

OCTOBER 2025 ISSUE

CoEB NEWSLETTER

RWANDA BIODIVERSITY CHRONICLE

Insights in Biodiversity Conservation and Research Advancement

In this edition:

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DIRECTOR'S MESSAGE

Dear Colleagues and Partners,

It is with great pleasure that I share with you the recent milestones achieved by the Center of Excellence in Biodiversity and Natural Resource Management (CoEB). Over the past quarter, CoEB has strengthened its leadership in biodiversity research, capacity building, and conservation outreach, contributing meaningfully to Rwanda's environmental and scientific development.

We have made significant progress in biodiversity data management, with updates to the Rwanda Biodiversity Information System (RBIS) and continued efforts in collection expansion across our herbarium and zoological repositories. Our facilities are being modernized, ensuring that valuable specimens are preserved under international standards. The addition of new curators and interns has enhanced our capacity for research, digitization, and documentation. Equally important, CoEB continues to invest in youth empowerment and professional training, equipping emerging scientists with practical skills in ecological monitoring, data analysis, and curation. Our outreach programs and community partnerships further ensure that conservation science translates into local action.

I am also proud to note that several peer-reviewed scientific articles authored by CoEB researchers have recently been published, reflecting our commitment to advancing evidence-based conservation and contributing to global scientific knowledge.

As we look ahead, CoEB remains dedicated to excellence in research, education, and innovation, ensuring that biodiversity continues to thrive as a cornerstone of Rwanda's sustainable future.

Thank you for your continued support and collaboration.

Associate Professor Venuste Nsengimana

Director, Centre of Excellence in Biodiversity and Natural Resource Management



**Since February 2024, the CoEB has a new director
Associate Professor Venuste Nsengimana (PhD)**

Nsengimana is an Associate Professor of Conservation Biology at the University of Rwanda, College of Science and Technology, School of Science, Department of Biology. Since February 2024 he serves as Director of the Centre of Excellence in Biodiversity and Natural Resource Management (CoEB), a UNESCO Category 2 centre under the auspices of UNESCO. Nsengimana holds a PhD from the University of Liège – Gembloux Agro-Bio Tech (Belgium), MSc in Biodiversity Conservation from the University of Rwanda, College of Science and Technology and a Bachelor of Biology Education from the former National University of Rwanda. He is affiliated to the Society for Conservation Biology (SCB) and the Association for Tropical Biology and Conservation (ATBC). He is also associate researcher to the African Research University Alliance (ARUA) Water Centre of Excellence based at Rhodes University, South Africa. His research work focuses on biodiversity and socioecological resilience. His publications can be found at <https://orcid.org/0000-0001-5963-8314>



Members of CoEB's Steering Committee. Photo/CoEB

On 10th September 2025, the CoEB Steering Committee convened to review the Center's 2024–2025 achievements and to approve the 2025–2026 Action Plan. The meeting assessed progress across research, training, and outreach programs, ensuring alignment with the operational standards of UNESCO Category II Centres (C2C). Members commended the ongoing work in collection development, scientific publication, and capacity-building initiatives, reaffirming CoEB's mandate to advance biodiversity conservation and sustainable resource management in Rwanda and the region.

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CONSERVATION STRATEGY AND FIELD-BASED RESEARCH



Chimpanzee conservation action plan workshop

From 10th to 14th August 2025, Dr. Jean de Dieu Uwizelimana, CoEB Research Associate, represented the CoEB at the National Chimpanzee Conservation Action Plan Second Workshop held in Kigali. The workshop focused on updating conservation strategies for Rwanda's chimpanzee populations within Nyungwe and Gishwati-Mukura National Parks. CoEB contributed technical insights on habitat connectivity, species monitoring, and community involvement, ensuring that the revised Great Ape Conservation Strategy aligns with Rwanda's biodiversity and landscape restoration priorities.

