

Nigerian Montane Forest Project
Montane Forest Conservation Initiative Nigeria



Annual Report 2023



Biological Sciences
Pūtaiao Koiora

Cover image: Auwal carries tree seedlings during one of the restoration planting days.



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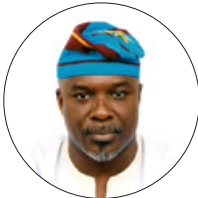
Introduction



Anastasios (Tasso) Paul Leventis - Patron



Phil Hall (Chair)



John Adeyemi Adeleke



Danladi Umar



Jonathan Millard



Hazel Chapman

As I look back on 2023, I feel immensely proud to be part of the Nigerian Montane Forest Project. More than ever, I appreciate the leadership and sense of ownership of the project from the team on the ground at Ngel Nyaki.

I am impressed with the strengthening links between the Project and the local communities. Partnering with the nursery school, teaching in the primary school, working with local beekeepers to increase honey production and running community workshops with the Fulani herders have all contributed towards this increased integration.

A testament to our increasing productivity is the employment of a second Science Coordinator, Jesse Istifanus, to take some of the heavy workload off Gabriel Dabo. Isti oversees forest ecology and restoration and Gabriel the ForestGeo plot and student research.

2023 highlights include the development of new national and international collaborations, the second census of the ForestGeo Plot, eight new postgraduate student projects and the planting of 20,000 more trees, taking our total now planted to over 70,000. We have been recognised by the African Finance Corporation at COP 28 as an exemplar of good practice for forest restoration and have had a wonderful write-up by Mongabay, the high-profile environmental science and conservation news platform, about our beekeeping initiatives.

Better internet means that our weekly zoom meetings with science and management have increased our efficiency. With Professor Danladi Umar in Gombe, Dr Iveren Abiem in Germany, myself in New Zealand and the team on the ground at Ngel Nyaki, the meetings are integral to our success.

It was a pleasure to meet our new Taraba State Commissioner for the Environment and Climate Change, The Honourable Hajiya Aishat Barde and update her and her Ministry on the Nigerian Montane Forest Project. The Commissioner was unequivocally supportive of the work we do.

A sad piece of news is the passing of our Yelwa Village Chief, Jauro Patel. The Jauro was always supportive of the Project and his community and he is greatly missed by us all.

As always, we extend our heartfelt gratitude to our funders, without whom our work would not be possible. We also express our sincere appreciation to our terrific Board members for their unwavering support throughout the year. All of you make invaluable and unique contributions to the Project.

Thanks to Gabriel and Iveren for their input into the writing of this report, and as always, to Matt Walters from the University of Canterbury for putting it together so beautifully.

Hazel Chapman

Executive Director, Nigerian Montane Forest Project

A handwritten signature in black ink that reads "Hazel Chapman".

Our values

Mission Statement

To promote national and international commitment to the conservation of Nigeria's montane forests by inspiring excellence in research by postgraduate students and empowering local communities through employment and education.

Aims

1. To combine scientific research with education at both tertiary and local community level in order to develop long term sustainable management of Nigeria's montane forests.
2. To facilitate the involvement of national and international researchers in Nigerian montane forest research.
3. To involve the community in the management of montane forest ecosystems.
4. To work with the community in other ways, such as developing small businesses and working with schools to develop conservation awareness.



The image shows the Sustainable Development Goals logo, which includes the United Nations emblem and the text "SUSTAINABLE DEVELOPMENT GOALS". Below the logo is a grid of 17 icons representing the goals: 1. No Poverty, 2. Zero Hunger, 3. Good Health and Well-being, 4. Quality Education, 5. Gender Equality, 6. Clean Water and Sanitation, 7. Affordable and Clean Energy, 8. Decent Work and Economic Growth, 9. Industry, Innovation and Infrastructure, 10. Reduced Inequalities, 11. Sustainable Cities and Communities, 12. Responsible Consumption and Production, 13. Climate Action, 14. Life Below Water, 15. Life on Land, 16. Peace, Justice and Strong Institutions, 17. Partnerships for Sustainable Development.

We are committed to biodiversity conservation through working hand in hand with local communities.

We actively pursue our four primary aims above, all of which can be linked to the United Nation's Sustainable Development Goals.

Our networks

We are excited to announce a new core funding partnership with the Africa Finance Corporation (AFC) in 2023. This pivotal support from AFC has revitalized the Nigerian Montane Forest Project, providing the means to continue and expand our essential science, education, conservation, and community development initiatives.



