

Introductory note:

- The following document is to be inserted, as it is, as an appendix to the BAP version 5, to be delivered before the end of the year 2020 (current version is 4B).
- It contains both the ARCC task Force panel review and, when relevant, key facts, inputs and comments from the Project's sponsors, in the purpose of clarification and/or update of Project's situation.

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IUCN SSC Primate Specialist Group
ARRC Task Force Panel Review:
'Aménagement Hydroélectrique de Kinguéle Aval
(34MW) PLAN D'ACTION POUR LA PRESERVATION
DE LA BIODIVERSITE (PAB), version 4B'

[The IUCN SSC Primate Specialist Group ARRC Task Force](#)

We are an IUCN SSC Primate Specialist Group Task Force comprised of the world's leading ape conservation experts with the goal of providing advice about avoidance, reduction, and restoration of the negative impacts of energy, extractive and associated infrastructure projects on apes, and recommendations for ways that companies can also contribute positively to ape conservation. The following is a review of the Kinguéle Aval project as of September 23rd 2020, conducted by a panel of five great ape experts with relevant experience in Gabon.

[The Kinguéle Aval project](#)

The Kinguéle Aval project is a 35 MW hydroelectric dam project located in Gabon. It will generate approximately 205 GWh of electricity per year and is a run-of-river operation. The dam will be 48 m high and 470 m long and consist of 170,000 m³ of concrete. Construction of the dam is predicted to take 40 months. Operation of the dam is planned from 2023 for 30 years.

The Kinguélé aval project is a hydroelectric development project with a capacity of 35 MW, or an annual production of 205 GWh. This energy will be injected into the Libreville interconnected network (RIC) and is predicted to result in a 13% increase in annual production. Its development is ensured by Asonha Energie, a company incorporated under Gabonese law 60% owned by Meridiam and 40% by Gabon Power Company (GPC).

The total project footprint is 290 ha which includes 234 ha of reservoir. A total of 187 ha of the project area is within the Monts de Cristal National Park and 74 ha are within its buffer zone. The remaining 29 ha are for the base camp, and other ancillary infrastructure. There will be a factory approximately 3 km upstream from the Andock Foula village. The reservoir will be located approximately 3 km downstream from the existing Kinguélé station.

The project site is considered the preferred location for the dam in terms of minimising impacts on the National Park, terrestrial and aquatic habitats and species; given Gabon's high forest coverage and extensive ape populations, it would be challenging to find an alternative site outside of critical habitat. Its location was selected as a planned extension of the historic hydroelectric structures of Kinguélé (57 MW) and Tchimbélé (68 MW). According to the study, less than 200 m of high-voltage line will be created to connect to these existing energy evacuation lines. In addition, less than a kilometer of road needs to be created. There will be no creation of new quarries and no underground works.

The Environmental and Social Impact Assessment (ESIA) was comprehensively compiled by ARTELIA, with Biotope as a sub-contractor in charge of the Biodiversity Action Plan (BAP), and their associated consultants. Assessments covered all biodiversity groups with a particularly strong focus on aquatic plants and fish by species experts. These in-depth studies have also discovered new information on a number of species, some providing a basis for reclassification (amphibian) and the identification of one new species of fish. In comparison however, the mammal assessment was brief (98 km of recce transects over 6 days with camera traps placed for 2-5 days within 2 km²) and was carried out in the wet season only.

Project's key facts, updates, inputs and comments

- An additional mammal survey in wet season has been carried out during main wet season 2020 (September – October). Its key results are provided later in the document, with a focus on great apes.
- Another additional mammal survey is planned during the main dry season 2021 (July – August). Its result will be consolidated with the wet season ones.
- A new survey strategy regarding apes is proposed later in the document.

As well as being situated just inside the Monts de Cristal National Park, the Kinguélé Aval project is inside the southwestern limit of an “exceptional” priority landscape for the conservation

of the Critically Endangered Western Lowland Gorilla (*Gorilla gorilla gorilla*) and the Endangered Central Chimpanzee (*Pan troglodytes troglodytes*) called the Monte Alén - Monts de Cristal – Abanga.

IUCN SSC Primate Specialist Group ARRC Task Force Engagement

The ARRC Task Force was contacted by Biotope concerning the Kinguéle Aval hydroelectric project in Gabon and presented preliminary information in a PowerPoint presentation. Biotope then provided version 4B of the Biodiversity Action Plan (BAP) on July 24th 2020 for an ARRC Task Force Panel review. The ARRC Task Force then assembled a panel of five members of ape experts with relevant experience in the region. The comments of the ARRC Panel on the BAP version 4 were delivered on August 14th 2020. Biotope then sent its response to these comments on September 17th 2020 as well as the Terms of Reference for Supplemental Mammal Surveys. The ARRC Task Force, Biotope, and the Sponsors joined in a call on September 23rd 2020 to clarify some of the comments, and the present document provides the latest version of the comments from the panel, having integrated feedback from the project.

General Comments

In general, the ARRC Task Force Panel agreed that there has **not been an appropriate level of survey effort, conducted over a well-defined survey area, and by relevant experts**, to ascertain the distribution and abundance of apes in this area. It is difficult therefore to assess if all the mitigative measures and the proposed biodiversity offset presented in the BAP are well designed and sufficient for apes without more accurate baseline data. We understand that supplementary mammal surveys are planned and some are underway. We reviewed the Terms of Reference for the wet season survey and therefore we provide more in-depth comments on these below (see section (v) of the baseline surveys).

Project's key facts, updates, inputs and comments

- Same comment as above (additional surveys carried out in 2020 and planned in 2021).

