



LOCAL KNOWLEDGE AND USE OF WILD EDIBLE PLANTS IN EASTERN PART OF NYUNGWE NATIONAL PARK IN RWANDA: PROSPECTS FOR FOREST BIODIVERSITY CONSERVATION

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ABSTRACT

*This research explored the local knowledge and use of wild edible plants in Nyungwe National Park (NNP) and its vicinity. Data were collected through semi-structured interviews with local elders on the use and knowledge of wild edible plants. Further, wild edible plants reported from the survey were investigated across transects and quadrats in NNP. Taxonomy of collected plants to species level, the identification of used and eaten parts, and the frequency of consumption were studied. A total of 35 species grouped into 21 families dominated by the families of Brassicaceae, Amaranthaceae, Cucurbitaceae, Rosaceae, Solanaceae, and Cyperaceae were the most known and used by local people. Three species namely *Begonia meyeri-johannis*, *Carapa grandiflora* and *Rubus kulinganus* were absolutely found inside the park, while other 13 species were absolutely collected in the vicinities of NNP. The remaining 18 species were found in both inside the park and in its vicinities. Leaves and young stems of wild edible plants are the most consumed by local people, especially during the periods of food scarcity. The research shows that local people have a good knowledge of wild edible plants and recommends sustainable measures for making the diversity of wild edible plants well known, used and conserved.*

Key words: Biodiversity, Conservation, Food insecurity, Sustainable use, Wild edible plants

INTRODUCTION

Since their existence, human beings utilized plants to satisfy essential needs such as food, clothing and shelter (Pandey, 2000). Plants were and are still used as food supplements, source of income, and medicine, in addition to the cultural, social and ritual values (Pandey and Chadha, 1993). Their importance as source of food was, and is now more frequent during the period of famine and food insecurity (Cunningham, 1996). Longtime ago, parts of wild edible plants including leaves, stems, tubers and roots, fruits, seeds and nuts, barks, gums, and sap were used as source of food. The plants were grown either naturally in farms, fallows or in uncultivated areas (Ruffo, Birnie, and Tengnäs, 2002). Further, they were mainly collected and used by people in rural areas (Zinyama *et al.*, 1990;

Lepofsky *et al.*, 1985), and eaten either cooked or in raw status (Pandey, 2000).

Other research indicated that the dependence on wild edible plants was mainly influenced by the nutritional and medicinal values that were found in plants and which were very important for health and for preventing malnutrition as well as different diseases (Van den Heever and Venter, 2007). The same study indicated the use of wild plants in preventing unwanted pregnancies, and for stimulation of lactation in women and domesticated animals. These properties are due to the presence of vitamins, and essential minerals including calcium and iron contained in these plants. Some other plant species were also used to improve and treat different diseases such as eye sight (Van den Heever and Venter, 2007).

In Rwanda, some wild edible plants were documented and different studies reported the species of *Myrianthus holstii* Engl and certain species of *Amaranthus* to be commonly consumed and available at some local markets of Rwanda (Muhongere, 2005; Ndagijimana, 2006). Nowadays, more emphasis is on cultivated edible plants with high production and less emphasis is given to the wild edible plants. These imbalances may lead to the extinction of some important wild edible plants, particularly those which are endemic and not well known. In addition, the lack of knowledge of their biology and over exploitation by local people, climate change, and some other anthropogenic activities on natural ecosystems may amplify the loss of these species.

The present study was done with the main purpose of bringing more awareness on wild edible plants, their use, protection and conservation. It aimed at (a) investigating the knowledge by local people about wild edible plants, (b) identifying plant organs eaten and the category of people who eat them as well as the frequency of consumption, and (c) suggesting conservation measures of identified wild plants. Research was conducted in eastern part

of Nyungwe National Park (NNP) and its vicinities. It was guided by two main research questions: (1) what are the wild edible plants found in NNP and its vicinity? (2) and what are the organs that are preferably eaten by local people inhabiting around NNP?