Project Partners / Collaborators

African Nature Investors Foundation (ANI), Nigeria
A.P. Leventis Ornithological Research Institute (APLORI), Jos, Nigeria
Dr Andrew Hacket-Pain, University of Liverpool UK
Dr Silvio Stivanello, University of Exeter, UK
Federal University of Kashere, Gombe State, Nigeria
Gombe State University (GSU), Nigeria
Nigerian Conservation Foundation (NCF), Nigeria
Nigerian Meteorological Institute (NIMET) Nigeria
Nigerian National Parks (NNP), Nigeria
Prof Pierre-Michel Forget, Natural History Museum, Paris, France
Royal Botanic Gardens, Kew, England
Smithsonian Tropical Research Institute-ForestGEO, USA
Taraba State University (TSU), Nigeria
University of Canterbury (UC), New Zealand
University of Exeter, United Kingdom
WAFROEX (West African Export)

Project Funders

Africa Finance Corporation (AFC)
A.G. Leventis Foundation
A.P. (Tasso) Leventis
Retired General T.Y. Danjuma
Stanbic IBTC Holdings PLC
Taraba State Government
University of Canterbury, NZ



Our forest

Ngel Nyaki is representative of the unique forests of the Cameroon mountain chain. Globally important for their endemic plants and animals, these forests are also extremely important carbon stores.

They are locally and regionally important for the ecosystem services they provide; clean water, flood control, medicinal plants, crop pollinators and honey bees.



Alfred (middle) demonstrating seed collection protocol for mast seeding to Aliyu (left) and Thomas (right)

Mast seeding

Mast seeding is a widespread reproductive strategy of some plant species whereby all individuals in a population synchronise their flowering and fruiting, producing enormous amounts of seeds in some years followed by years of low productivity. A leading hypothesis for why masting happens is predator satiation; that is, when trees produce masses of seeds all at once, predators are overwhelmed, and some seeds escape predation to establish into the next generation of trees. In the following lean seed years, predator populations crash. Mast seeding plays a pivotal role in shaping the dynamics and functioning

of forest ecosystems, influencing species interactions, community composition, and ecosystem processes. Historically, masting in tropical forests has been considered unlikely because e.g., most trees are animal dispersed, so fruit production needs to be constant. Our long-term tree phenology data, however, suggest that some species in Ngel Nyaki forest exhibit masting behaviour. To investigate this, in a new collaboration with Dr Andrew Hackett-Pain from the University of Liverpool, we have placed 200 seed traps under 10 individuals each of five species we suspect may mast seed. This will be a long-term study that

will expand our understanding of mast reproduction in tropical trees. Also, climate change may alter the timing and frequency of mast seeding events. For example, changes in temperature and precipitation patterns can disrupt the cues that trigger mast seeding, leading to shifts in the timing of seed production or changes in the frequency of mast years. Through this study we will soon be able to confirm the extent of mast seeding in an Afromontane forest and later begin to understand how climate change may disrupt mass seeding—affecting species resilience and future forest trajectories.

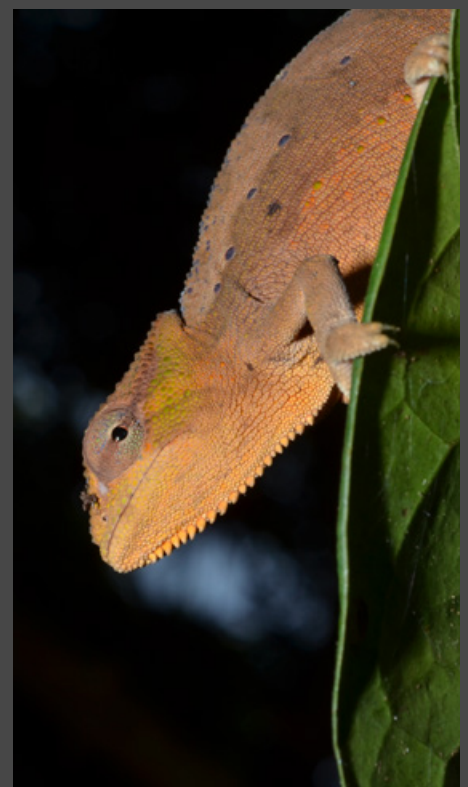


ForestGEO plot data from second census

Data collection and data entry for the Forest Global Earth Observatory (ForestGEO) 20.28 hectare plot has now been completed and the tree maps digitized.

The data files are being converted and checked for errors by Dr David Kenfack and his colleague at the Smithsonian Tropical Research Institute before they are uploaded to the ForestGEO database. Having these data in the Smithsonian database will be a significant contribution to our science as it will not only allow us to understand how the forest has changed in six years, but it also presents an opportunity to contribute our data to studies worldwide exploring patterns and changes in forest ecosystems globally. This generates collaborations with other research scientists.

From the 2023 data we found that 35,388 trees out of the 41,031 trees sampled in 2015 were still alive. We sampled 11,144 newly recruited plants. A preliminary estimation of Above-Ground Biomass Carbon (AGC) of the plot puts it at 129.40 mg C ha⁻¹. In our study in 2021 (Cuni-Sanchez *et al.*, Nature Journal), the AGC stock calculated from our 2015 census data was 120 mg C ha⁻¹. Our finding confirms our statement in the article that AGC stock in African tropical montane forests are higher than previously reported by the intergovernmental Panel on Climate Change (IPCC, 2019). We found that *Anthonotha noldeae* is the species with the highest net AGC in Ngel Nyaki forest.





Focus group discussion session led by Prof. Ali with the Mayo Nyebe community.