Baseline Surveys

i) Length and timing of survey

As part of the BAP, the mammal survey was only conducted during **one season** and led by one survey team over 6 days. The **camera-traps were only left for a few days** (sometimes only 2 days) which is not enough time for wildlife to get used to this new element in their environment and for capturing new species. The number of species expected vs recorded so far could have been checked with **species accumulation curves**. For great apes, especially when found at a low density, a much **greater survey effort** is needed to detect signs of their presence. Furthermore, this general mammal survey was **not conducted by ape experts**, which greatly reduced the probability of detecting signs of their presence (and especially when they are found at a low

density when you really need to be trained to find signs of their presence, and focus your survey on these species).

Project's key facts, updates, inputs and comments

- Same comment as above (additional surveys carried out in 2020 and planned in 2021).

ii) Survey area

Given the Mbe Park sector's width in places, it is **unlikely that ape home ranges/territories will fall within the Park alone**, meaning areas adjacent to the Park need to be included in any assessment as well. The survey area for the BAP was **not large enough**, only representing 2 km² along the existing road. It is well known that hunting pressure is higher closer to roads and thus it is also **unlikely that ape core areas would be close to roads**. The area surveyed for the BAP was also **not large enough to encompass potential indirect impacts** (as stated in the BAP, hunting pressure can extend in a radius c.10km from a village), and to understand the distribution and abundance of apes in relation to the project's infrastructure. It would have been better to use the 'aire d'étude rapprochée' as the survey area. More **interviews with local communities** could also have helped to delimitate better the survey areas for apes.

Project's key facts, updates, inputs and comments

- The initial mammal survey focused on the footprint of the project and its immediate surroundings, which are in the close vicinity of the road going to existing Kinguéélé dam facilities.
- The additional mammal survey carried out in main wet season 2020 has covered a much larger area, at the scale of the local landscape of the Crystal Mountains foothills: c. 93 km², encompassing the project's footprint (infrastructure, reservoir and facilities) and the project offset area.
- During an additional social survey in the framework of the project offsetting, information regarding the location of great apes in the local landscape have been provided by the population.

Please see results later in the document.

iii) Survey methods

The methods used to survey great apes for the BAP were interviews, camera-trapping and recces. It is not clear how interviews were conducted (e.g. semi-structured interviews with a focus group or at random when encountering someone, but the latter seems to be what has been used?). For the BAP, the **camera-trapping effort was not sufficient** and camera traps were used only over a very small area close to the road as mentioned above. Similarly, the **recces were also conducted along the road**, whereas it is likely that apes use nesting sites further away from the road.

Project's key facts, updates, inputs and comments

- Please see above comment for initial survey.
- The additional mammal survey carried out in main wet season 2020 has been based on a much greater survey effort, based on 48 camera traps cumulating 1400.4 camera.days of trapping (c. 29 days of survey per trap).
- Additional mammal fauna data (direct sightings and tracks) have been recorded during the setting/removing of the traps.

Please see results later in the document.

iv) Survey results

During the December 2017 assessment (annex to the BAP), one old **chimpanzee nest** was observed (but the location not provided) and there was eyewitness testimony of a **gorilla crossing the Mbé** below the dam structure in the fall of 2017. Chimpanzee nests in tropical rainforests remain only for a maximum of a few months. Given the very low effort of the survey, the chance of detecting a nest is low. The fact that a nest had been observed means that a more extensive surveys will likely detect many more signs.

Project's key facts, updates, inputs and comments

- Please refer to first comment: additional surveys carried out in 2020 and planned in 2021.

Anecdotal accounts provide evidence of gorillas north of Kinguele damn, only 2.5km from the upstream extremity of the Project's reservoir (9km from project infrastructure). Given the presence of great ape habitat and the extent of great ape home ranges/territories (~up to 40km²) this indicates that the project's area of influence is part of at least one chimpanzee territory and potentially also part of a gorilla home range.

The BAP also says that national park eco-guards reported the presence of **great apes further upstream of the Mbé valley**, towards the heart of the national park. Other evidence came from National Agency for National Parks (ANPN) seizure data 2018-2020 which reported that one **gorilla (carcass) and a chimpanzee was confiscated**, although their origins were not necessarily in the vicinity of the project area. The nearest local village of Andock Foula (with 34 people) also reported that **gorillas are occasionally hunted**.

It is hypothesized that **hunting activity from this village has led to a local extinction** of great apes in this area. The BAP concludes that there is no established population of gorillas or chimpanzees in the project area nor in the surrounding areas. The BAP also suggests that only a few individuals probably use the space in transit and that the area is on the periphery of any

community of great apes. The BAP reports that the risk to gorillas and chimpanzee from this project is therefore, “negligible.”

Strindberg’s models of ape densities in the study area/reservoir footprint were described as low, with gorillas showing higher prevalence than chimpanzees (gorillas 1-1.5 ind./km²; chimpanzees ~0.2 ind./km²) and greater ape densities toward the north/centre of the landscape. This is echoed by a previous WCS surveys in Monts de Cristal in the mid-2000’s. Additionally, during a separate 3-day scoping mission for the since-abandoned Kinguele Upstream project in September 2017, **evidence of a solitary male gorilla and a gorilla group** was found north of the Kinguele dam. However, a once-off survey conducted over a few days to assess the presence of all mammal species is **not an appropriate amount of time** to assess ape presence or abundance. A proper assessment can only be done with a **targeted ape survey** conducted first to assess the presence of ape, followed then by a **systematic survey with sufficient spatial and temporal resolution to also capture transient individuals**.

