

Biodiversity Loss Due to Urbanization on IL Township Area of Kota Rajasthan

*¹Dr. Shivali Kharoliwal and ²Dr. Surabhi Shrivastava

*^{1,2}H.O.D., Coordinator, Guest Faculty Department of Wild Life Science University of Kota, Kota, Rajasthan, India.

Abstract

Biodiversity is essential for the existence and proper functioning of all ecosystems as it supports habitats for all species. We all depend on biodiversity for food, air, and water and many medicines. Growing human population and land conversion has resulted in loss of species habitat and even their extinction. This article focuses on the loss of biodiversity due to development of concrete roads and human interferences in dense forest area of IL township area of Kota district. As Habitat loss is a challenge for all species. People harm biodiversity by their interference on environment through their outdoor recreation their by creating stress on local animal species and plants. Conserving biodiversity and even all forms of habitat will help save species for our future and in turn help in maintaining ecological balance.

Keywords: Biodiversity, conservation, extinct, ecological balance, stress

Introduction

Life forms we know today have taken hundreds and millions of years to evolve. They help in maintaining climate, stabilize chemical balance, renew soil and also protect watershed. People spend billions Plants and animals, evolving over hundreds of millions of years, have made our planet fit for the forms of life we know today. They help maintain the chemical balance of the Earth, stabilize climate, protect watersheds and renew soil. All societies, urban and rural, industrial and non-industrial, continue to draw on a wide array of ecosystems, species and genetic variants to meet their ever-changing needs. The diversity of nature is a source of beauty, enjoyment, understanding, and knowledge-a foundation for human creativity and a subject for study. It is the source of all biological wealth, supplying all our food, much of our raw materials, a wide range of goods and services and genetic materials for agriculture, medicine and industry worth many billions of dollars per year. People spend additional billions of

dollars to appreciate nature through recreation and tourism. The present study highlights the effects of urbanization on Biological diversity.

Methodology

In the present study IL township area was selected as it is rich in both flora and fauna. A comprehensive update list of plants, birds and animals was done. Herbs, shrubs and trees were counted along with birds and common animals. Secondary sources of data were taken from local newspapers like Patrika. In case of fauna direct count method was used for counting.

Results and Discussions

A comprehensive update list for plants, animals and birds was done before human interference and after in years 2019-20, 20-2021 and 2021-2022 (table 1.plants) (table2 birds) (table 3 animals) respectively.

Table 1: List of Flora recorded in study area

Scientific	Number of Plants Before Human Interference (Year)	Number of Plants After Human Interference (Year)	Number of Plants After Human Interference (Year)
Plant Name	2019-20	2020-21	2021-22
Acacia catechu	40	35	20
Acacia leucophloea	45	36	11
Acacia nilotica	39	23	12
Aegle marmelos	45	35	09
Ailanthus excelsa	50	45	25
Azadirachta indica	45	30	19
Bauhinia variegata	47	32	33
Anogeissus latifolia	43	18	16
Anogeissus pendula	45	17	12

Balanites aegyptiaca	34	24	12
Lantana camara	56	44	32
Prosopis cinerea	66	45	40
Prosopis juliflor	65	44	21
Wrightia tinctori	40	35	32
Ziziphus nummulari	48	40	25
Derris pinnata	55	35	18
Achyranthus aspera	39	30	12
Actinopteris radiata	45	31	10
Cassia tora	59	45	34
Cynodon dactylon	Uncountable	Uncountable	Uncountable
Commelina benghalensis	40	31	12
Cyperus rotundus	34	23	15
Dactyloctenium aegyptium	47	34	17
Eragrostis aspera ⁸	45	24	19
Holoptelea integrifolia	44	35	18
Launaea procumbens	57	44	32
Martynia annua	68	32	12
Parthenium hysterophorus	70	67	18
Ocimum basilicum	68	45	17
Peristrophe paniculata	69	45	16
Sonchus aspera	57	45	25
Tamarindus indica	76	55	34
Tridax procumbens	70	67	27
Urginea indica	43	32	29
Vernonia cinerea	44	31	16
Wrightia tinctoria	36	28	19
Xanthium strumarium	55	43	20

Pvalue/0.05, this is a summarized data

Table 2: List of Fauna Recorded in Study Area

Scientific Name	Common Name	Family	Status in IUCN	Year 2019-20	Year 2020-21	Year 2021-22
Macaca mulatta	Rhesus Monkey	Cercopithecidae	Schedule II Least Concern	110	78	29
Lepus nigricollis	Indian Hare	Leporidae	Schedule IV Least Concern	76	45	0
Calotes versicolor	Garden Lizard	Agamidae	Not Enlisted	76	56	32
Funambulus pennanti	Five Striped Palm Squirrel	Sciuridae	Schedule IV Least Concern	96	49	25
Rattus rattus	Black Rat	Muridae	Schedule V Least Concern	89	65	34

