

**AFRICAN PARKS & ENJOJO FOUNDATION**

**In collaboration with**

**SOUTH SUDAN WILDLIFE SERVICE**

**LANTOTO NATIONAL PARK  
WET SEASON AERIAL SURVEY**

**NOVEMBER 2022**

**Technical report No 2**

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## 1. SUMMARY

In November 2022, a joint aerial survey between African Parks Network and Enjojo Foundation in the Lantoto National Park has been conducted with the objectives to evaluate the status of the park with focus on quantifying human activity and encroachment, to determine the possibilities of Enjojo Foundation to join APN incubation program, and to support the formulation of priority interventions.

This report documents an assessment of the status of Lantoto National Park with a focus on the distribution and impact of human activities, ecological futures, infrastructure, and logistic access in Lantoto National Park at the end of rainy season. Used methodology combined systematic reconnaissance flights spaced 5km apart (east-west direction) and reconnaissance flights targeting key landscape features, based on previous field missions and available online data analysis. The survey was conducted between 3 and 5 November 2022, at an altitude of 300ft (92m) above ground level, using a Cessna 182 aircraft.

Lantoto National Park (1547 km<sup>2</sup>) possesses an impressive scenic landscape of densely forested savanna, forest, and some inselbergs. The survey confirmed an almost untouched habitat and a low human footprint with little encroachment into the protected area. Despite multiple testimonies indicating that leopards, pangolin, lions and different species of antelopes are still permanently present in the park, and that elephants still move seasonally from Garamba (confirmed by satellite elephant tracking by African Parks), the low number of direct wildlife observations and their tracks seems to confirm that the park has undergone heavy poaching during many years but also dense vegetation cover is restrictive for aerial survey observations. Positive is that no signs of commercial timber exploitation or any other natural resource exploitation except for poaching have been observed and that the Lantoto National Park has remained intact.

Despite the high levels of poaching, unstable security and the complete lack of infrastructure, its position at the interface between the Sudanian-Guinean Savanna and Congolian Forest bioregions underly the potential for conservation initiatives in the Lantoto National Park. Moreover, a well-managed and secured Lantoto would have a significant positive impact for the security and biodiversity of the Lantoto-Garamba Landscape as a whole.

In addition, our results brought new knowledge about Lantoto National Park ecosystem to the national government and contributed to the identification of priority management strategies.

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## 2. BACKGROUND

Enjojo Foundation is a non-governmental organization (NGO) registered in South Sudan that signed in January 2022 a Memorandum of Understanding (MOU) with the Ministry of Wildlife and Tourism for the co-management of Kidepo Game Reserve and Lantoto National Park in South Sudan, wherein both parties agreed to cooperate for the rehabilitation and management of these two protected areas. The basis of this memorandum is a joint recognition that conservation of the environment and its biodiversity are a top priority and an essential part of the National Development Strategy for the Government of South Sudan.

Lantoto National Park (1,547 km<sup>2</sup>) forms a contiguous protected area with the Garamba Complex sharing a common porous border of approximately 98 km along the Congo-Nile watershed divide (Fig. 1). The Garamba National Park is a UNESCO World Heritage Site of which Lantoto shares many similar landscape characteristics. Located in the transition zone between two centres of endemism, namely the Sudanian-Guinean Savanna and Congolian Forest bioregions.

Established in 1986 with an area of about 1547 m2, Lantoto National Park falls under IUCN Management Category: II = National Park (IUCN, 2022). The park was named by the Sudan's central government in the Wildlife Act of 1986 and Wildlife Conservation and National Parks Act of 2003. The Park has never been gazetted and the Park's boundaries have never been demarcated.

Figure 1: Location of the Lantoto National Park within the transboundary landscape with Garamba NP in the DRC.



The vegetation consists predominantly of densely forested savanna and forest, with a few inselbergs. Just outside the park, located 7km NW of RASOLO, lays the Moroko forest ("Moroko" means as much as the "Dark" in the Baka language). This primary forest, roughly estimated to be 60 to 70 km<sup>2</sup> large, owes its name to the very dense vegetation and the presence of large tree species. The potential importance of this primary forest could possibly extend the known distribution of (bird)species into the Nile Basin.

