

An International Edition

M A Khalid

Sanjay Kumar

Esha Yadav

Pranay Punj Pankaj

Rajesh Kumar Kharwar (Editors)

2025



VANISHING DIVERSITY

Global threats to flora and fauna

Contents

Preface

Editors' Profile

Introduction to global biodiversity	DOI: https://doi.org/10.5281/zenodo.17798078	
Preeti Kumari, Jaya Jayantika, Aakanksha Singh and Padikara K. Satheeshkumar		1-21
Habitat destruction and deforestation	DOI: https://doi.org/10.5281/zenodo.17818050	
Ravikant Singh, Praveen Kumar Singh and Ramesh Chandra Vishwakarma		23-58
When forests fall silent: Deforestation's impact on Songbird survival		
DOI: https://doi.org/10.5281/zenodo.17818424		
Shaafay Khalid, Monowar Alam Khalid and Kaleem Ahmed		59-70
Deforestation and ecological tipping points: Global consequences in the Amazon and Southeast Asian forests	DOI: https://doi.org/10.5281/zenodo.17818600	
Sarabjan Deori, Meghna Mech and Mayur Mausoom Phukan		71-83
Forest fragments and vanishing canopies – Threats and conservation pathways for hornbills in the Terai Arc of Uttar Pradesh		
DOI: https://doi.org/10.5281/zenodo.17818791		
Ruchira Nigam, Asif Ahmad Siddiqui, Monowar Alam Khalid and Chitra Singh		85-96
Understanding of illegal wildlife trade	DOI: https://doi.org/10.5281/zenodo.17818932	
Esha Yadav		97-103
Poaching and illegal wildlife trade	DOI: https://doi.org/10.5281/zenodo.17829173	
Rupam Sinha, Amit Kumar and Deepak Nehara		105-121
The dark side of green energy – Hidden costs for wildlife and the environment		
DOI: https://doi.org/10.5281/zenodo.17829397		
Deepak Nehara, Rupam Sinha, Aditya Kumar, R. A. Siddique, Meenakshi Singh and Daina Talukdar		123-134
Climate change and its impact on wild life		
DOI: https://doi.org/10.5281/zenodo.17829631		
Priyanka Shah, Priya Patel and Sanjay Kumar		135-146
Climate change-A driver in reshaping Avian ecology and their migration		
DOI: https://doi.org/10.5281/zenodo.17829782		
Mohsina Khan and Monowar Alam Khalid		147-163
Climate change and global warming: Challenge for future generations		
DOI: https://doi.org/10.5281/zenodo.17829921		
Amina Jafri, Nida Fatma and Pranjali Tripathi		165-172
Loss of habitat and ecosystem distruption due to pollution		
DOI: https://doi.org/10.5281/zenodo.17830096		
Shivendra Pratap Chauhan and Amita Sarkar		173-179



Environmental pollution and its effects on biodiversity

DOI: <https://doi.org/10.5281/zenodo.17830326>

Shailza Mishra, Gereraj Sen Gupta, Ashish Kumar Mishra, Shivani Gupta, Parvati Madheshiya and Supriya Tiwari

Pollution and its effects on biodiversity

DOI: <https://doi.org/10.5281/zenodo.17830531>

181-207

Yashwant Singh, Ranjana, Devendra Kumar Chauhan and Shailendra Kumar Chaudhary

Effects of the oil spill on the marine environment

DOI: <https://doi.org/10.5281/zenodo.17830682>

Hasmat Ali, Kiran Pal, Shubham Singh, Sahabiya Fatima Rahman and Javad Ahmad Siddiqui

Disease dynamics and their influence on species survival

DOI: <https://doi.org/10.5281/zenodo.17830913>

209-221

223-230

Amita Sarkar, Anurag Mishra and Anamika singh

The role of infectious diseases in accelerating species decline

DOI: <https://doi.org/10.5281/zenodo.17830989>

231-237

Meenakshi Singh, Rupam Sinha, Deepak Chand Meena, D.V.V.N. Durga Prasad, Diana Talukdar and Shailja Kumari

The role of disease in species decline

DOI: <https://doi.org/10.5281/zenodo.17831135>

239-243

Ritu Kumari, Mrityunjay Sharma, Anita and Padikara K. Satheeshkumar

Insect pollinators crisis: Ecological challenges and strategic responses

DOI: <https://doi.org/10.5281/zenodo.17835441>

245-262

P. K. Somjith, A. Hima, Omprakash Navik and Santosh C. Kedar

Pharmaceutical bioaccumulation in aquatic ecosystems: Environmental and human health implications and effects on flora and fauna