The fact that a chimpanzee nest was observed, and that ape presence was reported in the area indicates that there is at least one chimpanzee community using the area in the vicinity of the road but it is not possible to draw conclusions about ape abundance using such a rapid assessment as used in this BAP. The 2017 field mission can’t draw the conclusion that there is ‘no established population’ of great ape. Similarly, the statement in the BAP that the project site is ‘on the edge of critical ape habitat’ and that impacts on apes are ‘negligeable’ are not justified and are an overinterpretation of the limited survey information.

v) Recommendations

In this context, **the ARCC Task Forces and the Project’s sponsors both agree on the necessity of strengthening the baseline regarding great apes prior to the construction period and on the need for a much greater survey effort to detect signs of their presence in the area of influence of the Project.**

Additional surveys shall:

- Cover a larger survey area, including areas away from the main road to encompass potential indirect impacts of the Project (from both within and outside the Park), and to understand the distribution and abundance of apes in relation to the Project’s infrastructure. The design of this survey area for apes shall include interviews with local communities to delimitate it better.
- Increase significantly the survey effort during both wet and dry seasons, and use complementary methods: (camera-trapping, recces and the interviews mentioned above) with sufficient spatial and temporal resolution to also capture transient individuals.
- Include in the team trained ape experts to enhance the probability of detecting signs of their presence, and to focus the survey on these species.

Project's key facts, updates, inputs and comments

- The additional mammal survey carried out in main wet season 2020 has been based on a much greater survey effort: 48 camera traps cumulating 1400.4 camera.days of trapping (c. 29 days of survey per trap).
- Additional mammal fauna data (direct sightings and tracks) have been recorded during the setting/removing of the traps.
- One ape field expert was part of the field team: Vianet MIHINDOU, with extensive experience as an eco-guide in Lopé National Park, Gabon.
- An additional mammal survey is already planned in dry season 2021, and a survey strategy for apes is proposed later in the document, based on the last survey results.

Comments on the Terms of Reference for 2020 additional mammal baseline surveys

We were provided with the Terms of Reference (ToR) for conducting additional mammal surveys in the wet season (dated September 11th 2020) on September 17th 2020, however there wasn't an opportunity to provide meaningful comments that would have been taken into consideration given that this **survey was already underway**. However, we still provide here comments on these ToR so that some **modifications can be made once the teams retrieve the camera traps**, and in anticipation of the dry season survey that will take place in 2021. We feel strongly that further surveys need to be conducted **before the start of construction**, therefore we propose here to conduct **further recess once the team will retrieve the camera traps** to better understand the distribution of apes in this area, which will **help to better plan the dry season surveys**.

The main method to be used as part of these additional surveys is camera trapping. It is stated in the ToR that about fifty camera traps will be placed for three weeks to one month over two seasons: 1) the long rainy season (mid-September to November 2020) and the long dry season (July-August 2021). It would have been preferable to **leave the camera traps for a longer period** (as good batteries can last for c.45 days in such environment), and to **conduct two rounds** of camera trapping in each season, by moving the camera-traps to other grids for an increase coverage and survey effort (needed here because of the low ape density).

We reviewed the area to be covered for the supplemental surveys and discussed with Biotope and the project sponsors. Ideally, **the survey area would have been extended further to the north, south and east of the reservoir**, as it would be good to understand where gorillas and chimpanzees range¹ in relation with the planned infrastructures, and to understand potential

¹ Both western gorilla group home ranges and central chimpanzee community territories can be in the magnitude of 40km². Unlike chimpanzee territories which are exclusive, gorilla group home ranges can overlap with each other (dependent on density), as well

impacts on population connectivity. Given that camera traps have already been placed, at least **recces could be conducted in these areas** to obtain a better understanding of ape presence and distribution in these areas.

We would recommend that recces, specifically targeting apes, be conducted once the teams will go to retrieve the camera traps (**early October**). Given the difficult terrain, we would recommend that the team camps further away from the road and villages in order to leave them enough time to access more difficult terrain where apes might retreat to shelter from the human pressure. Further **interviews** should be conducted in villages in order to pinpoint interesting locations to survey, where apes have been seen recently or where one person can bring the team to a nesting location. Furthermore, more recces should be conducted in the surroundings where one chimpanzee nest was previously found in 2017. During these recces, **botanical species used for feeding and nesting should be recorded** to input into the rehabilitation plan (18ha to be rehabilitated). These recces need to include at least one primatologist with relevant survey experience.

The survey design and analysis in the ToR is based on a camera trap study conducted by Hedwig *et al.* from the Bateke plateau. The methodology applied for that study was based on capture-recapture techniques for estimating great ape abundance (note that it is better to use the video mode to identify individuals). This is not mentioned in the ToR. Instead it proposes to only use an abundance index.

Project's key facts, updates, inputs and comments

- The additional mammal survey was targeting the whole medium and large mammal community in order to both strengthen the baseline and support the offset strategy of the project. It also includes great apes and allows for an initial analysis. The proposed Relative Abundance Index (RAI) and Naïve Occupancy *'are useful measures to monitor the occurrence of a given species'* as indicated in this recent scientific paper, and allow comparisons with other papers.

