

CURRICULUM VITAE

Pascaline Nyirabuhoro

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FIELDS OF EXPERTISE

Climate Resilience and Water Resources: Skilled in implementing adaptation and resilience strategies, particularly in the fields of water services, including WASH (Water, Sanitation, and Hygiene), irrigation, water treatment plants, hydropower generation, and water resource management

Biodiversity Conservation and Restoration Ecology: Applying scientific principles to mitigate biodiversity loss and restore degraded habitats and designing strategies for ecosystem resilience and sustainable biodiversity management in response to disturbances

Sustainability and Green Technology: Applying scientific principles of sustainability to promote eco-friendly practices and innovating technologies that minimize environmental impact while addressing resource challenges

Non-renewable Resource Management: Investigating ecological impacts of environmental changes on species distributions and developing adaptive management practices to ensure sustainable use of non-natural resources

Environmental Policy and Law: Crafting and implementing policies and laws to address environmental issues, focusing on frameworks at local, national, and international levels to drive sustainable environmental governance

Environmental Health and Safety: Developing strategies to safeguard public health and environmental quality and addressing air, soil, and water quality issues, hazardous waste management, and occupational safety concerns

Environmental Education and Communication: Promoting public awareness and action on pressing environmental issues and designing educational programs to empower communities with knowledge and tools for environmental stewardship

EDUCATION

Doctor of Philosophy in Environmental Sciences, January 2021

University of Chinese Academy of Sciences, Beijing, People's Republic of China

Dissertation title: "Temporal Dynamics and Community Assembly Mechanisms of Rare and Abundant Bacterioplankton in Subtropical Reservoirs"

Advisor: Professor Jun Yang

Committee: Profs. Zongze Shao, Shuji Gao, Jun Yang, Changzhou Yan, Li Cui, Feng Zhao, Nengwang Chen

Master of Science in Geology, May 2015

Annamalai University, Chidambaram, Tamil Nadu, India

Postgraduate Diploma in Public Health, May 2015

Annamalai University, Chidambaram, Tamil Nadu, India

Postgraduate Diploma in Petroleum Exploration, May 2014

Annamalai University, Chidambaram, Tamil Nadu, India

Bachelor of Science in Environmental Health Sciences, February 2011

Kigali Health Institute, Kigali, Rwanda

ACADEMIC AND PROFESSIONAL POSITIONS

September 2023 to Present, **Environmental research specialist**, Save the Rwandan Environment and Biodiversity (SREB), Muhanga, Rwanda

Key responsibilities:

Conducting ecological research: Leading studies on the impact of human activities, climate change, and invasive species, particularly in the context of urbanization and agricultural expansion in Rwanda

Environmental impact assessments (EIAs): Collaborating with local stakeholders, government agencies, and community groups to conduct EIAs for development projects. Providing scientific recommendations aimed at minimizing negative environmental impacts while promoting sustainable development

Biodiversity conservation initiatives: Developing strategies to conserve endangered species and habitats through monitoring programs, habitat restoration projects, and the creation of protected areas. Working closely with SREB's conservation teams to implement action plans and assess their effectiveness over time

Data analysis and reporting: Utilizing advanced analytical tools and statistical models to process ecological data and generate actionable insights for conservation programs. Preparing detailed reports, scientific papers, and policy briefs for internal and external stakeholders, including government bodies, international organizations, and the public

Capacity building and training: Providing training and mentorship to junior researchers, local communities, and government personnel on topics such as biodiversity monitoring, environmental data collection, and sustainable land-use practices. Assisting in the building of local capacity to manage natural resources more effectively

Public awareness and advocacy: Engaging with local communities, schools, and media to raise awareness about environmental issues and promote biodiversity conservation. Assisting in the development of outreach programs that foster community participation in conservation efforts

September 2021 to August 2023, **Postdoctoral fellow**, Shenzhen MSU-BIT University, Shenzhen, China

Key responsibilities:

Conducting research: Executing research activities in accordance with the timeline and objectives outlined by my scientific supervisor, ensuring progress and alignment with overall project goals. Publishing a minimum of two research articles in journals ranked in Q1 and/or Q2 according to the Journal Citation Reports (JCR), contributing to advancing knowledge in the field of study