Lantoto National Park is known to have historically supported wildlife populations ranging from Giant Eland (*Tragelaphus derbianus*), Red -flanked Duiker (*Cephalophus rufilatus*), Bushpig (*Potamochoerus porcus*), Blue Duiker (*Cephalophus monticola*), Bush Duiker (*Sylvicapra grimmia*), African hunting dog (*Lycan pictus*), Colobus monkey (*Colobus abyssinicus*), Temminck's ground Pangolin (*Manis temmincki*) (Hillman, 1982). There is high probability of presence of Chimpanzees in the canopy high forest based on observer communications and probable nest sightings (Matkoski, pers. Comm., 2022). The savanna areas are known to have once supported large populations of African buffalo (*Syncerus caffer*), giraffe (*Giraffa camelopardalis antiquorum*), and several antelope species. Large carnivores including the lion (*Panthera leo*), spotted hyena (*Crocuta crocuta*) and leopard (*Panthera pardus*) are still reported by the communities to be present in the park. Satellite tracking has indicated that several elephant herds migrate into Lantoto for parts of the year from Garamba (African Parks, pers. Comm, 2022). The aerial survey has not allowed to accurately assess the current status of wildlife species. But the low number of observations of wildlife and wildlife tracks indicate that wildlife populations have faced steep declines due to armed conflict and heavy poaching.

Human population numbers in the immediate vicinity of the park are very low with most communities living near the road Tore to Rasolo. Except for Rasolo where agricultural activities spread out over several kilometres, the human footprint is very low with only sporadically small-scale agricultural activity near the road and with no presence of humans deeper inside the park. No indications of large-scale logging or other natural resource exploitation (except poaching) have been observed. Abandoned villages and neglected buildings bear witness to times when population numbers in the immediate vicinity of the park were several times higher than today. Communities have been displaced and live in exile due to many years of conflict. Peace and stability will most likely give an increase in the number of inhabitants who will return from exile. The tribes neighbouring the Park are Baka, Avokaya, Mondo and Adio. There are no ethnic tensions among these communities.

### **3. THE SURVEY OBJECTIVES AND METHODOLOGY**

No systematic survey has ever been done in Lantoto National Park. The objective of the survey was to survey Lantoto National Park to evaluate the current status of the park with focus on human activities that impact the environment, map ecological features and logistic accessibility during wet season, to determine the possibilities of Enjojo Foundation to join African Parks Network (APN) incubation program, and to support the formulation of priority interventions.

Specific objectives were identified as follows:

- *Evaluate presence and impact of human activities within Lantoto National Park, including settlements, agriculture, fishing camps, dams, poaching camps, elephant carcasses, tree cutting, mining etc.*
- *To verify and evaluate data gathered during the field visit in September.*
- *Map key ecological features within Lantoto National Park ecosystem.*
- *Evaluate rainy season logistic access and constraints for future management operations in Lantoto National Park (status of roads, identification of main water sources, high ground areas for potential bush airstrips or camps etc.), based on findings during field missions.*
- *To support the formulation of priority interventions.*
- *Increase the knowledge of key government personnel about the status of Lantoto National Park.*

Anticipated conservation impact

- *Contribute to the identification of priority conservation areas and formulate rehabilitation strategies within the Lantoto National Park.*
- *Support identification of location for future Lantoto National Park HQ.*
- *Support identification of community development strategies.*
- *Contribute to the development of Lantoto National Park management and sustainability plan.*
- *Increase knowledge of key government (national and local) personnel about the status of Lantoto National Park*
- *Form the basis for the identification of the methodology and frequency of future wildlife surveys required to evaluate the performance of future management efforts in the park.*

### **3.1 Survey region and methodology**

The survey was conducted between 3 and 5 November 2022, at an altitude of 300ft (92m) above ground level, using a Cessna 182 aircraft. The entire Lantoto National Park (1,547 km<sup>2</sup>) was identified for the aerial survey, using systematic reconnaissance flight (SRF) on transects at 5km distance. Additional reconnaissance flights were added targeting key landscape features, potential for park extensions, human settlements, and key agricultural areas, based on previous field missions and available online data analysis.

