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SUMMARY

In this project, we identified eight communities and three ethnic groups around the reserve. We also interacted with members of the communities. And from this interaction, we gather that the reserve is important to them as it provides medicines, wild fruits, craft materials, honey and lichen, a source of income. Through the interaction and subjective interview, we were able to identify 86 plant species that are important to the communities. Propagation of the most mentioned tree species Seedling donation was carried out in two phases. The first phase donation of ten (10) seedlings to ten individuals from each community we interacted with, and the second phase was a donation 700 seedlings to all the communities, each community receiving at least 80 Konkoli (*Beilshcmiedia mannii*) seedlings through the village head leader.

1.0 INTRODUCTION

Engaging local communities cannot be ruled out in the conservation of biodiversity. In addition to this, understanding community perception about any protected area can provide useful information in conservation management plans. Protected areas can be managed successfully if the local communities living around them are involved in their protection. This is why my team and I decided to engage the surrounding communities around Ngel Nyaki Forest Reserve to understand their perceptions on preserving the largest remnant of the montane forest on the Mambilla plateau. This project involved eight communities surrounding Ngel Nyaki Forest Reserve (Fig. 1).

The project's specific objectives were:

- a. To understand the perception of the surrounding communities of Ngel Nyaki Forest Reserve
- b. To identify the ecosystem service provided by the forest reserve to the surrounding communities.

2.0 METHODOLOGY

2.1 Communities Interaction

Ngel Nyaki is surrounded by eight communities remotely located at the edges of the Forest Reserve. These includes Yelwa, Gidan Musa, Panso, Dombo Gishi, Dujure, Mai Wuya, Mayo Yembe and Zongo Ajiya. These communities are mainly peasant farmers and cattle headers. My team and I successfully visited and interacted with the eight communities within a period of six months (Fig. 1).

We conducted a pilot survey through visits and interacted with community head leaders. This was followed by semi-structured interviews based on Cuni-Sanchaz et al (2019) methods with individuals to identify the ethnic groups, conservation awareness talks and interactions to identify tree species and their importance, seed collection and propagation of the most mentioned tree species. From the results of our interaction, seeds of the most valuable and most utilized tree seeds were collected and propagated which were later given back to the communities. A total of one Hundred (100) seedlings were donated to the communities, each community receiving 10 seedlings.

