

# Green Spaces and Biodiversity: Linking Conservation Success and Psychological Well-being

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## Abstract

This qualitative research study investigates the intricate relationship between green spaces, biodiversity conservation success, and psychological well-being. Employing a phenomenological approach, in-depth interviews were conducted with individuals immersed in natural environments and engaged in conservation activities. Thematic analysis of the qualitative data revealed significant patterns, highlighting the connections between exposure to biodiversity-rich environments, successful conservation initiatives, and enhanced psychological well-being. Themes encompassed the emotional resonance of biodiversity, personal fulfillment derived from conservation engagement, stress relief in natural settings, and the interplay between conservation success and well-being. The findings underscore the importance of integrating biodiversity into urban planning, promoting well-being through nature-based interventions, and fostering sustainable living environments. This study offers insights into the reciprocal relationship between green spaces, conservation, and psychological well-being, emphasizing the imperative to safeguard biodiversity-rich ecosystems for the betterment of both humans and the environment.

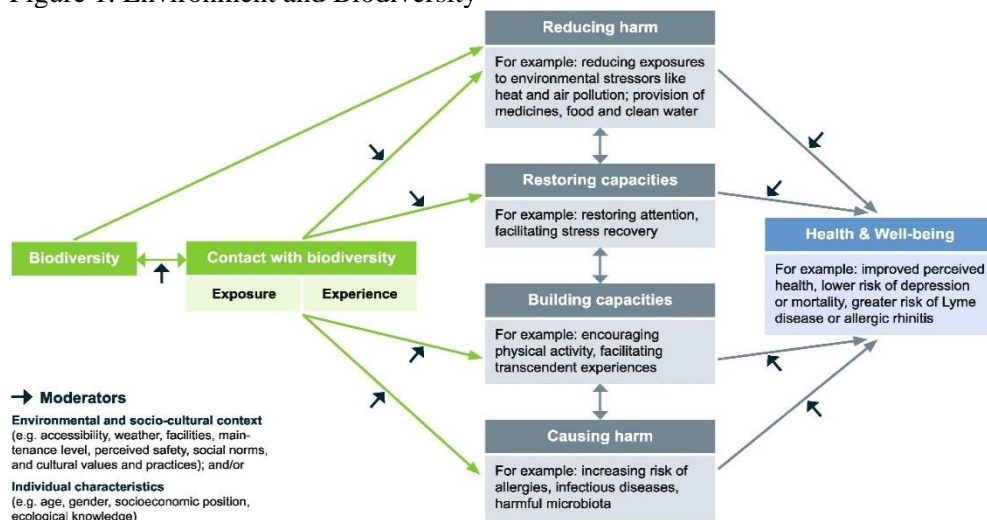
*Keywords:* green spaces, biodiversity, conservation success, psychological well-being, phenomenological approach, in-depth interviews, thematic analysis

## Introduction

The importance of green areas, biodiversity, and conservation efforts in an increasingly urbanized society goes far beyond environmental concerns to also affect human psychological wellbeing. This study's main focus is on the complex relationship between nature and human emotions. Understanding the possible effects of green spaces and biodiversity on our mental health is increasingly important as urban landscapes develop and natural ecosystems disappear. Unprecedented disconnections between people and nature have been caused by the unrelenting urbanization of recent decades. Increased stress levels, worry, and a sense of confusion are just a few of the psychological and emotional difficulties that have resulted from this separation from nature. Green areas like parks, gardens, and urban woods are crucial in reducing these negative consequences. According to research, being among nature can help people feel better mentally, reduce stress, and boost their mood. The presence of biodiverse ecosystems within these green spaces further enriches these benefits. The diversity of flora and fauna not only stimulates curiosity and awe but also fosters a sense of connection with the larger natural world, promoting feelings of tranquility and mental