DOI: <https://doi.org/10.5281/zenodo.17837011>

263-279

Arbind Kumar Choudhary and S. S. Avinash

Toxicological effects of malachite green

DOI: <https://doi.org/10.5281/zenodo.17837119>

281-307

Abhinav

309-315

Ocean acidification and coral bleaching, causes and impact on ecological and socioeconomic consequences

DOI: <https://doi.org/10.5281/zenodo.17837192>

Phool Gend Kumar

317-323

Imperiled chelonians: Issues and conservation challenges

DOI: <https://doi.org/10.5281/zenodo.17840959>

Monowar Alam Khalid, Sreeparna Dutta, Pawan Shantiprakash Pareek and Shailendra Singh

325-336

Overfishing and marine biodiversity loss

DOI: <https://doi.org/10.5281/zenodo.17841089>

Panchakarla Sedyaw, D. I. Pathan, Darwin Ratnaghosh Bhaladhare,

Pranali Arun Kamble, Sanket Sunil Kawade and Aniruddha S. Sharangdhar

337-352

- Poaching and illegal wildlife trade DOI: <https://doi.org/10.5281/zenodo.17841224>
Priya Patel, Priyanka Shah and Sanjay Kumar 353-370
- Agricultural practices and biodiversity decline
 DOI: <https://doi.org/10.5281/zenodo.17841457>
Avanish Prajapati, Akanksha Dwivedi, Priyanka Singh, Saumya Mishra, Nisha Singh, Khushboo Pal and Rajesh Kumar Sharma 371-400
- Agriculture as a driver of biodiversity loss DOI: <https://doi.org/10.5281/zenodo.17841581>
Rakesh Kumar Chaurasia 401-420
- Effects of invasive species in an ecosystems: A case studies from Nagaland
 DOI: <https://doi.org/10.5281/zenodo.17841760> **Wati Temjen, Khikeya Semy, Aosenla Jamir, Ngampo S. Salim and Maibam Romeo Singh** 421-437
- Wetlands: The essential component of ecosystems
 DOI: <https://doi.org/10.5281/zenodo.17842048>
Susmita Srivastav and Jaya Chaudhary 439-447
- Climate change and its impact on wildlife
 DOI: <https://doi.org/10.5281/zenodo.17842158> **Deepak Nehara, Rupam Sinha, Aditya Kumar, RA Siddique, Daina Talukdar and Dhram Prakash Srivastava** 449-455
- Biodiversity conservation network of India: National parks
 DOI: <https://doi.org/10.5281/zenodo.17842277>
Sanjeev Kumar Srivas, Reena Rastogi, Jyoti Devi, Satendra Sahu, Sahil Soni, Muskan and Nainasi Rajak 457-464
- Case studies on environmental stressors in India: Microplastics in marine life and pesticides affecting bees
 DOI: <https://doi.org/10.5281/zenodo.17842499>
Sanjeev Arora 465-474
- Entomophagy practices of the Phom tribe of Longleng district, Nagaland, India
 DOI: <https://doi.org/10.5281/zenodo.17844810>
N. Namsong, Rita Khatri Chhetri and Lobeno Mozhui 475-486
- Indigenous knowledge on edible insect consumption of the Chang Tribe, Tuensang, Nagaland
 DOI: <https://doi.org/10.5281/zenodo.17844861>
Yemkongbhakmei B. Chang, Rita Khatri Chhetri and Lobeno Mozhui 487-501
- Honey as a bioindicator of environmental stability: Melissopalynological perspective
 DOI: <https://doi.org/10.5281/zenodo.17844987>
Sneh Trivedi and Alka Srivastava 503-511
- Conservation measures and strategies for declining biodiversity-National and global perspective
 DOI: <https://doi.org/10.5281/zenodo.17845028>
Monowar Alam Khalid and Shaafay Khalid 513-527
- Harnessing the genetic diversity of cereal crops is a key approach for global food security under changing climate in 21st century-An update
 DOI: <https://doi.org/10.5281/zenodo.17845061>
Ravindra Prasad and Pragati Minz 529-549