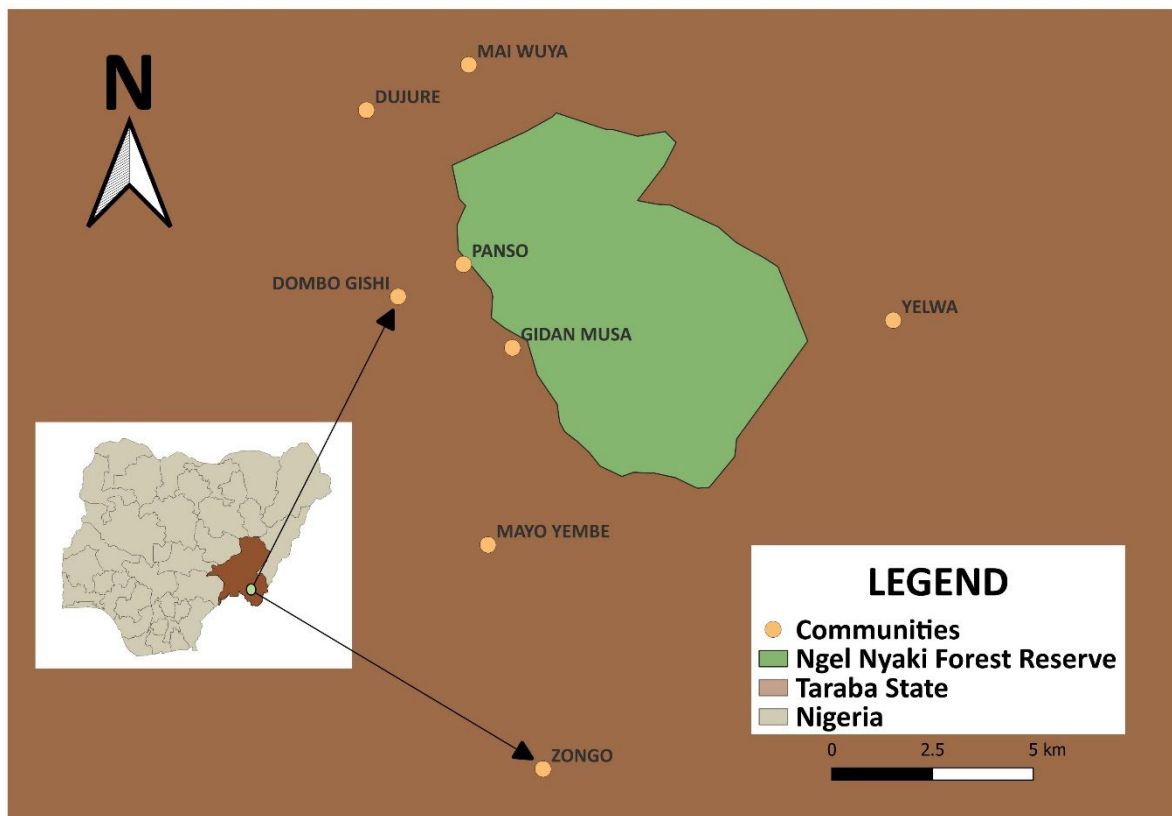


Fig. 1: Ngel Nyaki Forest Reserve with surrounding communities (source google map 2023)

Subjective interviews with individuals were conducted for each community visited. All members of the communities who turned out for the awareness campaign were asked to bring along at least any five valuable plant parts (Leaf, fruit, flower, seed, or bark) they know and has been useful to them or to their forefathers. In addition, we had a short walk around the forest reserve for them to identify other plant species and freely share their knowledge about the plant identified in the local language.

We engaged them with questions such as:

- i. What is the local name of the plant?
- ii. What benefits do you derive from the forest reserve? (Medicine, food, craft)?
- iii. What do you think of Ngel Nyaki Forest Reserve?
- iv. What is/are the plant/tree species that have benefited you or your grandparents?
- v. What part of the plant is used?
- vi. How is the plant part used?
- vii. How many of this plant is remaining in the forest?
- viii. What is your idea about protection of the Forest your parent once used?
- ix. Do you feel it is for your good the forest was protected?

3.0 FINDINGS

3.1 Plant Identification

My team and I interacted with at least 10 individuals from each community. Each plant brought by the members of the communities were identified and the team members who spoke the local language inquired about the local name of the plant and its uses. A phone recorder was used to record the interactions and common and/or scientific names were recorded when plant ID was confirmed.

A total of 86 plant species (herbaceous, lianas and woody) belonging to 42 families and their uses were identified. Most of the plants were also identified in Fulfulde, Mambila and Ndola dialects (appendix 1). This corresponds to the list of species in Chapman and Chapman (2004).

3.2 Ethnic groups

We identified five (5) ethnic groups around forest edges of the reserve. The ethnic groups include Ndola, Fulani, Kambo, Kaka and Mambila. However, Ndola was identified to be the major ethnic group and most speaking dialect in Panso, Dujure, Dombo Gishi, Mayo Yembe and Mai Wuya while Fulfulde is a general spoken dialect in all the eight communities (table 1). Most plants were identified in Fulfulde. Only few elderly men in their 50s were able to identify plant species in local dialect (Mambila and Ndola). (Appendix 1)

Table 1: Communities visited and the languages they speak -

Communities	Mambila	Ndola	Kaka	Kambo	Fulani
Panso	-	+	-	-	+
Gidan Musa	-	+	-	-	+
Dombo Gishi	-	+	-	-	+
Mai Wuya	-	+	-	-	+
Mayo Yembe	-	+	-	-	+
Zango Ajiya	+	+	+	-	+
Dujure	+	+	-	-	+
Yelwa	+	+	+	+	+

3.3 Seedling donations

In addition to 100 seedlings donated to the communities, one thousand (1000) seeds were also planted, seven hundred survived and reach reasonable growth for transplanting. We were able to distribute a total of 700 seedlings to the communities, each community out of eight communities having at least 80 and 120 seedlings. These seedlings were distributed to the communities to make a plantation of *B. mannii* (Konkoli).