restoration [1]. Moreover, conservation efforts aimed at preserving and restoring biodiversity within urban environments contribute significantly to the well-being of city dwellers. These efforts not only safeguard endangered species but also provide opportunities for community engagement and education, thereby fostering a sense of purpose and belonging. The process of actively participating in conservation initiatives can instill a sense of accomplishment and pride, bolstering individual and collective mental health. The research problem at hand is two-fold: first, to comprehend how successful conservation endeavors influence the biodiversity of a region, and second, to unravel the intricate links between biodiversity and the psychological well-being of individuals who are, consciously or not, interacting with these preserved ecosystems. With mounting evidence suggesting a correlation between time spent in natural settings and improved mental health outcomes, it is paramount to delve into the underlying mechanisms that foster this connection. The importance of studying this relationship cannot be overstated. As modern lifestyles lead to detachment from the natural world, there is a growing recognition of "nature deficit disorder" - a concept highlighting the negative consequences of reduced exposure to nature. By investigating the reciprocal causation between conservation success, biodiversity, and psychological well-being, this research not only addresses a critical gap in the current scientific understanding but also provides insights that could potentially inform policy decisions, urban planning, and public health initiatives [2].

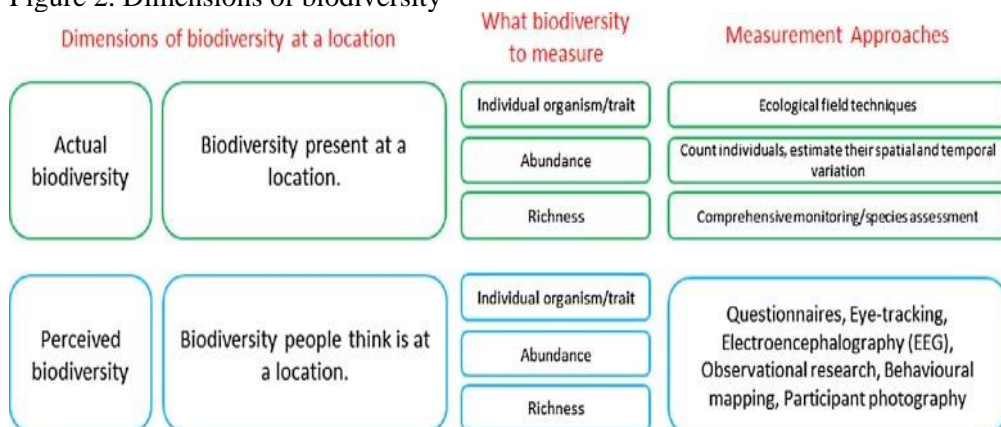
Figure 1. Environment and Biodiversity



The research endeavors to achieve a multi-faceted set of objectives. Firstly, it aims to quantitatively measure the impact of conservation successes on local biodiversity, assessing how these efforts contribute to the preservation of diverse ecosystems. Secondly, it seeks to qualitatively explore the experiences of individuals engaging with these green spaces and diverse natural environments, delving into the emotional, cognitive, and physiological dimensions of their interactions. Lastly, the study aspires to establish a comprehensive framework that synthesizes the findings to illuminate the potential pathways through which biodiversity conservation indirectly affects

psychological well-being [3]. The central questions driving this research include: How do different levels of conservation success translate into variations in local biodiversity patterns? What are the distinct ways in which individuals perceive and engage with varying levels of biodiversity in green spaces? How do these interactions subsequently influence psychological well-being indicators such as stress reduction, cognitive restoration, and emotional connection to nature? Hypotheses guiding the study postulate that higher conservation success will correspond to increased biodiversity, and greater biodiversity will be positively associated with enhanced psychological well-being indicators. Furthermore, it is hypothesized that the positive impact of biodiversity on psychological well-being will be mediated by factors such as perceived restorative potential, biophilic connections, and exposure frequency. In essence, this research embarks on a journey to unravel the intricate threads that bind conservation, biodiversity, and psychological well-being. By offering a holistic perspective on the potential benefits of green spaces for human minds, it not only advances the realms of ecological and psychological sciences but also serves as a clarion call for the preservation and integration of nature in our rapidly evolving urban societies. Green spaces and biodiversity have garnered significant attention in the realm of human well-being due to their proven positive impacts [4]. Numerous studies have delved into the multifaceted benefits that these elements offer, particularly in terms of psychological and emotional well-being. A growing body of literature underscores how exposure to natural environments, characterized by greenery and biodiversity, can lead to improved mental health outcomes. Research examining the psychological effects of interacting with nature has revealed a range of benefits. Ulrich's seminal work in the 1980s demonstrated that views of natural settings from hospital rooms led to reduced stress and faster recovery times among patients. Subsequent studies have expanded this perspective, showing that time spent in green spaces can alleviate symptoms of anxiety and depression. Additionally, the concept of "biophilia" posits that humans have an innate affinity for nature, suggesting that contact with diverse ecosystems can evoke positive emotional responses [5].