- Conservation efforts and solutions
DOI: <https://doi.org/10.5281/zenodo.17845104>
Asikho Kiso and Sanjay Kumar 551-574
- The role of technology in conservation
DOI: <https://doi.org/10.5281/zenodo.17845159>
Divyanshi Singh, Rupam Sinha, Aditya Kumar and Rohini Gupta 575-590
- From enclosure to ecosystem: How zoos are safeguarding biodiversity
DOI: <https://doi.org/10.5281/zenodo.17845203>
Azra Ikram, Monowar Alam Khalid and Sanjay Kumar Shukla 591-606
- Hidden havens in Peril: The critical role of microrefugia in conserving biodiversity under accelerating global change
DOI: <https://doi.org/10.5281/zenodo.17845247>
Bhavna Sharma and Amita Sarkar 607-610
- Species identification and biodiversity assessment through DNA barcoding: A case study of butterfly
DOI: <https://doi.org/10.5281/zenodo.17845385>
Rushda Faisal and Monowar Alam Khalid 611-617
- National conservation initiatives: Preserving resources for future generations
DOI: <https://doi.org/10.5281/zenodo.17845443>
Susmita Srivastav and Kavita Chaudhary 619-626
- Mainstreaming environmental education through National curriculum framework and NEP 2020: Opportunities and challenges in 21st century classroom
DOI: <https://doi.org/10.5281/zenodo.17845545>
Rashmi 627-640

Vanishing Diversity: Global Threats to Flora and Fauna

pp. 147-163, 2025, ISBN- 978-81-985978-7-8

Editors: M A Khalid, Sanjay Kumar, Esha Yadav, Pranay Punj Pankaj, Rakesh K. Kharwar

Publisher: M/S Academic Publishers & Distributors, Lucknow, India

DOI: <https://doi.org/10.5281/zenodo.17829782>



CLIMATE CHANGE-A DRIVER IN RESHAPING AVIAN ECOLOGY AND THEIR MIGRATION

Mohsina Khan and Monowar Alam Khalid*

Department of Environmental Science, Integral University, Lucknow - 226 026, India.

*Corresponding author e-mail: makhalid@iul.ac.in; ORCID : <https://orcid.org/0000-0003-1860-5430>

(Received 27 July 2025, Revised 21 September 2025, Accepted 28 September 2025)

ABSTRACT : Climate change is drastically affecting the intricate dynamics of avian migration and breeding patterns near wetland locations, triggering a cascade of ecological, behavioral and physiological consequences that highlight the complex interconnection of species and environments. As temperatures rise and precipitation patterns fluctuate, migratory birds' delicate synchronization with their environments is disrupted, resulting in phenological mismatches, altered species interactions and decreased reproductive success. Wetlands, which serve as critical stopover and breeding grounds for many avian species are changing in terms of water levels, vegetation composition, and food web dynamics, making migratory bird populations more vulnerable. This study synthesizes existing research and presents findings on the effects of climate change on avian migration and breeding near wetland sites, emphasizing the critical need for adaptive conservation strategies to mitigate the long-term consequences of climate driven disruptions to these critical ecosystems. Integrating new technology, such as AI-powered wildlife monitoring, satellite imagery analysis, acoustic monitoring, and advanced tracking devices, can help mitigate these effects. These advancements allow researchers and conservationists to monitor and respond to hazards in real time, assess and predict probable effects and mobilize communities for conservation. By utilizing technology, we can optimize resource allocation and create adaptive management plans to safeguard bird populations and wetland habitats. The plight of migratory birds acts as a wake-up call, telling us that the implications of climate change are already upon us.

Key words : Climate change, avian migration, wetland habitat, interconnectedness of species, wildlife monitoring.

Introduction

Living organisms today face numerous human-induced challenges, such as climate change, habitat loss, the release of novel chemicals, the introduction of invasive species, the spread or emergence of new pathogens in areas where they were previously absent, and the compounded effects of these and other stressors. The number of ecosystems that remain relatively undisturbed is rapidly declining. Projections suggest that by 2050, 15–37% of current animal and plant species could go extinct (Thomas *et al*, 2004) and by 2100, up to half of all species may face extinction (Myers and Knoll, 2001). Understanding how these anthropogenic pressures will impact key species is crucial in order to develop strategies that may mitigate their effects. Although there is significant focus on the extent of global warming and climate change over the past century, it is important to recognize that climate change itself is not a new or