Ecosystem service study

The Ecosystem Service Framework is used to understand the relationship between nature and people, thus assessing the ecological importance of ecosystem services may counter the trend of biodiversity loss and ecosystem degradation.

Building on the 2022 Rufford Small Grant conservation project led by Emmanuel Elisha (NMFP) on the perception of ecosystem services by local communities around Ngel Nyaki forest reserve, a research team from the University of Jos and Gombe State University is focusing on the Assessment, Quantification, and Economic Valuation of Ecosystem Services of the Ngel Nyaki Forest. The team includes lead writer Dr Iveren Abiem and Prof. Danladi Umar from the NMFP.

The objectives of this project are in line

with the goals of the UN ‘Five Years of Action’ for the development of mountain regions. Moreover, mountain regions are ideal laboratories to study the evolution of social-ecological systems and to examine the prospects and challenges that such changes have created. The project is funded by a 2022 National Research Fund (NRF) from the Tertiary Education Trust Fund (TET Fund), led by Professor Ahmed Ali, Dr Iveren Abiem, Dr Murna Tela, Dr Susinya Habila, Mr Emmanuel Elisha and Mr Christopher Yohanna.

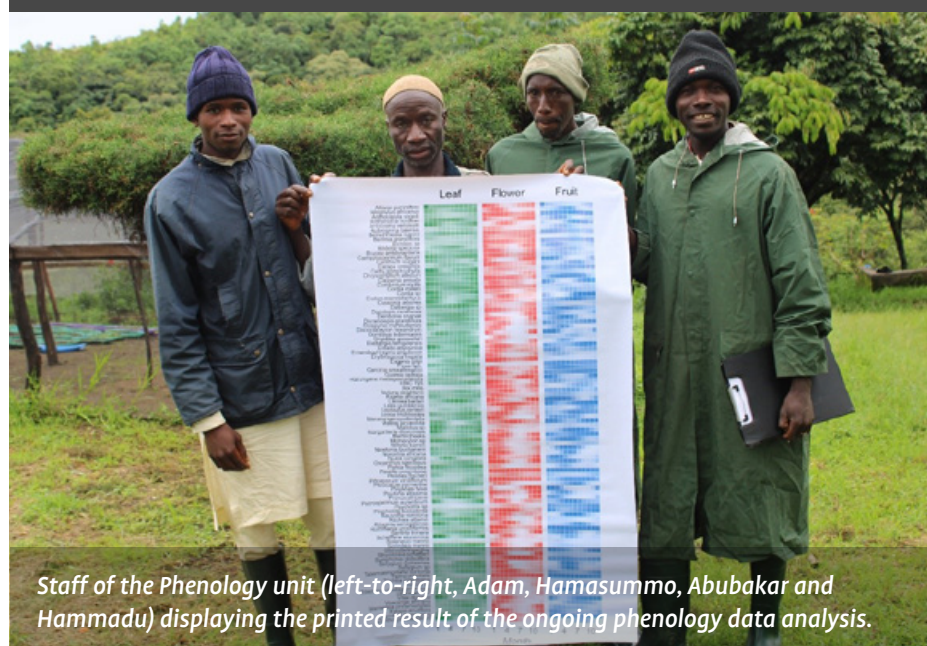
Phenology

Over the past 20 years we have collected monthly records on tree phenology—times of leaf fall, leaf flush, flowering, and fruiting—for almost 2,000 trees within Ngel Nyaki forest.

This year, in collaboration with Dr. Hao Ran Lai at the University of Canterbury, we have analysed some of these data to better understand the life histories of the different tree species in Ngel Nyaki Forest Reserve. More than that, we have found trends in these phenophases relating to climate change and modelled future trajectories based on the tree and climate data. The work has recently been published as a pre-print and is under review for publication in a scientific journal.

Read a pre-print of the paper:

<https://www.biorxiv.org/content/10.1101/2024.03.24.585819v1.abstract>



Staff of the Phenology unit (left-to-right, Adam, Hamasummo, Abubakar and Hammadu) displaying the printed result of the ongoing phenology data analysis.

Students

PhD students

This year we hosted three PhD students for field work at Ngel Nyaki.



Gboyega carrying out vegetation sampling in the grassland.



Schombi with Abubakar and Hammadu establishing line transects for Mammal survey.



Eric in the forest sampling Pleurotus species (Oyster mushrooms)

Awoku Gboyega

University of Canterbury

Year level

The Insect Pollinators of Mambilla Plateau Subsistence Farmland

2023 was Gboyega's last field season. Gboyega's research employs a variety of ecological and experimental techniques to investigate how landscape features impact the presence and activities of insect pollinators on farmlands.

Gboyega and his field assistants have carried out substantial fieldwork across multiple sites on the Mambilla Plateau, providing a better understanding of the critical role of insect pollinators in local agriculture.

We are lucky to have the help of an expert insect taxonomist, Dr Andrew Whittington in the identification of Mambilla farmland pollinators. Andrew has expertise in African farmland insect biodiversity.

