Annex 3.
Benefits of the Peatlands for Indigenous Peoples and Local Communities

Indigenous Peoples and Peatlands-derived Benefits (non-economic)

FOREST AND IDENTITY

The Indigenous Peoples of northern Republic of Congo are BaYaka groups who have been present for 50,000-90,000 years in the central Congo forests (Verdu, 2016). In Site 2, in the Sangha Department, the Indigenous Peoples identified as Mbendjele, and part of the BaYaka group. The Mbendjele living in the forests of the Sangha and Likouala departments generally identify as sub-groups within the broader BaYaka group (Lewis, 2014). Their customary lands include large areas of peat swamp forest (Lewis, 2014). Nineteen Mbendjele territories have been mapped in the area north of the Sangha River and west of the Oubangui River and are called "our forest" by the Indigenous Peoples who live there (Figure A3.1). they are "intimately familiar" with the area (Lewis, 2002). Ultimately, BaYaka identity is determined by way of life and is tied to the forest (Lewis J., personal communication, January 18, 2024).

The Mbendjele see themselves as forest people. In the words of a Mbendjele man in Kabo District, "The forest is very important for us, for our source of income and for our spiritual life too." The spiritual aspect of the forest is fundamental to the identity and origin story of the Mbendjele. They believe that God (*Komba*) created the forest for the BaYaka to share, and that it is their forest, and that sharing its resources is core to their identity as a Mbendjele (Lewis, 2002). The Mbendjele see all the forest as theirs, as they are descended from the forest people who have always lived in the forest (Lewis, 2002).

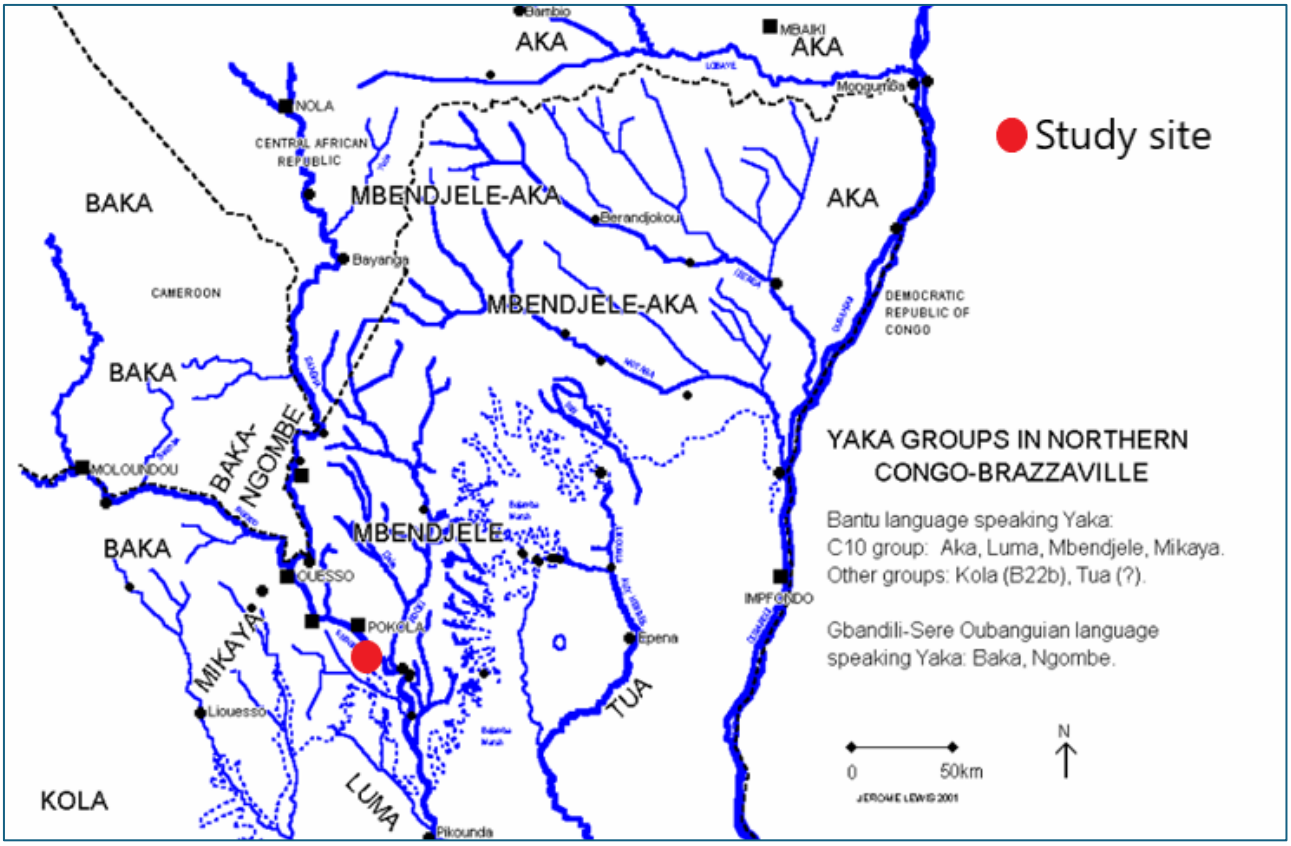

Figure A3.1 Map of Yaka groups in northern Republic of Congo (Lewis, 2002).

In our Sangha department study site, the Mbendjele identified themselves as Indigenous while the Sangha-Sangha (local community) identified themselves as Bantu, so these are the terms used in this Annex. The Mbendjele view of land is defined by movement and the journeys taken to hunt and gather forest resources. The Bantu idea of land is bounded space in which people dwell (personal communication, Vittoria, A., 29 November 2024). Bantu customary land is organised by clan, while one Mbendjele man said, "We don't have clans. We go and form groups. We don't depend on family links, we can be in a village and then leave for the forest together." In some literature, the forest takes on the role of family for the BaYaka, expressed as, "The forest is our mother and our father. It is our grandmother and our grandfather" (Hoyte, 2023). By extension, the forest is also God, Komba, as "The earth is Komba" (Hoyte, 2023). The unity of people and nature, material and spiritual life is summed up in this statement, "In effect, the BaYaka see themselves as forest transformed into persons" (Lewis, 2020).

The BaYaka people have been described as a "society of nature" (Lewis, 2021). The sounds of the forest, with its insects, birds and animals, are mirrored in the polyphonic music of the Bayaka, and the music communicates actively with the forest. The singing of the Mbendjele establishes relationships with the animals they want to hunt, mimicking the calls of animals, hearing and understanding where they are in the forest

and what they are doing. “By sharing music with the forest a relationship of care and concern between the human group and the forest is established” (Lewis, 2021). BaYaka music, like the forest, is intrinsic to BaYaka identity. The music of the BaYaka has been designated a ‘Masterpiece of Oral and Intangible Heritage of Humanity’ by the UN (UNESCO, 2008), and it depends on the forest for its expression (Lewis, 2016).

SPIRITUAL VALUE

The forest has great spiritual value for the Mbenjele. Forest spirits live in the forest and are guardians of the forest, and they bring health, happiness and luck to the people who engage with them through music, dance and through the sharing its resources (Hoyte, 2023). Spirit ceremonies are held in which drumming, singing and dancing call a forest spirit into the camp. Boys and girls go through initiation ceremonies in which they enter into a spiritual relationship with the forest and join a ritual association whose members share a link with certain spirits (Lewis, 2002). Initiates cannot share information with non-initiates, so there were limitations to our research on the spiritual value of the peatlands, but one Mbendjele man told us, “There is a traditional dance reserved for this zone of peatland. It is a dance done in the forest.” It is likely he was referring to the dance in which the forest spirits are invited into the camp and share their sacred knowledge and blessings. Another man said there is an area of forest banned for women and Bantus, where they practice Ejengi, a dance named after a forest spirit. It is likely that this peatlands area is a sacred place, or njanga, that is exclusive to initiates of the ritual association (Lewis, 2021).

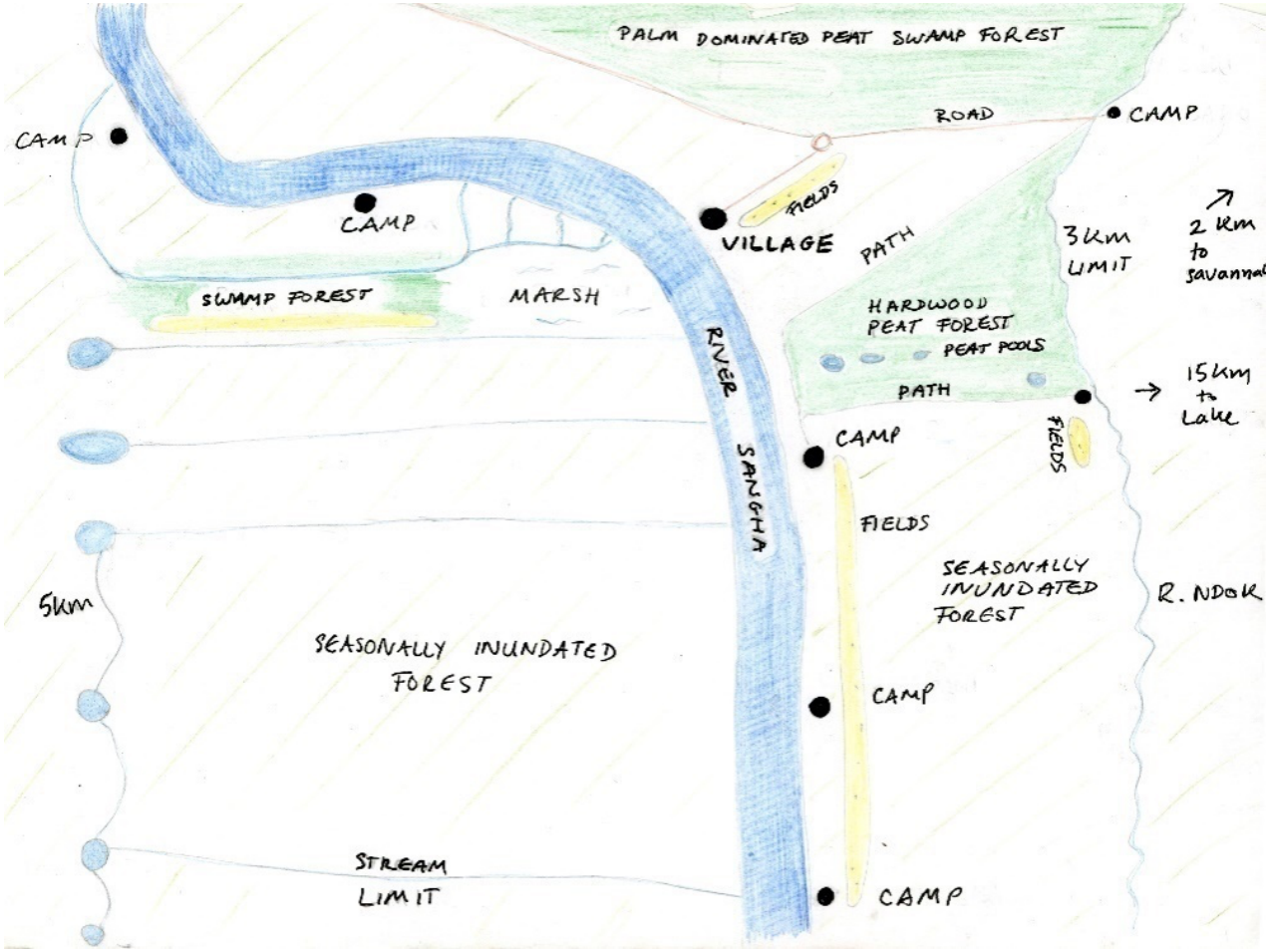

Figure A3.2 Community map of forest types and landscape features in Site 2, Sangha department

Ancestral spirits are also located in the forest. They give advice in a time of crisis and share their knowledge of the forest (Lewis, 2002). Both forest spirits and ancestral spirits walk alongside animals in the forest and guide hunters towards them and appear in dreams and provide guidance and wisdom (Hoyte, 2023). Music is a means to communicate with ancestral and forest spirits, engaging in a collective dialogue with the forest and its animals. One man told us, "When we go for an activity, one person starts to sing and dance. We sing to see if the forest is good or not, to know whether to go there or not, whether it is dangerous, whether to go in another direction, to orient us and tell us where we should not go." The forest is alive with spirits and holds deep spiritual value for the Mbendjele people.