Since the Bateke study, methods were developed further, including camera trap distance sampling, to conduct a robust field survey that provides useful information, including the estimation of density and abundance. Although we were asked to focus on great apes (a response

as with solitary males (seeking to establish their own groups). Spatial use of home ranges/territories areas is not evenly distributed, usually showing core areas of use associated with high food availability (which differs seasonally). Fidelity to these home ranges and territories tends to be high, although gorilla groups may temporarily shift their ranges due to perceived risks (whether from reproductive competition or human disturbance) and solitary male gorillas may expand their home range over time in the search of females. For these reasons, if even only one ape is found within the project area, it is by default part of a current home range/territory and if conditions allow could potentially use the project area into the future, despite the levels of disturbance. Apes have been found to live adjacent to human settlements/extractive operations and in modified habitats, not only solitary individuals but also groups e.g. gorillas groups within the operational footprint of Gamba's oil concessions, even adjacent to the oil terminals; chimpanzees adjacent to mining sites in Senegal and Guinea.

on our recommendation including elephants), the camera trap distance sampling will give abundance estimates for multiple species, including elephants, ungulates etc. A survey design could entail both **systematically placed camera traps for estimating mammal abundance and targeted camera traps at locations** potentially visited by great apes to address objectives 1 and 3 simultaneously. The **ToR would need to be revised for the dry season** in order to provide a better and more widely applicable methodology. Furthermore, there is a national camera trapping initiative underway by the Ministère des Eaux et Forêts (in collaboration with Panthera) across Gabon, therefore consultations with these organisations would be helpful to see if there is also a possibility for the project to align the camera trapping with their methodology (or otherwise for the BMEP).

Project's key facts, updates, inputs and comments

- The recommendations proposed above will be considered in the design of the 2021 survey strategy, bearing in mind that the project's priority is to inform the project's impact with indicators as simple as possible to collect, calculate and analyze.
- Please note that the project's biodiversity team is in contact with Panthera.

It is important to note that even if apes are not recorded on camera traps during the rainy survey season, **it will not confirm their absence from the area**, and surveys in the dry season will be needed to understand their seasonal ranging patterns.

Project's key facts, updates, inputs and comments

- Please see results and proposed survey program for 2021 in the following sections.

Discussions between Biotope, the Sponsors and the ARRC Task Force concluded that data generated from the camera traps from the rainy season will be shared with the task force, at which time we will be able to make further suggestions for the methodology and camera trap placements if needed for the dry season.

Project's key facts, updates, inputs and comments

- Once analyzed, collected data will be shared with ANPN and the Task Force.

New section: additional mammal survey key results for apes – main wet season 2020

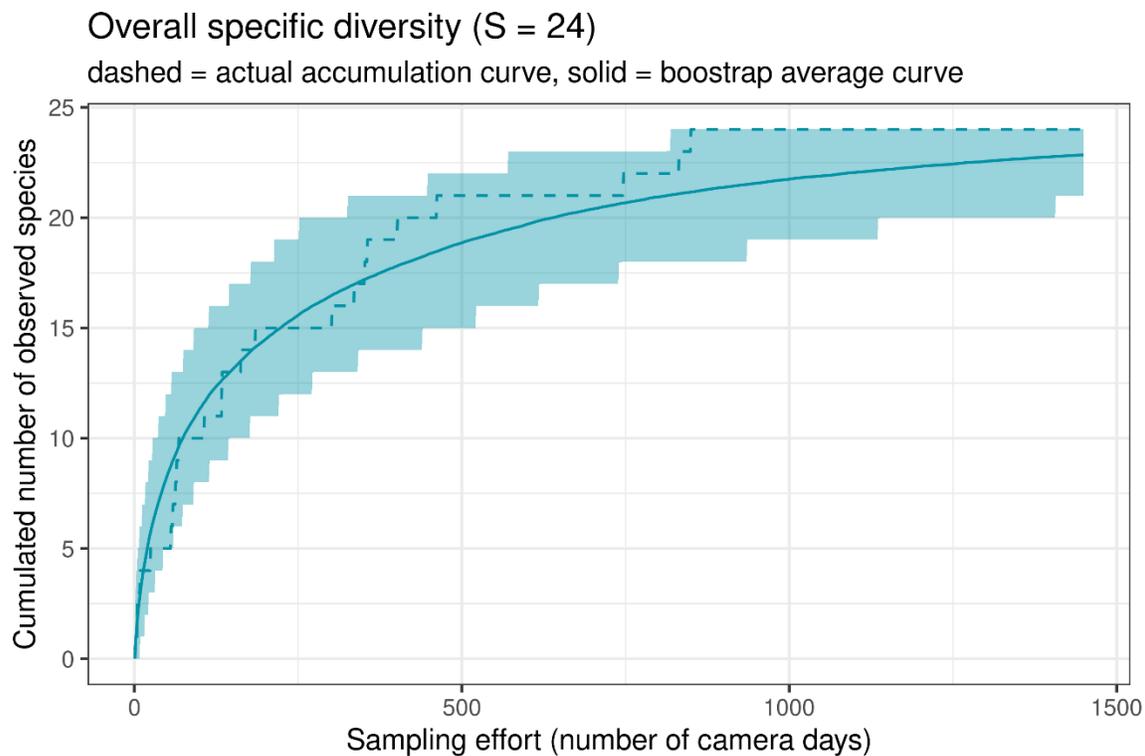
Disclaimer: this a first level of analyse of the results. Full analysis based on provided ToRs to be integrated in BAP version 5, to be disclosed before the end of the year 2020.

Protocol (draft presentation)

- The camera trap survey lasted from September 13th to October 19th, during the main wet season (highest level of rains) in Gabon.
- The area covered by the survey encompassed a large part of the project's landscape, including the project's footprint (infrastructure, reservoir and other facilities) and the project's offset area. When considering the polygon formed by the more external points, it covers 93 km² (= 9312 ha) of the southwestern foothills of the Crystal Mountains.
- 48 camera traps have been both installed and successfully removed, cumulating 1400.4 cameras.days of capture.
- The camera.traps were installed based on a 1 km x 1 km systematic grid, one trap in every two cells. 16 camera traps were thus located in the Crystal Mountains National Park and the other ones in its buffer zone.
- Additional fauna data have been collecting while setting/removing the camera.traps.

