

A central illustration within a circular frame shows a lush green landscape with a large tree, a path, and several butterflies. The entire cover is framed by large, flowing green shapes.

# **ENVIRONMENT IN 21<sup>ST</sup> CENTURY**

**(Volume IV)**

**Dr. Sangeeta Das**

**Kripa Drishti Publications, Pune.**

# **ENVIRONMENT IN 21<sup>ST</sup> CENTURY**

**(Volume IV)**

## **Editor**

**Dr. Sangeeta Das**

Assistant Professor,  
Department Of Botany,  
Bahona College,  
Jorhat, Assam, India.

**Kripa-Drishti Publications, Pune.**

Book Title: **Environment In 21<sup>st</sup> Century (Volume IV)**

Edited By: **Dr. Sangeeta Das**

**Price: ₹499**

ISBN: **978-81-19149-82-7**



Published: **Feb 2024**

**Publisher:**



**Kripa-Drishti Publications**

A/ 503, Poorva Height, SNO 148/1A/1/1A,  
Sus Road, Pashan- 411021, Pune, Maharashtra, India.

Mob: +91-8007068686

Email: [editor@kdpublishations.in](mailto:editor@kdpublishations.in)

Web: <https://www.kdpublishations.in>

© **Copyright Dr. Sangeeta Das**

All Rights Reserved. No part of this publication can be stored in any retrieval system or reproduced in any form or by any means without the prior written permission of the publisher. Any person who does any unauthorized act in relation to this publication may be liable to criminal prosecution and civil claims for damages. [The responsibility for the facts stated, conclusions reached, etc., is entirely that of the author. The publisher is not responsible for them, whatsoever.]

## **About The Book**

Human race is growing and developing every day. With the increasing human population, the load on the mother earth and our environment to fulfill the requirements is also increasing day by day. To mitigate our problems, we are continuously destroying the resources available on our earth. 21<sup>st</sup> century environment is facing a huge problem in maintaining environmental sustainability. This problem may even alter our life on this planet. The most serious issues of the 21<sup>st</sup> century environment is global warming, climate change, pollution of all the major resources, ecological imbalances, etc. which may even threaten the existence of the human race on the earth. Losses of biodiversity in every sphere, environmental degradation, depletion of the resources, etc. are to be reduced and replenished to maintain a sustainable environment on this earth. The 4<sup>th</sup> volume of the book titled '**Environment in 21<sup>st</sup> Century**' includes many articles on the current issues of environmental challenges and their ways to overcome those.

**Dr. Sangeeta Das**

# CONTENT

## **1. The Role of Literature in Shaping Environmental Perspectives: A Critical Analysis of Literary Works Depicting Environmental Issues - *Dr. Denis Vaz* . 1**

1.1 Introduction:.....	2
1.1.1 Nature Writing and Its Significance in Environmental Literature:.....	3
1.2 Ecofiction and Its Role in Environmental Literature: .....	4
1.3 Environmental Poetry and Its Significance in Environmental Literature:.....	5
1.4 Environmental Nonfiction and Its Role in Environmental Literature: .....	6
1.5 Environmental Journalism and Its Role in Environmental Literature:.....	7
1.6 Environmental Memoirs and Their Significance in Environmental Literature: ..	8
1.7 Environmental Ethics and Their Representation in Environmental Literature: .	9
1.8 Environmental Justice and Its Representation in Environmental Literature: ..	10
1.9 Conclusion: .....	11
1.10 References:.....	12

## **2. Unseen Environmental Ripple Effects of the COVID-19 Pandemic - *Narendra Kumar Ahirwar* ..... 18**

2.1 Introduction:.....	18
2.2 Positive Effect of Covid -19:.....	19
2.2.1 Reduction in Air Pollution:.....	19
2.2.2 Reduced Water Pollution:.....	20
2.2.3 Wildlife and Natural Habitats:.....	20
2.2.4 Climate Change:.....	21
2.2.5 Reduce Traffic: .....	22
2.2.6 Noise Reduction:.....	22
2.2.7 Human Activity:.....	23
2.2.8 Increase Soil Health: .....	24
2.3 Negative Effect of Covid -19: .....	24
2.3.1 Increased Water Demand: .....	24
2.3.2 Increase Deforestation:.....	25
2.3.3 Increased Medical and Plastic Waste:.....	25
2.3.4 Recycling Disruptions: .....	26
2.3.5 Reduced Agriculture Production:.....	26
2.4 Conclusion: .....	27
2.5 References:.....	27

## **3. Ecological Impact of Agricultural Chemicals - *Narendra Kumar Ahirwar, Ravindra Singh*..... 30**

3.1 Introduction:.....	31
------------------------	----

3.2 Agrochemicals and Their Effects:.....	32
3.3 Minimizing the Impact of Agrochemicals through Effective Management .....	37
3.4 Conclusion: .....	39
3.5 References:.....	39