Schombi Obidah Schombi

Modibbo Adama University of Technology

The Status and Determinants of Medium and Large-Sized Mammals in the Montane Forest of Ngel Nyaki

Using camera traps and line transects, Schombi is assessing the diversity and status of these taxa within the reserve.

Through this study, we hope to better understand the threats to these animals and design a more targeted conservation plan to ensure their survival.

Eric Bemuh Febnteh

University of Bamenda, Cameroon

Diversity and regeneration status of *Pleurotus* species (oyster mushrooms) and host trees for sustainable management at Etinde, Cameroon and Ngel Nyaki montane forests

Eric's research is documenting the hosts and phenology of the macro fungi and their chemical properties.

Oyster mushrooms are edible mushrooms known for their distinct flavour, so a part of Eric's research is investigating the ethnobotanical uses of the Oyster mushroom by the local community.

Eric has already published one paper from this work (Febnteh et al. 2023).



We remain committed to **high quality training** at tertiary level to build capacity.



Abdulkadir in the field.

Abdulkadir Ahmadu,

Modibbo Adama University of Technology in association with Gombe State University and the University of Canterbury NZ

A major focus of our research and conservation activities at Ngel Nyaki is forest regeneration, which is intricately linked to seed dispersal. Seed dispersal plays a significant role in forest dynamics, biodiversity maintenance, and ecosystem functioning.

Seed dispersal is a significant ecosystem service that birds provide to Ngel Nyaki forest tree species which depend on frugivores for dispersal. Birds are likely more important than ever, now that the populations of the large-bodied frugivores like chimpanzees and putty-nosed monkeys are low.

Abdul's research will focus on seed dispersal of understory tree species by birds and bats in the forest.

Many understory tree species are animal dispersed with fleshy nutritious fruits to attract frugivores, which then disperse the seeds. Seed dispersal plays a crucial role in the spatial distribution, colonization, and regeneration of understory tree populations within forests.

MSc students



Isaac Bawa

University of Nigeria Nsukka

Gastrointestinal parasites of tantalus monkeys (*Clorocebus tantalus*) in the forest fragments of Ngel Nyaki forest reserve

Due to climate change, habitat fragmentation and increasing human population sizes it has become critical to understand the dynamics of infectious diseases in wildlife and the drivers behind their spread.

Given the close phylogenetic connection between nonhuman primates and humans, parasites affecting these species are of particular significance due to their potential for zoonotic transmission and as models for studying social transmission within cohesive social structures. Isaac is investigating gastrointestinal parasites in the tantalus monkey: a common monkey found mostly in the forest fragments of the reserve and are often sighted near human settlements when searching for food.

This research will determine the prevalence of gastrointestinal parasites in tantalus monkeys and examine if this is related the troop size.

Secondly, because of how these monkeys tend to interact with the human population, it is important to identify if any of the parasites are of zoonotic importance as this may pose a threat to the well-being of the people in the community.

Isaac Bawa working in the new lab; screening for gastrointestinal parasites in stool samples from tantalus monkeys



Asibi Wesley

Gombe State University, Gombe

The impact of fruit removal and seed dispersal of *Syzygium* species by primates and some bird species in Ngel Nyaki forest reserve

Syzygium guineense and *Syzygium macrocarpa* are beneficial fruiting plants to the frugivorous birds and mammals in the reserve.

Syzygium produces fruits seasonally, providing frugivores with a reliable and concentrated food source during specific times of the year.

This seasonal abundance can be crucial for frugivores, especially during periods when other food resources may be scarce or less available.

Asibi's research will investigate the impact of fruit removal and seed dispersal by primates and birds on these *Syzygium* species.

Through his research we can understand the significance of these species to ecosystem interactions and functioning e.g., if they are a vital food source for a variety of frugivores, how does this impact on the behavior of these animals and influence the distribution and abundance of frugivores within the reserve.



Bashir Mijinyawa

Ahmadu Bello University, Zaria in association with the University of Canterbury, NZ

Edge effects and tree seedling survival in Ngel Nyaki forest reserve

The influence of edge effects on forest tree trajectories is becoming increasingly significant as many natural habitats continue to be impacted by activities that lead to their fragmentation and consequently making forest edges more prevalent.

Forest edges often experience altered microclimates compared to the forest interior. Factors such as increased light penetration, temperature fluctuations, wind exposure, and moisture levels can create unique environmental conditions along edges. T

hese altered microclimates can influence tree growth, mortality, regeneration, and species composition, thereby shaping the trajectories of forest stands over time.

Bashir is exploring what is filtering seedlings across the forest core-edge gradient.

He would also make a link between the filters and the seedling traits of four key species that are representative of a range of life histories: *Pouteria altissima*, *Entandrophragma angolense*, *Anthonotha noldeae*, *Celtis gomphophylla*.

This research will contribute to our understanding of how forest edges impact tree seedling survival, offering insights into the conservation and management of montane ecosystems, in the face of increased habitat fragmentation and environmental changes.

Findings from this research can guide forest management practices.

Bashir collecting seeds of *Anthonotha noldeae* for his project.