Research grant proposal writing: Spearheading the development and submission of research grant proposals, identifying funding sources, drafting detailed project proposals, and ensuring alignment with both institutional goals and scientific research priorities to secure necessary resources for future studies

Teaching responsibilities: Carrying out a teaching plan and curriculum outline, delivering no less than 12 academic hours per year as directed by a scientific supervisor. This includes designing and delivering lectures, conducting laboratory sessions, and mentoring students in various aspects of ecology and environmental science

Supervision of theses: Supervising a minimum of two Bachelor's and/or Master's theses, guiding students in the formulation of research questions, study design, data collection, analysis, and thesis writing, ensuring successful completion and defense

Organizing extracurricular activities: Planning and organizing extracurricular activities for students, such as seminars, cross-cultural exchanges, cultural events, and academic learning initiatives, in line with guidance from my scientific supervisor

January 2011 to August 2013, **Enumerator**, DelAgua Public Health Program in Eastern Africa, Kigali, Rwanda

Key responsibilities:

Data collection: Conducting field-based surveys and interviews in various communities across Rwanda, gathering critical data on health, sanitation, and environmental conditions

Data management: Inputting and processing collected data into the program's database, ensuring consistency and organization. Working closely with senior researchers to verify and clean the data before analysis

Reporting: Preparing and submitting detailed field reports, documenting findings, challenges faced, and recommendations for improving the data collection process or program execution

Survey implementation: Assisting in the planning and execution of large-scale health and environmental surveys, coordinating logistics for fieldwork, and ensuring proper use of data collection tools and equipment

Community engagement: Engaging with local communities to explain the survey's objectives, build rapport, and ensure participation in data collection, promoting awareness about the program's impact on public health

Capacity Building: Participating in training sessions for new enumerators, sharing knowledge of data collection techniques and promoting best practices for community-based research

Collaboration: Working in close collaboration with local health teams and external stakeholders to ensure the successful implementation of the DelAgua Public Health Program across multiple regions

LEADERSHIP AND SERVICE HIGHLIGHTS

August 2022, **Founder**, [Rwanda Geoscientists Society](#), a professional organization that brings together individuals who are interested in and work in the field of geoscience in Rwanda. RGS encompasses a broad range of scientific disciplines, including geology, geophysics, hydrology, meteorology, and environmental science

June 2018, **Founder**, [Center for Earth and Natural Resource Sciences](#), a comprehensive and multi-disciplinary research center engaged in fundamental and applied research on the environment, understanding earth processes and natural hazards, resource science, and innovative technologies and instruments for the control and remediation of water, soil, air, and solid waste pollution

RESEARCH INTERESTS

Primary interests: Climate resilience; Environmental pollution; Soil and water remediation; Microbial ecology; Urban ecology; Paleoecology; Renewable energy

Additional interests: Climate Extremes; Hydrology; Natural and anthropogenic hazards

PUBLICATIONS

Scholarly articles

Nyirabuhoro P[#], Ndayishimiye JC[#]. 2025. Innovating for a climate-resilient world: renewable energy and sustainable technologies. In: Doon RA (Ed.), *Transitioning to Climate Action*; MDPI: Basel, Switzerland. <https://www.mdpi.com/books/edition/7960-transitioning-to-climate-action>

Ndayishimiye JC[#], Nyirajana J[#], **Nyirabuhoro P[#]**, Nacumuyiki PI, Coker AO, Akintayo FO, Mazei Y, Saldaev D, Nkinahamira F, Habumugisha T, Murwanashyaka T. Determinants of environmental changes in human-modified ecosystems: Effects of plastics on moisture gradients, nutrients, and clay properties. 2024. *Heliyon*. 10:e38738. <https://doi.org/10.1016/j.heliyon.2024.e38738>