SOCIAL VALUE

The forest is associated with shade, peace and safety, and this contrasts with the relations with the Bantus in the village, which people described as full of conflict (Lewis, 2002). One Mbendjele man said, "We were born here but we do not have good relations with the Bantus … It has been like this since we were born." A typical point of friction is hunting, when the Bantu villagers give Mbendjele men a gun (the guns are owned by Bantus) and cartridges and the hunter is allowed to keep the head and intestines of the catch. Mbendjele are accused of selling the cartridges to buy alcohol while, in an incident witnessed, the Mbendjele man pleaded that he needed to pay for school fees. The unequal power relationship between Bantus and Indigenous Peoples is well documented and is described as an unbalanced barter relationship in which the villagers "often promise goods they never provide, and Mbendjele often promise work they never furnish" (Oloa-Biloa, 2017). According to the government of the Republic of the Congo, Indigenous Peoples are identified by their "extreme vulnerability" (République du Congo, 2011), and recent independent assessments reported that their way of life is seen as primitive and unworthy by Bantus, and they continue to face structural discrimination (Special Rapporteur on the Rights of Indigenous Peoples, 2020).

The Mbendjele in the peatlands in the study site in Sangha department mix their time in the village, where they practise a mixture of agriculture and hunter-gathering, with time in camps in the forest. In the village, many Indigenous men worked in the fields of Bantus and some had their own or a shared field. In the forest, hunter-gathering is the main livelihoods strategy. An Mbendjele woman said, "We set off into the forest, we do camps during the seasons. We still do this," and a man said, "We always all go to the forest, we have the same pattern and frequency of going to the forest." People hold both forest-derived knowledge and a lived-knowledge of Bantu society and culture. In the study site, we observed extensive ecological and traditional knowledge during guided forest walks and participant observation in forest activities.

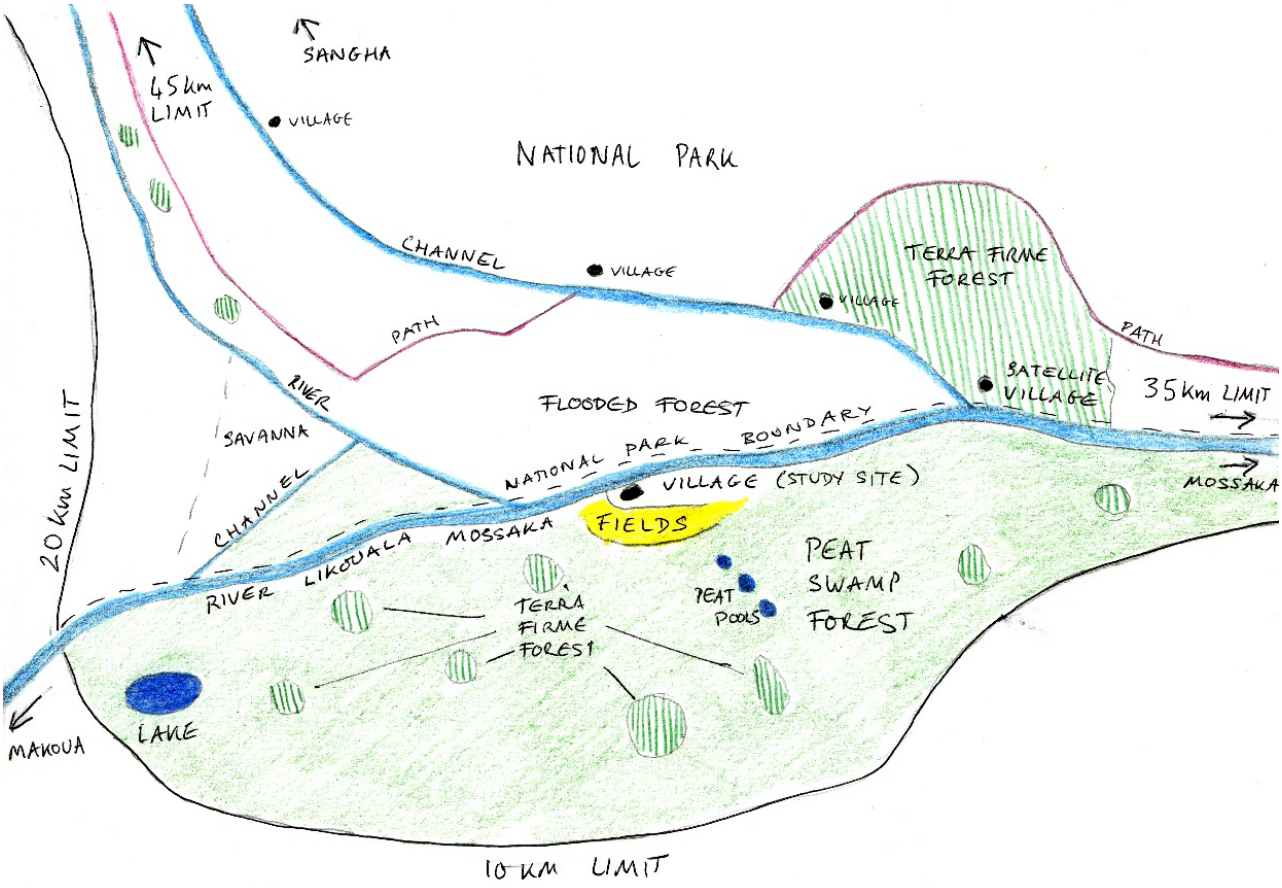

Figure A3.3 Community map of forest types and landscape features in Site 1, Cuvette department.

There is a risk that Indigenous knowledge is eroded by village life (Lewis, 2016; Townsend, 2015). According to a study of Indigenous Peoples who spend the majority of their time in the village with occasional interludes in the forest, extended time in the village has changed the social order, diminished the role of polyphonic music and modified rituals, and introduced aspirations for modernity (Townsend, 2015). The forest is where ritualised exchanges take place that build shared emotional values and establish harmony between people and the forest, and reduced time in the forest undermines these values (Lewis, 2016); Oloa-Biloa, 2017). BaYaka are sometimes paid in alcohol as a means of creating debt, encouraging addiction in order to claim the debt in bonded labour (Lewis J., personal communication, January 18, 2024). As a result, increased social tensions occur within a context of reduced capacity to resolve conflict and maintain social cohesion. Further research is needed to document Indigenous ecological knowledge and to develop strategies to reinforce it (Bombjaková et al., 2020).

VALUE TO HEALTH

The forest is deeply connected with spiritual, emotional and physical wellbeing of the Indigenous Peoples. As well as providing food, it provides medicine. People, particularly young mothers, also use the hospital in Pokola, though they run up debts paying for the transport to get there. Good health relies not only on food and medicine, it also relies on the spiritual and emotional connection that the Indigenous Peoples have with the forest. The spirit ceremonies bring health as well as luck in hunting and gathering (Hoyte, 2023). Living according to the principles of sharing and good relations, promotes wellbeing in the community and also in the afterlife (Hoyte, 2023).

DIRECT USE VALUE

The forest provides materials and food required for Indigenous wellbeing, such as the roof thatch, timber and vines for house construction, and fruit, vegetables and meat for subsistence. Different species of tree have different uses according to their properties, for example, a hardwood known locally as Embanja is used for house construction of houses, with a preference for Embanja located not in the swamp (though it is also found there), as its wood is harder. Roof thatch is made from the palm fronds of Raphia trees, particularly *Raphia laurentii* that grows extensively in the palm dominated peat swamp forest. One Mbendjele man told us "The peatlands are important for us as this is where we go to cut thatch from the Mabuku tree. The Mabuku is here in big numbers, and this is where we go for vines too." The vines of the best quality grow in the palm dominated peat swamp forest and the man said, "We cannot construct a house without vines for the walls and roof." Vines are also used by women to weave baskets. A site in the peatlands was recognised as a source of drinking water, described by an Indigenous man who said, "We make a camp in the peatlands where we are close to the water, not far from the peat where we have drinking water."

Forest-based activities build positive social relations: the collecting of caterpillars and mushrooms is done in mixed groups of men and women, and honey collecting in the peat swamp forest was described as "sociable - in groups of men and women." Forest-based activities also build gender identity and gender solidarity. Collecting wild yams, dam fishing, ngwaya (cutting water grasses and catching fish in the roots) and building houses is the role of women, while men specialise in hunting, spear fishing, climbing trees for honey and felling trees for construction. Gender roles relate to the ritual associations and to the knowledge, skills, songs and dances that are taught to initiates by the forest spirits specific to each initiate group (Lewis, 2002). Play is an important

way for children to learn, for example using a forest plant to build pretend huts, and children's games are part of the forest spirit performances (Oloa-Biloa, 2017).

Overall, the Mbendjele relationship with the peatlands and forest could be described as holistic and one that integrates health, economic, sociocultural and biophysical values (Pascual et al., 2017). Our research indicates more than this – that the protection of the peatlands is integral to the very survival of these communities.

Local Communities and Peatlands-derived Benefits (non-economic)

CUSTOMARY LANDS AND IDENTITY

The benefits of the peatlands to the Bantu communities were researched in two study sites: Site 1 was in Cuvette department, and Site 2 was in Sangha department and was shared with Indigenous Peoples (described above from an Indigenous perspective).

> Site 2 was a relatively new village founded in 1970 by the father of the current land rights holder (terrien) and village chief. The father/founder was from the family of customary land right holders known as the Sangha-Sangha who own an expanse of forest to the west and north. The study site included the village and four camps along either side of the River Sangha and the customary land extended hundreds of kilometres to the north (Figure A3.2). The village and camps were located in logging concessions (one on either side of the river) and had areas of zoned community forest. Peatlands were located in the community forest behind the village and camp on the north side of the river, while there was marshy forest that was not peat on the south side of the river (Crezee et al., 2022).
>
> The Bantus were not allowed to hunt beyond the limit of the community forest zone, marked by a logging company signboard and red crosses painted on trees, while the Mbendjele described freedom of movement in the forest. While Mbendjele interviewees said, "We go into the forest as we wish, there are no restrictions," and, "nowhere is prohibited," (in accordance with FSC certification which requires that the collection of non-timber forest products (NTFP) is without restriction), in contrast the Bantus regarded the boundary of the logging production zone beyond their community forest as a no-go zone. The production zone was not being actively logged at the time we conducted our field research, and since 1999 the logging company had worked in partnership with Ministry of

Forest Economy and World Conservation Society (WCS) to protect and monitor wildlife in this and other forest management units (Olam Agri, 2024).