3.4 Seedling Monitoring

My team and I revisited the communities in June 2023 to assess the status of seedlings earlier donated in 2022. Out of the 700-seedling donated, 500 seedlings survived. While on the second visit to the communities, Dombo Gishi, Gidan Musa and Panso

had successfully raised 900 seedlings, 300 each among the three communities. The seedlings were a composition of *Beilschmiedia mannii*, *Irvingia gabonensis*, and *Elaeis guineensis*.

3.5 Ecosystem Services

An interaction with the individual also revealed a list of resource currently enjoyed by the surrounding communities (Table 2). The list of services was classified according to millennium Ecosystem assessment (2005) (table 2).

3.6 Community perception

Interaction with the community reveal their understanding of the importance of the Ngel Nyaki Forest Reserve. The number of reports of these plant species uses mentioned was also calculated (Table 3).

Table 2: Ecosystem Services identified by communities that they derive from Ngel Nyaki Forest Reserve.

S/N	Direct benefit derived	Ecosystem Classification
1	Honey	Provision/Support
2	Water	Provision/Support
3	Herbs (medicine)	Provision
4	Wild yam	Provision
5	Thatched grass	Provision/Culture
6	Twines	Provision
7	Wild Yam	Provision
8	Wild fruits	Provision
9	Drum-wood	Cultural
10	Spices	Provision
11	Condiments	Provision
12	Air	Regulation
13	Lichens	Provision
14	Mushroom	Provision
15	Ancestral home	Cultural/Religion

Table 2: User report from the interactive session

S/N	Category	User Report (UR)	Percentage
1	Craft	4	3.85
2	Food	20	19.23
3	Beverage	1	0.96
4	Medicine	54	51.92
5	Fodder	1	0.96
6	Fuel wood	1	0.96
8	Poison	1	0.96
9	Condiment/Spices	11	10.58
10	Fruit	8	7.69
11	Aesthetics	1	0.96

12	Cultural	2	1.92
	Total	104	100

4.0 EVALUATIONS AND MONITORING

Interaction with community leaders before meeting with members of the communities was a key factor in gaining the community trust and confidence to share their view about Ngel Nyaki Forest Reserve. These enabled the members to give a list of plant species that are being accessed from the reserve as well as a list of other forest products such as lichens, honey and mushroom.

Feedback from the individual we interacted with at the pilot survey revealed the importance of community involvement in conservation projects. They confidently express their interest in protecting the reserve as it is their ancestral heritage that needs to be kept for generations to also inherit the knowledge of its composition, in terms of its biodiversity.

Willingness of some of the members of community to established self-owned plantation of Forest trees also revealed the success of our project fully sponsored by Rufford small Grant. This entails a change of ideology in total dependence on the forest reserve. Having self-own reserve will reduce pressure on the reserve.

We also identified land areas where the communities will prefer planting tree species. Most individual prefer to have these wild trees around their homes and self-owned lands of individuals than having seedlings planted in community land.

5.0 CHALLENGES/ LIMITATION

1. It was observed during seed collection, target tree species did not bear fruit during the period of the work. This is assumed to be linked with the changes in phenology and fruiting seasonality. However, we were able to collect and planted the seeds of Konkoli (*Beilschmiedia mannii*) which was available during the period of the work.

How it was handled

Since many seeds were not available as at the time of the project, we concentrated in raising the available seeds which was *B. mannii*. And gave a general demonstration of how to raise similar wild seedlings.

2. My team and I attempted to propagate few seeds of *Prunus africana*, *Pterocarpus erinaceus* but not much of the seedling survived. This was attributed to herbivory by rodents and insects.