General results (draft presentation)

- 24 medium and large mammal species have been identified through camera.trapping (large rodents, ungulates, carnivores, pangolin, elephant, monkeys and great apes). Please see accumulation curve below.



- Additional sightings and evidences add seven other mammal species (mostly monkeys).

Remark 1: other additional species to be added to the list from initial survey (2017).

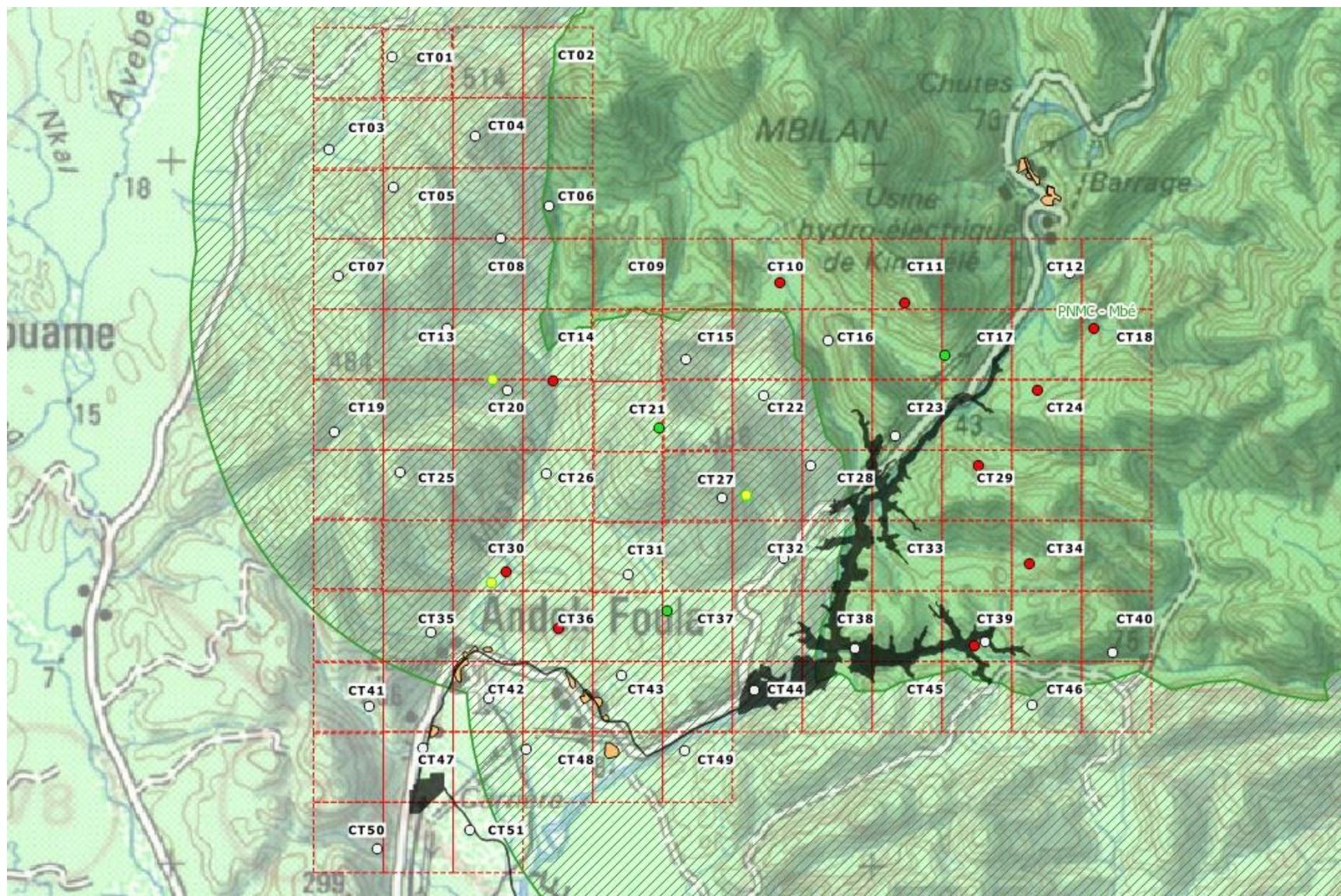
Remark 2: full analysis including Relative Abundance Index (RAI) and Naïve Occupancy for all species (and/or group of species) will be available in BAP version 5 to be disclosed before the end of the year.

Ape results (draft presentation)

Both Central Chimpanzee (*Pan t. troglodytes*) and Western lowland Gorilla (*Gorilla g. gorilla*) have been observed in the landscape.

Species	RAI	Naïve Occupancy	Nb. of individuals per capture event
Chimpanzee	1.7% (24 capture events)	20.8% (10 traps among the 48 ones)	1 – 4
Gorilla	0,2% (3 capture events)	6.3% (3 traps)	1 - 2

Distribution of apes capture events are presented on the map hereafter.



1 km grid. o : camera traps locations. Presence of ● Chimpanzee (photos); ● Gorilla (photos); ● Gorilla (tracks = nest or feces).