Strengthening Rwanda's biodiversity knowledge through RBIS

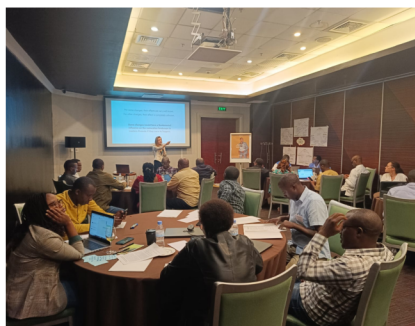
The Center of Excellence in Biodiversity and Natural Resource Management (CoEB), in partnership with the Ministry of Environment (MoE), organized two national workshops in August and September 2025 to strengthen the Rwanda Biodiversity Information System (RBIS), a national digital platform that centralizes and shares biodiversity data for research, policy, and conservation. The first workshop, held from 10th to 15th August 2025 at the University of Rwanda, Nyarugenge Campus (Camp Kigali), focused on biodiversity data validation and standardization. Experts from CoEB worked collaboratively to clean and verify more than 128,000 biodiversity occurrence records following Darwin Core standards.



RBIS data mobilization workshop at Nyarugenge Campus. Photo/CoEB

The second workshop, conducted from 31st August to 5th September 2025, centered on data reformatting, updating website and uploading validated datasets into RBIS. This process enhanced data accessibility, improved visualization tools, and strengthened Rwanda's capacity for evidence-based conservation. These workshops, funded by the MoE-SPIU through the COMBIO Project, brought together taxon specialists, GIS experts, and data scientists under the leadership of Assoc. Prof. Venuste Nsengimana, Director of CoEB. Their efforts ensure that biodiversity information is not only accurate and reliable but also readily available to guide national ecosystem restoration, climate adaptation, and land-use planning in line with the Global Biodiversity Framework. [Read more.](#)

Landscape futures: Participatory scenario planning workshop



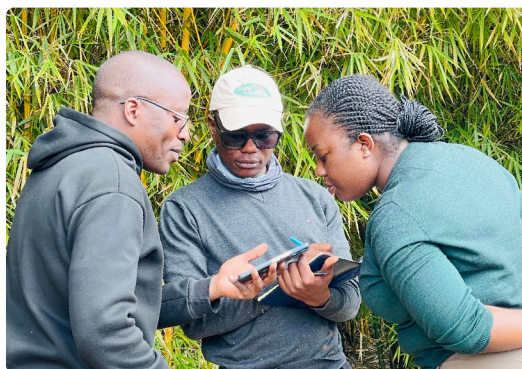
On 28th October 2025, CoEB hosted the Participatory Scenario Planning Workshop at the Park Inn Hotel, Kigali, in partnership with Leuphana University (Germany). Facilitated by Dr. Marina Frietsch and Dr. Dula Duguma, with coordination by Mr. Venant Nzibaza.

Landscape restoration workshop. Photo/CoEB

The workshop engaged experts and restoration practitioners in identifying drivers of change affecting Rwanda's restoration landscapes in Ngororero, Nyabihu, Rubavu, and Rutsiro. The session produced draft future scenarios to guide restoration policy, ecosystem management, and community adaptation strategies, with a follow-up validation event planned for February 2026. This project is one of several collaborative projects the CoEB has with international partners and its nodes and local partners.

Pre-field survey visits to selected forests in Rwanda

From 5th to 10th October 2025, a multidisciplinary CoEB team led by Assoc. Prof. Venuste Nsengimana conducted reconnaissance visits to Busaga (Muhanga), Sanza (Ngororero), Nyagasenyi (Ngoma), and Malenga Highland (Kirehe) forests. The mission evaluated forest accessibility, habitat integrity, and community engagement ahead of full biodiversity baseline surveys. Findings confirmed the forests' high ecological value and highlighted threats from agricultural encroachment and deforestation. Data collected will support RBIS updates and enrich national herbarium collections.