**4. Climate Change and Environmental Degradation - Narendra Kumar Ahirwar, Ravindra Singh.....42**

4.1 Introduction:.....	42
4.2 Understanding Climate Change: .....	43
4.2.1 The Greenhouse Effect and Its Causes:.....	43
4.2.2 Anthropogenic Contributions: .....	44
4.3 Observations and Predictions:.....	45
4.3.1 Global Temperature Trends:.....	45
4.4 Role of Greenhouse Gases: .....	45
4.5 Future Climate Projections: .....	46
4.5.1 Temperature Increase:.....	46
4.5.2 Changes in Precipitation Patterns: .....	47
4.5.3 Sea-Level Rise: .....	47
4.5.4 Ocean Acidification: .....	47
4.6 Ecosystems and Biodiversity: .....	47
4.7 Socioeconomic Impacts: .....	48
4.8 Impacts of Climate Change:.....	48
4.8.1 On Weather and Natural Disasters:.....	48
4.8.2 Amplified Natural Disasters: .....	49
4.8.3 Long-Term Implications: .....	49
4.9 Impact on Biodiversity: .....	50
4.10 Ecosystem Services: .....	50
4.11 Aquatic Ecosystems:.....	50
4.12 Conclusion: .....	50
4.13 References:.....	51

**5. The Silent Crisis of Microplastic Pollution in Our Environment and Its Impact on Living Organisms - Nisha Vashishat .....52**

5.1 Introduction:.....	52
5.2 Sources, Types and Degradation of Microplastics:.....	53
5.3 Ecological and Health Risks Associated with Microplastics:.....	56
5.3.1 Effects on Aquatic Organisms:.....	56
5.3.2 Effect on Terrestrial Organisms:.....	62
5.4 References:.....	63

**6. Avian Diversity: Intensive Agriculture and Use of Artificial Nests as A Tool for Bird Conservation - Manoj Kumar .....69**

6.1 Introduction:.....	69
6.2 Bird Diversity in Agricultural Ecosystem (Special Reference to Agricultural.....	70

6.2.1 Intensive Agriculture A Cause of Concern for Avian Diversity in Agricultural .....	71
6.3 Role of Native/Indigenous Tree Species in Supporting Bird Diversity in Agricultural .....	72
6.4 Role of Artificial Nests in Supporting Bird Diversity and Acting as A Tool For Bird .....	78
6.5 Conclusion and Future Aspects: .....	79
6.6 References: .....	80

**7. Nature’s Timekeepers: Unravelling the Effects of Environment on Biological Clock - Prachujya Gogoi, Atlanta Kalita, Aishwariya Mahanta. .... 83**

7.1 Introduction: .....	84
7.2 Molecular Mechanism of Biological Clock: .....	86
7.2.1 The Molecular Mechanism of Circadian Clock in <i>Synechococcus Elongatus</i> is Presented Here: .....	87
7.3 An Explanation of Clock Regulation in The Leaves of <i>Arabidopsis</i> : .....	89
7.4 Environmental Changes and The Biological Clock’s Adjustment to Them: ...	89
7.5 Antarctica's Blossoming Flowers: The Concerning Ramifications (Case Study): .....	91
7.6 Conclusion: .....	91
7.7 References: .....	92

**8. Role of Genetically Engineered Microbes for Bioremediation of Pollutants in Contaminated Areas - Narayan Sarkar, Barasha Ray..... 93**

8.1 Introduction: .....	94
8.1.1 Bioremediation by Genetically Engineered Microbes: .....	94
8.1.2 Other Genetically Engineered Microbes for Remediation: .....	96
8.2 Consortia of Microorganisms for Biodegradation: .....	98
8.3 Enzyme Systems for Biodegradation: .....	100
8.4 Metabolic Effects of Microorganisms on Xenobiotics: .....	100
8.5 Types of Reactions in Bioremediation: .....	101
8.5.1 Aerobic Bioremediation: .....	101
8.5.2 Anaerobic Bioremediation: .....	101
8.5.3 Sequential Bioremediation: .....	102
8.6 Conclusion and Future Perspectives: .....	103
8.7 References: .....	103

**9. Environment Sustainability and Covid-19: Its Repercussions - Prof. P. K. Ryngnga..... 107**

9.1 Introduction: .....	108
9.2 The Impacts: .....	111
9.2.1 Positive Environmental Impacts: .....	111
9.2.2 Negative Environmental Impacts: .....	112
9.3 Environmental Sustainability and Covid-19: .....	112

9.3.1 Challenges:.....	112
9.3.2 Opportunities:.....	113
9.3.3 Its Repercussions: .....	114
9.4 Conclusion: .....	116
9.5 References:.....	116