- Ndayishimiye JC[#], **Nyirabuhoro P[#]**, Gao X, Chen H, Wang W, Mazei Y, Yang J. 2024. Community responses of testate amoebae (Arcellinida and Euglyphida) to ecological disturbance explained by contrasting assembly mechanisms in two subtropical reservoirs. **Science of The Total Environment**, 953:176058. <https://doi.org/10.1016/j.scitotenv.2024.176058>
- Ndayishimiye JC, Mazei Y, Babeshko K, Tsyganov AN, Bobrov A, Mazei N, Smirnov A, Ren K, Abdullah Al M, Chen H, Wang W, Saldaev D, Ivanovskii A, **Nyirabuhoro P**, Yang J. 2022. Stochastic and deterministic processes shaping the testate amoeba communities across different biotopes of urban parks in Moscow and Xiamen cities. **Urban Ecosystems**. 26:617–628. <https://doi.org/10.1007/s11252-022-01306-8>
- Nyirabuhoro P**, Gao XF, Ndayishimiye JC, Xiao P, Mo YY, Ganjidoust H, Yang J. 2021. Responses of abundant and rare bacterioplankton to temporal change in a subtropical urban reservoir. **FEMS Microbiology Ecology**. fiab036. <https://doi.org/10.1093/femsec/fiab036>
- Nyirabuhoro P**, Liu M, Xiao P, Liu LM, Yu Z, Wang L, Yang J. 2020. Seasonal variability of conditionally rare taxa in the water column bacterioplankton community of subtropical reservoirs in China. **Microbial Ecology**, 80:14–26. <https://doi.org/10.1007/s00248-019-01458-9>
- Ndayishimiye JC[#], **Nyirabuhoro P[#]**, Wang W, Mazei Y, Yang J. 2020. Morphology of testate amoeba *Diffflugia australis* (Playfair, 1918) Gautier-Lièvre et Thomas, 1958 from a subtropical reservoir (southeast China). **Zootaxa**. 4890:097–108. <https://doi.org/10.11646/zootaxa.4890.1.5>
- Ndayishimiye JC, **Nyirabuhoro P**, Lin T, Zhang G, Zhang W, Mazei Y, Ganjidoust H, Yang J. 2020. Decade-scale change in testate amoebae community primarily driven by anthropogenic disturbance than natural change in a large subtropical reservoir. **Science of the Total Environment**. 78:fiab036. <https://doi.org/10.1016/j.scitotenv.2021.147026>
- Ndayishimiye JC, **Nyirabuhoro P**, Wang Q, Yang X, Yang J. 2020. Effects of natural and anthropogenic changes on testate amoebae communities in an alpine lake over the past 2500 years. **Science of the Total Environment**. 721:137684. <https://doi.org/10.1016/j.scitotenv.2020.137684>
- Nyirabuhoro P**, Mugerwa T, Ndikubwimana JD, Munyangyinka JP, **Ndayishimiye JC**, Uwamungu P. 2015. A study on sediments depositional mechanism at Nayakankuppam coast, TamilNadu, India. **International Journal of Engineering Research and General Science**, 3:478–492. <http://pnrsolution.org/Datacenter/Vol3/Issue6/56.pdf>
- Ndayishimiye JC, Nyirabuhoro P. 2015. A study on interdependent and asymmetrical behaviours associated with land use and land cover at Ruhande, Huye, Rwanda. **International Journal of Innovative Research and Development**. 4:217–222. http://internationaljournalcorner.com/index.php/ijird_ojs/article/view/135488

Conference abstract

- Ndayishimiye JC, Mazei Y, Ren K, Tsyganov AN, Smirnov A, Mazei N, Saldaev D, Ivanovskii A, **Nyirabuhoro P**, Yang J. 2023. Diversity and community assembly of testate amoebae and other microbial eukaryotes in diverse biotopes within urban parks: morphological and metabarcoding perspective. In: Lara (Ed.), E. *10th International Symposium on Testate Amoebae* (pp. 23). Abstract booklet, Royal Botanical Garden-CSIC, Madrid, Spain. <https://ista10madrid.csic.es/wp-content/uploads/2023/09/Abstract-Booklet-ISTA10-2.pdf>
- Ndayishimiye JC, Mazei Y, Babeshko K, Tsyganov AN, Bobrov A, Mazei N, Saldaev D, Ivanovskii A, **Nyirabuhoro P**, Ren K, Abdullah Al M, Chen H, Wang W, Yang J. 2021. Multi-habitat testate amoeba in temperate and subtropical urban parks. In: Mitchell EAD. (Ed.), *2021 International Symposium on Testate Amoebae – ISTA 9 ¾* (pp. 24). Program & book of abstracts, University of Neuchâtel, Neuchâtel, Switzerland. http://istar.wdfiles.com/local--files/ista-9-3-4-2021/ISTA_9_34_program%26book_of_abstracts_final.pdf