Area of the study and research methods

Study Area

This research was conducted in NNP (Figure 1). The Park is the largest and the most floristically rich forest covering an area of 1,019-kilometer squares. Geographically, it is situated between 2°15' and 2°55' South, 29°00' and 29°30' East, at the edges of Lake Kivu in the Albertine Rift eco-region (Plumptre *et al.*, 2002). The annual rainfall was estimated between 1800 and 2500mm during the time of data collection, with the mean annual rainfall of 1744mm. The daily temperatures varied between 0°C and 30°C, with an average of 15.5 °C. The weather is dominated by dry and rain periods alternating. Specifically, the months of dry seasons are end June to August and those of minor dry seasons are January and February, while those of rain seasons are March to May and September and December.

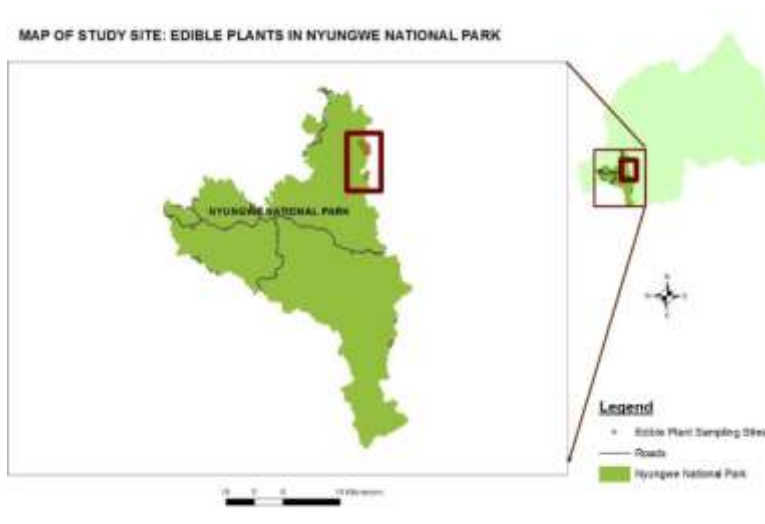


Figure 1: Location of the area of study within NNP and its vicinity (adapted from PCFN, 2016)

Nyungwe National Park has different types of soils, brought by various rocks of the region (Nyandwi, 2004). Due to the nature of its relief, hills and valleys, soil of NNP has high acidity, high concentration in aluminium, and high deficiency in

calcium, phosphorus, potassium and magnesium (Birasa *et al.*, 1990). The distribution of both fauna and flora depends on the nature of soil, altitude and humidity. The flora mainly includes pteridophytes, orchids, bryophytes, lichens, trees, shrubs whereas

the fauna is represented by primates and birds (Nyandwi, 2004). Data for this study were collected in the eastern part of NNP and its vicinity (figure 1), currently located in Nyamagabe district Gatara and Buruhukiro sectors.

Data collection and analyses

Prior to field data collection in NNP and its vicinities, data were collected through semi-structured interview questionnaire from local elders. 58 interviewees were selected purposively from the local people who live around NNP for a long period of time, with a minimum of 30 years. To be selected, the participant was assumed to have knowledge about the use and names of wild edible plants mainly collected in NNP and its vicinity. A total of 58 informants were interviewed and their data were thematically analyzed and presented descriptively and statistically. Specifically, data were concerned with the local names of wild edible plants, the parts consumed, and the group of people by age and gender who consumed them. Further, we were interested to know the purpose of consumption such as source of food or medicine. Before starting data collection processes, each participant signed a consent form and was assured that data will only be used for research. A pilot study was conducted in ten households outside of the area of study to test the validity of the questionnaire.

Field sampling of wild edible plants

After obtaining prior information specifically the names of wild edible plants and the parts used by local peoples, specimens were then collected across transects and quadrats in and in the vicinities of the park. The main purpose was to investigate the diversity and abundance of wild edible plants reported from the survey. Data were collected within May and June, the period in which most of the plants have fully grown up and developed. During field data collection and identification, plant experienced and specialist staff from PCFN (Project for the Conservation of Nyungwe Forest), and one security guardian from Nyungwe National Park participated in this exercise for guidance.

In total, 6 transects of one kilometer each were sampled. In each transect, a sub-transect of 25.4 meters was selected as a sampling unit, leaving a distance of 3.5 meters from the edge to avoid edge effects. In each sampling unit, a total of five sampling points separated by 1.9 meters were sampled and wild plants were collected based on the descriptions, names from local leaders and after agreement with the PCFN leader. Each sampling point had 3.1 meters of distance. Between 2 sampling points, a distance of 200 meters was maintained. At each 200 meters across the main transect, a quadrat of one-meter square was sampled for herbaceous plants while an area of one hundred-meter squares (100 m²) was sampled for woody plants (White and Eduards, 2000; Braun Blanquet, 1932).

