

GREEN CORRIDOR AND ITS RELEVANCE IN PRESENT SCENARIO

Dr. Romila Karnawat*
Dr. Nidhi Gaur**

ABSTRACT

This research paper explores the various aspects of green corridor, its significance in preserving biodiversity, ecosystem. It promotes the essential balance between economic and social development and prevents degradation of environment laying emphasis on protecting it and sustainable landscapes. Green corridors are crucial for maintaining ecological balance, facilitating species movement, and mitigating the adverse effects of human activities on ecosystems. This paper highlights the role of green corridors in biodiversity conservation, ecosystem services, habitat restoration, climate change resilience, recreational opportunities, and social and economic benefits. Through an in-depth analysis of existing literature, case studies, and scientific evidence, this research paper provides comprehensive insights into the importance of green corridors for a sustainable future.

Keywords: Green Corridor, Biodiversity, Ecosystem, Landscapes.

Introduction

Green corridors are crucial for the preservation and sustainability of our environment. They are defined as protected areas or networks of connected natural habitats that allow the movement of plants, animals, and ecological processes across landscapes [1]. These corridors play a vital role in maintaining biodiversity, promoting ecological balance, and mitigating the adverse effects of human activities on ecosystems [2]. In a world faced with increasing urbanization, habitat fragmentation, and climate change, these corridors play a crucial role in preserving biodiversity and fostering sustainable landscapes. This article explores the significance of green corridors and their multifaceted benefits for a sustainable future.

Here are some of the key importance of green corridors:

- **Biodiversity Conservation**

Green corridors facilitate the movement of various species, allowing them to migrate, disperse, and establish new populations. This connectivity helps in maintaining genetic diversity, which is essential for the long-term survival and adaptation of species in changing environments [3]. By providing suitable habitats and reducing fragmentation, green corridors help in prevention of the loss of biodiversity and the extinction of species.

Green corridors play a crucial role in maintaining genetic diversity by facilitating species movement and preventing isolation [4]. They contribute to biodiversity conservation by connecting fragmented habitats and allowing for the survival and adaptation of species.

Biodiversity is the foundation of healthy ecosystems, providing essential services such as pollination, nutrient cycling, and pest control. Green corridors are instrumental in maintaining biodiversity by connecting fragmented habitats and allowing for the movement of species. By providing a pathway for species to migrate, disperse, and establish new populations, green corridors help prevent genetic isolation and the loss of biodiversity [5]. The preservation of genetic diversity is crucial for the long-term survival and adaptation of species in changing environments.

* Associate Professor in Chemistry, SCRS Rajkiya Mahavidyalaya, Sawai Madhopur, Rajasthan, India.
** Alankar PG College, Jaipur, Rajasthan, India.

Case studies from around the world showcase the positive impact of green corridors on biodiversity conservation. For example, in Costa Rica, the Mesoamerican Biological Corridor has connected fragmented forests, allowing for the movement of endangered species such as jaguars and tapirs [6]. Similarly, the Great Eastern Ranges in Australia have facilitated the movement of numerous species, including the threatened koalas and gliding possums [7].

- **Ecosystem Services**

Ecosystem services are the benefits that ecosystems provide to humans and the environment. Green corridors provide numerous ecosystem services that benefit both wildlife and humans. They regulate water flow, reduce soil erosion, improve air quality, and mitigate climate change by sequestering carbon dioxide [8]. These corridors also support pollinators, which are vital for crop production and the maintenance of natural ecosystems. Green corridors provide a range of ecosystem services, including water flow regulation, soil erosion reduction, air quality improvement, and carbon sequestration [9]. They also support pollinators, which are crucial for crop production and the maintenance of natural ecosystems.

Green corridors play a vital role in the provision of various ecosystem services, contributing to the well-being of both wildlife and human communities. One of the key ecosystem services provided by green corridors is the regulation of water flow [10]. These corridors act as natural filters, improving water quality and reducing the risk of floods by absorbing and slowing down water during heavy rainfall events.

Green corridors also mitigate soil erosion by reducing the runoff of sediments into water bodies. By stabilizing soils and preventing erosion, they help maintain the health of ecosystems and protect water resources. Furthermore, green corridors contribute to air quality improvement by capturing and sequestering carbon dioxide, a major greenhouse gas responsible for climate change [11]. The presence of vegetation along corridors also helps filter air pollutants, enhancing the quality of the surrounding environment.

