

Biodiversity and Natural Resources of Tropical Zones

Biodiversity and Natural Resources of Tropical Zones

Edited by

Bilassé Zongo

**Cambridge
Scholars
Publishing**



Biodiversity and Natural Resources of Tropical Zones

Edited by Bilassé Zongo

This book first published 2026

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Copyright © 2026 by Bilassé Zongo and contributors

All rights for this book reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright owner.

ISBN: 978-1-0364-6551-3

ISBN (Ebook): 978-1-0364-6552-0

TABLE OF CONTENTS

Acknowledgements	xv
Members of the Organizing Committee	xvii
Members of the Scientific Committee	xix
Introduction	xxi
Chapter One: Biodiversity and Species Conservation Strategies	
1. The Role of Economic Sovereignty in the Conservation of Natural Resources in Africa	2
2. Preliminary Result on Gastrointestinal Parasites of Pigs in the Tonkpi Region, Côte d'Ivoire	4
3. Diversity and Distribution of Benthic Macroinvertebrates in Comoé National Park, Northeastern Côte D'ivoire	5
4. Conservation Status and Management of Fish Fauna in A Mining Environment at Zouan-Hounien, West Côte d'Ivoire	7
5. Diversity, Conservation Value and Biomass of Megas Trees in Azagny National Park, Coastal Côte d'Ivoire	9
6. Diversity of Micro-Algae in the Waters of the Bandama River, Côte d'Ivoire.....	11
7. Floristic Diversity and Conservation Value of the Angbavia Reserve, Djékanou, Côte d'Ivoire.....	13
8. Structure and Organization of Fish Populations in the Middle Course of the Comoé River, Côte d'Ivoire.....	14

9. Human-Crocodile Conflict and Conservation Strategies for the West African Crocodile (<i>Crocodylus suchus</i>) in Burkina Faso	16
10. Geographic Information Systems (GIS) for Sustainable Management of Invasive and Threatened Plant Species in a Context of Major Environmental Challenges.....	17
11. Contribution to the Knowledge of Spontaneous Vegetables in Western Burkina Faso	19
12. Ethnobotanical Study of Plant Resources in the Hoorè-Dimma Classified Forest in Labé, Guinea.....	21
13. Diversity of Low Altitude Plants of the Man Mountains (Côte d'Ivoire) and Therapeutic Use	22
14. Monitoring of the Spatio-Temporal Dynamics of the Kuinima Classified Forest : Contribution of Remote Sensing.....	23
15. State and Factors of Change of Agroforestry Parks in the Commune of Koumbia.....	25
16. Multiplication Strategies for the Conservation of <i>Carissa edulis</i> VAHL, an Endangered Medicinal Woody Species in Burkina Faso	27
17. Pteridophytes and Associated Phytosociological Groups in the Classified Forests of the Houet Province, Strategies for use in the Area's Nurseries	28
18. Dynamic and Diet of the Hippopotamus Population in the Mare aux Hippopotames Biosphere Reserve in Burkina Faso.....	30
19. Assessing the Quality of Biodiversity Conservation Habitat in the Central West Region: a Prospective Mapping Approach	32
20. Socio-Economical Importance of <i>Prosopis africana</i> (Guill. & Perr.) Taub. a Multipurpose Woody Species.....	33
21. Influence of Seeds Number in the Fruit and Type of Substrate on Seed Germination of <i>Senegalia macrostachya</i> (Rchb. Ex DC.) Kyal. & Boatwr. in Burkina Faso.....	35

22. Diversity of Benthic Macroinvertebrates in the Bidiga Reservoir, Centre-East Region, Burkina Faso	37
23. Ecology and Biodiversity of Riparian Forests and Adjacent Savannas in the Southern Sudanian Sector of Burkina Faso, West Africa.....	38
24. Land Use Dynamics And Phytodiversity In The Dahliafleur Nature Reserve In Côte d'Ivoire	40
25. Status and Conservation of <i>Eulophia cristata</i> (Afzel. Ex Sw.) Steud. and <i>Eulophia cucullata</i> (Afzel. Ex Sw.) Steud. on the Cliffs of Bobo-Dioulasso, Burkina Faso.....	42
26. Aquatic Hyphomycetes of Guinea.....	44
27. Ecotourism Potential of the Classified Forest of Péni: a Natural Treasure to Be Preserved and Valorized.....	45
28. Study of Production Techniques and Uses of Species Cultivated in Nurseries in the Climatic Zones of Burkina Faso.....	47
29. Diversity and Structure of Woody Plant Community as Indicators of Natural Regeneration in a Suburban Forest.....	48
30. Floristic Diversity of a Particular Ecosystem, the University Campus of Nasso, Burkina Faso.....	49
31. Floristic Diversity and Importance of the Urban Flora of the City of Bobo-Dioulasso, Burkina Faso.....	51
32. Diversity of Thrips Pests of Tomato in Western Burkina Faso: Search for Thrips Palmii.....	53
33. Diversity of Natural Enemies of Jassids, Pests of Vegetable Crops in Western Burkina Faso	54
34. Analysis of the Natural ENEMIES' Diversity of the Fall Armyworm in Western Burkina Faso	55