DISTINGUISHED LECTURESHIPS

- August 2022, **Guest lecturer**, *An Introduction to Effective Data Analysis Techniques Using Open-Source Tools*, University of Rwanda, Kigali, Rwanda
- July 2021, **Guest lecturer**, *Open-Source GIS Applications and Best Practices*, The Center for Earth and Natural Resource Sciences, Kigali, Rwanda
- December 2020, **Guest lecturer**, *R Programming for Ecological Data Analysis: An Introduction to Statistical Analysis and Visualization*, The Center for Earth and Natural Resource Sciences, Kigali, Rwanda

AWARDS, GRANTS, AND FELLOWSHIPS

- January 2024–December 2025, Co-principal Investigator, **Research grant**, *Spatial Distribution of Soil Biodiversity in Watersheds and Flood Control Reservoirs in Shenzhen City*, Innovative Youth Talent Project of the Department of Education of Guangdong Province, Total amount: 100,000 RMB
- January 2023–December 2023, Co-principal investigator, **Research grant**, *Prevalence of Testate Amoebae in the Urban Environment: Do Distinct Ecological Niches Exert Similar Pressure on the Microbial Community?* International Scientists of National Natural Science Foundation of China, Grant number: 32250410317, Total amount: 200,000 RMB
- May 2020, **Yongqing Environmental Protection Award**, a prestigious accolade recognizing excellence and commitment in safeguarding the environment, awarded by the Chinese Academy of Sciences
- September 2015–August 2018, **University of Chinese Academy of Sciences Scholarship**, a fully funded scholarship for a doctorate program awarded by the University of Chinese Academy of Sciences
- September 2012–August 2014, **Rwanda Education Board Scholarship**, a fully funded scholarship for postgraduate studies awarded by the Ministry of Education of Rwanda
- January 2006–November 2010, **Student Financing Agency Scholarship**, a fully funded scholarship for undergraduate studies awarded by the Ministry of Education of Rwanda

PROFESSIONAL ACTIVITIES AND AFFILIATIONS

- July 2025, **Peer reviewer**, Sustainability
- December 2024, **Peer reviewer**, Pollutants, Land, Sustainability
- October 2024, **Peer reviewer**, Land, Remote Sensing
- September 2024, **Peer reviewer**, Diversity
- August 2024, **Peer reviewer**, Geoscience
- July 2024, **Peer reviewer**, Biology
- June 2024, **Peer reviewer**, Applied sciences
- May 2024, **Peer reviewer**, Heliyon
- April 2024, **Peer reviewer**, Water, Land
- March 2024, **Peer reviewer**, Water, Land
- February 2024, **Peer reviewer**, Water, Sustainability
- January 2024, **Peer reviewer**, Heliyon, Sustainability
- December 2023, **Peer reviewer**, Heliyon
- November 2023, **Peer reviewer**, Sustainability
- October 2023, **Peer reviewer**, Sensors
- August 2023, **Peer reviewer**, Remote Sensing
- July 2023, **Peer reviewer**, Sustainability
- June 2023, **Peer reviewer**, Sustainability, Water
- May 2023, **Peer reviewer**, Sustainability

April 2023, **Peer reviewer**, Land
March 2023, **Peer reviewer**, Minerals, Remote Sensing
February 2023, **Peer reviewer**, Sustainability
January 2023, **Peer reviewer**, Life
December 2022, **Peer reviewer**, Sustainability
November 2022, **Peer reviewer**, Remote Sensing
October 2022, **Peer reviewer**, Sustainability
October 2022, **Organizing and Scientific Committee**, Second Joint Workshop, Urban microbiome: structure, function, management
September 2022, **Peer reviewer**, Minerals
September 2022, **Peer reviewer**, Sustainability
August 2022–Present, **Member**, [Rwanda Geoscientists Society](#)
May 2019–Present, **Member**, [Organization for Women in Science for the Developing World](#)
January 2018–Present, **Member**, [International Society of Testate Amoeba Researchers](#)