Collected specimens of plants were conserved in collection papers and temporary conserved in the plant laboratory room of the former Kigali institute of Education (KIE). They were identified to species level by the use of dichotomous keys about the plant diversity of Rwanda and NNP (Troupin, 1978; 1985; 1987; 1996). Wild edible plants were separated from other collected wild plants and statistical analyzed based on dominance and abundance diversity indices using statistical applications in excel software.

RESULTS

Wild edible plants reported by local people during the interview

Data from semi-structured interview indicated a total of 35 wild edible plant species (Table 1) classified in dicotyledons, monocotyledons and pteridophytes. These species were distributed in 21 families. The families of dicotyledons had the highest number of individual species dominated by the *Brassicaceae* with 4 species, *Amaranthaceae* with 3 species, *Cucurbitaceae* with 3 species, *Rosaceae* with 3 species, *Solanaceae* with 3 species, and *Polygonaceae* with 2 species (Table 1). The family of *Cyperaceae* had 3 species and it was the only one dominant monocotyledon identified in collected specimens. Leaves and fruits are most consumed parts (Table 1).

Table 1: Families of plant species, their scientific and local names, and consumed parts of wild edible plants indicated by local people

Family	Scientific name	Vernacular name	Consumed parts of the plant
Dicotyledones			
Amaranthaceae	<i>Amaranthus dubius</i> L.	Imbwija, imbogeri, bwiza bw'ishyamba	Leaves and young stems
	<i>Amaranthus cruentus</i> L.	Dodo, ibitarabuguma	
	<i>Amaranthus graecizans</i> L.	Inyabutongo	
Anacardiaceae	<i>Rhus vulgaris</i> Meikle	Umukaragata, Amasaka y'abashumba	Leaves
Balsaminaceae	<i>Impatiens stuhlmanii</i> Warb	Indondori	Fruits
Begoniaceae	<i>Begonia meyeri johannis</i> Engl.	Irebe	Leaves and young stems
Brassicaceae	<i>Erucastrum arabicum</i> Fisher et Meyer	Musagimbehe, Rwangaguhunga	Leaves, flowers and young stems
	<i>Cleome monophylla</i> L.	Nyirasogereza	
	<i>Cleome schimperi</i> Pax	Nyirasogereza	
	<i>Gynandropsis gynandra</i> (L.) Briq.	Isogi	
	<i>Cucurbita pepo</i> L.	Ibihaza	Leaves, flowers and fruits
	<i>Lagenaria abyssinica</i> Hook. F.	Amadegede	Leaves and fruits
	<i>Sechium edule</i> (Jacq.) Sw.	Ibishiyoti	Fruits
Euphorbiaceae	<i>Tragia brevipes</i> Pax	Isusa	Leaves
Lamiaceae	<i>Tetradenia riparia</i> (Hochst.) Godd	Umuravumba	Leaves
Melastomataceae	<i>Tristemma mauritianum</i> J. Gmellin	Ibitoki bya musambi Umurerabana	Fruits
Meliaceae	<i>Carapa grandiflora</i> Sprague	Amashwati	Fruits
Moraceae	<i>Myrianthus holstii</i> Engl.	Umwufe	Fruits
Oxalidaceae	<i>Oxalis latifolia</i> Kunth	Baricaye, kurisuka, mugabo udasunikwa	Leaves
Passifloraceae	<i>Passiflora edulis</i> SIMS	Intababara, Amatunda y'umugozi	Fruits
Polygonaceae	<i>Rumex abyssinica</i> Jacq. <i>Rumex usambarensis</i> Engl.	Umufumba Umufumbageshi	Leaves
Rosaceae	<i>Rubus apetalus</i> Poir. <i>Rubus kulinganus</i> Engl. <i>Rubus rigidus</i> Sm.	Inkeri Inkeri Nyiragakeri	Fruits
Solanaceae	<i>Physalis peruviana</i> L. <i>Solanum incanum</i> L. <i>Solanum nigrum</i> L.	Imbuhu, gaperi Intagarasoryo Isogo	Fruits and leaves Fruits Fruits and leaves
Urticaceae	<i>Urtica massaica</i> Mildbr.	Igisura	Leaves
Monocotyledons			
Cyperaceae	<i>Cyperus papyrus</i> L. <i>Cyperus denudatus</i> L. <i>Cyperus</i> spp.	Urufunzo Umurago Umushyikirizo	Stems
Dioscoreaceae	<i>Dioscorea</i> sp.	Ibihama	tubers
Typhaceae	<i>Typha latifolia</i> L.	Umuberanya	Stems
Pteridophyte			
Cyatheaaceae	<i>Cyathea manniana</i>	Igishihe	Young leaves and stems