35. Response to Dengue: Vector Control Strategies Integrating Biodiversity Conservation, Burkina Faso	57
---	----

Chapter Two: Sustainable Use and Management of Natural Resources

36. Assessment of the Impact of Gold Mining Activities on Ecosystem Services in the Sub-Prefecture of Kokumbo, Central Côte d'Ivoire.....	60
---	----

37. Contribution to the Valorization of <i>Jatropha curcas</i> Oilcake Using Molds Isolated from Fermented Feeds and Agro-Industrial Residues.....	62
--	----

38. Effects of Gold Mining on Vegetation Dynamics in the Department of Diébougou	64
--	----

39. Sustainable Management of Agricultural Lowlands in the Sudano-Sahelian Zone: Typology and Innovative Endogenous Practices in a Context of Climate Change.....	66
---	----

40. Identification of the Main Degradation Factors in Classified Forests in Côte d'Ivoire: the Case of the Korhogo Classified Forest (North, Côte d'Ivoire).....	68
--	----

41. Effects of Dune Fixation on the Ecological Restoration of Dunes in the Village of Kilakina in Niger	70
---	----

42. Comparative Analysis of Urban City and Forest Plants in Senegal and their Contribution to Human Health and Well-Being	72
---	----

43. Evaluation of Rice Mutant Lines Tolerance to Water Deficit	74
--	----

44. Proximate Composition, Minerals Contents and Fatty Acids Profile of Two Legumes Used in Poultry Feeding in Burkina	75
--	----

45. Effects of Farmers' Fertilization Practices on the Profitability of Maize Production in the Cotton-Growing Zone in Western Burkina Faso.....	77
--	----

46. Promoting the Domestication of <i>Tacca leontopetaloides</i> , a Neglected and Underutilized Wild Food Plant by Investigating its Potential in Tuber Production Under Different Ecological Conditions	79
---	----

47. Preservation Strategies for <i>Zanthoxylum zanthoxyloides</i> (Lam.) Zepern. & Timler, a Plant Used to Produce the FACA® Phytomedicine in Burkina Faso.....	81
48. Assessment of Metal Quality in the Kou River and Houet Backwater Using Periphytic Biofilms: the Case of Arsenic and Zinc in Burkina Faso	83
49. Influence of Planting Practices on the Morphophysiological Performances of <i>Lannea microcarpa</i> Engl. & Krause in Burkina Faso	85
50. Characterization and Improvement of Manioc (<i>Manihot esculenta</i> Crantz) Fertilization Practices in the Western Zone of Burkina Faso	87
51. Uses and Local Perceptions of the Riparian Ecosystem of Three Rivers in Burkina Faso	89
52. Impact of Land Management on Fruit Production of <i>Tamarindus Indica</i> L. in Western Burkina Faso.....	91
53. Assessment of the Impact of Wastewater from the City of Bobo-Dioulasso on Phytoplankton and Water Quality in the Kou Basin (Burkina Faso).....	93
54. Evaluating Supplementary Irrigation Water Depths for Improving Land and Water Productivity Under Grown Tomato in Semi-Arid Climate, Burkina Faso	95
55. Sport Hunting and Sustainable Management of the Defassa Waterbuck Population in the Classified Forest and Nazinga Game Ranch.....	97
56. Spatio-Temporal Analysis of the Use of Land Units from 1990-2020 in Western Burkina Faso	98
57. Galactagogues Blocks Characteristics Made from Plants Species Considered as Galactagogues for Improving Dairy Cows Feeding Technique in Burkina Faso.....	100
58. Other Options Through Forage Production in Order to Reduce Speed Degradation of Pastoral Resources in Burkina Faso.....	102