Our team at the field taking GPS coordinates. Photo/CoEB

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RESEARCH, INNOVATION, AND PROJECT IMPLEMENTATION

Community-based butterfly farming and indigenous tree planting: Conserving forests, sustaining livelihoods

The Ibanda–Makera Forest, located in Kirehe District in Eastern Rwanda, covers approximately 169.78 hectares and represents one of the few remaining forest fragments in the region. Despite its small size, the forest holds remarkable ecological value, providing habitat to 112 species of butterflies, blue monkeys, baboons, snakes, numerous bird species, and several indigenous trees including *Vepris nobilis* and *Markhamia lutea*. However, this biodiversity hotspot faces mounting threats from agricultural expansion, land fragmentation, and other human activities. In response, the Center of Excellence in Biodiversity and Natural Resource Management (CoEB) initiated a community-based Ecosystem-based Adaptation (EbA) project aimed at protecting biodiversity while improving local livelihoods. The initiative focuses on butterfly farming and indigenous tree planting as complementary strategies to promote ecological restoration and sustainable resource management.



Ibanda-Makera forest. Photo/CoEB

Butterfly surveys

To establish a robust ecological baseline, CoEB scientists, led by Dr. Jean de Dieu Uwizelimana, conducted detailed butterfly biodiversity surveys in and around the Ibanda–Makera Forest. The team employed the Pollard Walk Transect Method combined with baited traps to systematically record butterfly abundance and diversity across different habitat zones. The study identified 112 butterfly species representing major families such as Nymphalidae, Papilionidae, and Pieridae, confirming the forest's high conservation value. Several of these species were found to depend exclusively on indigenous trees and shrubs for feeding and breeding, emphasizing the critical link between forest integrity and butterfly population stability.



Surveying butterflies at Ibanda-Makera forest. Photo/CoEB

Socio-economic surveys

To complement ecological studies, CoEB conducted socio-economic surveys among households near the Ibanda–Makera Forest to assess perceptions and readiness to engage in butterfly farming. Using a SWOT analysis, the study identified strong community awareness of forest importance and high interest in alternative livelihoods as key strengths, while limited technical capacity and start-up capital were noted as weaknesses. Opportunities were found in the growing demand for butterfly exhibits and eco-tourism, whereas threats included habitat loss and limited market infrastructure. Findings revealed that over 70% of respondents were willing to participate in butterfly farming once trained and supported. In line with the New Ecological Paradigm (NEP), the survey indicated a growing appreciation among local communities, especially youth and women, of the interdependence between human well-being and ecosystem health, marking a shift toward more sustainable conservation values.

Community training

Based on these positive findings, CoEB organized hands-on training sessions to build community capacity in butterfly farming and tree nursery management. Led by Dr. Uwizelimana and CoEB technical experts, participants learned key aspects of butterfly husbandry, including egg collection, larval care, pupae handling, and adult release, ensuring that farming activities remain ecologically sustainable. At the same time, community members were trained to propagate indigenous host plants such as *Gomphocarpus physocarpus* (balloon milkweed), *Vepris nobilis*, and *Markhamia lutea*, which serve as essential food sources for butterfly larvae. Hundreds of balloon milkweed seedlings were planted in the forest buffer zone, providing new breeding habitats while supporting forest regeneration. This dual training approach, combining livelihood skills with habitat restoration, strengthens local ownership of conservation efforts and enhances both biodiversity and economic resilience. [Read more](#)



Butterfly farming training with community. Photo/CoEB

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CAPACITY DEVELOPMENT AND SCIENTIFIC ENGAGEMENT

LEADERSHIP AND CONSERVATION TRAINING FOR UNIVERSITY STUDENTS – KIGALI



University students being trained on conservation education at CoEB by LIC team

Through CoEB outreach program and in collaboration with the Landscape for Conservation (LiC) initiative, CoEB successfully conducted a youth environmental leadership training on 1st October 2025 in Kigali. The session equipped university students and emerging conservation leaders with skills to promote environmental awareness, community engagement, and sustainable resource use. These young participants are now ready to champion Rwanda's conservation future, building on CoEB's mission to inspire environmental stewardship through education and youth empowerment.