### **3.2 The team and aircraft**

The survey team comprised of a pilot, a principal observer and data capturer seated in the front (FSO), and two observers at the rear of the aircraft (RSOs). A Cessna aircraft 186 was used to fly parallel transects and additional reconnaissance flights.

Table 1: List of team members.

No	NAME	FUNCTION	AFFILIATION
1	J. Mike Fay	Pilot	African Parks
2	Nicolas Matkoski	FSO	African Parks Garamba
3	Kris Debref	Observer / RSO	Enjojo Foundation
4	John Okiech Okello	Observer / RSO	GOSS
5	Joseph Zacharia Taban	Warden Lantoto NP/RSO	SSWS
6	Benneth Bojo Nicholas	Assistant Director General wildlife / RSO	MWCT

The pilot navigated along the parallel transects with the aid of transect lines programmed into a tablet, maintaining an altitude of 92 m (300ft) above ground. A continuous track log of flight lines and observations were recorded by the FSO using Lotus app on smartphone (see Figure 2). The data were entered into ArcMAP software to establish a spatial data based across surveyed areas.

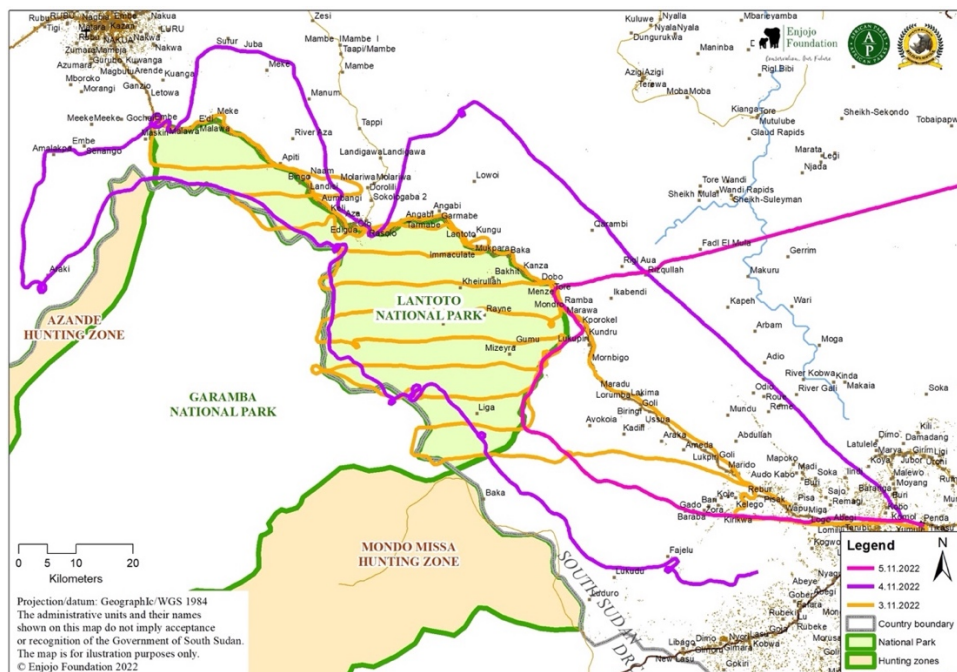
## 4. RESULTS

### 4.1 Survey area and flights summary

Table 2: Flights summary.

No	Date	Take off time	Landing time	Flight time, h	KM covered
1	3.11.2022	6:29 AM	10.23 AM	3.9	624
2	4.11.2022	6:40 AM	9:34 AM	2.9	464
3	5.11.2022	6:30 AM	8.06 AM Return to Juba	1.6	256
	<b>TOTALS</b>			<b>8.4</b>	<b>1344</b>

Figure 2: Survey area showing the actual tracks flown during the 2022 survey.