Pvalue/0.05, this is a summarized data

Table 3: List of Bird Species Recorded in Study Area

Scientific Name	Common Name	Status in IUCN ^b Category	Year 2019-20	Year 2020-21	Year 2021-22
Acridotheres ginginianus	Bank Myna	Schedule IV Least Concern	98	67	23
Acridotheres tristis*	Common Myna	Schedule IV Least Concern	90	87	36
Bubulcus ibis	Cattle Egret	Schedule IV Least Concern	98	69	45
Columba livia	Blue Columba livia	Not Enlisted Least Concern	150	98	56
Corvus macrorhynchos	Jungle Crow	Not Enlisted Least Concern	79	59	24
Passer domesticus	House Sparrow	Not Enlisted Least Concern	120	105	56
Pavo cristatus	Common peafowl	Schedule I Least Concern	200	150	10
Psittacula cyanocephala	Plum-headed Parakeet	Schedule IV Least Concern	115	98	35
Psittacula krameri	Rose Ringed Parakeet	Schedule IV Least Concern	87	45	23
Turdoides caudate	Common Babbler	Schedule IV Least Concern	57	34	10

Pvalue/0.05, this is a summarized data

These results show a significant decrease in the number of plants and animals found in the given area. The effect of human interference and urbanization was noted in the present study. Statistical test ANOVA was also done. Test showed a significant decrease in the number of flora and fauna at a 5% level of significance which clearly proved that the loss of biodiversity was due to urbanization and development.

Conclusions

India's biodiversity is in jeopardy today. Due to various reasons our wild life appears to be on the verge of being totally wiped out (Cardinale 2006, 2007; Worm 2006, Bruno 2008) [1, 3, 2, 5]. Biodiversity supports habitats for all species by providing many unique environments in which species habit coexist together (Kinzig 2002, Stachowicz 2007, Schmid 2009, Srivastava 2009) [12, 4, 7, 8]. Only bold and imaginative action in conservation will enable us to save this rich heritage (Cardinale 2007, 2009, Quijas 2010, Cadotte 2008, Loreau 2010) [3, 9, 10, 13].

Acknowledgement

I would like to thank all IL township members who helped me in collecting this information. I would extend my special thanks to IL township gardeners who helped me and suggested their views.

References

1. Cardinale BJ. *et al.* Effects of biodiversity on the functioning of trophic groups and ecosystems. *Nature*. 2006; 443:989-992.
2. Worm B. *et al.* Impacts of biodiversity loss on ocean ecosystem services. *Science*. 2006; 314:787-790.
3. Cardinale BJ. *et al.* Impacts of plant diversity on biomass production increase through time due to complementary resource use: A meta-analysis. *Proc. Natl Acad. Sci. USA*. 2007; 104:18123-18128.
4. Stachowicz J, Bruno JF, Duffy JE. Understanding the effects of marine biodiversity on communities and ecosystems. *Annu. Rev. Ecol. Evol. Syst.* 2007; 38:739-766.
5. Bruno JF, Cardinale BJ. Cascading effects of predator richness. *Front. Ecol. Environ.* 2008; 6:539-546.
6. Cardinale BJ. *et al.* in *Biodiversity and Human Impacts* (eds Naeem, S. *et al.*) 105–120 (Oxford Univ. Press), 2009.
7. Schmid B. *et al.* in *Biodiversity and Human Impacts* (eds Naeem, S. *et al.*) 14–29 (Oxford Univ. Press), 2009.
8. Srivastava DS. *et al.* Diversity has stronger top-down than bottom-up effects on decomposition. *Ecology*. 2009; 90:1073-1083.
9. Quijas S, Schmid B, Balvanera P. Plant diversity enhances provision of ecosystem services: A new synthesis. *Basic Appl. Ecol.* 2010; 11:582–593.
10. Cadotte MW, Cardinale BJ, Oakley TH. Evolutionary history and the effect of biodiversity on plant productivity. *Proc. Natl Acad. Sci. USA*. 2008; 105:17012–17017.
11. Millennium Ecosystem Assessment. *Ecosystems and Human Well-being: Biodiversity Synthesis* (World Resources Institute, 2005).
12. Kinzig AP, Pacala SW, Tilman D. *The Functional Consequences of Biodiversity: Empirical Progress and Theoretical Extensions* (Princeton Univ. Press, 2002).

13. Loreau M. *From Populations to Ecosystems: Theoretical Foundations for a New Ecological Synthesis* (Princeton Univ. Press, 2010).