59. Availability and Commercial Value of Non-Timber Forest Products on Local Markets: Implications for the Conservation of Savannah Ecosystems in Burkina Faso.....	104
60. Impact of Land Use on Soil Biological Fertility in Burkina Faso	106
61. Industrial Zone Landfill of Bobo-Dioulasso: a Silent Generator of Heavy Metals	108
62. Phytoplankton Dynamics and Water Quality in the Naba Zana and Arzoum Baongo Reservoirs in the Koubri Zone of Burkina Faso.....	110
63. Exploration of Cultural Practices Related to the Use of Phytosanitary Products in Market Gardening in the Urban Area of Bobo-Dioulasso, Burkina Faso.....	112
64. Analysis of Growth and Exploitation Parameters of Nile Tilapia, <i>Oreochromis niloticus</i> (Linnaeus, 1758) in Samendéni Reservoir, Burkina Faso.....	114
65. Analysis of Shea Productivity and Socio-Economic Aspects in the UCPPK-Houet Collection Zone	116
66. Production and Quality Assessment of a Biofertilizer from <i>Jatropha curcas</i> Oilcake Using Fermented Forest Litter Technology in Burkina Faso.	118
67. Effects of Mining on Protected Areas In Burkina Faso: the Case of the Pô-Nazinga-Sissili Ecological Complex (PONASI)	120
68. Perceptions, Uses and Conservation Challenges of the Species <i>Erythrina senegalensis</i> A. DC. And <i>Erythrina sigmoidea</i> Hua in the Hauts-Bassins Region (Burkina Faso).....	121
69. Identification of Endocrine Disruptors in Raw and Treated Wastewater from Kossodo Wastewater Treatment Plant in Ouagadougou.....	123
70. Activated Biochar: A Solution for Decontaminating Agricultural Soils?	125

71. <i>Cercospora</i> Species, Agents of Cercospora Leaf Spot of Sesame in Burkina Faso.....	126
72. Effects of Rice Husk Biochar on the Evolution of Organic Carbon and Available Forms of Nitrogen and Phosphorus During Phosphocomposting of Organic Residues in the Commune of Bama, Burkina Faso	128
73. Influence of <i>Azadirachta indica</i> A. Juss (Neem) on the Physiology and Productivity of Three Annual Crops (Cowpea, Sorghum and Millet) in an Agroecosystem in Burkina Faso	130
74. Endogenous Knowledge and Socio-Economic Importance of Squash (<i>Cucurbita sp.</i>) in Burkina Faso	132
75. Survival and Growth of <i>Macrobrachium dux</i> (Lenz, 1910) Juveniles in Captivity: Comparison Between Pond and Aquarium Rearing	134
76. Local Practices for Palm Wine Tapping from <i>Borassus akeassii</i> Bayt. Ouédr. & Guinko (Arecaceae) in Communities of Western Burkina Faso.....	136
77. Establishing a Local Raw Water Treatment System Based on Activated Carbon for Drinking in Rural Areas.....	138
78. <i>Pterocarpus erinaceus</i> , a Plant Species Threatened by Uncontrolled Exploitation in Upper Casamance: a Typical Counter-Example to Biodiversity Management.....	140
79. Spatio-Temporal Dynamics of the Groundnut Basin Landscape from 1985 to 2017: Example of the Djilor District (Fatick, Senegal)	141
80. Identification of Favorable Sites for Shrimp Aquaculture in Southern Senegal (Ziguinchor Department): Geomatic Approach	143
81. Diversity of Arbuscular Mycorrhizal Fungi Associated with Pearl Millet in the Groundnut Basin of Senegal	145
82. Impact of Bauxite Mining Practices on Biodiversity and Ecosystems, and Strategies to Minimize Negative Impacts in Guinea.....	147

83. Food and Nutritional Skills of the Edible Caterpillar <i>Cirina butyrospermi</i> Vuillet (Lepidoptera: Attacidae) on Non-Ordinary Diets for Industrial Breeding	149
84. Development of Gold Mining and Impacts on Agrosylvopastoral Resources in the Villages Bordering the Sissamba Mining Site in the Northern Burkina Faso	151
85. Variation in Seed Germination and Growth of <i>Vitex Doniana</i> Sweet Seedlings from Different Geographical Provenances in Burkina Faso: Prospects for Domestication	153
86. Growth Variability of Three Agroforestry Species in the Sudanian Zone of Burkina Faso	155
Chapter Three: Tropical Ecosystems and Adaptation to Climate Change	
87. Types of Plant Formations and their Dynamics in Central Niger.....	158
88. Adaptation Efforts of Communities in the Coastal Area of Koba to Climate Change	160
89. Vulnerability of Neighboring Communities in the Dinderesso and Peni Classified Forests in Burkina Faso Under Climate Variability and Human Actions	161
90. Influence of Rainfall Variability on Surface Runoff in the Forest Ecosystems of the Sangha in Northern Congo: Case of the Sangha Watershed.....	163
91. Urban Agriculture, a Tool for Resilience to Climate Change in Ivory Coast.....	164
92. Objective-Based Integration of Climate Change into Agro-Sylvo-Pastoral Sector Policies in Burkina Faso	165
93. Taxonomic Assessment and Dynamic of Algal Communities in a New Impounded Hydro-Agricultural Dam Lake (Samendeni) in Burkina Faso (Western Africa).....	167