Intern students

This year the Project hosted five Industrial Work Experience Scheme (SIWES) Undergraduate Students from Taraba State University for a period of six months. The students were trained in ecological and conservation research and undertook a small individual research project.



Hassana Ayipe

Hassana began an assessment of climbers and lianas across Ngel Nyaki forest reserve. She collected specimens for the herbarium and worked on identifying the species.



Blessing John

Blessing investigated the macro fungi that inhabit forest litter materials, and how their abundance differ in various parts of the reserve. Her work also brought to light the substrate that these fungi prefer to colonize.



Sandra Kefas

Sandra assessed species richness of mosses in the reserve in relation to their substrate preference. She used quadrats in grassland and core forest to collect moss species as well as recording the substrate that each species inhabit.



Cyprian Msuega

Cyprian investigated the species richness and distribution of ferns across habitats in the reserve. He surveyed all four habitat types and determined the differences in species composition across them.



Manasseh Peter

Manasseh assessed and identified the insect predators of *Carapa oreophila* fruit. Using experimental setup, he incubated matured and immature fruit, collected all insects that emerged, identified them to species level and quantified the level of damage they caused to the fruits.



Mary Sylvester

Mary studied the composition of butterfly species in the reserve, she collected butterfly specimens from around the reserve using sweep net and Pollard walk methods, all collected specimen were identified down to species level.



From Left to Right- Manasseh Peter, Hassana Ayipe, Sandra Kefas, Mary Sylvester, Blessing John and Cyprian Msuega.

Achievements

Gabriel Dabo awarded a ForestGEO research grant

This year, Gabriel, one of our two science coordinators was awarded a ForestGEO research grant to carry out a research project on liana composition and distribution in the Ngel Nyaki forest.

Collaborating with Dr Iveren Abiem, Dr David Kenfack and Prof. Hazel Chapman, his study will provide valuable information about liana diversity and biomass in Afrotropical ecosystem and add to the understanding of liana ecology in Afrotropical regions and promote liana research output from Africa.

Gabriel was one of just six scientists to be awarded a J & J Ruinen Fellowship in tropical Forestry by ForestGEO.



Read the ForestGEO article here:

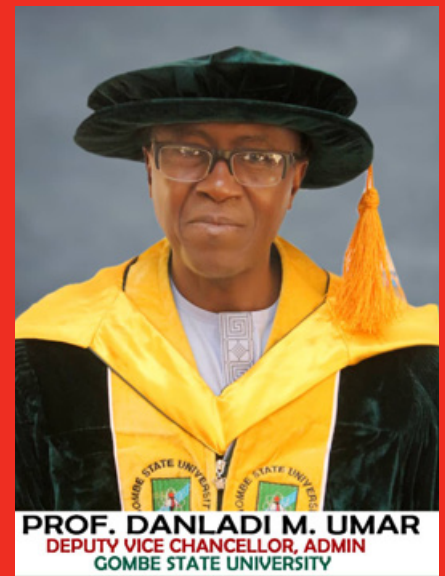
<https://forestgeo.si.edu/blog/jj-ruinen-fellowship-tropical-forestry-announcing-2023-awardees>



Meet Prof. Danladi Mohammed Umar: From NMFP scholar to university leader

Prof. Danladi Mohammed Umar, Deputy Vice Chancellor (Administration) at The University of Gombe, has a story that's a testament to impact the Nigerian Montane Forest Project (NMFP) has had on individual lives. Born in Gombe on December 1, 1962, his journey began with humble beginnings and led him to a groundbreaking PhD experience at the University of Canterbury through the NMFP. This wasn't just a study period; it was a life-changing venture that deepened his love for environmental conservation.

Starting as an assistant lecturer at Gombe State University in 2005, Danladi worked his way up over 16 years to become a professor, and eventually, stepped into the role of Deputy Vice Chancellor. His leadership at the NMFP since 2019 has been a game changer, knitting together Nigerian and international research



PROF. DANLADI M. UMAR
DEPUTY VICE CHANCELLOR, ADMIN
GOMBE STATE UNIVERSITY

efforts that have pumped new life into ecological studies and conservation.

Now as Deputy Vice Chancellor, Danladi is putting everything he's learned into practice, steering the university toward a greener and more sustainable future. His story shows just how far you can go when you combine academic pursuits with a passion for making a difference.



Isti coordinating tree planting in one of our regeneration plots.

Jesse Istifanus becomes our second science coordinator

We are very happy to welcome Isti as our second science coordinator. Istifanus has an MSc in botany from Gombe State University. He knows the Project well, having done his MSc thesis work at Ngel Nyaki between 2019–2023 and then having volunteered and worked with the Project on various science projects. Istifanus is especially interested in endangered tree species and their prorigation.

A new laboratory for the project

The project has an unwavering commitment to facilitate all research activities at the field site.

Consequently, thanks to funding from Retired General T.Y. Danjuma we unveil our new laboratory at the field station. This facility will give our researchers the space and equipment to undertake basic laboratory activities. We hope that in time, we can acquire more equipment for all the important research that we do at the Project.