The Bantu villagers, meanwhile, did not recognise the customary tenure of the Indigenous Peoples. The village chief said that when his ancestor arrived and founded the village, there were no Indigenous Peoples. “The Indigenous Peoples are from Ikelemba, they were not here before, there was no-one”[1]. Another villager described how Bantus in a camp “have Indigenous Peoples, as these people always follow the Bantus.” The village chief’s ambition was for the Bantu population of the village to grow so that the village grew in importance. The villagers were migrants who had come from other regions or from DRC and had been allocated *terra firme* land for free for houses and fields by the village chief. They paid him each month for the right to fish in the forest. Fishing in the rivers is free, because the rivers belong to the State.

The Bantus regularly referred to the Indigenous Peoples as thieves, for example telling them not to steal firewood from a tree in a village. The Bantus’ use of the forest benefited from the knowledge and skills of the Indigenous Peoples. For example, Bantu women said they went with the Mbendjele during caterpillar and honey collecting trips to buy the products from them. They also bought traditional medicine from the Mbendjele. Other forest uses were common for both Bantus and Mbendjele, such as the making of beauty oil for babies from the fruit of Raphia trees and collecting palm grubs from rotten Raphia trunks. Overall, the peatlands were a valuable source of materials and wellbeing. They provided thatch for homes from the Mabuku or Raphia tree, medicines for health (bark from the bokuka and kolo trees) and spiritual wellbeing (money was left in the forest for the spirits of the ancestors).

Figure A3.4 Research assistant, Eustache Amboulou, holds the leaf of a plant believed to have mystical power.

> The other study site, Site 1 in Cuvette department, was located on the south side of the River Likouala Mossaka just opposite Ntokou Pikounda National Park. While access to the park was restricted, the forest behind the village was accessible for NTFP collection and fishing. Ntokou Pikounda National Park was created by the government of the Republic of the Congo in 2013 and has been managed by WWF (World Wildlife Fund) since 2017 (WWF, 2024). WWF removed people living in camps in the Park and set up a system of seasonal fishing in the buffer zone for registered fishers (WWF, 2024). This reduced people's access to traditional fishing grounds and increased their reliance on the peat swamp forest behind the village. As one person said, "This forest is how we survive, though there are not many fish compared to the Park."

The customary lands extend 35 km to the East of the village, 20 km to the West, 45 km North and 10 km South (Figure A3.3). The area to the North is in Ntokou Pikounda National Park, where access is restricted to two three-month fishing seasons. As in the

Sangha department study site, the right to fish on customary land in the rest of the forest is determined by the customary landowner (terrien), who is descended from the original founding ancestor of the village. The village had a history of translocation under the collectivisation programme of President Marien Ngouabi, but despite this disruption, customary land holders hold the rights to different areas of the rivers and to forest peat pools for fishing. As a woman explained, "Our ancestors had the ponds, they passed from generation to generation. If your mother or father came from there, it is your pond, if not, you have to ask for permission." A neighbouring village, established in colonial times as a labour camp for a palm oil venture, has no land rights and individuals have to pay between 10,000-80,000 FCFA ($15 – $130) per season for fishing rights, "Or else if he sees you fishing, the land holder takes everything."

SPIRITUAL VALUE

The forest is home to spirits of the ancestors, as explained by a number of interviewees in both study sites. In Site 1, a man said he leaves 100 Francs CFA (US$ 0.2) in the roots of the Okungu tree for the ancestors, and it has gone when he returns the next day. An elderly man said, "If you don't do that, the medicine won't work." This practice is specifically for medicinal plants in the forest, but not for those growing in the village. Other aspects of the spiritual life of the forest were reported, such as the use of red leaves to wrap fetishes, and a tree that had the power to protect people fleeing from the village in times of conflict (Figure A3.4). Fetishes are used by hunters to make hunting and fishing successful, to avoid attacks from ferocious animals and to become invisible during a hunt.

SOCIAL VALUE

In both sites the Bantu villagers spoke about the social value of the forest. Going into the forest was a sociable activity, creating shared experiences between groups of women, men, youths or family groups. Children learned from their parents and from each other how to observe, read the signs and behave in the forest. In Site 1, the forest was also cited as a place of refuge in the case of conflict, and a source of materials for fetishes.

The peat swamp forest played an important role in the cultural life of the village. In Site 1, palm wine was collected from the Molengue (*Raphia sese)* trees that grew in the seasonally inundated and peat forest. Men shin up the tree and collect tap the tree, and serve the wine at ceremonies, social gatherings and give it to dignitaries and officials as a sign of respect. The wine comes in different forms: a sweet juice, an alcoholic wine, a wine with alcohol content strengthened through the addition of bark

from the Okouele tree, and tcham-tcahm that is served hot. Raphia trees were also a source of food, through their fruit and, when dead, the palm grubs that are collected from the rotten trunk.

VALUE FOR HEALTH

In Site 1 the forest provided medicinal plants to treat ailments, which was appreciated because the health centre was not trusted to treat people effectively. The bark of the Okouele tree was boiled in water to treat stomach-ache; the roots, bark and sap of the Mokua tree were used to treat malaria, back ache, blood sugar levels and snake bites; the bark of the Yongonbila tree were used to treat malaria, back ache, and unwanted pregnancies; and Tsengi bark was boiled in water for diarrhoea and fever. In the second site, even where access to free medical care was within a day's travel, the forest was the first port of call for treatment of illnesses. Some of the trees identified during forest walks were Bokuka and Kolo, the bark of both was used for malaria, back ache, abortion, and, in the case of Kolo, also as used for cleaning a womb after birth and as an aphrodisiac. Medicinal knowledge was learned from parents, other practitioners and from Indigenous Peoples.

Figure A3.5 From left to right: Sapelli treet; Doto plant used to treat snake venom; Bomba tree, of which the fruit are soaked in water, all from Site 2, Sangha department (photo credit C. Dummett).

DIRECT USE VALUE

Fishing was the principal livelihood activity. In addition to the intensive periods of fishing in Ntokou Pikounda National Park, people fished along the river Likouala Mossaka in the dry season and in the peat forest. In the peat forest they used nets and hooks during the rainy season, and practised dam fishing at the end of the dry season.

Fishing was seen as a means earn money quickly, and as lower risk compared to agriculture to produce the staple food manioc (cassava), which was at risk of elephant damage. Access to land for agriculture was not a limiting factor as, "Space is not an issue, anyone can ask for a field". While the men identified as fishers – and some as former hunters - the young men were frustrated that despite their education they were reliant on fishing, and they identified as aspiring government employees. Many women had diversified livelihoods: fishing, farming, trading. For everyone, the peat swamp forest was essential for their livelihoods. In Sangha department, a village man explained how important it was for food security saying, "We go to the peat forest to fish, when we are hungry we fish there in the dry season too, and we go there to collect palm grubs."

In both field sites the forest provided essential materials for the construction of houses and cultural items such as baskets, sleeping mats, stools, musical instruments and more. Hardwood species were identified during forest walks, each known for their unique qualities: Etoka was used for pirogues, Liyapa for pillars and rafters, Olongo for oars.

The palm fronds of Mabuku (*Raphia laurentii*) were used for roof thatch, and its fibres were put to multiple uses, such as furniture, fish traps and animal cages. Multiple *Raphia* species play an important cultural role in the life of forest communities (Mogue Kamga et al., 2020). People could identify flora with particular properties and their seasonality. This extensive traditional knowledge of risks and resources means the villagers are able to live and survive in an area with limited market access and very few government services. In the words of one person in Site 1, "We live thanks to the forest."

Case study: Mbendjele Ecological Knowledge

The Mbendjele in the study site demonstrated immense knowledge of and skill in the forest. During a forest walk the guide could see that a broken leaf stalk on a tree stump indicated a gorilla had been eating there less than an hour earlier, and scuffed earth under a fallen tree showed that porcupines had been playing the night before, and the direction they had set off in. The forest is full of signs and signals, of plants that tell stories and have histories, bird calls that indicate action or danger and animal tracks that show movement and journeys. As well as reading the natural world, signs are given by the spirit world, by ancestral spirits who visit the living in dreams and tell them where to hunt and gather the following day (Hoyte, 2023).

Collecting honey is an activity the Mbendjele are respected for by the Bantu villagers, and the sharing of honey is much loved by the Mbendjele themselves. The forest

provides clues as to where honey might be located: during a guided walk, flowers on a bush indicated that bees could be found and followed, and a hollow branch high up in the canopy was a potential place for a hive. One Mbendjele man said, "There is lots of honey in the peatlands. We go specifically to look for it. It is all around." When a hive is identified, a group goes into the forest and a man climbs the tree with burning charcoal to smoke out the bees. The honeycomb is pulled out of the hive and carried down to share. Sometimes honey is found because ancestral spirits have told people where to go, coming to them in their dreams, and arriving at night to take some because they like it so much (Hoyte, 2023).

Figure A3.6 Clockwise from top right: Marantacae leaves; Lasiomorphus schott with edible leaves; Koko leaves; Koko leave (Gnetum africanum) leaves being prepared; all from Site 2, Sangha department (photo credit C. Dummett).

Indigenous forest knowledge is also evident in Mbendjele understanding of the interconnectedness of their activities: collecting mushrooms is the time to catch turtles, because the turtles like eating mushrooms; and mushroom hunting can be combined with harvesting peke fruit, because the maboua mushroom grows at the same time as the peke fruit ripens, and both are found next to the peat. (The peke fruit has a seed which can be dried, fried and ground into a paste like peanut butter.) The seasonality of forest plants and fruit is very well understood and provides a structure for the year. The collecting of kongo caterpillars when they fall from Sapelli (*Entandrophragma cylindricum*) trees is so important that the Indigenous schools have

holidays at this time. An Mbendjele man said that by July the caterpillars have grown for two or three months, and put on weight, so “When the sun shines, the sun makes them weak and they can no longer walk, and they fall. We come and collect them.” The Sapelli tree is also known for its bark, which if made into a juice and applied to the eyes of a girl, will act like a love potion. The Sapelli is the most sought-after hardwood species for forestry companies, and whereas the season of caterpillars used to be a time when people could “eat like there was no end”, logging has extracted the mature specimens and the chef de village expressed concern that caterpillars are no longer found in large numbers (Lewis, 2002).

The forest is characterised by dangers people encounter there, particularly snake bites, as well as by the plants that treat them. The plant known as Doto has a fibre in the inner stalk which diminishes the power of snake venom, Epaka is used to dry a wound (Figure A3.5), and the bark of another tree is heated with oil and applied to aid the binding of bones. Fishing has its dangers too, and Indigenous knowledge, experience and expertise is applied to mitigate risks. One woman said that fishing with a machete in a hole under the roots of a tree should never be done alone, as water could rush in and block the way out. Dam fishing involves immersing hands in the mud, where spiked fish, electric fish and pythons can cause injury. Ancestral spirits impart knowledge in dreams about where to fish, and then they come later to eat the fish left behind (Hoyte, 2023).

Forest activities are loved despite the dangers they pose. Mbendjele girls described collecting koko (*Gnetum africanum)* leaves as their favourite activity, along with the leaves used to wrap manioc (*Marantacae*) (Figure A3.6). Astute observation and continuous enquiry, as well as practical use of forest resources has built up immense knowledge of the peatland ecosystem (Figure A3.7). This knowledge is not taught in schools but is learned through curiosity and taught through social, cultural, spiritual and ecological interactions. For example, the polyphonic music that is the identifying trait for BaYaka people, is both an expression of and an education in the complexity of the forest ecosystem (Lewis, 2021). According to Lewis, BaYaka singing in multi-part harmony develops the skills needed for living in the forest, fostering an ability to be autonomous and a heightened awareness of what others are doing, creating music that has multiple individual, complementary, spontaneously evolving parts in the same way that a hunt is a single coordinated act (Lewis, 2002, 2013).