How it was handled

My team and I had to make fence using kitchen wires to protect against herbivores and insects.

3. Not much of the grass's seeds were available to cultivate for the Fulanis. However, a discussion with most of the individuals showed some interest to cultivate and develop a piece of land for experimentation using three (3) cattle and subsequently expand in the future.

An interaction with Fulanis revealed only few individuals are willing to adopt the idea of ranches. However, they confirmed if improved grass species can be introduced, they are willing to adjust to confining their cattle to grazing in self-own lands.

6.0 FUTURE PLANS

Most members of the communities showed interest in having self-owned plantation of wild trees. With this, we will continue to work with these large group of the people to empower them with some skills and support to establish and maintain self-owned plantations of wild species which have been identified to have financial and economic benefits. Though it may take a lifetime, nevertheless, the people will need to train on a sustainable method of collecting herbs for medicines; utilizing forest edges for bee keeping rather than wild collection of honey which is not sustainable. These are all part of the skill and empowerment the communities will get support from Nigerian Montane Forest Project (NMFP) to reduce pressure on the reserve.

It is worth mentioning here that every individual we interacted with kept wishing they can be given more piece of land at the forest edges for farming and grazing. Giving part of the forest for agricultural activities will not solve the quest for demanding more land for agriculture. To mitigate this, future plan is to empower and equipping the communities with agricultural skills that will be self-sustaining. With better skills and improved seeds, the vast community lands not cultivated can be utilized without encroaching into the reserve. Introduction of improved grasses as fodder will be required to further shift the attention of herders from the reserve.

CONCLUSION

The project has achieved it's set objectives of promoting a better understanding between the NMFP and the forest-edge communities and working with the communities to plant useful forest tree species on farms and round Fulani compounds. This project has further given the communities a sense of belonging as they expressed willingness to partner with NMFP in conserving Ngel Nyaki Forest. The results obtained will be used in engaging communities in the conservation of biodiversity of Ngel Nyaki Forest Reserve.

Appendix 1: Plates



Plate 1: Some members of the communities **a, b, c, d** Yelwa, Mayo Yembe, community, Gidan Musa and Dombo Gishi communities. Photo credit: Emmanuel B.E., Usman A.



Plate 2: Planting seedling of *Beilschmiedia* (Konkoli) around home (Photo credit: Usman A.)



Plate 3: Alfred Christopher and Helen Andrew heading to Mayo Yembe Village (Photo credit: Emmanuel B. E.)



Plate 5: Team members crossing Mayo Lugungo (Thomas Patick behind on blue jacket, Julius, Hammasumo Usman and Dauda Abubakar)



Plate 5: *Beilschmiedia* seed propagation (Photo Credit Emmanuel B. E.)



Plate 6: Nursery of Palm Kernel raised by member of Mayo Yembe Community (Photo credit: Emmanuel B. E.)