The new laboratory at the field station.





Staff members of the Project displaying their certificates after completing the workshop.

Staff empowerment

The project's management organized and executed a three-day workshop designed to widen the knowledge of staff around fieldwork.

It was also an opportunity for staff to learn more about what the research they help carry out is used for and its wider implications.

The workshop led by Dr Daniel Ziglah from Gombe State University was aimed at enhancing staff expertise and field capabilities.

The workshop was successful, and the staff welcomed this development that would make them better at their jobs.

They are working to apply the knowledge they gained during this workshop to their work.

Field assistant Helen Andrews goes to university

Helen Andrew, one of the pioneering and leading field assistants for the ForestGEO project and who has been with the project for nine years enrolled for her BSc degree in Botany at the Taraba State University in 2023.

Helen is one among several others from the project who have gone on to pursue higher education: a testament to the project's commitment to supporting the education of indigent peoples.

All the best for your studies Helen but we are incredibly happy that you will continue to be linked with the NMFP ForestGeo plot!



Community initiatives

The local community underpins all our research and conservation work—we depend on their goodwill and cooperation. Thus, regular community engagement is extremely important to the Project.



Volunteer teaching

The Science Coordinators, Project Volunteers, and undergraduate interns have continued to volunteer themselves every Friday to teach the students at the Government Secondary School in Yelwa.

They teach several subjects including Mathematics, English, Biology, Chemistry, Physics, Basic Science, and Basic Technology.

This is extremely helpful for the teachers and students at the school since the school is short-staffed. This initiative was well received and appreciated by the community leaders, parents, and students as it improved their learning outcomes.

Science coordinators Gabriel and Istifanus with student interns with some of the staff- Mrs. Esther, Mr. Shekarau, and Mr. Gongola of Government Secondary School Yelwa.

Stakeholder meeting

We believe successful conservation requires an integrated approach, considering the needs and perspectives of all stakeholders.

It must integrate traditional knowledge with scientific expertise and promote equitable resource-sharing arrangements. It needs to foster community participation in decision-making processes. Thus, this year we organised a stakeholder meeting with the permission and assistance of the Jauro, inviting all cattle owners whose grazing land borders on the



The management and some staff of the project together with the late Jauro Patel and cattle owners around Ngel Nyaki.

reserve to work collaboratively to finding sustainable solutions that balance our conservation goals with the needs of the herding communities. The outcome has been overwhelmingly positive. This year, we recorded fewer incidents of fire in the

reserve and fewer conflicts resulting from cattle trespass. This is encouraging and emphasizes the value of collaboration and conversation in developing long-term solutions to environmental concerns.

Conservation awareness

Another initiative aimed at reinforcing a positive relationship with the local community and at the same time advocating for the conservation of the biodiversity that Ngel Nyaki was a 'conservation awareness campaign.' The

team, including our science coordinators and management group, and our immediate past Science Coordinator, Emmanuel Elisha, visited the villages surrounding Ngel Nyaki forest reserve. They talked about conservation, the

value of trees and explained our NMFP tree planting campaign. Through this initiative, we have witnessed increased community engagement and support. Residents have actively participated in planting activities in the Reserve.



Elisha and Gabriel, interacting with the local community members at Yelwa village.

Our activities encourage participation by all.

10 REDUCED INEQUALITIES



Members of the Fulani (cattle herders) community talking with the Project about conservation and the benefits that the Project are providing to their people.



The nursery school children singing their song about the forest and its importance to their community.



The junior and senior Yelwa youth football teams—both teams help the Project in many ways, including tree planting and in fire control. The Project offers the top academic achievers in each team a scholarship towards their school fees.

Next year will see the first all woman's team- watch this space!

Publicity and partnerships



View the full white paper here:
<https://s3.eu-central-1.amazonaws.com/afc-assets/afc/AFC-Africa-Finance-Corporation-White-Paper-FINAL.pdf>

A reforestation & conservation model for Africa

The African Finance Corporation (AFC) in its publication “How Africa Can Unlock World’s Most Promising Net-Zero Solution” described NMFP described as a model for reforestation and conservation for the continent.

In the words of the writers, they say:

“The NMFP’s research has enabled the exploration of various reforestation techniques, leading to the conclusion that enhancing existing forests is more effective and sustainable than creating new ones.

Observations in mid-2023 suggest a significant development: the forest is regenerating at an accelerated rate compared to previous years. This phenomenon is currently under detailed study to comprehend the underlying factors and ways to further expedite this process.

The AFC is enthusiastic about these advancements and is looking forward to a deeper collaboration with the NMFP. The goal is to gain a comprehensive understanding of the reforestation strategies employed at Ngel Nyaki, and how these practices can be adapted and applied to other conservation projects throughout the continent.”

We continue to **strengthen and grow our partnerships**, locally, nationally and globally.

17 PARTNERSHIPS FOR THE GOALS



In October, we hosted Orji Sunday, a journalist from Mongabay, the American conservation news web portal that reports on environmental science and features extensive information on tropical rainforests.