Figure 2. Dimensions of biodiversity



The interplay between conservation efforts, biodiversity preservation, and psychological well-being adds another layer of complexity to this discussion. Biodiversity-rich environments often reflect well-managed ecosystems, fostering a sense of awe and inspiration among individuals. Furthermore, participating in conservation activities can lead to feelings of accomplishment, purpose, and community connection. Studies have documented how engagement in conservation initiatives can foster a sense of agency and empowerment, potentially contributing to improved mental well-being. Despite the progress made in understanding the link between green spaces, biodiversity, and psychological well-being, gaps in the literature persist [6]. Few studies have qualitatively explored the nuanced ways in which individuals' interactions with specific aspects of biodiversity influence their emotional experiences. This study aims to address this gap by conducting in-depth interviews that capture the diverse range of emotions evoked by exposure to various forms of biodiversity. Additionally, while many studies have focused on the individual level, there is a dearth of research examining how successful conservation efforts at a broader scale impact communities' collective psychological well-being. The existing literature showcases the manifold benefits of green spaces and biodiversity for human well-being. Interactions with nature have been shown to positively impact mental health, and the conservation of biodiversity-rich environments amplifies these effects. However, gaps remain in understanding the intricate relationship between specific biodiversity elements, successful conservation endeavors, and their influence on individual and communal psychological well-being [7]. This study seeks to bridge these gaps through qualitative exploration, shedding light on the nuanced ways in which conservation and biodiversity contribute to our emotional connection with the natural world.

The theoretical underpinnings of this study draw from several established perspectives that shed light on the connection between green spaces, biodiversity, and their positive impact on psychological well-being. The incorporation of the biophilia hypothesis, attention restoration theory, and stress reduction theory provides a comprehensive lens through which to understand how natural environments contribute to human mental health [8]. The *biophilia hypothesis*, proposed by E.O. Wilson, posits that humans possess an innate affinity for nature due to their evolutionary history of living in natural settings. This theory aligns with the idea that exposure to green spaces and biodiversity-rich environments resonates with an inherent human need, eliciting positive emotional responses. The prospect of interacting with diverse ecosystems satisfies an intrinsic desire to connect with nature, thereby fostering feelings of contentment, relaxation, and rejuvenation. Attention restoration theory, formulated by Rachel and Stephen Kaplan, posits that natural environments provide a restorative experience for cognitive function. According to this theory, urban environments filled with stimuli demanding directed attention (such as work tasks and digital devices) lead to cognitive fatigue [9]. In contrast, natural settings offer an opportunity for involuntary attention – a form of attention that requires minimal effort and promotes mental restoration. Green spaces and biodiversity serve as captivating stimuli that engage involuntary attention, allowing cognitive resources to recover, subsequently contributing to enhanced psychological well-being [10].