Appendix 2: Tables

Table 1: List of Plant species and local name

S/N	Family	Plant species	Mambilla	Fulfude	Ndola
1	Caesalpinoideae	<i>Afzelia african</i>		Kawohi	
2	Memosoideae	<i>Albizia sp</i>	Yomen	Yamerehi	
3	Euphorbiaceae	<i>Alchonea laxiflora</i>		Karkandam	
4	Zingiberaceae	<i>Alfromonum sp</i>	Gwa	Sitta lainde	
5	Sapindaceae	<i>Allophylus africanus</i>	Tager	Buduchi	
6	Bombacaeae	<i>Andasonia digitata</i>		Bokki	
7	Annonaceae	<i>Annona senegalensis</i>		Dukkuhi	Aboha
8	Combretaceae	<i>Anogeiosus leicarpus</i>		Gosgahi	
9	Loganiaceae	<i>Anthocleista vogelii</i>	Taroo		
10	Caesalpinoideae	<i>Anthonotha noldeae</i>		Kojoli	
11	Asteraceae	<i>Aspilia africana</i>	We-el	Sonyonai	
12	Meliaceae	<i>Azadiractha indica</i>		Neem	
13	Lauraceae	<i>Beilschmiedia mannii</i>	Ngwe	Konkoli	
14	Bombacaeae	<i>Bombax costatum</i>	Zankum	Bantahi	Pumma
15	Arecaceae	<i>Borasuss aethiopum</i>		Dub-i	
16	Euphorbiaceae	<i>Bridelia ferruginea</i>		Bududi dimi	Akwaa
17	Euphorbiaceae	<i>Bridelia sp</i>	Jar	Mburumburum	
18	Ochnaceae	<i>Campylospermum flavum</i>		Kokarahi	
19	Rubiaceae	<i>Canthium sp</i>		Jagarahi	
20	Meliaceae	<i>Carapa oreophyla</i>		Karangahi/Karangatu	
21	Asteraceae	<i>Chromolaena odorata</i>		Bukasa	
22	Combretaceae	<i>Combretum molle</i>	Veer	Sakatahi	
23	Rubiaceae	<i>Crossopterynx febrifugum</i>		Remajogohi	
24	Euphorbiaceae	<i>Croton macrostachyus</i>	Buor	Ngalawahi	
25	Araliaceae	<i>Cussonia arbonea</i>	Banker	Hoyahi	Adop
26	Caesalpinoideae	<i>Daniellia olivari</i>		Kayalahi	

27	Sapindaceae	<i>Deinbolia sp</i>	Gib		
28	Memosoideae	<i>Dichrostachys cinerea</i>	Tuo njerre	Burle	
29	Melastomataceae	<i>Dissotis</i>	Ndakal	Gaku	
30	Steculiaceae	<i>Dombeya ledermannii</i>	Te-el	Dalamhi	
31	Arecaceae	<i>Elaeis guineense</i>	Mba'a	Kwaraje	
32	Memosoideae	<i>Entada abyssinica</i>	Bo'om	Pelwahi	
33	Papilionoideae	<i>Erythrina senegalensis</i>	Gomm	Bordilohi	Ndeya
34	Papilionoideae	<i>Erythrina sigmoidea</i>	Gomm	Bantahi	Ndeya
35	Myrtaceae	<i>Eugenia gilgii</i>		Muramoda	
36	Moraceae	<i>Ficus sp</i>	Boll	Cediyahi	
37	Moraceae	<i>Ficus sur</i>	Tagar	lbbe	
38	Clausiaceae	<i>Garcinia sp</i>	Nger	Dankamaru	Ambata
39	Rubiaceae	<i>Gardenia eurobecens</i>	Ndeng	Dingali	
40	Clausiaceae	<i>Harungana madagascariensis</i>	Jeou	Burugalhi	
41	Hymenocardiaceae	<i>Hymenocardia acida</i>	Korr	Yewasettohi	
42	Aquifoliaceae	<i>Ilex nutis</i>		Ndanehohi	
43	Poaceae	<i>Imperata cylindrica</i>	Liel	Sojo	
44	Euphorbiaceae	<i>Jatropha curcas</i>		Kwalakwalahi	
45	Meliaceae	<i>Khaya senegalensis</i>		Kahi	
46	Bignoniaceae	<i>Kigelia africana</i>		Jirlahi	
47	Apocynaceae	<i>Landolfia sp (Small fruit)</i>	Larum	Tibokko	
48	Apocynaceae	<i>Landolfia sp (large fruit)</i>	Mamber	Pogije	
49	Anacardiaceae	<i>Lannea sp</i>		Sonyi	Aruma
50	Ochnaceae	<i>Lophira lanceolata</i>	Tuo nu	Karehi	
51	Maesaceae	<i>Maesa lanceolata</i>		Belbelhi	
52	Rubiaceae	<i>Musaenda acuarata</i>		Bue pabi	
53	Lamiaceae	<i>Ocimum gratissimum</i>			
54	Memosoideae	<i>Parkia biglobosa</i>	Manyer	Narehi	
55	Arecaceae	<i>Pheonix reclinata</i>	Zorr	Dalle	
56	Phyllanthaceae	<i>Phyllanthus muellerinus</i>		Ribrihi	Simsa
57	Caesalpinoideae	<i>Piliopstigma thonningii</i>		Barkehi	Bartejo