**10. Environmental Triad: Exploring the Interplay of Water, Air, and Soil Pollution - Ayan Majumdar .....117**

10.1 Introduction:.....	118
10.2 Effects of Water Pollution: .....	118
10.2.1 Sources of Water Pollution:.....	120
10.3 Air Pollution:.....	122
10.3.1 Types of Air Pollutants: .....	122
10.3.2 Sources of Air Pollution:.....	123
10.4 Health and Environmental Impacts: .....	124
10.4.1 Global and Local Effects:.....	124
10.5 Soil Pollution:.....	125
10.5.1 Types of Soil Pollutants: .....	125
10.5.2 Sources of Soil Pollution:.....	126
10.5.3 Impacts of Soil Pollution:.....	127
10.6 Prevention and Remediation: .....	127
10.6.1 Interconnected Environmental Challenges: Water, Air and Soil Pollution.....	128
10.7 References:.....	130

**11. Glauconite: A Green Mineral with Agricultural Potential - Muhammad Yasir Naeem, Tulkinzhon Gaipov, Yayra Rakhmetova, Yerlan Umarov, Zeliha Selamoglu, D. Monisha, Pooja Shivmuni, S. Ravichandran .....132**

11.1 Introduction:.....	134
11.2 Glauconite: A Green Mineral with Agricultural Potential:.....	135
11.3 Glauconite: A Sustainable Approach to Plant Nutrition: .....	138
11.4 Challenges and Future Directions: .....	142
11.5 Conclusion: .....	144
11.6 References:.....	144

**12. Sustainable Development through Environmental Laws Protection: A Review - Akрати Sachan, Pooja Shivmuni, S. Ravichandran, Dr. Karandeep Kaur .....148**

12.1 Introduction:.....	149
12.2 Issues in Environmental Law Enforcement in India: .....	153
12.3 Conclusion: .....	154
12.4 Reference: .....	155



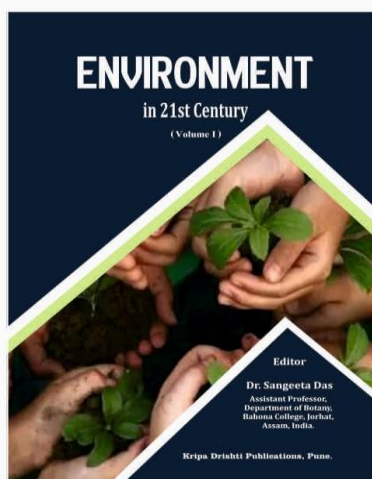
## ABOUT THE AUTHOR



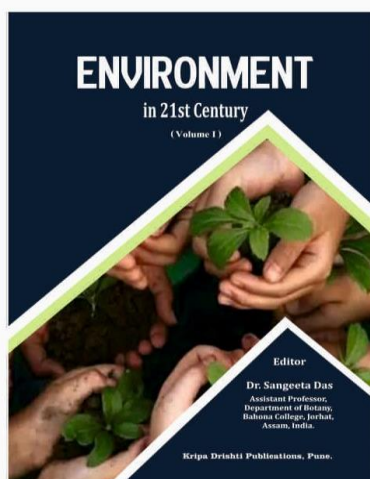
### Dr. Sangeeta Das

*She is an Assistant Professor of Botany at Bahona College, Jorhat, Assam, India. She did her Ph.D. from Dibrugarh University, Assam and worked as DST Women Scientist at Assam Agricultural University, Jorhat, Assam. She has edited 9 books and published a number of research papers and articles in reputed journals and books. She has presented a number of research papers in different National and International Seminars all over the country and delivered lectures as a resource person both inside and outside the country. She is also a member of the editorial board (Honorary) in the International Journal of Integrated Research & Development (IJIRD), Journal of Intellectuals (JOI), and has reviewed papers in many National and International Journals.*

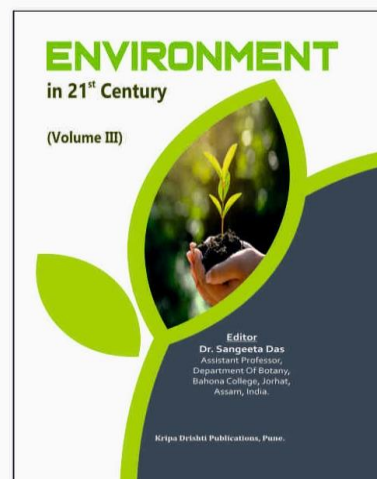
## PUBLISHED VOLUMES



Volume I



Volume II



Volume III



**Kripa-Drishti Publications**

A-503 Poorva Heights, Pashan-Sus Road, Near Sai Chowk,  
Pune - 411021, Maharashtra, India.

Mob: +91 8007068686

Email: editor@kdpublications.in

Web: <https://www.kdpublications.in>

Price: ₹ 499

ISBN: 978-81-19149-82-7



9 788119 149827