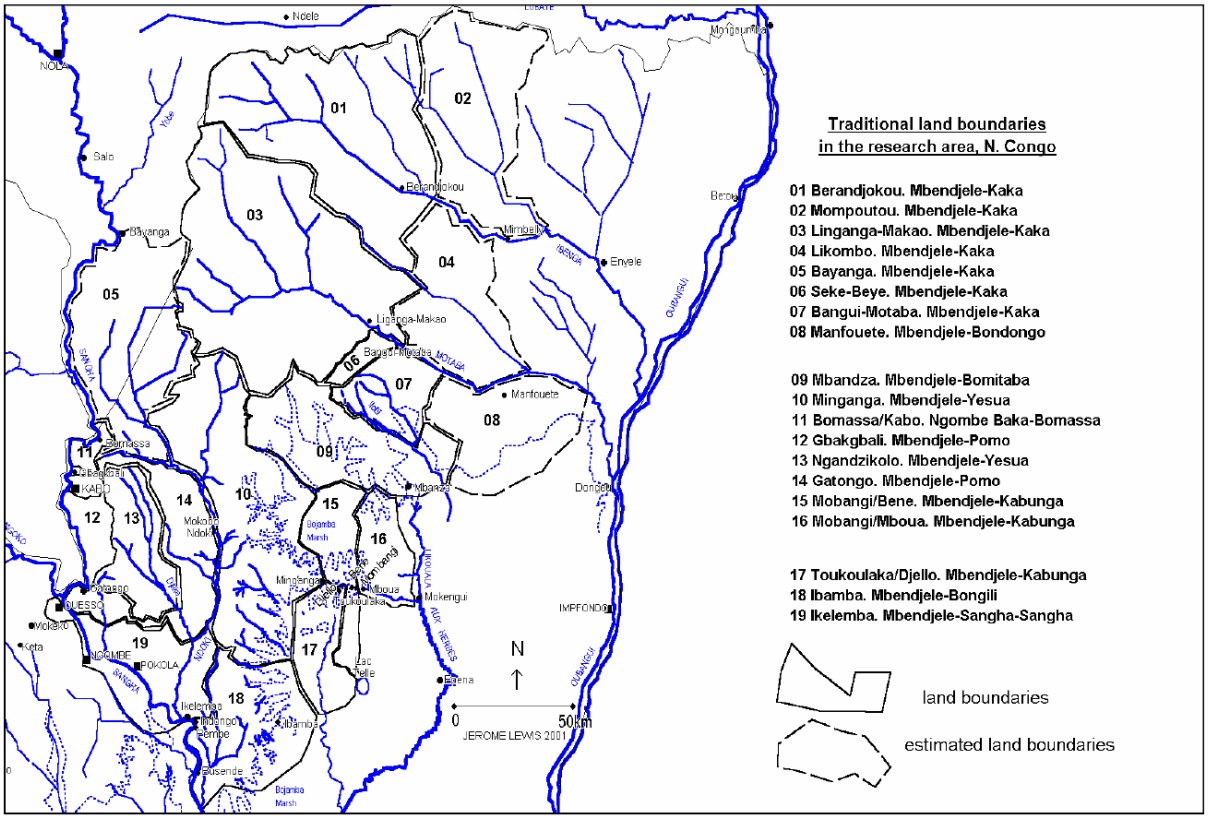

Figure A3.7 Map of Traditional Land Boundaries in Mbendjele Forest (Lewis, 2002).

Economic Benefits from the Congo peatlands ecosystems

In this section we analyse Indigenous Peoples' and local communities' livelihoods and provisioning services from all ecosystem types within the study sites. In the Cuvette and the Sangha departments, Indigenous Peoples and local communities carry out agriculture on *terra firme* land, fishing in both the rivers and the peatlands, hunting and harvesting of NTFP in both the *terra firme* forest and the peatlands, and livestock farming. These livelihoods strategies produce goods that are sold for cash income and used for consumption. Our analysis derives peatland income using direct monetary values and using market prices to estimate household consumption. We estimate the income sourced from different livelihood activities and the contribution of the peatlands to the total value of production activities.

METHODOLOGY

We carried out face to face individual survey with 93 heads of households, 52 from the Site 1 and 41 from the Site 2. The sampling was done randomly, informed by participatory mapping carried out in an earlier exercise.

All the sources of household revenue were considered including peatlands, swamp forest, *terra firme* forests, rivers, agriculture, and livestock and the benefits of each were quantified by asking about harvests quantities, harvest rules and periodicity, and uses. The total value for each product's period of production was considered as the per annum value. For example, *Irvingia gabonensis* is harvested for a three-month period each year and the total value of the three months was considered as its per annum value.

CONSOLIDATION OF THE VALUE OF THE BENEFITS

The Indigenous Peoples and local communities in the peatlands produce food and household goods with an average value of $2,807 per household per year in Site 1 (Cuvette department) and €1,943 in Site 2 (Sangha department). Overall, fishing is the dominant livelihood activity, contributing about 55% of total household income, followed by agriculture (22%) and non-timber forest products (19%). Hunting and small livestock (mainly chicken) play only a marginal role, together accounting for less than 5% of household income (Figure A3.8). This reflects households' strong dependence on peatland-based, river-based, and forest-based activities. Table A3.1 shows the Indigenous Peoples and local communities' differences in the contribution of different activities and ecosystems.

Table A3.1 Average annual production value (US$) per household from activities and ecosystems, at Site 1 and Site 2, from this study, for local communities (LC) and Indigenous People (IP).

Contribution	Site 1	Site 2		Site 2
	LC	LC	IP	Average
Agricultural value	769	314	122	225
Peatlands contribution per household	421	603	742	667
NTFP from the peatlands	149	153	305	224
Fauna from the peatlands	12	124	98	112
Fishing from the peatlands	260	326	339	332
Terra firme forest contribution	189	412	499	453
NTFP from the Forest	178	351	422	384
Fauna from the Forest	11	62	77	69
River contribution	1,417	578	612	594
Livestock contribution	13	2	8	4
Total Value per household	2,807	1,910	1,983	1,943

In Site 1, the peatlands and rivers contribute 65% of household revenue, of which 12% was from the peatlands (Figure A3.9). Rivers are the most important source of livelihoods (53%), followed by fields (28%), the peatlands (12%) and *terra firme* forest (7%). In Site 2, the peatlands are the first source of income (36%), followed by rivers (30%), then *terra firme* forest (20%), and lastly fields (14%). The peatlands and rivers together form an interconnected freshwater habitat that supports fishing, hunting and the collection of NTFP, and together the peatlands and rivers contribute 66% of the value of livelihoods. The peatlands contribute a slightly greater share of livelihoods value for Indigenous Peoples than for Bantu villagers (37% and 32% respectively).

Fishing, NTFP harvesting and hunting were practised in the peatlands, with fishing in the rivers and the peatlands accounting for 48% of livelihoods value for Indigenous Peoples, and 47% for the Bantus.

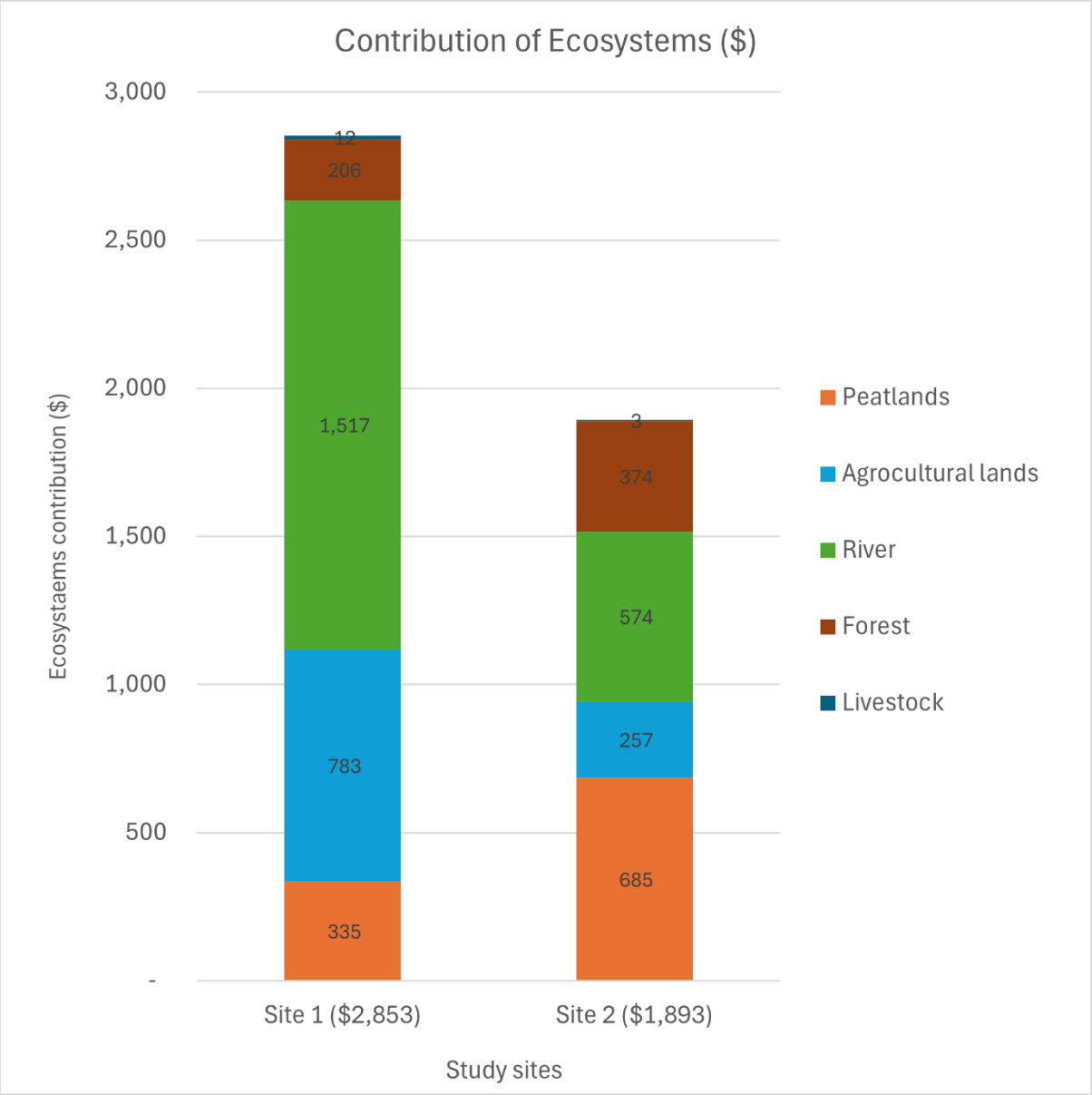

Figure A3.8 The contribution of different ecosystems to average household production value for Site 1 and Site 2, from this study.

BENEFITS FROM FISHING

Fishing is the main activity carried out in the sites visited, practised in rivers and in the peatlands, with 7 main species caught for consumption and trade (Table A3.2). In site 1, 90% of households engaged in fishing activities. Inside the Ntokou Pikounda National Park fishing was restricted to two three-month periods and elsewhere there were no restrictions. River fishing is aimed at the market, while fishing in the peatlands

is mainly intended for consumption. Fishing in the peatlands is most productive at the end of the dry season, when dam fishing is used to trap and catch fish left behind by the withdrawing water.

In site 2 in Sangha department, 98% of surveyed households engaged in fishing and 90% reported fishing in the peatlands. In Site 2 fishing harvests were smaller than in Site 1. As in site 1, fish taken from the peatlands were more for household consumption while those from the rivers were sold in the local market.