58	Piperaceae	<i>Piper sp</i>	Lomm		
59	Pittosporaceae	<i>Pittosporum tenuifolium</i>		Nyanyulehi	
60	Araliaceae	<i>Polyscias fulva</i>	Ruon	Lekko mbaggu	
61	Protaceae	<i>Protea madiensis</i>		Lebrehi	
62	Hypericaceae	<i>Psorospermum aracuatum</i>	Ghar	Sawaiki	Shiminshiya amma
63	Rubiaceae	<i>Psychotria sp</i>	Njar	Burudeje	
64	Dennstaedtiaceae	<i>Pteridium aquilanium</i>	Enkon	Agugu	
65	Caesalpinoideae	<i>Pterocarpus erenaceus</i>	Tuo homme	Banohi	Ajengha
66	Apocynaceae	<i>Rauvolfia vomitorea</i>		Kofa	
67	Euphorbiaceae	<i>Ricinus comunis</i>	Chur	Jurman	Angeren
68	Rosaceae	<i>Rubus sp</i>	Tambul borre	Nyamdu baka	
69	Rubiaceae	<i>Sarcocephalus latifolius</i>		Bakurehi	Afula
70	Malvaceae	<i>Sida acuta</i>	Weé	Saldori	Nyinna
71	Solanaceae	<i>Solanum sp</i>	Ngoó	Kuwitaje	
72	Poaceae	<i>Sporobolus pyramidalis</i>	Gwur	Pagame	
73	Clausiaceae	<i>Symphonia globulifera</i>		Kandihi	
74	Myrtaceae	<i>Syngium macrocarpum</i>	Enkan	Malmoje	
75	Myrtaceae	<i>Syzygium guineense</i>	Tawur	Sumsum	
76	Caesalpinoideae	<i>Tamarindus indica</i>		Jab-i	
77	Loranthaceae	<i>Tapinanthus sp</i>	Dalap	Sohore	
78	Papilionoideae	<i>Tephrosia vogelii</i>	Twin	Yomji	
79	Combretaceae	<i>Terminalia ivorensis</i>	Thor	Kulahi	Attaa
80	Ulmaceae	<i>Trema orientalis</i>		Gauri chollihi	
81	Rutaceae	<i>Vepris sp</i>		Komhi	
82	Asteraceae	<i>Vernonia agbmadalina</i>	Luwe	Suwankali	
83	Lamiaceae	<i>Vitex doniana</i>	Tergen	Bummeje	Galbije
84	Melastomataceae	<i>Warneckea cinnamomoides</i>		Gaudehi	
85	Annonaceae	<i>Xylopiia sp</i>		Kimbhi	
86	Rutaceae	<i>Zanthoxylum sp</i>		Pasakorihhi	

REFERENCES

Chapman, M. H., Olson, M. S. and Trumm, D. (2004). A report on the montane forests of Taraba State Nigeria, and an assessment of how they have changed over the past thirty years. *Oryx* 38(03):282 - 290.

Cuni-Sanchez, A., Sullivan, M. J. P., Platts, P. J., Lewis, S. L., Marchant, R., Imani, G., Hubau, W., Abiem, I., Adhikari, H., Albrecht, T., Altman, J., Amani, C., Aneseyee, A. B., Avitabile, V., Banin, L., Batumike, R., Bauters, M., Beeckman, H., Begne, S. K., ... Zibera, E. (2021). High aboveground carbon stock of African tropical montane forests. *Nature*, 596(7873), 536-542. <https://doi.org/10.1038/s41586-021-03728-4>

Millennium Ecosystem Assessment (2005). *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC.

Pardo-de-Santayana, M. (2008). Cultural Importance Indices: A Comparative Analysis Based on the Useful Wild Plants of Southern Cantabria (Northern Spain). *Economic Botany* 62, 24–39. <https://doi.org/10.1007/s12231-007-9004-5>