Additionally, green corridors support pollinators such as bees, butterflies, and birds, which play a crucial role in pollination and the reproduction of plants [12]. By providing suitable habitats and food sources, green corridors ensure the survival and abundance of pollinators, contributing to the productivity of both natural ecosystems and agricultural landscapes.

- **Habitat Restoration and Enhancement**

Green corridors can serve as pathways for restoring degraded habitats and promoting the growth of native vegetation [13]. They can be used to rehabilitate areas affected by human activities such as deforestation, urbanization, or industrialization. By connecting fragmented habitats, green corridors increase the available habitat area, allowing for the recovery of plant and animal populations. Green corridors are instrumental in rehabilitating degraded habitats and promoting the growth of native vegetation [14]. They provide pathways for the recovery of plant and animal populations and help restore ecological balance.

Habitat degradation and loss are significant threats to biodiversity. Green corridors offer a solution by serving as pathways for the restoration and enhancement of degraded habitats. These corridors connect patches of intact or restored habitats, allowing for the expansion of suitable habitats for various species. Through habitat restoration, green corridors promote the growth of native vegetation, thereby supporting the recovery of plant and animal populations [15].

Successful examples of habitat restoration through green corridors can be found worldwide. The Los Angeles River Greenway in California, USA, has transformed a concrete channel into a thriving green corridor, providing habitat for numerous species and enhancing the urban environment [16]. In Europe, the LIFE Green Corridors project has successfully restored and connected wetland habitats, benefiting endangered species such as the European pond turtle and the aquatic warbler [17].

- **Climate Change Resilience**

Climate change is altering ecosystems and threatening the survival of many species. Green corridors contribute to climate change resilience by facilitating species' movements in response to changing environmental conditions. As temperatures and precipitation patterns shift, species may need to migrate to find suitable habitats. Green corridors provide the necessary connectivity for these movements, enabling species to adapt and survive in the face of climate change [18]. Green corridors enhance climate change resilience by facilitating species' movements in response to shifting environmental conditions. They provide connectivity for species to find suitable habitats, thereby promoting their adaptation and survival.

- **Recreational and Educational Opportunities**

Green corridors offer recreational spaces for people to enjoy nature and engage in outdoor activities such as hiking, birdwatching, and photography. They also serve as valuable educational resources, allowing people to learn about biodiversity, ecosystems, and the importance of conservation.

- **Social and Economic Benefits**

Green corridors have positive impacts on local communities by enhancing the quality of life through access to green spaces and recreational opportunities. They also contribute to local economies through ecotourism and nature-based industries, creating employment opportunities.

- **Green Corridor and its Relevance**

In present scenario, green corridor in a city may be assumed as natural infrastructure like trees, plants, herbs etc. that connects two green open spaces to form green pathways. This corridor provides ecological services and mobility networks in residential, commercial, educational land. Today, people find themselves least interactive with others and are busy in fulfilling the needs of their professional and individual aspects which departs them from social aspects and humanity. In most of the Metro cities, we find very heavy traffic due to increasing population and motor vehicles. The air quality index is increasing day by day, creating an alarming situation for living community. The concept of green corridor enhances their social interaction in urban population with nature which improves their health by providing the walking pathways and other modes of physical activities. It also helps in conservation of environment by plantation drive.

Conclusion

Green corridors are vital for preserving biodiversity, fostering sustainable landscapes, and ensuring a resilient future. The objective of green corridor is to link important natural areas in a city by means of a corridor characterized by rich vegetation. Due to their linear configuration, green corridors favour movement, flow and exchange of landscape elements of different scales. They play a crucial role in biodiversity conservation, ecosystem services provision, habitat restoration, climate change resilience, recreational opportunities, and social and economic benefits. Protecting and establishing green corridors is crucial for maintaining a harmonious relationship between humans and nature.