Table A3.2. Freshwater taxa utilised by people at Sites 1 and 2, from this study.

English Name	Local Name	Scientific Name
Snakehead	Mungussu	Parachanna spp.
Lungfish	Dzombo	Protopterus dolloi
Catfish	Ngolo	Clarias spp.
Killi clown	Mallebe/Malele	Epiplatys spp.
Carp	Mboto	Distichodus spp.
Turtle	Koba	Trionychidae spp.
Crocodile	Ngoki	Osteolaemus spp.

Most of the catch was sold for cash income, while 24% of fish in site 1 and 28% in site 2 were eaten. Prices varied between sites and between communities. Fishing yielded $1,677 on average per household per year in site 1 while in site 2 the value of fishing was reported to be about half this, with Indigenous Peoples (IP in the charts below) and local communities (LC) earning $950 and $904, respectively (Figure A3.10). In Site 1, 15% of the fishing income was sourced from the peatlands and the richest fishing grounds were within the Ntokou Pikounda National Park, with restrictions as mentioned above. In this site, three species dominate the value of the fish catch, namely Catfish (21%), Snakehead fish (18.7%) and Lungfish (14.5%). In site 2, 36% of the value of fishing came from the peatlands. In both the sites, crocodile (ngoki) and turtle (koba) were also harvested in the peatlands. Crocodile contributed about 4% and 2% of catch value in Site 2 and Site 1 respectively, while the value of turtle is negligible.

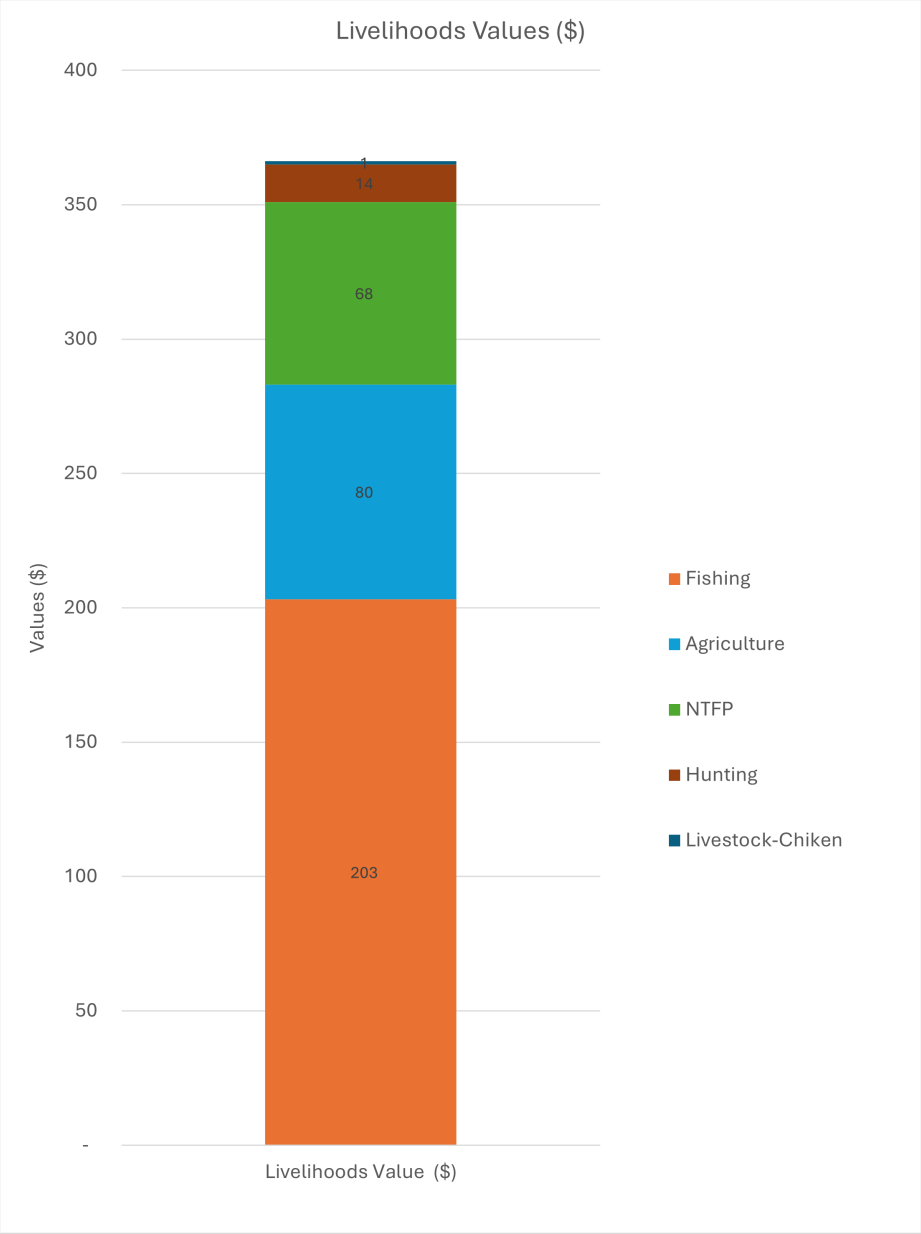

Figure A3.9 The contribution of different livelihood activities to household income, from this study in US$.

BENEFITS FROM AGRICULTURAL LANDS

The majority of households interviewed practice agriculture (84% in Site 1 and Site 2 combined) with an average land holding of 1.5 ha. In our study sites most agricultural land was converted from *terra firme* forest using slash and burn practices, as is the case across the central Congo Basin (Dargie et al., 2019). On average 1.7 ha of land was converted using slash and burn practices in the last 5 years, totalling 74 ha of forest converted to agriculture across both sites. In the two study sites, there were no agricultural activities in the peatlands. This is in contrast to the South Sumatra Peatlands in Indonesia where agricultural cultivation is one of the most important

drivers of peatland degradation (Wildayana, 2017). In the fields on *terra firme*, there was no observed or reported use of toxic chemicals compounds (herbicides, insecticides, etc.) which could impact water and soil quality.

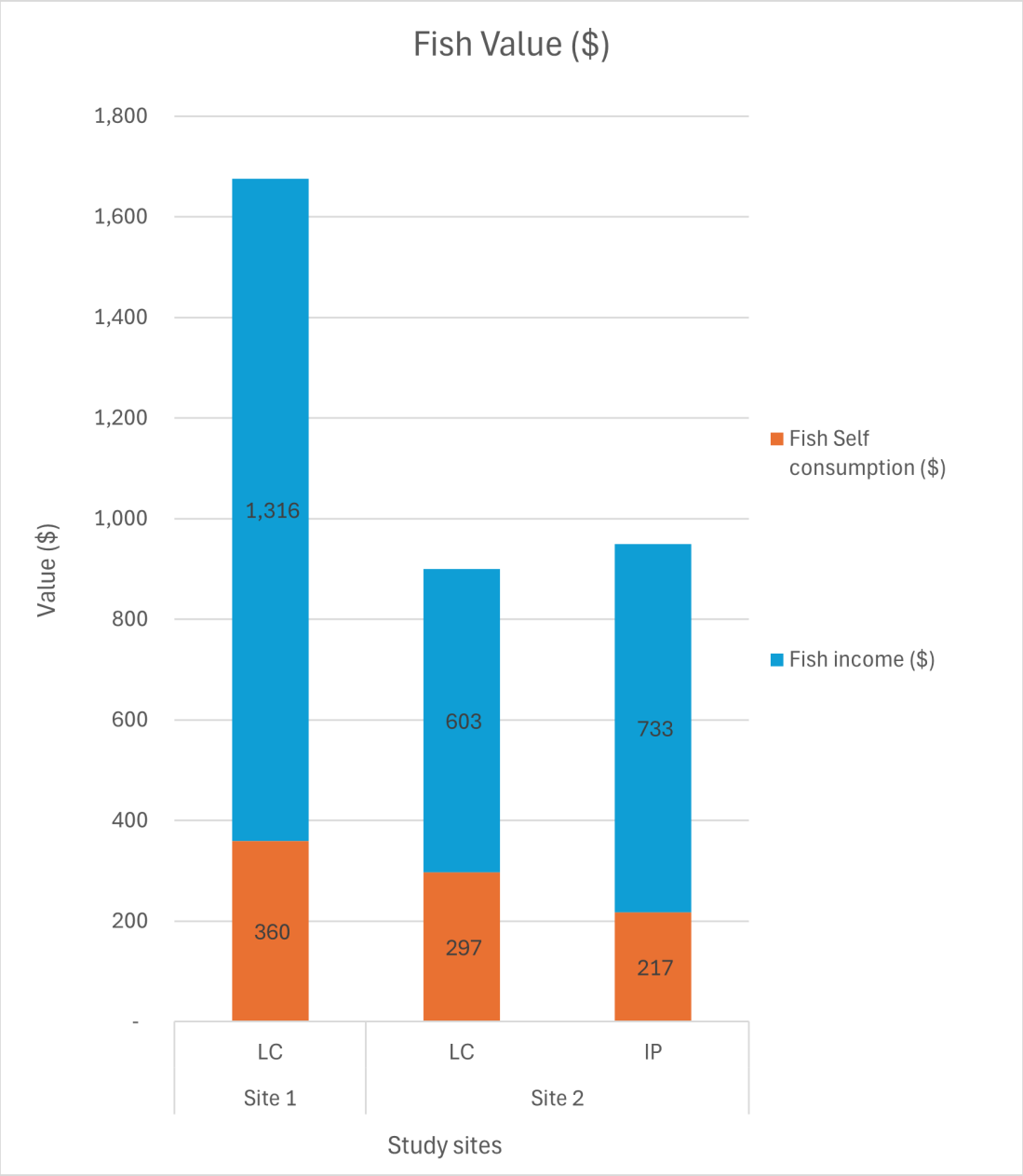

Figure A3.10 Average annual household value of fish production and proportion consumed or sold, by site and demographic group, from this study, in USD. LC = Local Community, IP = Indigenous people.

In both the study sites, agriculture is not very diversified. Households rely largely on cassava, cassava leaves, bananas, maize, cocoyam, and sorrel. Cassava is grown more than any other crop, though Indigenous households reported less than a third of the production reported by Bantu villagers. In both sites the majority was for consumption (60% in site 1; 69% and 59% for the IP and LC respectively in site 2). About 78% of

households engaged in cassava cultivation (Figure A3.11), with an average production of 2.6 tonnes per household in a year. The average household per annum value from agricultural activities was $768 in site 1, and $314 and $128 for the local community and Indigenous Peoples respectively in site 2.