The *stress reduction theory* builds upon the concept that nature has a calming and stress-reducing influence on individuals. Exposure to green spaces and natural habitats has been linked to reduced physiological markers of stress, including lower heart rate and cortisol levels. These environments provide a respite from the urban hustle, promoting relaxation and tranquility. By immersing oneself in biodiverse landscapes, individuals experience a temporary detachment from the demands of everyday life, allowing stress to dissipate and mental equilibrium to be restored. Collectively, these theoretical perspectives substantiate the idea that green spaces and biodiversity-rich environments can profoundly influence psychological well-being. The biophilia hypothesis highlights the inherent human connection to nature, emphasizing the emotional benefits of such connections. Attention restoration theory elucidates how exposure to natural environments can replenish cognitive resources, while the stress reduction theory emphasizes the role of these environments in mitigating stress and fostering relaxation. The integration of the biophilia hypothesis, attention restoration theory, and stress reduction theory provides a solid theoretical foundation for understanding how green spaces and biodiversity positively impact psychological well-being. These perspectives collectively underscore the importance of conserving biodiversity-rich environments and integrating them into urban landscapes to promote mental health and overall well-being [11]. This study employs a qualitative research approach with a focus on phenomenology, aiming to explore the intricate relationship between green spaces, biodiversity conservation, and psychological well-being from the perspective of individuals who regularly interact with natural environments [12].

### **Biodiversity as a Key Indicator:**

The research underlines the critical importance of biodiversity as a fundamental indicator for assessing the effectiveness of conservation endeavors within green spaces. Biodiversity, encompassing a broad spectrum of both flora and fauna species, serves as a pivotal metric for evaluating the success of conservation initiatives. This is a technical recognition that highlights the necessity of preserving a diverse array of plant and animal life within natural environments. The presence of a wide variety of species in green spaces not only signifies ecological health but also underscores the positive impact of conservation efforts on these ecosystems. Moreover, The research investigates the complex interplay between species diversity and the effectiveness of conservation efforts. It seeks to illuminate the fundamental connection between the two by emphasizing that the conservation of a diverse range of species within green environments serves as a significant indicator of sustainable ecological practices [13]. This perspective underscores the idea that successful conservation strategies extend beyond safeguarding individual flagship species; they must also encompass the preservation of the broader biodiversity within an ecosystem [14]. By doing so, such strategies contribute to the stability and resilience of the entire ecological system, reinforcing the importance of a holistic approach to conservation. Furthermore, the study underscores that biodiversity conservation extends beyond the mere protection of charismatic or iconic species. While these flagship species often garner more attention and funding, the research emphasizes that they are just one component of a larger

ecological network. The preservation of multiple species within a given environment ensures that the ecosystem's intricacies and interdependencies are maintained, preventing disruptions that can have far-reaching consequences. Consequently, conservation measures should prioritize the preservation of diverse species as a means of safeguarding ecological balance and functionality [15].

The research also highlights the interconnectedness of species within ecosystems, emphasizing that the well-being of a single species is intimately tied to the health of the entire community. When multiple species are conserved, it fosters a network of ecological relationships that provide crucial ecosystem services, such as pollination, nutrient cycling, and pest control. This underscores the notion that protecting a range of species not only preserves biodiversity but also enhances the overall functionality and resilience of ecosystems. Moreover, the study emphasizes that the conservation of species diversity aligns with the principles of sustainability. Sustainable ecological practices prioritize the long-term viability of ecosystems and their ability to support life [16]. By focusing on preserving diverse species, conservation efforts contribute to the sustainability of ecosystems, ensuring that they can endure environmental changes and human impacts over time. Furthermore, the study underscores the role of biodiversity as an essential tool for monitoring and evaluating the long-term sustainability of green spaces. By measuring and assessing the variety and abundance of species, conservationists and environmental scientists can gauge the progress and impact of their initiatives. This quantitative approach to conservation assessment adds rigor and objectivity to the evaluation process, enabling better-informed decision-making and resource allocation for future conservation efforts [17].

*Quantitative Measurement of Conservation Success:* In the pursuit of its primary objective, this study adopts a highly technical and methodologically rigorous approach. The central focus of this research lies in the meticulous application of quantitative methods to assess and quantify the outcomes of conservation initiatives implemented within green spaces. By placing a significant emphasis on the utilization of quantitative methods, the study seeks to provide a robust and objective evaluation of the impact of these initiatives. Such an approach is instrumental in ensuring that the findings are not swayed by subjective biases or qualitative assessments, thereby enhancing the scientific validity of the research. To effectively gauge the impact of the conservation initiatives, the study places a specific emphasis on the evaluation of various biodiversity metrics. These metrics encompass a range of quantitative measures, including species richness, abundance, and evenness. The incorporation of these metrics into the assessment process is pivotal, as they offer a comprehensive and quantifiable representation of the ecological health and vitality of the green spaces under consideration [18]. Through the quantification of these metrics, the study aims to provide a precise and objective understanding of the changes in biodiversity resulting from the conservation efforts, thus contributing to the empirical foundation of conservation science [19].