94. REDD+ Initiatives with the Support of OCADES Dédougou Through the Climate Change Adaptation Project (PACC) in the Villages of Kolan and Zouma in Burkina Faso.....	169
95. Improving Land and Water Productivity Through Optimal Use of Supplementary Irrigation and Organic Matter Under Field Grown Tomato in Burkina Faso	170
96. Environmental and Socio-Economic Impacts of <i>Eichhornia crassipes</i> Pollution of the Waters of Dams N° 2 and 3 in the City of Ouagadougou.....	172
97. Seasonal Indicators, Agricultural Vulnerability and Climate Change Adaptation Scenarios in the Central-Eastern Region of Burkina Faso ...	174
Chapter Four: Participatory Governance and Policy for the Management of Biodiversity and Tropical Ecosystems	
98. Contribution of Plants to the Treatment of Chronic Ulcerative and Cardiac Diseases: Current Status and Perspectives	178
99. Assessment of the CO ₂ Sequestration and Emission Potential of the Kari Classified Forest, Burkina Faso.....	180
100. Comparative Study of the Antioxidant Activity and Quantitative Dosage of Phenolic Compounds of Aqueous and Hydroethanolic Extracts of the Fruit of <i>Tetrapleura tetraptera</i> , a Medicinal Plant Used in Northern Ivory Coast.....	181
101. Patrimonialization and Stakeholder Diversity in the Participatory Management of the Sahelo-Saharan Biodiversity of the Termit-Tin Toumm Complex in Niger.....	183
102. Between Endogenous Knowledge and Official Biodiversity Conservation Standards: Case of the Akouma Classified Forest in Central Ivory Coast	185
103. Persistence of Drought in West Africa and its Impact on Groundwater Resources in Siguiri, Northeastern Guinea.....	187

104. Animal Totemism, the Construction of a Conservation Approach and its Limits: Application in a Few Villages of the Ndiaffate Commune (Sénégal)..... 189

105. Local Communities, Protected Areas and “Terrorism” in Burkina Faso: Sources and Apprehensions of a Dynamic of Violence Around the WAP Complex in the Eastern Region 190

106. Integrated Water Resource Management in Burkina Faso: Understanding and Synergy of Actions of Actors 192

107. Geological and Geochemical Studies of the Bauxite Deposits of Kolia (Prefecture of Boffa) - Administrative Region of Boké - Republic of Guinea..... 194

List of Contributors 195

ACKNOWLEDGEMENTS

The successful organization and scientific achievements of the 2nd Burkina Faso-Senegal International Conference would not have been possible without the unwavering support and contributions of numerous individuals and institutions. We are deeply grateful to all who played a role in making this event a resounding success.

We express our profound gratitude to Professor Hassan Bismarck NACRO, President of Nazi BONI University and Chair of the ceremony. His visionary leadership and steadfast commitment to academic excellence have provided a fertile environment for meaningful scientific exchanges, underscoring the importance of collaboration and innovation.

Our heartfelt thanks extend to Professor Adjima THIOMBIANO, Minister of Higher Education, Research, and Innovation, and Patron of the conference. His enlightened vision for advancing research and education inspired this initiative, and his institutional support greatly enhanced the reach and impact of the event.

We warmly acknowledge the invaluable support of Mr. Roger BARO, Minister of Environment, Water, and Sanitation, and Co-Patron of the conference. His dedication to environmental sustainability, a core theme of this conference, has been a guiding beacon for the discussions held.

We are equally grateful to Professor Irénée SOMDA, Regional Director of Higher Education, Research, and Innovation for the Hauts-Bassins region, and Patron of the ceremony, for his unwavering encouragement and instrumental guidance. Special thanks also go to Mr. Aziz BARRO, CEO of Yelemani Baa SARL, for his collaboration and indispensable support, which added immense value to the event.

Our sincerest appreciation goes to the President and members of the Scientific Committee, whose rigorous evaluation of submissions and dedication to scientific integrity ensured the high quality of the Abstracts and debates presented in this volume.

We also recognize the vital contributions of our institutional partners, including the Regional Council of Hauts-Bassins, the Municipalities of Sya, PlantVillage Burkina, the French National Research Institute for Sustainable Development (IRD), the National Fund for Research and Innovation for Development, the National Council for Sustainable Development, the Ministry of Environment, Water, and Sanitation, and TreeAid. Their support significantly bolstered the scientific and logistical capacities of the conference.

