhne, 2014; Gaio-Oliveira et al., 2017; Chen & Sun, 2018), but over time, their role evolved to provide opportunities for education, recreation, and social interaction, which are increasingly recognized as critical for human well being (Chiesura, 2004; Vergou & Willison, 2014; Dodd & Jones, 2022). Botanical gardens, on the one hand, increase environmental awareness as educational centers,

while on the other hand, they offer recreational areas that provide opportunities for passive and active interaction with nature. (Wassenberg et al., 2015; Funsten et al., 2022). These spaces also host cultural and seasonal events, such as exhibitions, concerts, and public celebrations, which enhance their accessibility and social value. Culturally and historically, botanical gardens preserve heritage landscapes, rare plant collections, and architectural elements (Caballero, 2015). However, as these gardens expand their educational and recreational offerings, they must also navigate challenges such as overcrowding, ecological degradation, and balancing visitor engagement with conservation priorities (Chiesura, 2004;

Blackmore et al., 2011; Mounce, 2017).

From this perspective, the aim of this study is to investigate the intersections of recreation, education, and conservation within botanical gardens. It seeks to understand how these multifunctional spaces are thoughtfully designed and managed to balance their roles as centers for biodiversity conservation, hubs for educational engagement, and destinations for recreational experiences.

## Materials and Methods

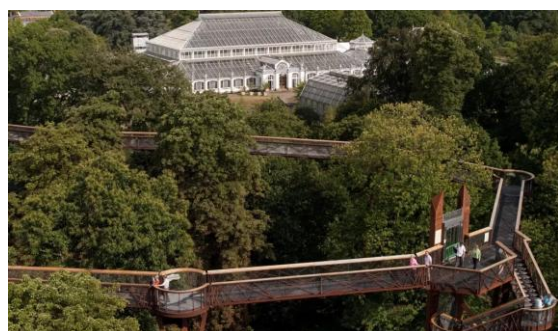
In line with the purpose of the study, UNESCO-listed botanical gardens are chosen to examine due to their dual role as cultural heritage sites and conservation hubs. These gardens are globally recognized for both their ecological contributions and their historical and aesthetic (Caballero, 2015). *Kew Gardens*, was founded in 1759 and was inscribed on the UNESCO World Heritage List in 2003, recognizing its historical, cultural, and botanical significance (UNESCO, 2024) (Figure 1). *The Singapore Botanic Gardens*, established in 1859, is a tropical garden located near the heart of Singapore's urban core (Figure 2). Inscribed on the UNESCO World Heritage List in 2015, the garden is recognized for its cultural and historical importance, as well as its role in advancing tropical horticulture and conservation (UNESCO, 2024). *The Orto Botanico di Padova*, located in Padua, Italy, is the oldest botanical garden in the world still in its original location. Founded in 1545 as part of the University of Padua, the garden was established to cultivate medicinal plants for academic study and remains



**Figure 1.** Palm House at Kew Gardens (Retrieved from: <https://whc.unesco.org>)



**Figure 2.** The bandstand at Singapore Botanic Gardens (Retrieved from: <https://whc.unesco.org/>)



**Figure 3.** Treetop Walkway, Kew Gardens (Retrieved from <https://www.kew.org/kew-gardens/whats-in-the-gardens/treetop-walkway>)

a prominent center for botanical research and education (Figure 3). In 1997, the Orto Botanico was inscribed on the UNESCO World Heritage List for its historical and scientific significance (UNESCO, 2024).

This study adopts a comparative case study approach to explore how UNESCO-listed botanical gardens balancing their roles as centers for biodiversity conservation, hubs for educational engagement, and destinations for recreational experiences. Case study methodologies are particularly effective in capturing the complexities of multi-functional spaces like botanical gardens, as they allow for a detailed examination of practices across different cultural and ecological contexts (Yin, 2018; Baxter & Jack, 2008). The data collection method for this research involves a comprehensive review of existing literature and documentation. Institutional reports, such as

annual reviews, strategic documents, and management plans provide insights into how these gardens integrate recreation while adhering to conservation mandates. UNESCO documentation, including nomination dossiers and management plans, further illustrates how each garden aligns its recreational offerings with its conservation and heritage objectives (UNESCO, 2024). The key reference documents; *The Kew Outreach Strategy 2022–2027* and the *World Heritage Site Management Plan 2020–2025 (Kew Gardens)* provide insights into Kew Gardens' structured approach to visitor engagement, capacity control, and sustainable tourism. Information regarding the Orto Botanico, Padua was derived from the *Periodic Report - Second Cycle*, which highlights the challenges and current practices in managing visitor flow and interpretation at this historic site. For the Singapore Botanic Gardens, strategies were derived from the *World Heritage Site Management Plan 2024–2028 (Singapore Botanic Gardens)* focusing on accessibility, education, and eco-tourism initiatives. This study employs a structured framework to analyze the recreation, conservation, and education programs within UNESCO-listed botanical gardens. The framework was categorized into three key areas:

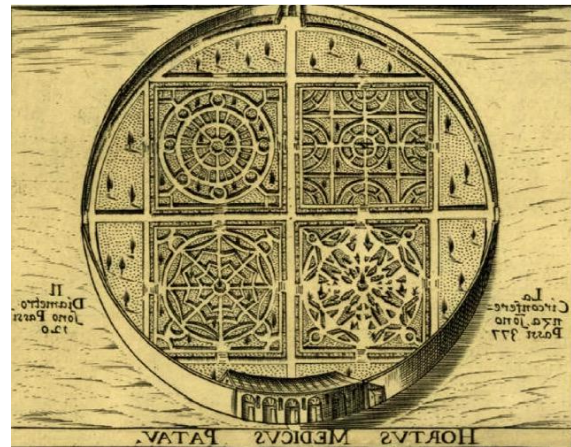
1. *Recreational-Focused Programs* – Active and passive recreational activities, including social and cultural events.
2. *Educational-Focused Approaches* – Public engagement, interpretive displays, and structured learning programs.
3. *Conservation-Focused Strategies* – Sustainable visitor management, biodiversity preservation, and ecological design.

Each botanical garden was examined through this lens to determine how these elements are integrated and balanced.

## Findings and Discussion

Building on the structured framework, this section reveals how these gardens interplay between recreation, education and conservation in botanical gardens, particularly those with UNESCO heritage status (Table 1). In terms of active recreation, Kew Gardens, provides

dynamic features such as the Treetop Walkway (Figure 4), which offers elevated views of the landscape, alongside seasonal interactive exhibits like light trails (Royal Botanic Gardens Kew, 2023). Singapore Botanic Gardens, on the other hand, prioritizes family-friendly active recreation through the Jacob Ballas Children's Garden (Figure 5), which includes interactive play areas and fitness trails (Singapore Botanic Gardens, 2020). Conversely, the Orto Botanico di Padova focuses less on active recreation due to its historical design, offering walking paths primarily within the Biodiversity Garden (Padova Botanical Garden, 2018).



**Figure 4.** Orto Botanico di Padova, "Orto dei semplici" (the 'simple' plant garden) (Retrieved from: <https://heritage.unipd.it/en/orto-botanico/>)



**Figure 5.** Jacob Ballas Children's Garden, Singapore Botanic Gardens (Retrieved from: <https://www.nparks.gov.sg/sbg/visit-us/maps--a--brochures>)

**Table 1.** Recreational activities at three botanic gardens.

		<b>Royal Botanic Gardens, Kew (UK)</b>	<b>Singapore Botanic Gardens</b>	<b>Orto Botanico di Padova (Italy)</b>
<b>Recreation- Focused</b>	<b>Active Recreation</b>	-Treetop Walkway for elevated views -Seasonal light trails	- Jacob Ballas Children's Garden -Fitness trails	-Walking paths in the Biodiversity Garden
	<b>Passive Recreation</b>	-Quiet lawns -Waterlily House -Tranquil garden trails	-Healing Garden - Symphony Lake	-Contemplative spaces -Renaissance Garden
	<b>Cultural and Social Activities</b>	-Seasonal festivals (e.g., Orchid Festival) -Outdoor concerts -Art exhibitions	-Symphony Lake concerts -Guided tours and cultural events	-Thematic biodiversity exhibitions -Guided historical tours
<b>Education- Focused</b>	<b>Educational Programs</b>	-Interactive exhibits -Guided tours emphasizing conservation and history	- Eco-education workshops - Nature trails with interpretive signage	-Workshops on biodiversity at 19th Century Greenhouses -Historical exhibits in the Biodiversity Garden -The Botanical Museum
<b>Conservation- Focused</b>	<b>Unique Features</b>	-Palm House -Temperate House -Treetop Walkway	- National Orchid Garden - Integration of tropical biodiversity -Heritage trees	-Goethe's Palm -Renaissance-era circular design -Oldest academic garden still in original location
	<b>Visitor Management</b>	-Enhances visitor experience through interpretation, festivals and events -Storytelling aligned with conservation goals -Programs for underrepresented groups -Sensory tours for accessibility -Manages visitor flow through timed entries, pre-booking systems, and capacity limits. -Digital tools enhance accessibility -Regular monitoring of visitor impacts and conservation efforts.	- Promotes an immersive experience with clear educational themes, highlighting heritage and biodiversity. -Free entry for all visitors -Inclusive facilities for families -Open access with natural circulation; utilizes large spaces to minimize overcrowding. -Comprehensive monitoring ensures minimal ecological impact and improves visitor experiences.	-Basic visitor amenities -Visitor use is managed but lacks a specific plan for crowd control. -Interpretive resources to fully highlight the site's heritage. -Primarily reflective spaces -Limited data on visitor impacts; some monitoring exists but needs improvement.