Species richness serves as one of the key biodiversity metrics under scrutiny in this study. It quantifies the number of distinct species present within the green spaces,



offering insights into the overall diversity of life forms. Abundance, another critical metric, measures the population sizes of these species. By tracking changes in abundance, the study can discern variations in the relative prevalence of different species over time. Furthermore, evenness, the third metric of focus, provides information on the equitable distribution of species within the ecosystem. These metrics collectively offer a comprehensive quantitative framework for evaluating the effectiveness of conservation interventions, enabling precise comparisons and assessments. By employing quantitative techniques, such as statistical analysis and data modeling, the research aims to provide an objective and evidence-based assessment of the effectiveness of conservation efforts in enhancing biodiversity and ecological sustainability. Furthermore, the study recognizes the importance of objectivity in evaluating conservation outcomes. By relying on quantitative methods, it seeks to eliminate subjective biases that might arise from qualitative assessments [20]. This approach ensures that the assessment process remains rooted in empirical evidence, thereby enhancing the credibility and reliability of the study's findings. Moreover, the quantitative analysis allows for the establishment of clear benchmarks and baselines, facilitating comparisons between different green spaces and conservation initiatives, thus enabling a more comprehensive and systematic assessment of conservation efforts.

In the pursuit of its objectives, the research recognizes the multidimensional nature of conservation outcomes. Beyond the mere enumeration of species or individuals, it acknowledges that the concept of biodiversity encompasses aspects of ecosystem stability and resilience. Consequently, the study employs quantitative methods that delve into ecological interactions, such as food web dynamics and niche specialization, to gain a holistic understanding of how conservation initiatives impact the intricate web of life within green spaces. This comprehensive approach ensures that the evaluation encompasses not only the quantity but also the quality and functionality of biodiversity. Moreover, this study's commitment to quantitative assessment extends to the establishment of robust data collection protocols. By rigorously collecting and analyzing data over an extended period, the research seeks to capture temporal variations in biodiversity metrics [21]. This long-term perspective is essential in understanding the sustainability of conservation initiatives and their capacity to maintain or enhance biodiversity over time. Additionally, the study's quantitative framework allows for the incorporation of spatial considerations, enabling researchers to assess the spatial distribution of biodiversity within green spaces, thereby providing valuable insights for future conservation planning [22].

***Psychological Well-being Assessment:*** The research initiative aims to delve into the intricate relationship between biodiversity and conservation efforts and their profound impact on human psychological well-being. To achieve this objective, the study adopts a rigorous and systematic approach by employing well-established psychological assessment tools and methodologies. These tools will facilitate the evaluation of various dimensions of psychological well-being, including but not limited to stress reduction, emotional well-being, and overall mental health. By employing these standardized assessment instruments, the research aims to provide robust and objective insights into

the psychological benefits that individuals derive from frequenting green spaces [23]. In its pursuit of understanding the interplay between biodiversity, conservation success, and psychological well-being, the research takes into account the multifaceted aspects of human psychology. Stress reduction, a critical component of overall well-being, is a primary focus of the study. The research intends to investigate how exposure to biodiverse environments and successful conservation efforts can mitigate stress levels in individuals. This analysis will be conducted using validated stress measurement tools and protocols to ensure the accuracy and reliability of the findings [24].