Preliminary analysis

Chimpanzees

Occurrences West of Mbé river

- Considering the data from the 5 cameras with Chimpanzee occurrences located west of the Mbé river, at least 10 different individuals, including 6 adults (3 females and 3 males), 2 subadults, 1 juvenile and 1 baby have been observed.
- In this western part of the landscape surveyed, (sub-)groups of few individuals, possibly belonging to the same community, have been observed from the vicinity of Andok Foula village and local road (CT36), and along the Missolo/Begnoum valley (CT30, CT14), c. 3 – 4 km from the project footprint (construction site, reservoir and facilities). Single individuals have also been captured in the north, at the border of the National Park, c. 3 km from existing Kinguélé dam facilities and at a minimum distance of 1.5 km from the upstream extremity of the project's reservoir (CT10, CT11).

Trap	Shortest distance to human settlements and to Project's footprint	Synthesis of Chimpanzee capture events – West of Mbé river
CT10	3.9 km from Andok Foula village 3.7 km from existing Kinguélé station 8.5 km from the Project's basecamp 5.5 km from the Project's construction site 2.1 km from the Project's reservoir	1 event (1 photo), 1 (sub-?) adult
CT11	2.5 km from Andok Foula village 2.4 km from existing Kinguélé station 9.4 km from the Project's basecamp 5.6 km from the Project's construction site 1.5 km from the Project's reservoir	1 event (4 photos), 1 adult
CT14	3.9 km from Andok Foula village 7.3 km from existing Kinguélé station 5.8 km from the Project's basecamp 5 km from the Project's construction site 4.3 km from the Project's reservoir	4 events (40 photos), small group of at least 4 (-6?) individuals + one baby

Trap	Shortest distance to human settlements and to Project's footprint	Synthesis of Chimpanzee capture events – West of Mbé river
CT30	1.1 km from Andok Foula village 9.3 km from existing Kinguélé station 3.0 km from the Project's basecamp 3.8 km from the Project's construction site 3.9 km from the Project's reservoir	4 events (60 photos), at least 7 individuals: 6 adults and sub-adults + 1 juvenile
CT36	0.6 km from Andok Foula village 9.2 km from existing Kinguélé station 2.6 km from the Project's basecamp 2.8 km from the Project's construction site 2.9 km from the Project's reservoir	1 event (9 photos), 1 female + juvenile, possibly the same as the ones observed in neighbouring CT30

Occurrences East of Mbé river

- Considering the data from the 5 (other) cameras with Chimpanzee occurrences located east of the Mbé river, at least 7 different individuals have been observed, including (again) 6 adults (3 females and 3 males) and 1 subadult.
- In this eastern part of the landscape surveyed, one (sub-)group of few individuals has been observed along the Meba river, a left bank tributary of the Mbé river close to an upstream part of the reservoir footprint (CT39, CT34). Additionally, single individuals have been observed on the slopes of the Mbé valley, quite close to the future reservoir limits (CT18, CT24, CT29).

Trap	Shortest distance to human settlements and to project's footprint and facilities	Synthesis of Chimpanzee capture events – East of Mbé river
CT18	2.0 km from Andok Foula village 1.8 km from existing Kinguélé station 11.3 km from the Project's basecamp 6.9 km from the Project's construction site 1.1 km from the Project's reservoir	1 event (13 photos), 1 (young) male
CT24	2.8 km from Andok Foula village 2.6 km from existing Kinguélé station 10.1 km from the Project's basecamp 5.7 km from the Project's construction site 0.6 km from the Project's reservoir	1 event (5 photos), 1 (young) female

Trap	Shortest distance to human settlements and to project's footprint and facilities	Synthesis of Chimpanzee capture events – East of Mbé river
CT29	4.0 km from Andok Foula village 3.8 km from existing Kinguéle station 8.8 km from the Project's basecamp 4.3 km from the Project's construction site 0.7 km from the Project's reservoir	1 event (96 photos), 1 adult male
CT34	5.3 km from Andok Foula village 5.1 km from existing Kinguéle station 8.9 km from the Project's basecamp 4.0 km from the Project's construction site 1.0 km from the Project's reservoir	2 events (18 photos), 2 adults (male + female)
CT39	5.3 km from Andok Foula village 6.3 km from existing Kinguéle station 7.8 km from the Project's basecamp 2.9 km from the Project's construction site 0.0 km from the Project's reservoir	8 events (117 photos), 4 individuals including the pair of CT34, one other female and one sub-adult

Gorillas

Three camera traps have revealed the presence of Gorillas in the western part of the survey area, with at least one male and one female. Additional data (nests and feces) have been collected during the setting/removing of the traps (CT20, CT30, CT27). No clear pattern of distribution is identified yet.

Trap	Shortest distance to human settlements and to project's footprint and facilities	Synthesis of Chimpanzee capture events – East of Mbé river
CT17	2.7 km from Andok Foula village 2.6 km from existing Kinguéle station 9.3 km from the Project's basecamp 5.2 km from the Project's construction site 0.6 km from the Project's reservoir	1 event (9 photos), 1 male and 1 female

Trap	Shortest distance to human settlements and to project's footprint and facilities	Synthesis of Chimpanzee capture events – East of Mbé river
CT21	3.7 km from Andok Foula village 6.3 km from existing Kinguéle station 5.8 km from the Project's basecamp 3.7 km from the Project's construction site 2.7 km from the Project's reservoir	1 event (1 photo), 1 adult
CT37	1.6 km from Andok Foula village 7.9 km from existing Kinguéle station 3.9 km from the Project's basecamp 1.5 km from the Project's construction site 1.5 km from the Project's reservoir	1 event (14 photos), 1 adult male

Project Impacts and Mitigation

The project footprint is relatively small and in general the area has already been subject to the cumulative impacts of previous and current exploitation and infrastructure including logging, existing hydroelectric operations at Kinguele and Tchimbele, as well as from both legal and illegal activities by local communities (as is the case of Andock Foula) in the buffer and Park. However, the fact that part of the project (albeit small in area) lies within ape habitat, within a National Park, that itself is part of a landscape of exceptional importance for great apes, should infer that **ape populations/other biodiversity in this area should not only be protected/maintained but also that the existing conditions be improved for their populations to recover and thrive.**

For great apes, the BAP concludes that as the project lies on the margins of critical habitat, any project impacts should be negligible. It suggests that these impacts can be offset by the proposed net gain measures of increasing suitable habitat and providing additional support to ANPN in particular for anti-poaching patrols² (and biomonitoring, assuming guards also collect data on species through the use of SMART) and project-related eco-tourism.