## 4.2 Vegetation and Landscape

The vegetation and the type of landscape differ in the different sections of the park. Roughly spoken, the park proper could be divided into three parts. The section situated S of the imaginary line between DELELE and TORE could be classified as densely forested savannah (see Figure 3). The area between this imaginary line and RASOLO can in general be regarded as a forest, while the area W of RASOLO is more a patchwork of both densely forested savannah, hills and forest.

Figure 3: Lantoto National Park

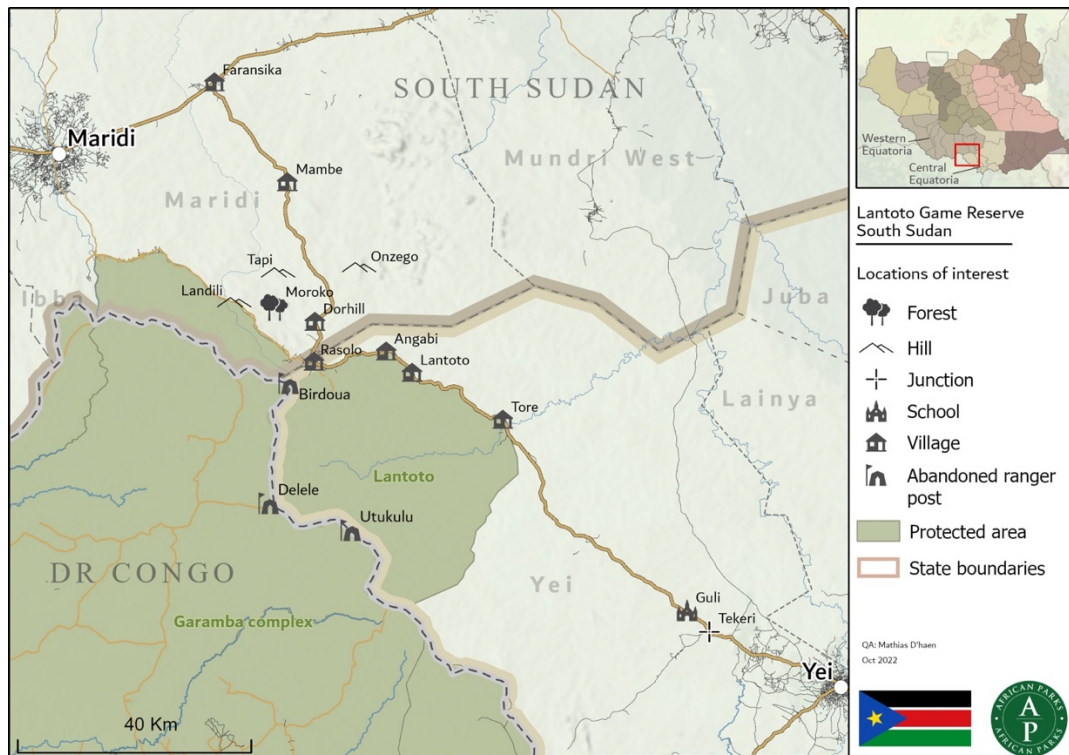


Figure 4: Forest between Delele-Birdoua



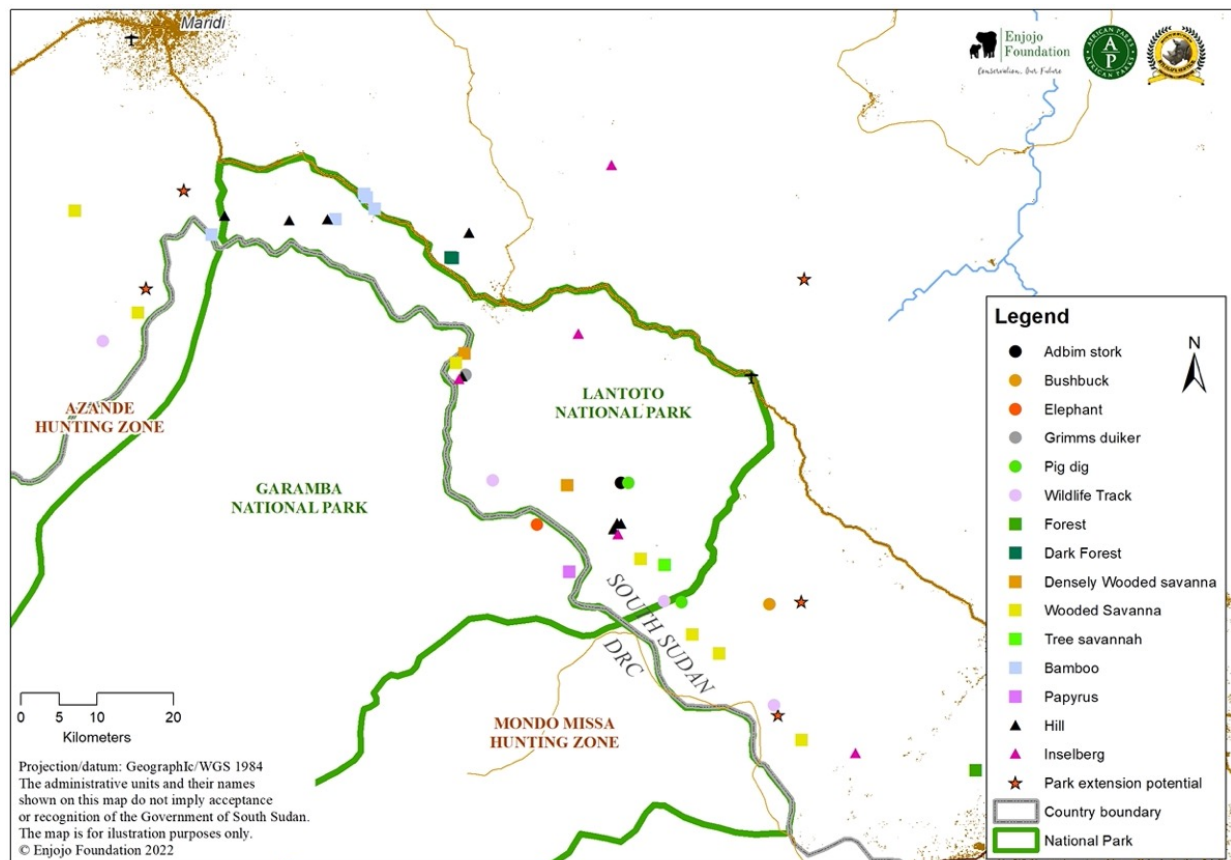
### 4.3 Wildlife

Very few animals and their tracks were observed during the survey, despite multiple testimonies from the communities in Tore and Rasolo that Pangolins, leopards, lions, and different antelopes are still present in the park. It was confirmed by rangers in Garamba that elephants were trying to cross from Garamba National Park into Lantoto National Park the time of the survey, but were pushed back into Garamba due to the presence of a poachers' camp close to the border of the DRC and South Sudan.

Table 3: Wildlife observations summary

Species	No of observations	No of individuals	Note
Abdim's stork	1	400	
Bushbuck	1	1	south of Lantoto NP
Pig dig	2	1	
Elephant track	2		
Elephants	1	2	Across border in Garamba
Wildlife track	5		

Figure 5: Distribution of wildlife and habitat observed during the 2022 wet season aerial survey.