ORIENTATION AND ONBOARDING OF PROFESSIONAL INTERNS AT COEB

On 15th September 2025, CoEB, led by Assoc. Prof. Venuste Nsengimana, welcomed a new cohort of professional interns at the University of Rwanda – Huye Campus. The session introduced interns to CoEB's vision, strategic programs, and research priorities. In his address, the Director encouraged them to gain hands-on experience complementing their academic knowledge, noting that they are now part of the CoEB family committed to advancing biodiversity conservation, in the past five years internship program at CoEB has trained over 50 brilliant interns most of them are now in different job positions, others are pursuing their studies including PhD programs. This time, over a six-month internship, participants will develop skills in biodiversity research, data analysis, academic writing, and curation practices. The event concluded with a cocktail reception, marking the start of an exciting professional journey for Rwanda's emerging conservation scientists.



CoEB Director welcoming new interns. Photo/CoEB

EXPANDING HERBARIUM AND ZOOLOGICAL COLLECTIONS



CoEB interns being trained on how to prepare plants for collection Photo / CoEB

The National Herbarium of Rwanda, managed by CoEB, has updated thousands of records with precise georeferencing and standardized location data. This achievement stems from a collaborative project with the University of Kansas Biodiversity Institute and Natural History Museum, funded by the U.S. National Science Foundation. CoEB is among only four African institutions contributing to georeferencing African specimens housed in U.S. herbaria. Ongoing specimen collection, curation, and digitization, driven by new curators and skilled interns, continue to expand Rwanda's biodiversity database. With over 20,000 specimens dating back to 1915, the National Herbarium stands as a vital national resource for plant biodiversity, strengthening capacity in documentation, taxonomy, and research.

The National Zoological Collection at CoEB is undergoing renovation with the installation of standardized cabinets, creating a well-conditioned environment for long-term specimen preservation. Ongoing specimen preparation and cataloguing have already enabled hundreds of animal samples to be properly conserved and made accessible for research and education, strengthening CoEB's role in biodiversity documentation and scientific reference across Rwanda.



Work at National Zoological Collection. Photo/ CoEB

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SCIENTIFIC RESEARCH SEMINARS AND KNOWLEDGE SHARING

As part of its efforts to foster scientific exchange and applied research, the Center of Excellence in Biodiversity and Natural Resource Management (CoEB) organized a series of academic seminars and webinars between August and October 2025 at the University of Rwanda, Nyarugenge Campus. These hybrid sessions brought together researchers, students, and practitioners to share new findings in biodiversity conservation, ecosystem management, and climate-smart agriculture. Typically, 20–50 participants attend each session, and future webinars remain open to the wider research community.

VALUING AMPHIBIANS AND REPTILES IN RWANDAN ECOSYSTEM CONSERVATION



Delivered on 13th August 2025, Mr. Mapendo Mindje, an Assistant Lecturer at the University of Rwanda and CoEB Research Associate, explored the ecological and conservation importance of amphibians and reptiles.

His presentation revealed that Rwanda hosts 58 amphibian species and 86 reptile species, many of which are endemic to montane and wetland habitats. He highlighted their role as bioindicators of environmental change and warned that these groups are among the most threatened by habitat loss, agricultural expansion, and pollution.

Mr. Mindje emphasized the need to integrate herpetofauna data into national biodiversity monitoring systems like the Rwanda Biodiversity Information System (RBIS) to improve ecosystem assessments and policy response.