**Figure 6.** Symphony Lake, Singapore Botanic Gardens (Retrieved from: <https://www.sso.org.sg/whats-on/symphony-in-the-gardens-2024-july>)

Passive recreation zones are a common feature across all three gardens, providing visitors with spaces for relaxation and contemplation. Kew Gardens offers expansive lawns for picnics, quiet areas like the Waterlily House, and numerous garden trails that foster tranquil experiences (Royal Botanic Gardens Kew, 2023). Similarly, the Singapore Botanic Gardens includes wellness-oriented spaces such as the Healing Garden and Symphony Lake, designed to promote relaxation and stress reduction (Singapore Botanic Gardens, 2020). The Orto Botanico di Padova, deeply rooted in its Renaissance heritage, emphasizes passive recreation through contemplation gardens, seating areas, and reflective spaces set against its historic structures (Padova Botanical Garden, 2024).

Cultural and social activities are integral to the recreational offerings of these gardens. Kew Gardens hosts a variety of events, including seasonal festivals like the Orchid Festival, outdoor concerts, and art exhibitions that appeal to diverse audiences (Royal Botanic Gardens Kew, 2023). The Singapore Botanic Gardens also places strong emphasis on cultural engagement with Symphony Lake concerts (Figure 6), cultural celebrations, guided tours, and educational workshops (Singapore Botanic Gardens, 2020). Meanwhile, the Orto Botanico di Padova focuses on thematic exhibitions related to biodiversity and guided tours that emphasize its historical and ecological significance (Padova Botanical Garden, 2024).

## CONCLUSION

This study explored the recreational activities of Kew Gardens; Singapore Botanic Gardens; and Orto Botanico di Padova to investigate how these gardens integrate recreation while maintaining their core missions of conservation and education. The findings indicate that each garden adopts distinct approaches based on its historical context, ecological priorities, and visitor engagement strategies. Kew Gardens successfully balances active and passive recreation through structured visitor management and diverse cultural programming. Singapore Botanic Gardens emphasizes family-friendly and wellness-focused recreation, integrating accessible green spaces with eco-educational initiatives. In contrast, Orto Botanico di Padova, constrained by its historical layout, prioritizes passive and contemplative recreation while incorporating modern biodiversity education.

Botanical gardens serve as multifunctional spaces, fulfilling roles in biodiversity conservation, education, and recreation. Their management requires a delicate balance between these objectives, particularly in UNESCO-listed gardens, where conservation and heritage preservation are prioritized. However, the expansion of recreational programming in botanical gardens presents both opportunities and challenges. While interactive exhibits and cultural events can enhance visitor engagement, they may also divert attention from conservation objectives or contribute to visitor overuse of ecologically sensitive areas. To address these

concerns, botanical gardens must adopt sustainable visitor management strategies, such as clear zoning for recreation and conservation, capacity control measures, and interpretive education programs to reinforce their ecological missions. Findings suggest that botanical gardens that successfully integrate education into recreational activities can enhance public engagement while upholding conservation priorities. Passive recreation remains the preferred approach due to its minimal environmental footprint, while carefully planned active recreation can serve as an effective tool for engagement without disrupting conservation efforts.

Future research could expand on these findings by conducting visitor surveys to better understand preferences and satisfaction levels. Additionally, analyzing the financial and operational impacts of recreational programming on conservation efforts would offer deeper insights into how botanical gardens can sustain their multi-functional roles in urban environments.

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