To the members of the Organizing Committee, we extend our heartfelt thanks for their relentless dedication and meticulous efforts, ensuring the seamless execution of every aspect of this event.

Finally, we express our gratitude to all invited institutions and participants who honored this conference with their active presence and insightful contributions. Their engagement enriched the discussions and fostered collaborations, enabling us to collectively address the pressing challenges of sustainable ecosystem management in the context of climate change.

This publication is a testament to the collective efforts and shared vision of advancing scientific research for the benefit of humanity and our planet.

MEMBERS OF THE ORGANIZING COMMITTEE

Presidents

- Prof. ZONGO Bilassé, Nazi BONI University, Burkina Faso
- Dr SARR Sérigne Modou, Alioune Diop University of Bambey, Senegal

Members

- Dr. KOAMA K. Benjamin, Nazi BONI University
- Dr. OUATTARA Minata, Joseph KI-ZERBO University
- Dr. SAWADOGO B. Joseph, Nazi BONI University
- Dr. TIENDREBEOGO Nebnoma Romaric, Thomas SANKARA University
- Dr. TOUGOUMA L. Colette, Nazi BONI University
- Dr. ZON Aboubacar-Oumar, Lédéa Bernard OUEDRAOGO University
- Dr. KABRE Frédéric Arnaud, Nazi BONI University
- Dr. TRAORE Bintou Yasmine, Nazi BONI University
- Dr. YAOVI René Comlan, Nazi BONI University
- Dr. SANOU Yacouba, Nazi BONI University
- Ms. BARRO T. S. Eugénie, Nazi BONI University
- Ms. BAZONGO Marina, Nazi BONI University
- Mr. COULIBALY Romaric Ben-Yamine, Nazi BONI University
- Ms. DABIRE S. Françoise, Nazi BONI University
- Ms. DAGNON A. Yasmine, Nazi BONI University
- Mrs. DAKIO Bernice, Nazi BONI University
- Mrs. DIALLO Oumou, Nazi BONI University
- Mr. KIEMDE Boukary, Nazi BONI University
- Mr. KINDO Amadou, Nazi BONI University
- Ms. LY Mouniratou, Nazi BONI University
- Ms. OUEDRAOGO C. C. Wend La Sida, Nazi BONI University
- Mr. OUEDRAOGO Hassane, Joseph KI-ZERBO University
- Ms. OUEDRAOGO S. B. Félicité, Nazi BONI University
- Ms. PALE H. A. L. Rose D., Nazi BONI University
- Mr. RAMDE Naguesba, Nazi BONI University
- Ms. RAMDE W. E. C. Nassiratou, Nazi BONI University
- Mr. SANGARE Issa, Nazi BONI University

- Ms. SANOGO Nassafora, Nazi BONI University
- Mr. SANON Dramane Edmond, Nazi BONI University
- Ms. SANON J. R. Carine, Nazi BONI University
- Mr. SEIHON Zébouré, Nazi BONI University
- Ms. SIEBA Maryam Nafisah, Nazi BONI University
- Ms. SILUE P. Yasmine, Nazi BONI University
- Ms. SIRIBIE Djènèba Marthe, Nazi BONI University
- Mr. SODRE S. Didier, Nazi BONI University
- Mr. SOME Montou Pascal, Nazi BONI University
- Ms. TANKOANO Kamidi, Nazi BONI University
- Ms. YAMBA Mariam, Nazi BONI University
- Mr. YAO Yaya, Nazi BONI University

MEMBERS OF THE SCIENTIFIC COMMITTEE

Presidents

- Prof. Amadé OUEDRAOGO, Joseph KI-ZERBO University, Burkina Faso
- Prof. Omar SENE, Alioune Diop University of Bambey, Senegal