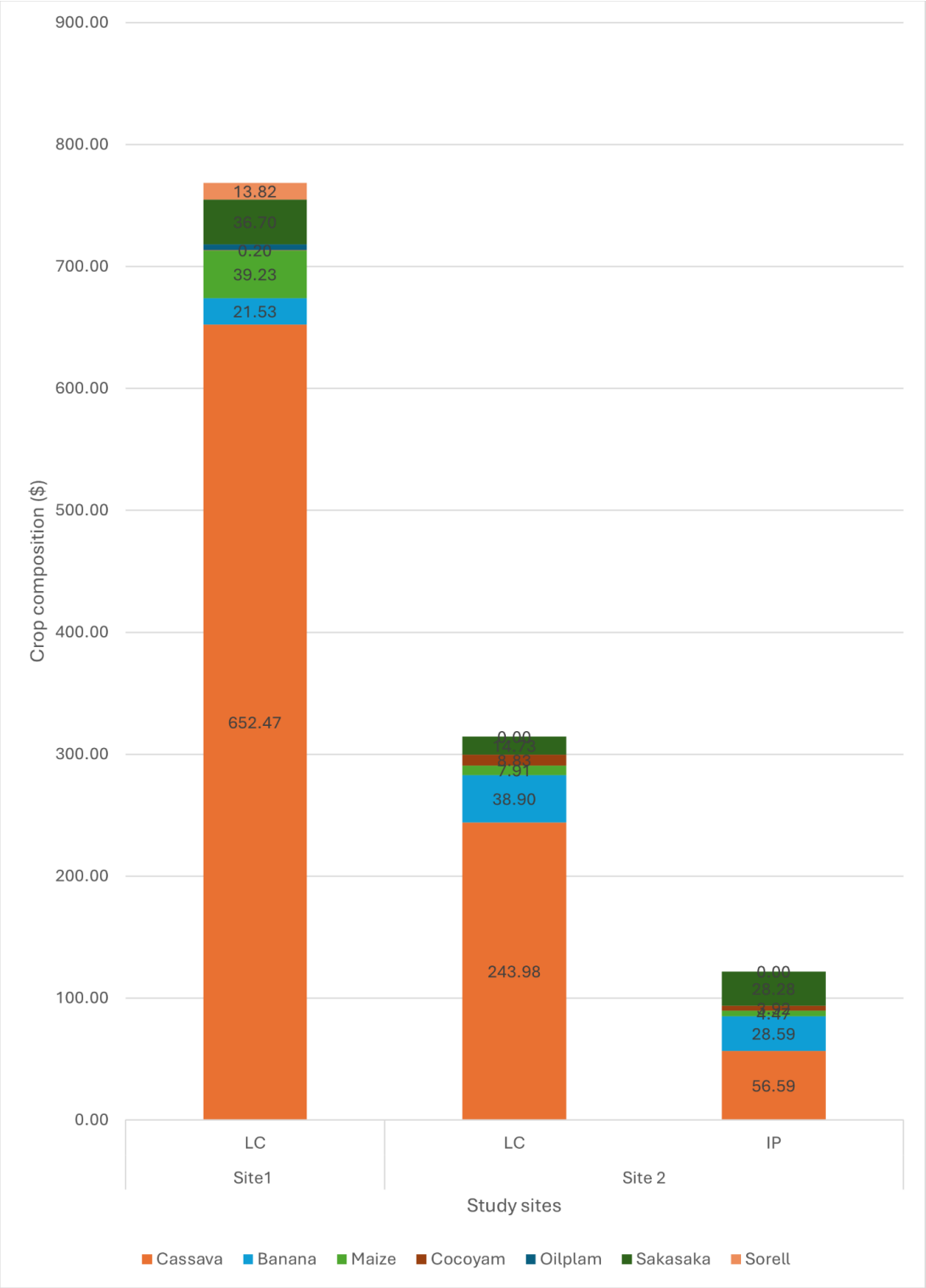

Figure A3.11 The contribution of different crops to household revenue by site and demographic group, from this study, in US$. LC = Local Community, IP = Indigenous people.

BENEFITS FROM HARVESTING NTFP

NTFP include both edible and non-edible products, including edible plants, mushrooms, fruit, honey, fuelwood, vines and medicinal plants. NTFP were more important in site 2 than in site 1 where fishing and agriculture played a bigger role. In the second site they contributed 26% of the value of livelihoods for Bantus and 37% for Indigenous Peoples, compared to 11% in site 1. Edible peatlands NTFP from the forest and the peatlands are among the most used provisioning services.

Overall, nearly half (48%) of NTFP in both the sites were sourced from the peatlands (38% of NTFP in site 1 and 53% of the NTFP in site 2). NTFP contribute an average value of $327 per household in Site 1, of which 81% is for consumption. In site 2, the average value of NTFP per household was $727 for Indigenous Peoples and $504 for Bantus, of which 63% and 46% respectively was for consumption (Figure A3.12).

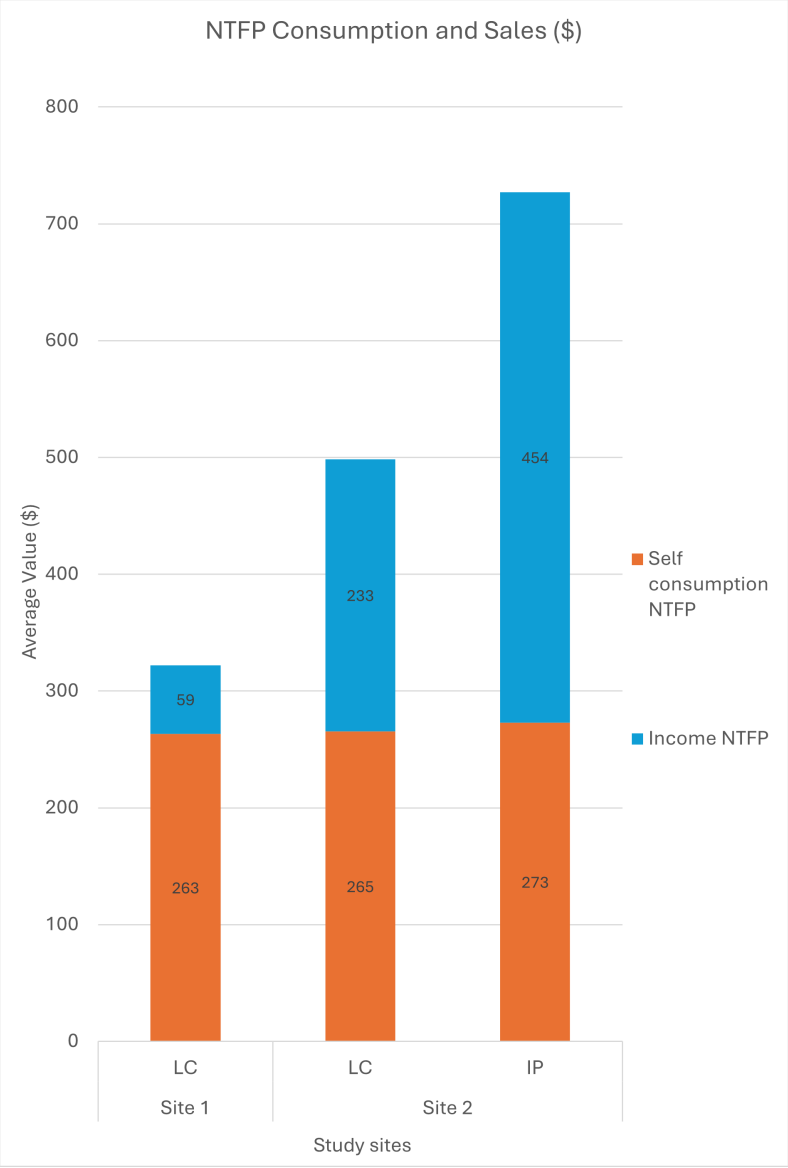

Figure A3.12 Average NTFP value produced, consumed, and sold by site and demographic group, from this study, in USD. LC = Local Community, IP = Indigenous people.

In Site 1 fuelwood dominated the NTFP production value (53%), followed by mushrooms (11%), bark and leaves for traditional medicine (9%), *Marantacae* (8%) and *Gnetum* (6%). In site 2 bush mango dominated, accounting for 31% and 35% of the value of NTFP for the IP and non-IP households respectively, followed by fuelwood, mushroom, Gnetum and honey (Figure A3.13).

The NTFP appear to be harvested sustainably in both the study sites. In site 1, the NTFP harvesting was mostly carried out by the women. In site 2, indigenous Mbendjele collected for their own use and for sale to the Bantus.

In terms of edible NTFP, *Gnetum spp.* (koko) was the most consumed vegetable harvested in both the study sites. It is eaten as an alternative to cassava leaves and is consumed almost every day. *Gnetum* was harvested by 88% of respondents in site 2 (compared to 54% in site 1) and Indigenous Peoples sold the majority (75%) to Bantu villagers for about CFA 200 (US$ 0.3) per Kg, which is half the price received by Bantus in the local market.

Next came *Marantacae* leaves, which are used to wrap manioc, the staple food, and which grow in the undergrowth and in humid environments (Loubelo, 2012). In the study sites about 73% of households in site 1 and 90% in site 2 reported that they harvest *Marantacae*. Indigenous Peoples use it for household consumption and sell it at CFA100 (US$ 0.3) per kg. *Irvingia Gabonensis* (bush mango), which is used as a spice in stews and dishes, was collected by 59% of households in site 2 during its two-month fruiting season. *Irvingia* is sold in the local markets, for CFA1,250 (US$ 20) per kg. Mushrooms are cooked as part of the stew accompanying the main meal. Mushrooms are mostly sourced from the peatlands (97% in site 1 and 71% in site 2). In the second site all Indigenous respondents participated in mushroom harvesting and said they sell mushrooms to Bantu villagers at CFA1,000 (US$ 1.6) per kg. Honey is collected from beehives in trees in the peatlands. It is mostly an Indigenous activity: 89% of Indigenous Peoples surveyed said they had collected honey (20.2 litres per household), compared to 21% of households in Site 1 and 19% of non-Indigenous households in Site 2.

The nonedible NTFP collected in the peatlands are fuelwood, wood and fibre for construction. All respondents harvested fuel wood, used for cooking and for smoking fish. Most fuelwood is collected from *terra firme* forest where it is dry, and respondents

estimated they collected 2.12 tonnes per household per year in site 1 and 1.7 tonnes in site 2. *Calamus* (rattan), *Bambusa spp.* (bamboo), *Tinospora spp.* (liana), *Raphia spp* (raffia leaves) are some of the NTFP used in house building. About 20 tonnes of wood and 6 tonnes of fibre were harvested from Sites 1 and 2 for house building. Raffia and palm leaves are typically used for making furniture, and the walls and thatch for houses and are known to be relatively resistant to rot (Rainey et al., 2010). Bamboo and liana are also used for basket weaving.