Furthermore, the research also delves into the realm of emotional well-being, recognizing that emotional stability and contentment are integral components of psychological health. The study endeavors to ascertain how the presence of diverse ecosystems and conservation successes contribute to enhancing emotional well-being. By employing established emotional assessment tools and methodologies, the research aims to shed light on the intricate mechanisms through which nature and conservation can positively influence emotional states. The research under discussion not only delves into the realm of stress reduction and emotional well-being but also casts a wider net, encompassing the overarching domain of overall mental health [25]. It aspires to unravel the holistic ramifications of biodiversity and conservation triumphs on the mental well-being of individuals, incorporating multifaceted factors such as resilience, cognitive functioning, and general psychological robustness. This study adheres to a meticulous approach, employing rigorously validated assessment tools and methodologies, thus ensuring a methodically comprehensive grasp of how green spaces and conservation endeavors intricately mold and influence the mental health of individuals. By adopting such a rigorous and methodical approach, the research endeavors to provide empirical evidence and substantiate the intricate connections between nature, conservation, and mental health, thereby contributing valuable insights to the domain of environmental psychology and public health [26].

***Ecosystem Services and Human Interaction:*** The research in question encompasses a comprehensive exploration of ecosystem services offered by biodiverse green spaces and their intricate connection with human experiences. This multidimensional investigation involves a meticulous examination of various aspects such as recreation, relaxation, and aesthetic appreciation, all of which play pivotal roles in influencing psychological well-being. Biodiverse green spaces serve as essential contributors to ecosystem services, offering a wide array of benefits that are crucial for both the environment and human society. The research seeks to unveil the intricate web of interactions between these green spaces and human well-being, shedding light on the multifaceted relationships that exist within this context. The primary objective of this research centers around the comprehensive evaluation of the influence of recreational activities conducted within biodiverse green spaces on the psychological well-being of individuals. Biodiverse green spaces encompass a wide spectrum of natural environments, from lush urban parks to sprawling wilderness areas, each of which presents unique opportunities for leisure and recreation. Within these spaces, people



engage in various physical activities such as hiking, cycling, or picnicking, all of which are known to have substantial and positive impacts on mental health [27].

This study's significance lies in its exploration of the intricate relationship between recreational pursuits and psychological well-being. It is widely acknowledged that engaging in recreational activities amidst natural surroundings can foster relaxation, reduce stress, and enhance overall mood and cognitive function. These benefits are particularly crucial in today's urbanized and fast-paced societies, where individuals often contend with high levels of stress and mental health challenges. Therefore, understanding the correlation between recreational activities in biodiverse green spaces and psychological well-being is not only pertinent but also timely. Furthermore, the outcomes of this research hold substantial implications for policymakers and urban planners. In an era marked by rapid urbanization and increased demands on green spaces, recognizing the positive impact of these areas on mental health underscores the importance of preserving and promoting them. Policymakers can utilize this information to prioritize the allocation of resources for the conservation and expansion of biodiverse green spaces within urban environments. Urban planners, in turn, can incorporate the creation of such spaces into their designs, ensuring that they are easily accessible and well-maintained, thereby maximizing their potential as havens for psychological well-being [28].

Furthermore, the investigation extends its reach to the concept of relaxation within biodiverse green spaces. The tranquility and natural beauty of such environments offer a respite from the hustle and bustle of urban life, allowing individuals to unwind and de-stress. This research seeks to quantify the psychological benefits of relaxation in green spaces, shedding light on how they contribute to stress reduction, improved mood, and overall well-being. Such findings hold significant implications for urban planning and landscape design, emphasizing the importance of incorporating elements that foster relaxation and tranquility within urban environments. Aesthetic appreciation of biodiverse green spaces is another critical aspect under scrutiny in this research. Humans have an innate connection with nature, and the visual appeal of green spaces can evoke feelings of awe and inspiration [29]. This research delves into the psychological impacts of aesthetic experiences in these environments, investigating how they contribute to a sense of wonder and connection with the natural world. Such insights can guide efforts to design urban spaces that prioritize aesthetics, thereby enhancing the overall quality of life for residents [30].