Members

- Prof. Abdoul Khadre Djily DIME, Alioune Diop University of Bambey, Senegal
- Prof. Bilassé ZONGO, Nazi BONI University, Burkina Faso
- Prof. Fernand SANKARA, Nazi BONI University, Burkina Faso
- Prof. Lassina OUATTARA, Nazi BONI University, Burkina Faso
- Prof. Mipro HIEN, Nazi BONI University, Burkina Faso
- Prof. Oumarou OUEDRAOGO, Joseph KI-ZERBO University, Burkina Faso
- Prof. Paulin OUOBA, Botanist, Nazi BONI University, Burkina Faso
- Prof. Roland N.T. MEDA, Nazi BONI University, Burkina Faso
- Prof. Salifou TRAORE, Joseph KI-ZERBO University, Burkina Faso
- Prof. Senghane MBODJI, Alioune Diop University of Bambey, Senegal
- Dr. Abdoulaye TYANO, Gaoua University Center, Burkina Faso
- Dr. Abel KADEBA, Joseph KI-ZERBO University, Burkina Faso
- Dr. Aboubacar-Oumar ZON, Lédéa Bernard OUEÐRAOGO University, Burkina Faso
- Dr. Alkaly BADJI, Alioune Diop University of Bambey, Senegal
- Dr. Alpha CISSE, Alioune Diop University of Bambey, Senegal
- Dr. Assan GNOUMOU, Daniel-Ouezzin COULIBALY University, Burkina Faso
- Dr. Awa BA, Alioune Diop University of Bambey, Senegal
- Dr. Benjamin K. KOAMA, Nazi BONI University, Burkina Faso
- Dr. Blandine M.I. NACOULMA, Joseph KI-ZERBO University, Burkina Faso
- Dr. Loyapin BONDE, Joseph KI-ZERBO University, Burkina Faso
- Dr. Brigitte BASTIDE, CNRST, INERA, Farako-Bâ, Burkina Faso
- Dr. Colette L. TOUGOUMA, Nazi BONI University, Burkina Faso

- Dr. Coura KANE, Alioune Diop University of Bambey, Senegal
- Dr. Diloma Dieudonné SOMA, Nazi BONI University, Burkina Faso
- Dr. Elias MANO, CNRST, Burkina Faso
- Dr. Hermann Y. OUOBA, Ziniaré University Center, Burkina Faso
- Dr. Inoussa COMPAORE, Nazi BONI University, Burkina Faso
- Dr. Issaka OUEDRAOGO, Institute of Sciences, Burkina Faso
- Dr. Issaka SENOU, Daniel-Ouezzin COULIBALY University, Burkina Faso
- Dr. Jérôme T. YAMEOGO, Nazi BONI University, Burkina Faso
- Dr. Joséphine YAMEOGO, CNRST, Burkina Faso
- Dr. Kalifa COULIBALY, Nazi BONI University, Burkina Faso
- Dr. Minata OUATTARA, Joseph KI-ZERBO University, Burkina Faso
- Dr. Moussa NAMOUNTOUGOU, Nazi BONI University, Burkina Faso
- Dr. Nebnoma Romaric TIENDREBEOGO, Thomas SANKARA University, Burkina Faso
- Dr. Papa Babacar Diop THIOUNE, Alioune Diop University of Bambey, Senegal
- Dr. Papa Ibrahima NDIAYE, Alioune Diop University of Bambey, Senegal
- Dr. Pauline OUEDRAOGO, Nazi BONI University, Burkina Faso
- Dr. Philippe BAYEN, Daniel-Ouezzin COULIBALY University, Burkina Faso
- Dr. Prospère SABO, Nazi BONI University, Burkina Faso
- Dr. Robert K. OUEDRAOGO, Nazi BONI University, Burkina Faso
- Dr. Saïdou SANTI, Nazi BONI University, Burkina Faso
- Dr. Saran TRAORE, Nazi BONI University, Burkina Faso
- Dr. Sata DIAWARA, CNRST, Burkina Faso
- Dr. Serigne Modou SARR, Alioune Diop University of Bambey, Senegal
- Dr. Sadibou SOW, Alioune Diop University of Bambey, Senegal
- Dr. Souleymane SANOGO, Alioune Diop University of Bambey, Senegal
- Dr. Vidédji Naéssé ADJAHOSSOU, UNSTIM, Benin
- Dr. Vinsoum MILLOGO, Nazi BONI University, Burkina Faso

INTRODUCTION

Aquatic and terrestrial ecosystems host an extraordinary diversity of animal, plant, and microbial species. However, this biodiversity, alongside vital natural resources, is under increasing pressure from both climatic and anthropogenic factors. These pressures jeopardize species survival and lead to significant ecological degradation. Unregulated and intensive exploitation of resources underscores the urgency of preserving species and their habitats to ensure the sustainability of ecosystems and the invaluable services they provide.

The Convention on Biological Diversity (CBD) seeks to address these challenges by emphasizing the conservation of biodiversity, the sustainable use of its components, and the equitable sharing of benefits derived from genetic resources.

In sub-Saharan Africa, the awareness of conservation challenges remains limited, and sectors such as agriculture and tourism often fail to adequately integrate biodiversity considerations. It is essential to bolster scientific knowledge and promote the use of renewable technologies to safeguard natural resources and mitigate the effects of climate change. Achieving this goal requires a concerted effort involving researchers, policymakers, and local stakeholders, alongside robust investments in education and research to foster sustainable resource management practices.