TRANSFORMING AGRICULTURE WITH VERMICOMPOST AND VERMIWASH



During the seminar held on 17th September 2025, Mr. Vincent Sindikubwabo, Founder and Managing Director of VERMIFAM Ltd, showcased how his enterprise is revolutionizing sustainable agriculture through the Smart Soil+ model. His study demonstrated that using biochar-enriched vermicompost and vermishash, produced from organic waste, can improve soil fertility, increase crop yields, and reduce chemical fertilizer dependence by up to 30%. The project integrates IoT-based nutrient monitoring with farmer participation, offering scalable solutions for climate-smart agriculture and circular bioeconomy development. Recognized as a two-time Global Resilient Agriculture Innovation Challenge winner (2023 & 2025), Mr. Sindikubwabo's innovation contributes to soil health restoration, carbon sequestration, and youth empowerment in green enterprise. [Read more](#)

GENETIC CHARACTERIZATION OF MOSQUITO SPECIES IN AKAGERA NATIONAL PARK



Presented on 1st October 2025 by Mr. Justin Sibomana, a private veterinarian and molecular epidemiologist, this seminar unveiled the first comprehensive genetic assessment of mosquito species diversity in Akagera National Park. From 321 collected samples, 28 species across six genera were identified, with *Mansonia* species dominating at 66%. Through DNA barcoding, 22 species were genetically confirmed, showing notable intraspecific variation between plateau and lowland habitats. These findings form the first molecular baseline for mosquito biodiversity in Rwanda's savannah ecosystems and provide essential data for vector surveillance, disease risk assessment, and wildlife health monitoring in conservation areas.

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MEETINGS & CONGRESSES

From August to October 2025, CoEB participated in major international events, including the AETFAT Congress and AGCBIN Meeting in Ghana, and the 6th World Congress on Agroforestry in Kigali. These engagements strengthened regional collaboration, showcased CoEB's work on biodiversity data, restoration, and youth-led conservation, and reinforced Rwanda's leadership in sustainable ecosystem management.

COEB PARTICIPATION AT THE AETFAT CONGRESS – ACCRA, GHANA



The CoEB delegation took part in the AETFAT Congress in Accra, Ghana, from 3rd to 8th August 2025, under the theme “Exploring Africa’s Algae, Fungi, and Plant Diversity for Conservation in a Changing World.” The congress provided an excellent opportunity for scientists to share research on Africa’s botanical diversity. CoEB highlighted Rwanda’s herbarium collections and their integration into the Rwanda Biodiversity Information System (RBIS), underscoring the importance of accessible biodiversity data for conservation planning.

AFRICAN BOTANIC GARDEN CONSERVATION INTERNATIONAL NETWORK (ABGCI) MEETING – ACCRA, GHANA



Also on 3rd August 2025, CoEB attended the BGCIN meeting in Accra under the theme “Right Tree at the Right Place (RTRP).” The CoEB Director presented progress from the RTRP–Seed Project, focusing on native tree species data compilation, RBIS dataset integration, and science-based restoration planning. Discussions reinforced the need for ecologically appropriate species selection to ensure sustainability and long-term forest resilience.

3RD AFRICAN YOUTH SUMMIT ON BIODIVERSITY – ACCRA, GHANA



During the AETFAT week, CoEB’s young researchers, Ms. Aime Sandrine Uwase and Mr. Salim Kabano, represented Rwanda at the 3rd African Youth Summit on Biodiversity, themed “Consolidating African Youth-led Actions for the Global Biodiversity Framework (GBF).” They presented the Legacy Tree Project and activities from the Rwanda Herbarium, showcasing youth-driven conservation leadership. Their contributions reflected CoEB’s commitment to empowering young scientists in biodiversity action and climate adaptation.

6TH WORLD CONGRESS ON AGROFORESTRY (WCA) – KIGALI



On 22nd October 2025, CoEB participated in the 6th World Congress on Agroforestry (WCA) held in Kigali, contributing to discussions on sustainable restoration under the Right Tree at the Right Place (RTRP) initiative. The CoEB Director presented updates on the RTRP–Seed Project, emphasizing native tree data integration into RBIS and efforts to align agroforestry with climate resilience, biodiversity protection, and sustainable livelihoods.