TEACHING AND MENTORING

September 2022–June 2024, **Thesis advisor**, *Temporal Dynamics and Assembly Mechanisms of Microbial Communities in Subtropical Ponds*, Postgraduate student Geng Zihan from Shenzhen MSU-BIT University and Lomonosov Moscow State University
September 2023–December 2023, **Course instructor**, *Practical Biology*, Postgraduate students from Shenzhen MSU-BIT University
January 2023–July 2023, **Course instructor**, *Aquatic Microbiology*, Postgraduate students from Shenzhen MSU-BIT University
September 2021–June 2023, **Thesis advisor**, *Determinants of Bacterial Community Composition in a Subtropical Endorheic Urban Pond*, Postgraduate student Cao Lixi from Shenzhen MSU-BIT University and Lomonosov Moscow State University
December 2022, **Invited speaker**, *My UCAS-IUE Experience Before and After Graduation*, Institute of Urban Environment, Chinese Academy of Sciences
September 2022–December 2022, **Course instructor**, *Practical Biology*, Postgraduate students from Shenzhen MSU-BIT University
January 2022–July 2022, **Course instructor**, *Aquatic Microbiology*, Postgraduate students from Shenzhen MSU-BIT University

PRACTICAL AND TECHNICAL SKILLS

Expert in aquatic microbial ecology and biodiversity conservation

Strong interpersonal skills, capable of conducting fieldwork independently or collaboratively in a team. Proficient in a variety of experimental techniques, including sampling and the identification of microorganisms using microscopy, culture, and molecular approaches. Proficient in statistical analysis and ecological data visualization using R, IBM SPSS, OriginLab, PAST, PRIMER, CANOCO, Ecosim Professional, Gephi, GIS tools, and Computer-aided design (CAD) and graphics

Skilled in molecular analysis techniques

Expertise in PCR, DNA/RNA extraction, and filtration systems for microbial research.

Experienced in teaching and mentoring

Supervision of postgraduate and undergraduate students while fostering diversity and inclusion

Proficient in research grant proposal writing and team management

Successful track record in writing grant proposals, managing interdisciplinary teams, and coordinating research activities

Active contributor to scientific publishing and education

Publishing peer-reviewed articles, delivering lectures, and conducting workshops

LANGUAGES

English: native proficiency

French: native proficiency

Kinyarwanda: native

Mandarin Chinese: Basic level

VOLUNTEER EXPERIENCE

January 2004–Present, **Economic development initiatives**, Active participant in the *Umuganda Community Service Initiative* in Rwanda, contributing to the improvement of the community through monthly clean-up activities, infrastructure development projects, and other community initiatives. Demonstrated strong teamwork, communication, and leadership skills in coordinating with fellow community members to complete projects

January 2012–July 2012, **Fundraising activities**, Active participant in fundraising activities for the *Agaciro Development Fund*, contributing to the economic development of Rwanda by supporting initiatives aimed at improving the lives of citizens. Utilized excellent communication and fundraising skills to engage potential donors and drive contributions to the fund

September 2016, **Rescue and environmental restoration initiatives**, volunteered in cleaning Xiamen, China, after the devastation of super typhoon Meranti, providing assistance with debris removal, relief goods distribution, and support for affected families. Collaborated with a team of volunteers to help restore infrastructure and clear public areas, demonstrating a strong commitment to community service and leadership skills

December 2021, **Fundraising activities**, volunteered for a corporate social responsibility campaign by the Development Bank of Rwanda aimed at contributing to the Government of Rwanda's goal of connecting all households to electricity by 2024. Assisted in the organization of fundraising events to support the project. Collaborated with other volunteers to develop and implement strategies to achieve project goals

REFERENCES

Yuri A Mazei, Ph.D., Vice-rector and Professor (Postdoctoral advisor)

Department of General Ecology and Hydrobiology, M V. Lomonosov Moscow State University
Leninskie Gory 1, 119991, Moscow, Russia, E-mail: yurimazei@mail.ru

Jun Yang, Ph.D., Professor (Doctoral advisor)

Institute of Urban Environment, Chinese Academy of Sciences
Xiamen 361021, China, Phone: +86-592-6190775, E-mail: jyang@iue.ac.cn

Jean Claude Ndayishimiye, Senior Lecturer (Research collaborator)

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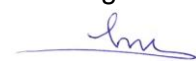
Theophile Murwanashyaka, Senior Lecturer (Research collaborator)

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DECLARATION

I **Pascaline Nyirabuhoro**, declare that these data correctly describe me, my qualifications and experience.

Muhanga–Rwanda.



January 31st 2025