On the other hand, whilst these options may be the most feasible, the ESIA mentions that the construction phase will mobilise several hundred workers for 3 years and 25 workers during exploitation (the initial concession agreement being 34 years). It also mentions that many service providers will be solicited, potentially creating business opportunities for local residents and nationals and that local social access may be permitted to the site to facilitate the sale of their wares. This influx of workers during the construction phase, the construction itself, the subsequent induced access and the loss of habitat (albeit small, estimated at ~200 ha) will have impacts on any apes in and around the project area in terms of **potential loss of food resources**

² It is noted in the budget that part of this support includes salaries for an additional team of 7 rangers for the life of the project, but per diem (rations) will be provided only during the construction phase.

(e.g. important fruit trees), **displacement due to noise/dust, induce barriers to movement** (e.g. riverine areas are known to support chimpanzee movements), **increase exposure to hunting** (in the face of ever-increasing urban demands for wildmeat), and potentially **introduce disease** and invasive species.

Project's key facts, updates, inputs and comments

- The project's activities, especially during construction, are managed through a specific Environmental and Social Management Plan (ESMP). This Plans include clear statements and commitments from the project that no social influx will be allowed nor facilitated in the framework of the project.
- Regarding Biodiversity, this ESMP comprises a Biodiversity Action Plan (BAP, current version 4B) that encompasses all biodiversity-related, including a Biodiversity Management Plan (BMP) that applies to the construction activities under the constructor responsibility in terms of implementation.
- Those BAP and BMP both address the potential impacts mentioned by the Task Force. A Biodiversity Monitoring and Evaluation Plan (BMEP) is under development and will allow a permanent audit of the actions implemented in a framework of adaptive management.

Additionally, the BAP also notes that once the reservoir is flooded that apes will **no longer be able to cross the Mbe river along a section of 8-10 km, which will certainly have an influence on ape dispersal behavior**. There was mention of the Kinguele dam being used as a crossing point by a gorilla. A mission concerning the previously proposed Kinguele Upstream project also heard mention of one sighting of a silverback gorilla using rocks as steppingstones to cross the Mbe River during the dry season. This suggests that currently the river is not a complete barrier to movement of great apes, especially gorillas, and thus the **fragmentation effect of the dam is underestimated**.

Project's key facts, updates, inputs and comments

- The Mbé river from the existing reservoir of Kinguélé dam to the existing Kinguélé facilities ('short-cut section') has a level of water significantly low compared to the section where the project will take place and where the flow has been reinjected from Kinguélé facilities.

- The Mbé river in the c. 9 km section of the project's footprint is a large torrential river with a flow of 60 to 90 m³/s. It is too large to allow canopy closure upon it. Illustrations of that watercourse profile are fully available in the dedicated sections of the Environmental and Social Impact Assessment (ESIA) and the BAP. In other words, the reservoir of the project will enlarge a bit an already large and speed flowing river that does not currently allow apes to cross. Special attention is nevertheless paid to the Meba river, medium size tributary where a group of Chimpanzee has been observed (CT39, CT34).
- Still on the topic of habitat fragmentation, please remember that the road to access both the basecamp and the construction site is already in place (existing road to existing Kingulé and Tchimbélé dams), as well as the main transmission line, both along the Mbé mainstem. Specific measures have been taken to avoid impacts on any crossing fauna in the framework of a dedicated traffic plan (especially speed control). The connections from the project facilities to those networks are only a few hundred meters. The basecamp will be installed on an already modified area (old quarry).

Some other potential indirect project impacts are also missing or underestimated in the BAP. For example, there should be mention of potential disease transmission from humans to apes and additional measures need to be put into place to avoid this. Some impacts have been partially addressed through the proposed measures targeting other species but there is need to provide further targeted mitigation for great apes. Please see recommendations below.

Project's key facts, updates, inputs and comments

- Other potential project impacts are addressed in both BAP and BMP. Please see confirmation below.

We recommend:

- The project should aim for zero poaching by project staff within the National Park and strict adherence to user rights within the buffer zone to allow for potential expansion (recovery)/increased occupancy of apes in the project area.

Project's key facts, updates, inputs and comments

- Fully integrated in the BMP for construction activities and staff, and also in the BAP in the framework of the offsetting strategy that includes a support to ANPN management.
- The project should avoid the removal of fruit trees known to be important in ape diet. Such trees should be protected wherever possible.

Project's key facts, updates, inputs and comments

- The BMP includes specific attention to fruiting trees that would be present around the construction site. Such measure can't apply in the reservoir footprint.
- Wherever possible, the project should maintain canopy closure across the road and if at all feasible, consider facilitating crossing points over the proposed reservoir.