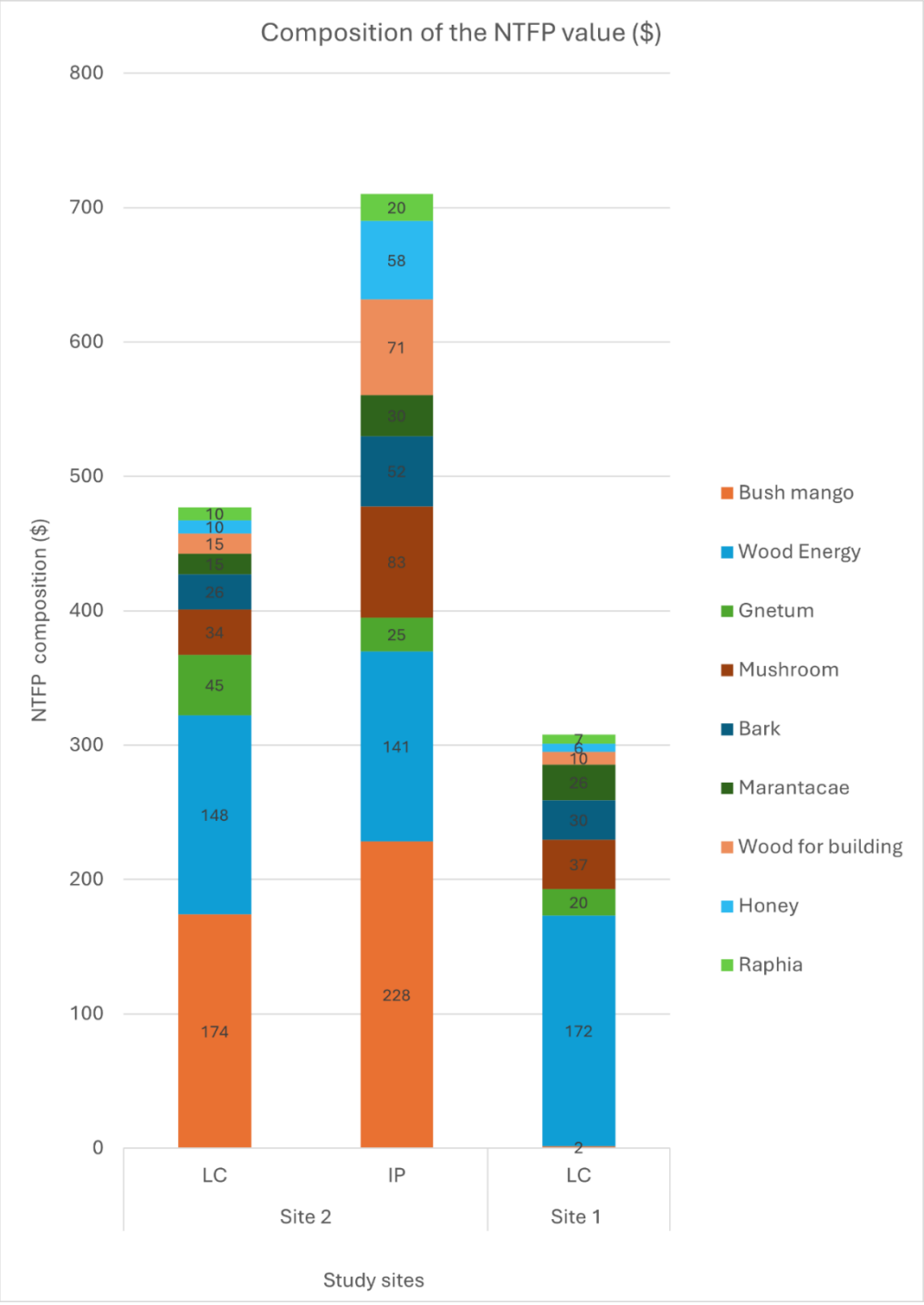

Figure A3.13 The contribution of Non-timber forest products (NTFP) products by site and demographic group, from this study, in US$. LC = Local Community, IP = Indigenous people.

BENEFITS FROM HUNTING

Although only two household heads declared hunting as their principal activity, several households reported that they hunt crocodile, turtles and snakes in the peatlands (included in the valuation of fishing, above) and duiker/antelope, monkey, porcupine and bush pig in all forest types. Indigenous households hunt more than Bantus, though they earn less than Bantus overall as a result of the low price at which they sell (Table A3.3). Overall, about 42% of the value of bushmeat per household in both the sites (excluding crocodile, turtles and snakes) was sourced from the peatlands.

Hunting was worth more to households in site 2, with the value per household averaging at US$186 for Bantus and US$175 for Indigenous households per annum, compared to US$31 in the first site. In both sites, bush pigs accounted for the greatest share of hunting value, followed by antelope, monkey and porcupines. The majority of bushmeat is sold (90%) in local market.

Table A3.3 Hunting harvest, volume and price for Indigenous People (IP) and local community (LC) households over 12 months in Site 2, by Indigenous People (IP) from this study.

	Average Number hunted per household, annually		Total units hunted annually	Percentage of units from peatlands	Average weight in kg per unit	Price per under unit, US$	
	IP	LC				IP	LC
Antelope	10	5	282	53	10	6	18
Monkey	11	7	311	57	4-5	3	7 – 11
Porcupine	7	5	226	58	7	3.5	7 – 9
Bush pig	9	13	222	71	30 – 60	9	27 – 45

BENEFITS FROM KEEPING LIVESTOCK

Livestock breeding was practised less than other activities. About 37% of the households interviewed carried out livestock activities. About 87% of these households kept a small number of poultry (on average 9 chickens per household in site 1 and 2 per household in site 2), and only 3 households kept duck and 3 households kept sheep. Chickens were kept both for consumption and for sale, selling at between CFA1,500 (US$ 2.4) and CFA2,500 (US$ 4) per unit. In an average household in site 1, out of 14 units, 5 were sold and 9 were eaten; and in site 2, out of 4 units, 2 were sold and 2 were consumed. The total value of chicken breeding was $827 in the study sites.

PEATLANDS, INCOME AND POVERTY IN THE STUDY SITES

Our research shows that the peatlands are a vital source of economic benefits, contributing to local economies and to poverty reduction. We compare the household's per capita income from land-based activities with the poverty threshold of €2.15, to give an indication of poverty levels. We also consider the "extreme poverty" threshold: this is the threshold that covers only basic food needs or food subsistence needs, known as the "$1 a day threshold". The per capita value of produce (both what is sold and consumed) was calculated using the household size distribution.

Applying the national measure of poverty of US$ 2.15 a day, Figure A3.14 shows that between 64-90% of households in Site 2 and 83% in Site 1 live below the poverty threshold, compared to a national average of 47%, (taking into account consumption, as does the national poverty survey in the Republic of the Congo) (World Bank, 2023; personal communication, Viboudoulou, M., 6 December 2024). Of these, between 23% and 53% of households lived on less than a dollar a day, the definition of extreme poverty. If only their income is considered, the percentage of households living below the extreme poverty threshold increases (up to 74% of Indigenous households live in extreme poverty if income alone is taken into account), highlighting the limited role markets play in household economies in the peatlands.

The results indicate that a modest increase in income from peatlands could lift many households out of poverty. Peatlands contributed to 45% and 31% of Bantu households being lifted out of extreme poverty in Site 2 and Site 1, respectively, compared to 26% of the Indigenous households, who were also lifted out of extreme poverty due to their income from peatlands. This indicates the importance of the peatlands in sustaining people living locally.

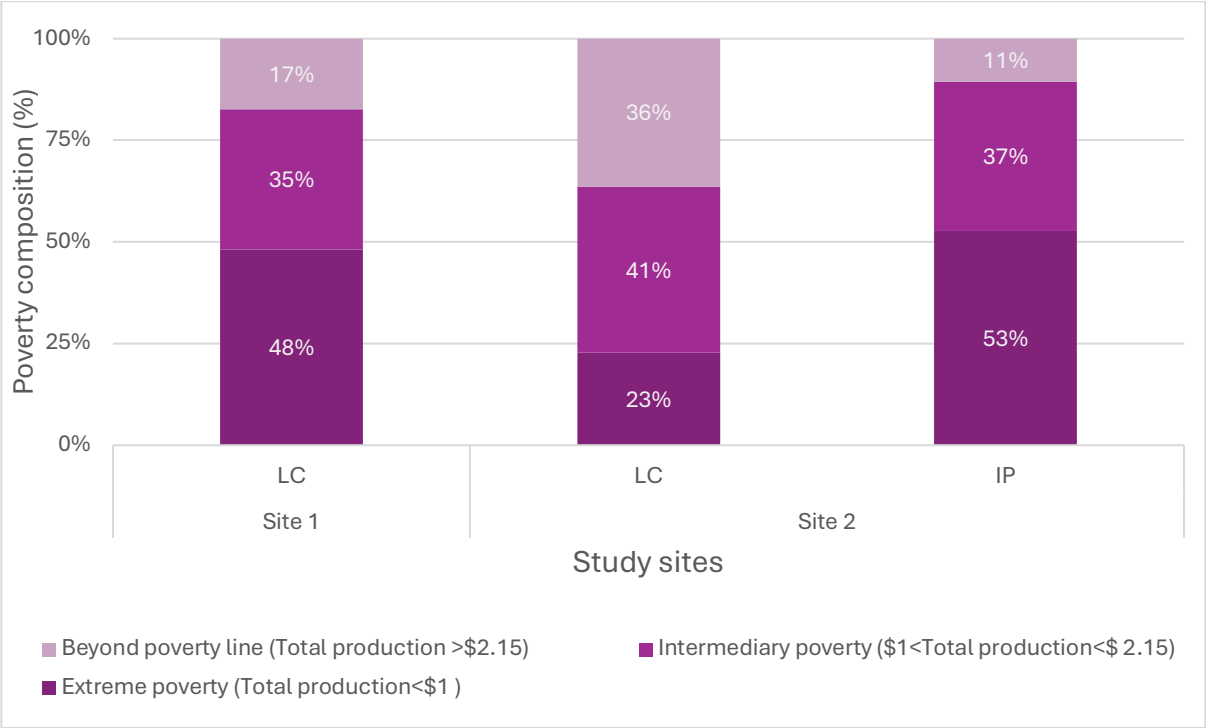

Figure A3.14 Prevalence of poverty, assessed via income thresholds, in Site 1 and Site 2, from this study.

Expectations and Aspirations

The expectations of Indigenous Peoples and local communities in the study sites related to the changes they had seen during their lifetimes. In the first study site, Ntokou Pikounda National Park came under the management of WWF and restrictions were introduced in 2019, significantly affecting people who had had semi-permanent fishing camps there. Up until that point fishing had been unlimited (while hunting was subject to patrols by eco-guards and bans on hunting protected species). After the zoning of the park and the introduction of seasonal fishing restrictions, as one male youth said, "we were no longer free." Not only was access to the forest limited, but the abundance of fish reduced. The past was characterised by an abundance of fish, when "we could eat three times a day, but now we eat once a day and eat a small amount of fish," according to an interviewee in site 1. Explanations for the reductions in fish catch included an increase in the number of people fishing, and changes in the timing and duration of the rainy season. One man described these changes, saying, "Before, there were periods when the forest was entirely flooded and it was impossible to fish for two to three years at a time; then there would be a dry season when the ponds were accessible, and the fish would be really big."

Aspirations were very tied to the forest and to access to fishing. The main concern was continued, or increased, access to the forest. The male youths said, "Our future is threatened," and they said the Park must lift its restrictions. If there were further restrictions on access to the forest, people agreed that life would become impossible. They said they would die for lack of food and the village would empty.

In the second site, in Sangha department, people had also experienced changes in access to the forest, because of a forestry concession. When CIB-Olam zoned the forest into a community zone and a production zone, the production zone was understood by the Bantu community, called Sangha-Sangha, to be off-limits (they called it "the park" and believed it was a protected area), while the Indigenous Mbendjele were free to practise their hunter-gatherer activities there, though they were at risk of being mistaken for poachers by the anti-poaching patrols. Some Sangha-Sangha saw benefits in future from the ban on hunting, saying, "Before hunting was not regulated, while now this allows our children and their children to see threatened species." Bantus in the second site were first or second generation migrants, settled along the river, so their timeframe for change was shorter than the Indigenous Peoples who had known the forest for generations.

The Indigenous Peoples observed great changes in the forest, saying, "Now it is difficult to eat. Now it takes a lot of effort, we have to go far from the village." In the village they rely on fishing and farming for their food, saying, "We have changed our eating habits, we no longer rely on wild yams," an Mbedjele woman said. Female Indigenous youth were adamant that in future they wanted to "continue doing what we do now," a mix of camps in the forest and sometimes living in the village. "We want to keep collecting fruit like *malombo"* said one, referring to *Landolphia Owariensis*. The male Mbendjele youth explained that in future they wanted the forest to have rest periods, "Perhaps three years without any fishing and then we would restart. If it was for us to decide, we would take this decision together." They had done this for ponds on the other side of the river, closing them for fishing for three years, and had informed the Sangha-Sangha villagers, but migrants from DRC had come and fished there.