Wild edible plant species identified in NNP and its vicinities

Wild plants were sampled using both transects and quadrats to identify the wild edible plant species. In a total of 71 plant species identified through the aforementioned techniques, only seven plant species were recognized as wild edible plants. The latter comprised *Begonia meyeri-johannis*, *Cyathea manniana*, *Rubus apetalus*, *Rubus rigidus*, and *Rubus kulinganus* (Table 2). With the quadrat technique, six more other wild plants namely *Helichrisum mildbraedii* Moiser, *Rapanea*

melanophloeios (L.) Mez, *Solanum terminale forsskal*, *Lobelia gibberoa* Hemsley, *Stephania abyssinica* (Dill. and Rich.) Walp, *Urtica massaica Mildbr* and *Carapa grandiflora Sprague* were identified. Apart from the five wild edible plants obtained across the transects, the *Urtica massaica Mildbr* and *C. grandiflora Sprague* were also identified from the quadrats (Table 2), totaling seven wild edible plants species from the whole sampling (Table 2).

Table 2: Families, scientific and vernacular names and collected organs of identified wild edible plants

N°	Family name	Scientific name	Vernacular name	Collected organ
1	Begoniaceae	<i>Begonia meyeri-johannis</i> Engl.	Irebe	Leaves and young stems
2	Cyatheaceae	<i>Cyathea manniana</i>	Igishihe	Young stems and shoots
3	Meliaceae	<i>Carapa grandiflora</i> Sprague	Ishwati	Fruits
4	Rosaceae	<i>Rubus apetalus</i> Poir. <i>Rubus rigidus</i> Sm. <i>Rubus kulinganus</i> Engl.	Umukeri Nyiragakeri Umukeri	Fruits Fruits Fruits
5	Urticaceae	<i>Urtica massaica</i> Mildbr.	Igisura	Leaves

Frequency of consumption of identified parts of wild edible plants

Plant parts such as leaves, stems, tubers, fruits or seeds were reported to be eaten by local people (Table 1). Local people reported also that these parts of wild edible plants were eaten either fresh,

cooked or grilled depending on the type of individual plant specimen and the preference by local people and category (children, youth and adult people) of the consumers. The most eaten wild edible plant organs were reported to be leaves, stems and fruits (Figure 2).

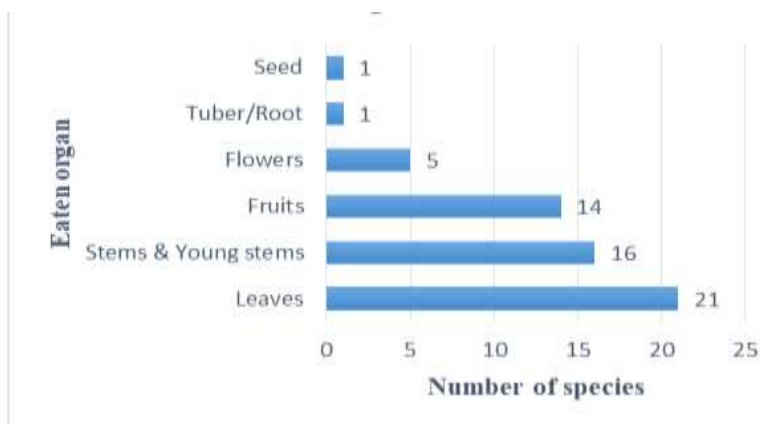


Figure 2: Eaten organs with their frequency of consumption

Among the collected and identified specimens (Table 1), the most frequently eaten wild edible plants reported by local people include *Solanum nigrum* (96.55%), *Myrianthus holstii* (89.65%), *Impatiens stuhlmanii* (87.9%), *Rubus apetalus* (86.2%), *Rubus rigidus* (86.2%), *Rumex abyssinica*

(60.34%), *Erucastrum arabicum* (50%), *Passiflora edulis* (37.93%), *Urtica massaica* (32.75%), and *Rumex usambarensis* (32.75%). The percentage for remaining 25 species varied between 1.8% and 26%, which implies that they are less consumed (Table 3).