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OUR RECENT PUBLICATIONS

1. Nsengimana, V., Iradukunda, C. S., Habiyaemye, J. D. D., & Nsanganwimana, F. (2025). Contribution of savanna and forest restoration outcomes on terrestrial arthropod communities in eastern Rwanda. *Discover Environment*, 3(1), 124. [Read more](#)
2. Uwizelimana, J. D. D., Sibomana, C., Nzarora, A., & Gordon, I. J. (2025). Butterfly diversity (Lepidoptera: Papilionoidea) within the Ibanda Makera forest remnant, Eastern Province of Rwanda. [Read more](#)
3. Dusabimana, J. C., Mind'je, R., Mupenzi, C., Mindje, P. K., & Mindje, M. (2025). Spatio-temporal land use/land cover changes and subsequent ecosystem service value dynamics in Musanze District, Rwanda. *Environmental Monitoring and Assessment*, 197(11), 1-19. [Read more](#)
4. Habimana, V., Gaidashova, S., Kalisa, E., Nsabimana, A., Scholz, C. A., & Driscoll, C. T. (2025). Bioaccumulation of Trace Elements in Fish From Lake Kivu and Its Potential Risk to Consumers in Rwanda. *Food Science & Nutrition*, 13(9), e70929. [Read more](#)
5. Duguma, D. W., Löhr, K., Temperton, V. M., Apollinaire, W., Baumann, M., Kaplin, B. A., ... & Fischer, J. Five Frontiers for Science and Practice of Ecosystem Restoration in East African Forest Landscapes. *Integrative Conservation*. [Read more](#)
6. Manzi, O. J. L., Mujawamariya, M., Tarvainen, L., Ziegler, C., Andersson, M. X., Dusenge, M. E., ... & Uddling, J. (2025). Photosynthetic Heat Tolerance Partially Acclimates to Growth Temperature in Tropical Montane Tree Species. *Plant, Cell & Environment*. [Read more](#)
7. Ndayizeye, G., Kmoch, L., Baumann, M., Nsengimana, V., Fischer, J., & Plieninger, T. (2025). Participatory mapping of local people's values in restoration landscapes in Western Rwanda. *Restoration Ecology*, e70217. [Read more](#)
8. Ndatimana, G., Dusabe, M. C., & Albrecht, C. (2025). Bridging riverine and lacustrine systems: Macroinvertebrate indicators of ecological health in the Rwandan Congo basin. *Environmental Monitoring and Assessment*, 197(11), 1218. [Read more](#)
9. Majyambere, M., Niyodushima, P., & Nsabimana, A. (2025). Optimizing Field Taxonomy: Development of a Field-Adapted Identification Key to the Rodents of an Afromontane Tropical Rainforest(2009–2023). *Tropical Zoology*, 38(3-4). [Read more](#)
10. Ndayizeye G, Kmoch L, Baumann M, Nsengimana V, Fischer J, Plieninger T. 2025. Participatory mapping of local people's values in restoration landscapes in Western Rwanda. *Restoration ecology*, 1-13. [Read more](#)
11. Dugger, P. J., Cordeiro, N. J., Mulindahabi, F., Bana, M., & Kaplin, B. A. (2025). Increasing fruiting synchrony at the community level in an Afromontane tropical forest. *Ecosphere*, 16(9), e70409. [Read more](#)
12. Ruticumugambi, J.A., De Smedt, P., Verbeeck, H., Kaplin, B.A., Gatesi, J., Ndoli, A., Uwizeyimana, V., Nkurikiye, J.B., Rutebuka, J., Mugabowindekwe, M. and Vancoillie, F. 2025. Local-scale tree cover modulates pollination services and crop yield in tropical agroforestry landscapes, Rwanda. *Landscape Ecology* 40(9): 182. [Read more](#)

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