References

1. Urban wildlife corridors: Building bridges for wildlife and people” Amanda J. Zellmer and Barbara S. Goto, *Front. Sustain. Cities*, 14 October 2022, Volume 4 - 2022 | <https://doi.org/10.3389/frsc.2022.954089>
2. “Corridors best facilitate functional connectivity across a protected area network” Frances E. C. Stewart 1,4, Siobhan Darlington1, John P.Volpe1, Malcolm McAdie2 & JasonT. Fisher *Scientific Reports* | (2019) 9:10852 | <https://doi.org/10.1038/s41598-019-47067>
3. “Planning considerations of green corridors for the improvement of biodiversity resilience in suburban areas”, Yuhong Wang, Siqi Jia, Zhe Wang, Yang Chen, Shicong Mo and N. N. Sze, *Journal of Infrastructure Preservation and Resilience* (2021) 2:6 <https://doi.org/10.1186/s43065-021-00023-4>
4. R. Srivastava, R. Tyagi, Wildlife corridors in India: Viable legal tools for species conservation”, *Environmental Law Review* 2016, Vol. 18(3) 205–223
5. Dole, J.W., Ng, S.J., Sauvajot, R.M. 2004. Use of Highway Undercrossings by Wildlife in Southern California. *Biology Conservation*, 115 (3):499-507. &Foreman, Dave. *Rewilding North America: a Vision for Conservation in the 21st Century*. Washington: Island, 2004.
6. Corrales, L. & T. Zuñiga. 2001. Análisis de Representatividad Ecológica del Corredor Biológico Mesoamericano. CBM. Managua, Nicaragua. 10p.
7. Baillie, JEM; Hilton-Taylor, C; Stuart, S (eds). 2004. 2004 Red List of Threatened Species. A Global Species Assessment. IUCN Gland, Switzerland, Cambridge UK.
8. Smith, P., Ashmore, M. R., Black, H. I., Burgess, P. J., Evans, C. D., Quine, T. A., ... & Orr, H. G. (2013). The role of ecosystems and their management in regulating climate, and soil, water and air quality. *Journal of Applied Ecology*, 50(4), 812-829.

9. Fremier, A. K., DeClerck, F. A., Bosque-Pérez, N. A., Carmona, N. E., Hill, R., Joyal, T., ... & Wulffhorst, J. D. (2013). Understanding spatiotemporal lags in ecosystem services to improve incentives. *BioScience*, 63(6), 472-482.
10. Liqueste, C., Kleeschulte, S., Dige, G., Maes, J., Grizzetti, B., Olah, B., & Zulian, G. (2015). Mapping green infrastructure based on ecosystem services and ecological networks: A Pan-European case study. *Environmental Science & Policy*, 54, 268-280.
11. Hussain, M., Butt, A. R., Uzma, F., Ahmed, R., Islam, T., & Yousaf, B. (2019). A comprehensive review of sectorial contribution towards greenhouse gas emissions and progress in carbon capture and storage in Pakistan. *Greenhouse Gases: Science and Technology*, 9(4), 617-636.
12. Allen-Wardell, G., Bernhardt, P., Bitner, R., Burquez, A., Buchmann, S., Cane, J., ... & Walker, S. (1998). The potential consequences of pollinator declines on the conservation of biodiversity and stability of food crop yields. *Conservation biology*, 8-17.
13. Marzluff, J. M., & Ewing, K. (2008). Restoration of fragmented landscapes for the conservation of birds: a general framework and specific recommendations for urbanizing landscapes. *Urban ecology: An international perspective on the interaction between humans and nature*, 739-755.
14. Murgueitio, E., Calle, Z., Uribe, F., Calle, A., & Solorio, B. (2011). Native trees and shrubs for the productive rehabilitation of tropical cattle ranching lands. *Forest Ecology and Management*, 261(10), 1654-1663.
15. Savard, J. P. L., Clergeau, P., & Mennechez, G. (2000). Biodiversity concepts and urban ecosystems. *Landscape and urban planning*, 48(3-4), 131-142.
16. Kondolf, G. M., & Yang, C. N. (2008). Planning river restoration projects: social and cultural dimensions. *River restoration: Managing the uncertainty in restoring physical habitat*, 43-60.
17. Siuta, M., Nedelciu, C. E., Zadorozhna, D., Sangumani, R. N., & AA, S. (2016). Report on Socio-Economic Benefits of Wetland. *does not represent the views of Michael Otto Foundation for Environmental*.
18. Lawler, J. J. (2009). Climate change adaptation strategies for resource management and conservation planning. *Annals of the New York Academy of Sciences*, 1162(1), 79-98.