Table 3: List of the most frequently consumed wild edible plants by local people

N°	Species	Number of informants	Percentage (%)
1	<i>Solanum nigrum</i>	56	96.55
2	<i>Myrianthus holstii</i>	52	89.65
3	<i>Impatiens stuhlmanii</i>	51	87.9
4	<i>Rubus apetalus</i>	50	86.2
5	<i>Rubus rigidus</i>	50	86.2
6	<i>Rumex abyssinica</i>	35	60.34
7	<i>Erucastrum arabicum</i>	29	50.0
8	<i>Passiflora edulis</i>	22	37.93
9	<i>Urtica massaica</i>	19	32.75
10	<i>Rumex usambarensis</i>	19	32.75
11	<i>Rhus vulgaris</i>	15	25.86
12	<i>Tragia brevipes</i>	12	20.68
13	<i>Tristemma mauritianum</i>	8	13.79
14	<i>Amaranthus dubius</i>	8	13.79
15	<i>Dioscorea sp</i>	8	13.79
16	<i>Amaranthus cruentus</i>	7	12.06
17	<i>Solanum incanum</i>	7	12.06
18	<i>Cleome schimperi</i>	6	10.34
19	<i>Cleome monophylla</i>	6	10.34
20	<i>Physalis peruviana</i>	6	10.34
21	<i>Cyathea manniana</i>	3	10.34
22	<i>Oxalis latifolia</i>	2	5.17
23	<i>Begonia meyeri-johannis</i>	2	3.44
24	<i>Tetradenia riparia</i>	3	3.44
25	<i>Amaranthus graecizans</i>	1	5.17
26	<i>Carapa grandiflora</i>	1	1.72
27	<i>Cyperus papyrus</i>	1	1.72
28	<i>Cucurbita pepo</i>	1	1.72
29	<i>Cyperus sp</i>	1	1.72
30	<i>Lagenaria abyssinica</i>	1	1.72
31	<i>Sechium edule</i>	1	1.72
32	<i>Cyperus donutatus</i>	1	1.72
33	<i>Typha latifolia</i>	1	1.72
34	<i>Rubus kulinganus</i>	1	1.72
35	<i>Gynandropsis gynandra</i>	1	1.72

Distribution of wild edible plants in study area

Findings from the local people were supported by the field data collection. Species *Begonia meyeri-johannis*, *Carapa grandiflora*, and *Rubus kulinganus* reported by local people were absolutely collected in Nyungwe National Park. Higher number of wild edible plants (18 species) namely *Amaranthus dubius* Mart., *Amaranthus cruentus* L., *Rhus vulgaris* Meikle., *Impatiens stuhlmani* Warb., *Tragia brevipes* Pax., *Tristemma mauritianum* J. Gmellin., *Myrianthus holstii* Engl., *Passiflora edulis* Sims., *Rumex abyssinica* Jacq., *Rubus apetalus* Poir., *Rubus rigidus* Sm., *Solanum nigrum* L., *Urtica massaica* Mildbr., *Cyperus*

papyrus L., *Cyperus denudatus* L., *Cyperus sp.*, *Typha latifolia* L. and *Cyathea manniana* were reported to be collected in Nyungwe National Park and its vicinity.

The remaining 13 wild edible plant species namely *Amaranthus graecizans* L., *Erucastrum arabicum* Fisher and Meyer., *Cleome monophylla* L., *Cleome schimperi* Pax., *Gynandropsis gynandra* (L.) Briq., *Cucurbita pepo* L., *Sechium edule* (Jacq.) Sw., *Tetradenia riparia* (Hochst.) Godd. *Oxalis latifolia* Kunth., *Rumex usambarensis* Engl., *Physalis peruviana* L., *Solanum incanum* L., and *Lagenaria abyssinica*, were reported to be present and

absolutely collected in the vicinities of Nyungwe National Park.