Project's key facts, updates, inputs and comments

- Outside of the few parts of the existing road that will be flooded under the reservoir, no enlargement of this road is planned by the project, and thus no impact on existing canopy closure above the road.
- All project workers need to be instructed about the risks of disease transmission to apes and about sanitation measures that should be implemented to minimise those risks. Additional measures should include the vaccination of workers. Employees should not be allowed to work in the project site when sick, and there should be portable toilets made available to workers. Special guidelines should be put in place as well during COVID-19 (see ARRC website for further information: <https://www.arrctaskforce.org/covid-19>). We understand that some of these measures have already been included in the BMP submitted to the Sponsors

Project's key facts, updates, inputs and comments

- Confirmed. Disease risks fully integrated in both health, safety, hygiene-related plans and Biodiversity Management Plan.
- All project workers should be trained in appropriate behaviours to adopt when in the proximity of apes. We understand that this also has been included in the BMP submitted to the Sponsors

Project's key facts, updates, inputs and comments

- Confirmed. Training for appropriate behaviors integrated in Biodiversity Management Plan.

It is our understanding that Biotope will continue to oversee the project's biodiversity, and that a biodiversity specialist will be hired to oversee the implementation of the BAP measures directed to the construction company. It will be important to develop a strong BMEP to monitor the effectiveness of mitigation measures and of their implementation.

Project's key facts, updates, inputs and comments

- Confirmed for Biotope's assistance and biodiversity specialist in Asonha's team.
- Consolidated BMEP to be integrated in BAP version 5 (to be disclosed before the end of the year).

More detailed recommendations for mitigating the impacts of the project on apes can only be provided once more detailed information is known on how apes use the area.

Project's key facts, updates, inputs and comments

- Please see additional survey results provided, to be consolidated with the updated additional survey proposed (please see new section in that document).

Residual impact assessment and calculation of offset requirements

At this stage, it is difficult to determine the area needed for compensating the impacts of the project on apes as there is still **inadequate baseline data** on apes for this area. Information for calculating the offset size was extrapolated from a study carried out in a different area of Gabon (300km away) which is not necessarily representative of the project area. The radius of 10km of defaunation around a village is not specific to this area, which we would expect to be different around a national park and its buffer zone. In addition, the residual impact assessment does **not take into account any indirect impacts**.

Project's key facts, updates, inputs and comments

- The offsetting strategy of Kinguélé aval has been developed to address the key biodiversity values impacted by the project with complementary 'habitat' and 'species' approaches by remaining proportionated to the project's impacts.
- The 'habitat' approach results today in the protection of an additional part of the project's landscape.

The additional area to protect appear to have a **lower conservation value** than the area impacted in the NP. This **size of the proposed area does not even cover the area used by one chimpanzee or one gorilla group**. We recommend that in identifying offset sites, functional corridors should be considered to improve connectivity to neighboring forests, or between the two sectors of the Monts de Cristal.

Project's key facts, updates, inputs and comments

- The offset area is located in the immediate vicinity of the National Park, in the same landscape and watershed, and in the same ecological conditions. It enlarges the cover of preserved forests in this landscape while having been extracted from a forest permit.
- To date, the observations made within the offset area already confirm the presence of similar habitats (terrestrial and riverine) and of some key critical habitats triggers: *Plataplochilus sp.* fish, amphibians, Forest Elephant, Giant Pangolin and Great Apes (survey reports in progress).

The **additional ANPN patrol team** to be financed for the duration of the project does not constitute compensation, but rather is a **mitigation measure** aimed at tackling potential indirect impacts from the project.

Project's key facts, updates, inputs and comments

- Based on the above comments, this additional patrol team will control the activities within the offset area (as a contribution to offset) and support when necessary the implementation of the mitigation actions of the project.

Other recommendations

The following are recommendations that, while potentially falling outside of the sole responsibility of the Project, we wanted to flag as important actions to decrease the impact of this Project, as well as the **cumulative impact of projects** in the area.

We recommend establishing a **multi-sector stakeholder platform** to coordinate the reduction of cumulative impacts. The BAP includes a preliminary initiative involving other hydroelectric operators at the scale of the Komo watershed (MoU) and it would be good to explore this further, to include adjacent logging companies as well.

Lastly, because the project area overlaps with the park, it would be good to **revise the management plan** of the park accordingly to include the additional mitigation measures required for the new hydroelectricity site.

Summary

In general, we find that the Biodiversity Action Plan has not adequately considered potential impacts from the project on great apes, which were mainly based on results from a weak survey. Without sound baseline data, it is difficult for the task force to help the project minimize their impacts on apes. Further surveys targeting apes are urgently needed in order to better understand their presence and distribution in the area **before construction starts**. We are happy to see that further surveys are underway, however once again they are not targeting apes and may not record their presence given their low density in this area. We hope that the project will devote more survey time to increase the chances of detecting ape presence, and conduct recces targeting potential areas that could be used by apes once the teams go to retrieve the camera traps in early October. We would be happy to input into a survey plan for these additional recces.

New section: additional mammal survey strategy

Based on the confirmed presence of the apes in the landscape, a strategy is currently being designed to better inform the influence of the project on the frequentation by apes of both landscapes and project footprint surroundings.

It would consist in:

- A more regular camera trap survey effort for mammals including apes, starting in 2021 at least two months before construction starts and turning to be the basis for monitoring;
- To densify the trapping grid by covering all the cells that intersect the project's facilities, especially the reservoir.

Continued ARRC Task Force Engagement

The ARRC Task Force would be happy to offer to:

- Provide feedback on the BMEP when ready
- Conduct an independent field audit
- Develop a ToR for additional recces to be conducted in the rainy season
- Input into the dry season survey protocol
- Be available to answer questions once the surveys are underway and for reviewing survey results