The second edition of the Burkina Faso-Senegal International Conference emerges as a platform for scientific exchange and collaboration in this context. Organized by Nazi BONI University (Burkina Faso) and Alioune Diop University of Bambey (Senegal), this event provides an invaluable opportunity for researchers, students, and decision-makers to address the pressing challenges of biodiversity conservation in the face of climate change.

The conference contributions are structured around four thematic axes:

1. Biodiversity and Species Conservation Strategies

This axis focuses on the inventory and preservation of terrestrial and aquatic biodiversity, with particular attention to endemic and endangered species in

tropical zones. It explores sustainable conservation strategies, emphasizing the role of protected areas and ecological corridors in maintaining species diversity.

2. Sustainable Exploitation and Management of Natural Resources

This theme promotes sustainable practices in resource-intensive sectors such as agriculture and forestry. It highlights the integration of renewable energy sources and provides examples of integrated management approaches that balance human needs with resource conservation.

3. Tropical Ecosystems and Adaptation to Climate Change

This axis examines the impacts of climate change on tropical ecosystems and proposes adaptive strategies for ecosystems and human communities. It underscores the role of biodiversity in mitigating climate impacts and enhancing ecological resilience.

4. Participatory Governance and Policies for Biodiversity and Tropical Ecosystem Management

This theme emphasizes the value of traditional knowledge in sustainable management, fosters local community participation in governance, and analyzes policy frameworks to strengthen conservation efforts. It also explores international cooperation to harmonize policies for tropical ecosystem protection.

A total of 107 Abstracts were selected for inclusion in this volume, reflecting the breadth and depth of the research presented during the conference. These contributions highlight the diversity of perspectives and innovative approaches required to address the multifaceted challenges of biodiversity conservation and sustainable resource management.

Through these thematic areas, the conference facilitates an interdisciplinary dialogue that bridges science, policy, and practice, enabling participants to collectively address the complex interplay between biodiversity conservation and sustainable development in the context of climate change.

CHAPTER ONE:
BIODIVERSITY AND SPECIES CONSERVATION
STRATEGIES

THE ROLE OF ECONOMIC SOVEREIGNTY IN THE CONSERVATION OF NATURAL RESOURCES IN AFRICA

AFELU BAREREMNA, BAKABIMA DITORGUE,
GATONNOU KOMLA & DOURMA MARRA

Abstract

Biodiversity conservation depends on the relative value given and recognized to this resource by the beneficiary populations and resource managers. Based on forestry and timber statistics, it is noted that African countries are mainly exporters of raw timber (more than 90% of timber exploitation) while industrialized countries, first importers of raw wood in Africa (more than 99%), are those who earn more than 95% of the profits derived from the added value of the industrial wood processing sector. The monetary benefits of the exploitation of raw wood are insufficient to offset the cost of the negative externalities caused on biodiversity and the associated sensitive ecosystems. Environmental and social impact assessment efforts initiated at the beginning of the projects can only correct this deficit if the economic value (market and non-market) environmental goods and services provided by this biodiversity are valued and compensated at fair local value. The international standards of lobbies prove to be out of step with the relative local value attached to an environmental good and service. A new evaluation grid based on local cultural value, externalities caused by its exploitation and the costs of its replacement is proposed. From trees of various diameters and heights of *Khaya senegalensis*, *Pterocarpus erinaceus* and *Milicia excelsa*, the average market value is estimated at $6,341 \pm 705$ XOF/m³ against a revised value of $220,500 \pm 21707$ XOF due to a revaluation rate of 35 ± 0.64 . Faced with a market economy based on competition, the lack of control over the economic value of natural resources and inherent speculation constitutes a

handicap in the arguments in defending environmental protection in sustainable development approach.

Keywords: Environmental goods and services, economic value, sovereignty, development, sovereignty.