From all collected and identified wild edible plants, four species: *Cyperus papyrus* L., *Cyperus denudatus* L., *Cyperus* sp., and *Typha latifolia* L. were reported by local people as rare and in danger of extinction. Moreover, the latter and *Dioscorea* sp. were reported as wild edible plants by local people and were not found in the sampled area of NNP and its vicinity.

Category of people consuming wild edible plants and conservation

Analyzed data indicated that 23 species specifically *Solanum nigrum*, *Erucastrum arabicum*, *Amaranthus dubius*, *Amaranthus cruentus*, *Amaranthus graecizans*, *Begonia meyeri-johannis*, *Cleome monophylla*, *Cleome schimperii*, *Cucurbita pepo*, *Lagenaria abyssinica*, *Sechium edule*, *Myrianthus holstii*, *Tragia brevipes*, *Tetradenia riparia*, *Passiflora edulis*, *Urtica massaica*, *Dioscorea* sp, *Cyperus papyrus*, *Cyperus denudatus*, *Typha latifolia*, *Cyperus* sp, *Cyathea manniana*, *Gynandropsis gynandra* were consumed by all category of people. Other 10 species namely *Impatiens stuhlmanii*, *Tristema mauristanum*, *Oxalis latifolia*, *Rumex abyssinica*, *Rubus apetalus*, *Rubus rigidus*, *Physalis peruviana*, *Rhus vulgaris*, *Rubus kulinganus*, *Rumex usambarensis*) were reported to be consumed by children only, while the remaining 2 species including *Solanum incanum* and *Carapa grandiflora* were reported to be eaten by adults only.

Concerning the purpose of collection of wild edible plants, results indicated that these species are collected due to their nutritional value and traditional importance such as therapeutic importance. Indeed, some of them were recognized by local people to treat nausea, and to contribute to the well-functioning of different parts of the human body particularly the stomach. The majority of these plants were collected during the rainy season whereas only *Myrianthus holstii*, *Rubus apetalus*, *Rubus rigidus*, *Rubus kulinganus*, *Tristemma mauritanum*, *Tetradenia riparia*, *Solanum*

incanum, *Passiflora edulis* and *Sechium edule* were reported to be collected during the dry season.

Local people also reported that they do not go in park for collecting wild edible plants due to fearing the amount of money that they could pay once caught in the park. Only 10 % of the respondents informed that they collect them occasionally, for example when there is a natural fire outbreak in the forest and they go to put it out. Concerning the knowledge about other areas where wild edible plants are mainly consumed, few (3%) of the respondents confirmed that wild edible plants were also eaten in neighboring countries such as the Democratic Republic of Congo. All respondents (100%) highlighted that wild edible plants were mainly collected and eaten in periods of drought and famine. Concerning their perceptions about the conservation of wild edible plants, the majority of the respondents (85%) informed that if human actions on harvesting and use of wild plants continue, there shall be changes in dynamism of natural ecosystems, and some species may be extinct. Some other respondents (25%) suggested the home gardens as a measure of preserving those wild edible plants inhabiting Nyungwe National Park and its vicinities.

DISCUSSION

Through transects and quadrats a total of 35 wild edible plant species were found in Nyungwe National Park and its vicinities. Seven of these species namely *Begonia meyeri-johannis*, *Cyathea manniana*, *Rubus apetalus*, *Rubus rigidus*, *Rubus kulinganus*, *Carapa grandiflora* and *Urtica massaica* were absolutely found in NNP and four of them, specifically *Begonia meyeri-johannis*, *Carapa grandiflora*, *Rubus kulinganus*, and *Dioscorea* sp. were reported to be endemic to NNP.

About 50% of the respondents reported these seven species to be more frequently consumed and the consumed parts include leaves, fruits and tubers. Other studies also indicated that wild edible plants are highly consumed due their source of source of nutritional value and their use in traditional and modern medicine (Van den Heever and Venter,

2007; Nkundimana, 2004). The consumed parts of wild edible plants cited by the local people include leaves, stems, fruits, seeds and flowers. Other studies indicated some other parts not recognized by local people inhabiting the area of study. These include barks, gums and plant sap (Ruffo, Birnie, and Tengnäs, 2002).