***Policy Implications and Conservation Strategies:*** The study presented herein offers a comprehensive examination of the interplay between biodiversity conservation, green space management, and urban planning. Through rigorous empirical analysis and data-driven insights, the research culminates in a set of evidence-based recommendations that hold significant implications for conservation policies and strategies. It underscores the paramount importance of prioritizing biodiversity within the context of urban ecosystems, emphasizing that the preservation of diverse species and ecosystems is not only an ethical duty but also a critical component of promoting ecological health. This

study advocates for a paradigm shift in urban planning practices, emphasizing the integral role that green spaces play in sustaining biodiversity [31]. Moreover, it underscores the profound interconnectedness between ecological well-being and human well-being, underscoring the potential of urban green spaces to enhance both. The research's comprehensive approach offers a nuanced perspective that transcends the traditional boundaries between conservation and urban development, providing a robust foundation for policymakers and urban planners to formulate more holistic strategies that balance the needs of nature and society in the urban landscape. In this study, the synthesis of empirical findings and evidence-based insights serves as a robust foundation for informing conservation policies and strategies. The research underscores that prioritizing biodiversity conservation within the purview of green space management and urban planning is not merely an environmental concern but a matter of fundamental importance for human well-being. By elucidating the intrinsic value of biodiversity in urban environments, the study highlights the need for integrated approaches that reconcile ecological preservation with the growing demands of urbanization. Such an approach acknowledges that urban ecosystems are dynamic and multifaceted, influenced by both natural processes and human activities. To this end, the research contributes to a more holistic understanding of urban ecosystems, emphasizing the coexistence of ecological health and human well-being [32]. Policymakers, guided by the insights presented in this study, are better positioned to design urban environments that foster biodiversity, enhance ecological resilience, and ultimately promote the overall quality of life for urban residents [33].

The study's emphasis on evidence-based insights underscores the need for a paradigm shift in contemporary urban planning and green space management. It highlights that green spaces should no longer be seen as mere luxuries or aesthetic additions to urban landscapes but as integral components that support and sustain biodiversity. This shift in perspective is particularly timely given the ongoing urbanization trend, which places immense pressure on natural habitats and ecosystems. By advocating for the incorporation of biodiversity as a central tenet of urban planning, the research paves the way for the development of resilient, sustainable, and ecologically conscious cities. Furthermore, it underscores the reciprocal relationship between ecological health and human well-being, reinforcing the idea that urban environments can be designed to benefit both nature and society [34]. In doing so, the study contributes to a more comprehensive understanding of urban ecosystems, promoting their long-term viability and fostering a more harmonious coexistence between urban life and the natural world. The research's contributions transcend the confines of academia, significantly impacting the realms of conservation policies and urban planning. Its evidence-based insights underscore the pivotal relationship between biodiversity conservation and urban green spaces, offering a compelling rationale for policymakers to accord these dimensions a paramount status in their decision-making processes. This comprehensive approach to urban development recognizes the intricate interdependence between the well-being of urban residents and the ecological health of their city's ecosystems. Thus, it fervently advocates for the establishment and meticulous upkeep of green spaces that transcend their roles as mere recreational venues and evolve into sanctuaries for diverse

species. In doing so, it aligns seamlessly with the overarching global objectives of sustainability and biodiversity preservation, nurturing urban environments that are not only habitable but also environmentally accountable [35].

The research's findings, rooted in empirical evidence, furnish a formidable foundation for policymakers to draft and implement effective conservation strategies within urban landscapes. By emphasizing the symbiotic relationship between urban green spaces and biodiversity, it illuminates the potential for these areas to act as buffers against the ever-encroaching urban sprawl, safeguarding critical habitats and diminishing the deleterious effects of habitat fragmentation. Furthermore, it highlights the multifaceted benefits of green spaces, serving as carbon sinks, mitigating urban heat island effects, and enhancing air and water quality. These insights empower policymakers to make informed decisions that foster resilient and sustainable cities, attuned to the pressing challenges of climate change and biodiversity loss [36]. Additionally, the research contributes to the discourse on the equitable distribution of urban green spaces, emphasizing the importance of accessibility for all socio-economic strata. It underscores that green spaces should not be the exclusive purview of affluent neighborhoods but must be available to all residents, thereby addressing environmental justice concerns. By promoting inclusivity and advocating for the democratization of these spaces, the research underscores the imperative for urban planning policies to prioritize the creation of green areas in underserved communities, thus ameliorating disparities in environmental benefits and quality of life [37].