The aspirations of Indigenous Peoples and local communities often related to improved transport, in order to access markets and services. In both study sites, this was the most cited improvement. Some wanted improved river or road transport in order to access health services, others to sell fish and agricultural produce in markets, and to have more choice in what to buy. "Prices will reduce, goods will flow," said one male youth in the first study site. Alongside improved market access, people wanted technical outreach, access to credit, and materials for improved agriculture, livestock

farming and market gardening. Interviewees cited the need for tools such as hoes, axe and machetes, support for farming cooperatives, and advice on manioc mosaic disease.

Improved access to education was an aspiration of almost all, both Sangha-Sangha and Indigenous Mbendjele. In the district capital the college provided a good standard of education but lacked materials, a proper water source deserving the school, teachers' accommodation, and regularly paid staff salaries. In the second site, a primary school for Indigenous children was also attended by Sangha-Sangha, but they wanted a school of their own, and everyone wanted better classrooms (it had dirt floors and holes in the roof) and an improved teacher-student ratio (one teacher taught 120 children). The importance of education was expressed by one mother who said, "Education is everything. It is important to succeed in school in order to become a government employee, in order to have a salary". The most common aspiration, particularly of the youth, was to become a government employee. One said, "We fish to eat, but it is not our choice, we want jobs". A government salary is perceived to bring job security, a pension, and status. A government job potentially also enables people to tap into other sources of wealth, and fund a network that supports the wider family and elevates social standing (Bayart, 2009). Some youth who had returned to the village after completing college recognised government jobs were out of reach and wanted skills training in mechanics, masonry, technology or refrigeration.

Essential services that are the responsibility of the state were cited as high priorities: access to health care, security and electricity. In Site 1 there was a health clinic, but interviewees said standards were poor and the population preferred to pay to travel to the departmental capital rather than be treated there. "The mortality rate is too high," was one complaint, and "They give the same medicines for all illnesses," was another and, "We need a qualified doctor, a lot of people die here." The site had no police force or gendarmerie, even though it was a district capital, and one of the reasons for wanting electricity was to improve security. The village had had electricity, running water and a phone network, but all had fallen into disrepair due to mismanagement and the police force had fled after riots. This left people relying on the forest for their livelihoods. Customary rights holders were visibly better off, with homes with corrugated iron roofs, and an aspiration of villagers with weaker land tenure – such as the descendants of migrant labourers who were brought in to work on a now-defunct palm oil plantation – was for improved housing.

EXPECTATIONS RELATING TO PROTECTION OPTIONS

Despite the importance of the peatlands to Indigenous Peoples' and local communities' livelihoods, no-one was in favour of creating a National Park as an option for protection against industrial exploitation. In the first study site everyone was opposed to this because of their experience with Ntokou Pikounda National Park. They felt that if the seasonal and zonal restrictions on fishing were replicated in the rest of their forest, "we would all die." In the second site, where the Sangha-Sangha had experience of limitations on forest use set by the logging company, they said, "A protected area would create difficulties… Our life depends on this zone." One man explained their lack of trust in an externally imposed system, saying, "We live with a predatory state which does not respect rights." The Indigenous respondents were similarly against, comparing their freedoms under the logging concession with future restrictions in a protected area. In response to questions in the survey asking how much money they would accept as compensation for the creation of a protected area in the peatlands, 71 % of the survey respondents from the two sites said they were not willing to accept any payment.

A community managed reserve, explained as similar to a protected area but managed in partnership between the state or an appointed NGO and the community, was rejected by most focus group participants, both Indigenous Peoples and local communities. The Mbendjele in Sangha department in particular were cautious about shared decision making, saying "we don't decide anything on the forest." One Indigenous man expressed hope that the possibility of managing their own forest, could bring more respect for their practise of closing parts of it on a cyclical basis to allows species populations to recover. However, if it meant they would be kept out of the reserve, it would not be acceptable: "Our children go there to collect caterpillars and if there is protection, they won't go there anymore."

Community forest concessions had a similarly cautious response, with some seeing the advantage of deciding how to manage the forest, while others had misgivings about real autonomy in management. Indigenous people spoke about their intention to protect the forest, but acknowledged that their relations with other local communities are difficult, and saw that any shared decision making would be abused and would not work. "It will be a bad thing, since they will seek to dominate and there will be conflict."

The reaction to the option of secure land title was mixed. In both the study sites, the majority of focus group participants voiced concerns about acquiring land title as a strategy for protecting the forest, while four individuals specified that they were in support if land title was Indigenous, communal land title. One man in Sangha

department said, “We are in favour if it is for the community, but *not* if it is for an individual.” People observed that land title would enable them to deter commercial actors by presenting evidence that it is their land, but they expressed concerns that land title could be obtained by the village elite and lead to restrictions in access.

The most popular option, despite current levels of threats, was to maintain the status quo and to fund community development. The reason for not wanting the peatlands to be designated was an expressed fear that essential access to customary lands and natural resources might be restricted and decisions about land use might be made without consultation with the customary land users. On the other hand, if the community’s role as guardians of the forest was acknowledged and development funding was provided, the preferred option was no new protected status. All focus group participants emphasized the essential importance of continued usage by Indigenous Peoples and local communities.

References

Bombjaková, D., Lew-Levy, S., Duda, R., Loubelo, G., & Lewis, J. (2020). BaYaka education : From the forest to the ORA (*Observer, Réflechir, Agir*) classroom. *Hunter Gatherer Research*, *6*(1-2), 87-114.

Crezee, B., Dargie, G. C., Ewango, C. E., Mitchard, E. T., Emba B, O., Kanyama T, J., Bola, P., Ndjango, J.-B. N., Girkin, N. T., & Bocko, Y. E. (2022). Mapping peat thickness and carbon stocks of the central Congo Basin using field data. *Nature Geoscience*, *15*(8), 639-644.

Dargie, G. C., Lawson, I. T., Rayden, T. J., Miles, L., Mitchard, E. T. A., Page, S. E., Bocko, Y. E., Ifo, S. A., & Lewis, S. L. (2019). Congo Basin peatlands : Threats and conservation priorities. *Mitigation and Adaptation Strategies for Global Change*, *24*(4), 669-686.

Hoyte, D. S. (2023). Gorillas and Grandfathers : Baka Hunter-Gatherer Conceptions of the Forest and Its Protection, and the Implementation of Biocultural Conservation Through Extreme Citizen Science in the Rainforests of Cameroon [PhD Thesis, University of London, University College London (United Kingdom)].

INS. (2023). 5th Census Report, Resultats Preliminares, Cinquieme Recensement General De La Population et de L'habitation (RGPH-5).

Lewis, J. (2002). Forest hunter-gatherers and their world : A study of the Mbendjele Yaka pygmies of Congo-Brazzaville and their secular and religious activities and representations. PhD Thesis, University of London.

Lewis, J. (2013). *A cross-cultural perspective on the significance of music and dance to culture and society: Insight from BaYaka Pygmies*. In Language, Music and the Brain: A mysterious relationship. Strüngmann Forum Reports, vol. 10. (pp.45-65).

https://direct.mit.edu/books/edited-volume/3711/chapter-abstract/123230

Lewis, J. (2014). *Egalitarian social organisation among hunter-gatherers*. Libcom website. https://libcom.org/article/egalitarian-social-organisation-among-hunter-gatherers-case-mbendjele-bayaka-jerome-lewis

Lewis, J. (2016). 'Our life has turned upside down! And nobody cares.'. *Hunter Gatherer Research*, *2*(3), 375-384.

Lewis, J. (2020). Living with the Forest. *Scientific American*, *322*(5), 54.

Lewis, J. (2021). Why music matters: Social aesthetics and cultural transmission. Sean Kingston Publishing.

Lewis, J. (2024). UCL. Online interview with Cassandra Dummett, 19 June.

Loubelo, E. (2012). Impact des produits forestiers non ligneux (PFNL) sur l'économie des ménages et la sécurité alimentaire : Cas de la République du Congo. PhD Thesis, Université Rennes, France.

Mogue Kamga, S., Brokamp, G., Cosiaux, A., Awono, A., Fürniss, S., Barfod, A. S., Muafor, F. J., Le Gall, P., Sonké, B., & Couvreur, T. L. (2020). Use and cultural significance of Raphia palms. *Economic Botany*, *74*, 207-225.

Moise, R. E. (2019). *Making Community Forestry Successful in DRC: Anthropological Perspectives on Community-Based Forestry Management*. Rainforest Foundation UK. https://www.rainforestfoundationuk.org/wp-content/uploads/2021/10/drc-moise-study-english.pdf

Olam Agri. (2024). *Pioneering public-private collaboration celebrates 25 years of biodiversity conservation in the Republic of Congo*. Press release: https://www.olamagri.com/news/press-release/celebrates-twenty-five-years-of-biodiversity-conservation-in-the-republic-of-congo.html

Oloa-Biloa, C. (2017). The egalitarian body. A study of aesthetic and emotional processes in massana performances among the Mbendjele of the Likouala region (Republic of Congo). PhD Thesis, University College London.

Pascual, U., Balvanera, P., Díaz, S., Pataki, G., Roth, E., Stenseke, M., Watson, R. T., Başak Dessane, E., Islar, M., Kelemen, E., Maris, V., Quaas, M., Subramanian, S. M., Wittmer, H., Adlan, A., Ahn, S., Al-Hafedh, Y. S., Amankwah, E., Asah, S. T., … Yagi, N. (2017). Valuing nature's contributions to people: The IPBES approach. *Current Opinion in Environmental Sustainability*, 26, 7-16.

Rainey, H. J., Iyenguet, F. C., Malanda, G.-A. F., Madzoké, B., Dos Santos, D., Stokes, E. J., Maisels, F., & Strindberg, S. (2010). Survey of Raphia swamp forest, Republic of Congo, indicates high densities of Critically Endangered western lowland gorillas Gorilla gorilla gorilla. *Oryx*, *44*(1), 124-132.

République du Congo. (2011). Loi n°5-2011 du 25 février 2011 portant promotion et protection des droits des populations autochtones – République du Congo | ClientEarth. https://www.clientearth.fr/actualites/ressources/loi-n-5-2011-du-25-février-2011-portant-promotion-et-protection-des-droits-des-populations-autochtones-république-du-congo/

Special Rapporteur on the rights of Indigenous Peoples. (2020). *Visit to the Congo—Report of the Special Rapporteur on the right of Indigenous Peoples*. OHCHR report. https://www.ohchr.org/en/documents/country-reports/ahrc4534add1-visit-congo-report-special-rapporteur-right-indigenous

Townsend, C. (2015). Baka ritual flow diverted. *Hunter Gatherer Research*, *1*(2), 197-224.

UNESCO. (2008). *UNESCO - Polyphonic singing of the Aka Pygmies of Central Africa*. Report. https://ich.unesco.org/en/RL/polyphonic-singing-of-the-aka-pygmies-of-central-africa-00082.

Verdu, P. (2016). African Pygmies. *Current Biology*, *26*(1), R12-R14.

Viboudoulou Vilpoux, M. E. (2024). World Bank. Email with Cassandra Dummett and Jonas Ngouhouo-Poufoun, 6 December.

Wildayana, E. (2017). Challenging constraints of livelihoods for farmers in the South Sumatra peatlands, Indonesia. *Bulgarian Journal of Agricultural Science*, *23*(6).

WWF. (2024). Ntokou Pikounda National Park. Webpage: https://wwf.panda.org/discover/people_and_conservation/protected_and_conserved_areas/ntokou_pikounda_national_park

Endnotes

[1] This contradicts the map of the traditional land boundaries of the Mbendjele, see Figure A3.1 (Lewis, 2002).