Apart from the species mentioned in the above paragraph, other 28 plant species collected in the vicinity of NNP (Table 1) were reported. This implies that the studied area has a significant number of wild edible plants that could contribute to the improvement of food diet of local people. Wild edible plants identified in the area of study were also found in other regions of Rwanda (Muhongere, 2004; Ndagijimana, 2006). Some of them were also identified in Afromontane forests of Uganda, Tanzania and Ethiopia (Cunningham, 1996; Addis, Urga and Dikasso, 2005). However, some other wild plant species specifically those of families *Cyperaceae* and *Typhaceae*, were reported not to be longer available.

Their absence was attributed to the overuse and diminishing of marshlands where they were adapted. The majority of identified species (15 species) for this study were reported by 25% of the respondents and they highlighted that wild edible plants are preferably eaten during the period of drought or due the time of food insecurity. This trend was also found in other studies (Abbink, 1993; Cunningham, 1996; Guinand and Lemessa, 2001).

Results of this study also indicated that it is very hard for local people to pay attention in aspects of goods and services provided by wild edible plants and consequently they are not well conserved. Indeed, only 25% of the respondents suggested one way of conserving wild edible plants. Special measures have to be taken in order to encouraged them to sustainably use these wild edible plants (Maundu *et al.*, 1999), not only because they contribute in increasing the quantity of day to day diet particularly in areas with insufficient food but also due to their role for human wellbeing.as they are rich in different nutritional as well as medicinal values (Cordeiro, 2012).

The species in the vicinity of NNP reported in this study were also found in other studies (Nischalke *et al.*, 2017). Only few edible plants species were common between the vicinity and inside the forest. Some species reported by the local people were totally absent in the sampled areas and this trend has been observed in other studies. For instance, not obtaining *Dioscorea* climbers which give *Discorea* tubers, according to Hart and Hart (1986) cited in Cunningham (1996) is due to the fact that the forest is not disturbed by the fire which stimulate their growth in secondary forest. This absence of wild edible plants would not motivate local people to go into the forest.

Similarly, the rarity of some species like those belonging to *Cyperaceae* and *Typhaceae* could reduce the frequency of local people to go in NNP for collecting wild edible plants. This information about the distribution and abundance of wild edible plants would probably serve forest conservationists during their awareness campaign on the role of plant diversity in and around the park. In addition, with ethnobotanic projects, stakeholders can initiate projects aimed at cultivating and domesticating wild edible plants outside of the park with the purpose of sustainable conservation of the park. Such project would also reduce encroachment by local people who intent to go into the forest for collection of plants which are frequently consumed but yet absent in the vicinity of the park.

CONCLUSIONS AND RECOMMENDATIONS

The study revealed that local people around NNP have a good knowledge about the wild edible plants. More wild edible plants were recorded in the park vicinity than inside the forest. As confirmed by respondents, this implies that local people frequently collect plants in the vicinity and occasionally in the park. This research also noticed that different plants organs particularly leave and young stems were consumed by local people of different categories. Although the consumption of wild edible plants is primarily driven by their nutritional and therapeutic values, our findings demonstrate that the consumption increases during the period of drought or food insecurity.

Based on the finding of the study, wild edible plants are important to the local people of the study area. Therefore, these plants should be protected and conserved and also be well used not only because they are source of nutritional values, medicine, good and services today and tomorrow but also for avoidance of their extinction due to different reasons including overexploitation. Local people demonstrated good knowledge about the diversity and use of wild edible plants but this was not the case about the conservation of these species.

For conservation to be effective, there is a need to provide local inhabitants with knowledge and skills that will allow them to get involved in conservation of plant diversity in and outside the forest. One of the options for sustainably conservation and protection of natural ecosystems in which wild edible plants are found could be the initiation and promotion of ethnobotanical projects for people inhabiting in areas surrounding the protected natural

ecosystems. Such practices would help in increasing the awareness of local people about the importance of the forest as a seed bank for rare plants in their living environment and also about the role of wild edible plants as a source of food and medicine.

Acknowledgements

Authors acknowledge very much the support provided by Wild Conservation Society (WCS), Project for the Conservation of Nyungwe Forest (PCFN), authorities of NNP and local people around NNP during data collection and plant sampling. They have eased and enabled us in conducting the study. Our special thanks go to Barakabuye Nsengiyumva and Mulindahabi Félix for their great support both financial and academic; without them data and findings could not be available. Our special gratitude goes to Prof. Pontien Ndabaneze for his special academic support to the first author.

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