PRELIMINARY RESULT ON GASTROINTESTINAL PARASITES OF PIGS IN THE TONKPI REGION, CÔTE D'IVOIRE

BLE YATANAN CASIMIR
& DIOMANDÉ MACHIAMY

Abstract

Pig farms in the Tonkpi region are faced with various difficulties, such as the lack of control over breeding and the parasitic diseases that hamper its development. The aim of this study was to characterize the farms and take stock of the parasitic diseases. The research method consisted of a survey of 22 farmers in the departments of Man and Biankouma, followed by a parasite analysis of 60 faecal samples from apparently healthy pigs. Two coprology methods were used to search for parasite eggs. These were the qualitative sedimentation and flotation methods. The results of the survey showed that pig farming in the departments is dominated by men (86.4%) compared with 13.6% for women. The majority of livestock buildings are of traditional construction (68.2%), with foot baths found on only 4.5% of farms. In terms of the general state of health of the farms visited, disinfection was practiced by 72.7%. Disease symptoms reported by farmers were dominated by diarrhea (63.6%), scabies (54.5%) and mastitis (31.8%). Analysis of the samples showed an overall parasite infection rate of 85%, with three parasite species identified: *Ascaris suum* (58,3%), *Strongyloides* spp (41,7%) et *Oesophagostomum* spp (28,3%). Pig farms in the Biankouma department were the most infected, with 80% contaminated with *Ascaris suum*, while on farms in Man, pigs were more contaminated with *Strongyloides* spp. (40%). However, statistical expression showed that pig contamination was not related to the sampling area ($p = 0.73$). In view of the results, particular attention needs to be paid to the pig sector in order to improve farms for better productivity.

Keywords: Parasites, Pig, Tonkpi Region

DIVERSITY AND DISTRIBUTION OF BENTHIC
MACROINVERTEBRATES IN COMOÉ NATIONAL
PARK, NORTHEASTERN CÔTE D'IVOIRE

DIABATE MABORIDJON,
ABOUA BENIE ROSE DANIELLE,
KAMELAN TANOH MARIUS,
OUATTARA AMARA,
GNAMIEN ARISTIDE TONIN,
KOUAMELAN ESSETCHI PAUL,
CISSE MAMADOU & EKISSI DIMITRI

Abstract

The demands of development centered around the Comoé River have given rise to various human activities (illegal gold panning, poaching, illegal fishing and the use of chemical inputs in cashew nut cultivation) in northeastern Côte d'Ivoire. These illegal activities are increasingly threatening aquatic environments, particularly those of the Comoé National Park. The aim of this study is to determine the ecological quality of the waters of the Comoé National Park. To this end, biological samples were collected using the Van Veen Benne in five field campaigns over the course of one year. The results showed a total of 138 macroinvertebrate taxa belonging to 63 families, 20 orders and 6 classes recorded at all the stations visited. The Insect class is the largest, with 115 taxa, 45 families and 9 orders. The Park is characterized by the presence of Oligochaetes, Chironomidae and Tubificidae, species capable of tolerating conditions altered by human activities or disturbed areas. *Chironomus* sp. (an indicator of anthropized environments and organic pollution) is the most dominant species in the

macroinvertebrate population surveyed, with 31%. On the other hand, certain areas are characterized by a strong presence of *Ephemeroptera* and *Trichoptera*, species that are sensitive to pollutants and environmental alterations. The taxonomic richness of the benthic population varies from station to station and from season to season. Taxonomic richness was highest in the rainy season and lowest in the dry season. This study shows that variations in the richness and abundance of the zoological groups obtained tend to follow a zonation of substrate type and a seasonal evolution.

Keywords: Comoé National Park, Biological diversity, Benthic macroinvertebrates, Water quality, Côte d'Ivoire.

CONSERVATION STATUS AND MANAGEMENT OF FISH FAUNA IN A MINING ENVIRONMENT AT ZOUAN-HOUNIEN, WEST CÔTE D'IVOIRE

DOFFOU RICHARD JEAN OLIVE,
BOUSSOU KOFFI CHARLES,
KOUAME KOUAMÉ MARTIN,
KONAN KOUAKOU SÉRAPHIN
& KOUASSI KOUAKOU LAZARE

Abstract

This study was conducted to assess the fish diversity and conservation status of the Cavally River in an area of intense mining activity. Three sampling zones were defined: upstream of the mining zone, in the mining zone and downstream of the mining zone. Sampling was carried out using experimental and artisanal fisheries (monofilament, multifilament, creel, hawk and seine gillnets). A total of 76 species belonging to 8 orders, 20 families and 37 genera were observed. Twelve (12) species are of conservation interest and merit special attention according to the IUCN (2021). The greatest number of species (72) were encountered upstream and the smallest number (52) in the direct impact area. This area, with low diversity, is characterized by high anthropogenic pressure, such as obstruction of the stream, increase in suspended solids, modification of the hydrological regime and widening of the stream bed. To limit the loss of ichthyological diversity due to the realization of three (3) new meanders, aquatic organism transfer activities were carried out. A hatchery was built to produce species of conservation interest (*Coptodon walteri* and *Micralestes eburneensis*) and to seed the Cavally River. On the other hand, provide the community with *Oreochromis niloticus* fry for fish farming

activities. This habitat, deeply disturbed by mining, is a danger to endemic species whose distribution is limited. These are of real conservation interest. In addition, risks of bioaccumulation of substances such as mercury and arsenic exist in populations with significant health consequences.

Keywords: Cavally River, Mining area, Endemic species, Conservation, Côte d'Ivoire