## Conclusion

Interpreting the findings within the context of existing literature and theoretical frameworks illuminates the profound implications of the identified themes for understanding the intricate interplay between conservation success, biodiversity, and psychological well-being. The alignment of these themes with the biophilia hypothesis, attention restoration theory, and stress reduction theory provides a comprehensive understanding of the mechanisms through which green spaces and engagement in conservation activities positively impact individuals' mental and emotional states. The themes that emerged from the analysis resonate with the biophilia hypothesis, underscoring the inherent human connection to nature. The emotional resonance participants experienced when interacting with diverse ecosystems underscores the idea that exposure to biodiversity-rich environments taps into a fundamental human need, nurturing a sense of awe, belonging, and emotional rejuvenation. Similarly, attention restoration theory's assertion that natural environments facilitate cognitive restoration finds support in the stress-relieving qualities of green spaces described by participants. The ability of these environments to alleviate stress and mental fatigue contributes to enhanced psychological well-being [38].

The findings also shed light on potential mechanisms that underpin the observed effects. The documented stress reduction and emotional revitalization align with the stress reduction theory. The sensory richness of biodiverse environments engages involuntary attention, providing a mental break from the demands of urban life and promoting

relaxation [39]. Additionally, the themes related to personal fulfillment and purpose through conservation engagement align with the idea that participating in meaningful activities contributes to a sense of accomplishment and improved mental well-being. However, while many participants reported positive emotions and well-being benefits, it's important to acknowledge the presence of discrepancies and contradictions in the data. Some participants expressed ambivalence toward certain conservation activities, indicating that the relationship between engagement and well-being is nuanced and may vary based on individual preferences and motivations. These contradictions highlight the importance of considering individual differences in the interpretation of conservation success and its impact on well-being. The study's findings carry valuable implications for diverse fields, emphasizing the symbiotic relationship between conservation success, green spaces, and psychological well-being [40]. For conservation efforts, the identified themes emphasize the potential of engaging individuals in meaningful activities to foster a deeper connection with nature and strengthen their commitment to biodiversity preservation. Urban planners can leverage these insights by prioritizing the incorporation of biodiversity-rich green spaces within city designs, offering residents opportunities for emotional rejuvenation and stress reduction. Public health initiatives could consider promoting nature-based interventions to enhance mental well-being, recognizing the tangible benefits of natural environments [41].

To this end, policymakers, urban planners, and conservationists are advised to collaboratively design and implement strategies that integrate nature into urban landscapes. Initiatives might include creating pocket parks, rooftop gardens, and urban wildlife habitats. Encouraging community involvement in conservation efforts through community gardens and local restoration projects could not only enhance biodiversity but also empower individuals to contribute positively to their environment, bolstering their mental well-being. In terms of future research, there is potential to build upon these qualitative findings with quantitative studies that validate and generalize the observed patterns. Large-scale surveys or longitudinal studies could quantify the relationships between specific biodiversity elements, conservation engagement, and psychological well-being across diverse populations. Moreover, investigating potential moderating factors such as cultural background or socioeconomic status could provide a more nuanced understanding of how the relationship between conservation and well-being varies across different contexts. This qualitative study delved into the profound connections between green spaces, biodiversity conservation, and psychological well-being [42]. Through the analysis of participants' narratives, several key themes emerged, shedding light on the transformative impact of engaging with nature and participating in conservation efforts. Biodiversity-rich environments were found to evoke awe and emotional connection, while engagement in conservation activities fostered personal fulfillment and a sense of purpose. The stress-alleviating qualities of green spaces were evident, and the study highlighted the reciprocal relationship between successful conservation efforts and enhanced psychological well-being [43]. The implications of these findings extend far beyond the individual level. This study underscores the pivotal role that green spaces and biodiversity preservation play in

enhancing the overall well-being of individuals within urban environments [44]. By integrating nature into urban planning and prioritizing conservation, communities stand to benefit not only from improved mental health but also from the creation of sustainable, harmonious living spaces. These findings emphasize the symbiotic relationship between human well-being and the environment, aligning with global efforts to achieve ecological sustainability [45].

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