Orji wrote about activities at the Project alongside the rich culture of the communities on the Mambilla Plateau.

Read the full article here:

<https://news.mongabay.com/2024/02/ bees-bring-honey-and-hope-to-a-forest-reserve-in-nigeria/>

Journalist Orji Sunday (Middle), with the members of the Yelwa community.



Bees bring honey and hope to a forest reserve in Nigeria

by Orji Sunday on 24 February 2024



- Nigeria's Ngel Nyaki Forest Reserve boasts more plant species than any other montane forest in Nigeria.
- The reserve is also home to a small population of endangered Nigeria-Cameroon chimpanzees.
- However, human pressures have resulted in deforestation of portions of Ngel Nyaki.
- An initiative hopes to safeguard and rehabilitate Ngel Nyaki's habitat by training community members in beekeeping.

YELWA, Nigeria — Nightfall at the Ngel Nyaki Forest Reserve field station is clad in the whispers, chirps and trills of insect song. Flames from the burning wood in the fire pit pierce the darkness as flashlights held by field assistants and patrollers reveal a river of fog flowing over



Conservation and restoration

Science coordinator, Gabriel (right), and the Head of the Nursery Unit, Augustine (left) during the regeneration activity.



70,000
seedlings and
seeds planted for
forest restoration
in the grassland.

Tree planting

In addition to the five sites we are monitoring for passive restoration – that is, sites that are protected from fire and burning and left to regenerate naturally, we have also fenced off 191 ha around the top perimeter of the Reserve in which we have now planted over 70,000 seedlings and seeds. This has been made possible with the help from the local communities bordering the reserve.

13 CLIMATE ACTION





Dombeya ledermannii project

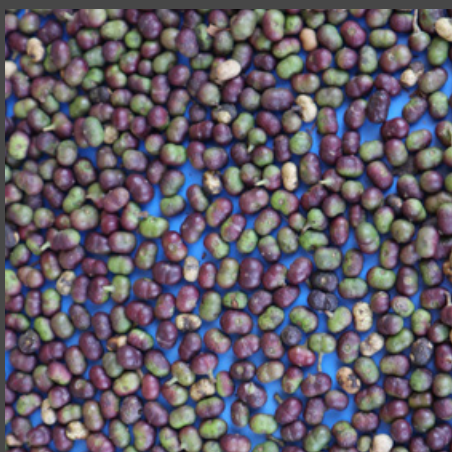
This year a team of four researchers are working on the ecology and conservation of *Dombeya ledermannii*, an endangered small grassland tree belonging to the Malvaceae family. It is only found in Cameroon and Nigeria, and in Nigeria only on the Mambilla and Jos plateaus.

Their research, funded by Conservation Leadership Programme (CLP) focuses on

assessment of threat and challenges that this plant faces, ways to mitigate these threats and conservation awareness about the importance of preserving this rare plant species.

They will also raise seedling of *Dombeya* to incorporate it into our ongoing regeneration activity here in the reserve.

The Dombeya ledermannii project team Thaddeus Pev, Simon Ojodomo, Glory Ozoji and Jude Philip with members of Yelwa community after a successful conservation awareness workshop.



Endangered plants project

An essential aspect of our conservation efforts is the regeneration of endangered plant species.

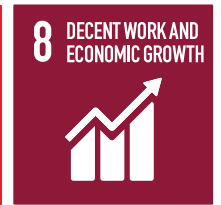
To this end, we have collected seeds from several ICUN endangered plant species, including *Prunus africana*, these threatened plants. Concurrently, we are monitoring the survival and growth of these seedlings.

This effort is important to ensure the proper preservation and propagation of these endangered species within the Reserve.

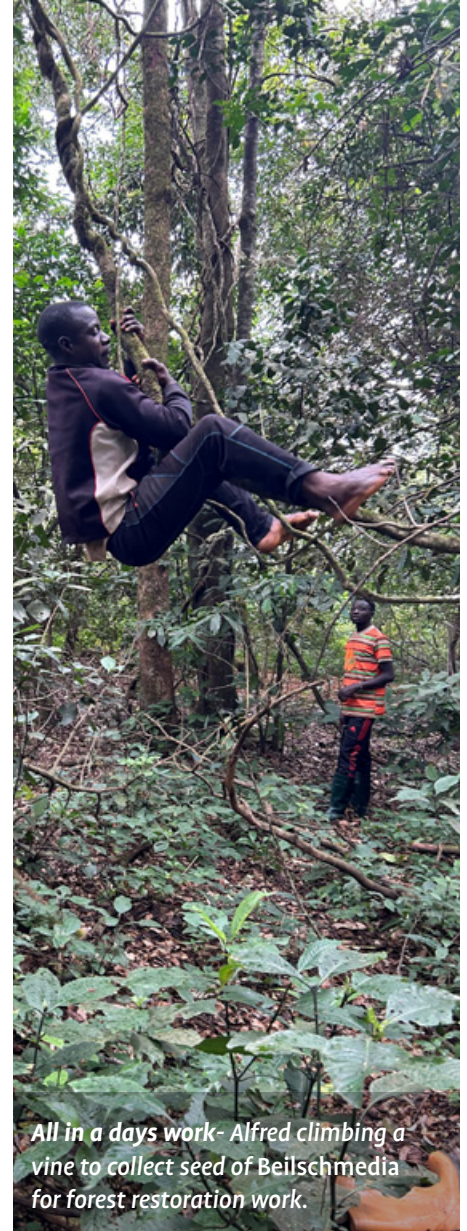
Seeds of the ICUN Red Data Listed Prunus africana.

Our people at work

We provide **long-term employment with training opportunities** for local communities.



Fence maintenance is ongoing- the fence keeps cattle and fire out of the forest reserve.



All in a days work- Alfred climbing a vine to collect seed of Beilschmedia for forest restoration work.



Misa and Hazel have been working together since 2005.



Fruits of Beilschmedia.



The team tree planting into grassland outside of the forest.



The team pitch in to construct another tree nursery to accommodate even more tree planting.



Misa with Ahmadu Lazarus, Taraba State Forest and Climate Change officer, Jalingo.



Exodus Samuel, Abubakar Musa and Joel Idi sorting Anthonotha seeds for planting directly into the grassland.



Going on an expedition to Kurmin Danko during November 2023.



Research papers

Papers published

- Alström, P., Mohammadi, Z., Donald, P. F., Nymark, M., Enbody, E. D., Irestedt, M., ... & Stervander, M. (2023). Integrative taxonomy reveals unrecognised species diversity in African *Corypha* larks (Aves: Alaudidae). *Zoological Journal of the Linnean Society*, zlad107. <https://academic.oup.com/zoolinnea/article/200/4/1080/7285693>
- Duru, C. E., & Kulawe, D. (2023). Diversity, Distribution and Abundance of Solanaceae Family Species at Ngel-Nyaki Forest Reserve, Taraba State, Nigeria. *Bima Journal of Science and Technology* (2536–6041), 7(4), 38–45.
- Elisha E.B., Bolade, I. A., Kazeh, N. W, Mohammed, A., Mafenne, A. N. & Dahiru S. (2023). First description of the eggs and nestlings of Petit's Cuckoo-shrike *Campephaga petiti*, and first records of its breeding in Nigeria. *Malimbus* 45:1–7

- Febnteh, E. B., Anjah, G. M., Kinge, T. R., & Ambebe, T. F. (2023). Abundance and Diversity of *Pleurotus* Species and Host Trees for Sustainable Management in Ngel-Nyaki Montane Forest Ecosystem. *East African Scholars Multidisciplinary Bulletin*, 6(5), 45–53.
- Lai, HR, Hill T, Stivanello S, Chapman HM (2024) Discordant changes in foliar and reproductive phenology of tropical dry-forest trees under increasing temperature and decreasing wet-season rainfall <https://www.biorxiv.org/content/10.1101/2024.03.24.585819>
- Soba T.M., Abdulazeez B.S, Ndagi H.I (2023). Comparative Assessment of the Effects of two Vegetation Zone Forests on Plant Litter Quantity and Quality in Taraba State, Nigeria. *East African Scholars Journal of Agriculture and Life Sciences*, 6(7), 133–140.

Papers submitted

- Abiem, I., Kenfack, D., and Chapman, HM. (2023) Investigating the effect of plant-soil feedbacks and intraspecific competition on species coexistence in a Tropical Afromontane Forest. Submitted to *Journal of Ecology*

Talks

- Iveren Abiem: "The role of biotic interactions in driving tropical forest diversity" for the Nigeria Bird Atlas Project.
- Hazel Chapman "The Nigerian Montane Forest Project" for "Fresh Thinking" - a University of Canterbury series.

Social media

Our social media following continues to grow.

1,200 X followers

2,200 Facebook members

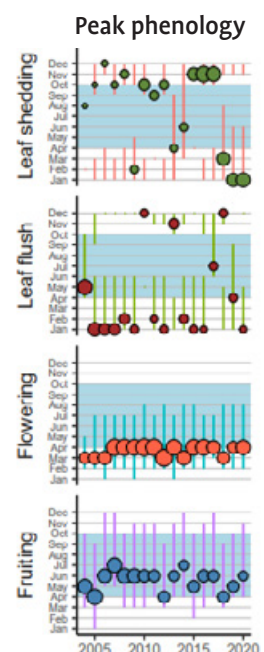


Hao Ran Lai

Our study shows contrasting patterns in leaf and reproductive phenology. Fewer fruits and more leaf shedding suggest decreased productivity, affecting frugivores and nutrient cycling. Asynchronous leaf shedding may disrupt ecosystem rhythms by uncoupling from reproduction. Varying responses to climate change imply Ngel Nyaki forest may shift away from evergreens towards more deciduous species dominance.

Community-level phenology across years.

Calendar month when the community is predicted to reach peak phenology. Points and error bars are circular median and interquartile range, respectively. Larger point size indicates higher peak intensity. Light-blue shaded regions denote the historical wet season.





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