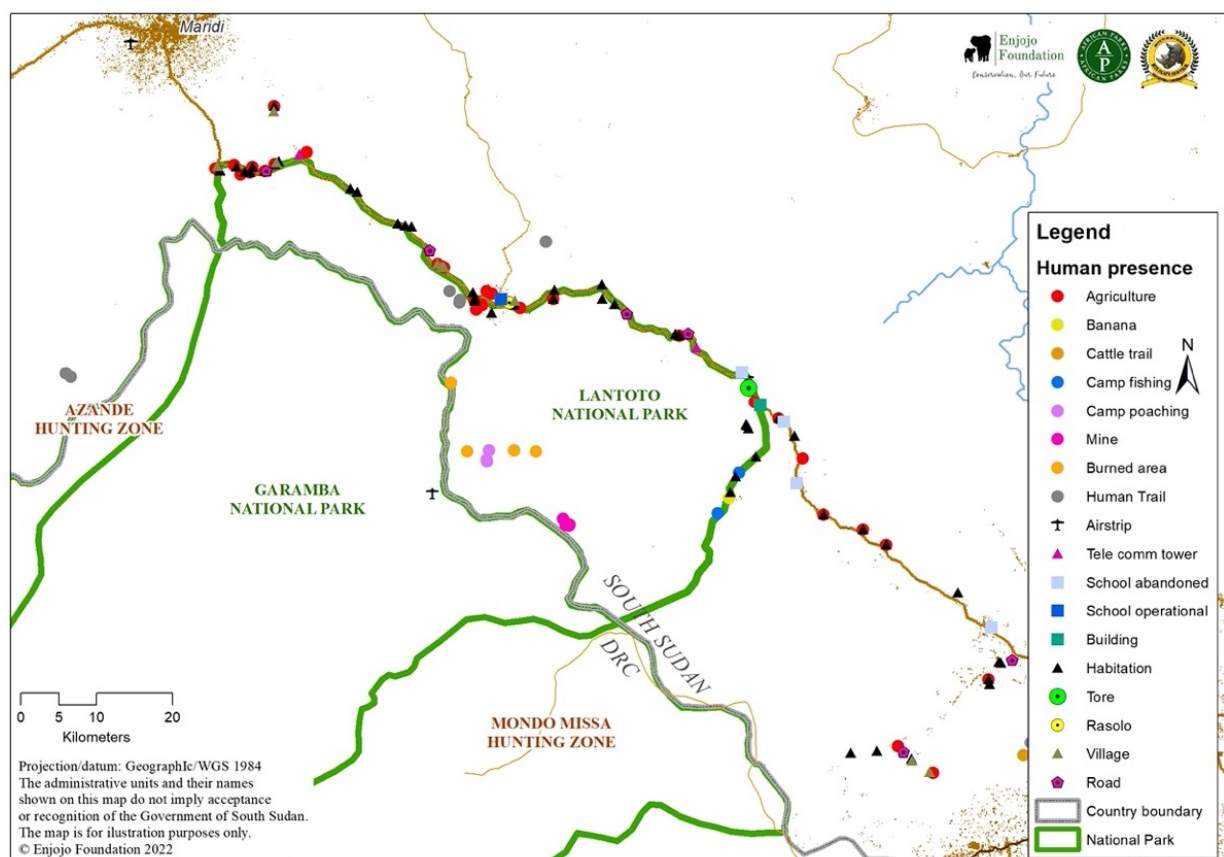
#### 4.4 Human activities

Income generating activities include agriculture, bee-keeping, small livestock (chicken, goats, pigs) and hunting/poaching. Settlements with small scale agricultural activities are mainly located in the villages of Tore, Rasolo and Naam. No indications of large-scale logging or other natural resource exploitation (except poaching) have been observed. Several small gold mines have been observed close to the DRC-South Sudan border but seemed to have been non-active for at least several months.

Table 4: Key human activities observations summary

Observation	No of observ.	Note
Agriculture - fields	36	Small scale agriculture
Burned area	5	
Poachers' camp	1	
Fishing camp	3	
Mining	1	Several abandoned gold mines
Settlements	54	few huts
Villages	3	

Figure 6: Distribution of all human activities; agriculture and other human activities observed during the 2022 aerial survey.



## VILLAGES

Rasolo, Tore and Naam are the only villages currently inhabited by a significant number of people. Smaller settlements between these three villages are inhabited by only a few dozen inhabitants at the most. All settlements are located on both sides and in the immediate vicinity of the Yei-Maridi road that is bordering the park. Many abandoned buildings, empty schools and other structures indicate that the real population numbers are higher than one can observe today. Most people have been displaced by years of conflict and stay in refugee camps in Uganda and the DRC. It is expected that refugees will return home when peace and stability are established in Central and Western Equatoria States.

*Figure 7: Rasolo with an estimated 1000 to 1200 people living in the center and immediate surroundings.*



*Figure 8: Tore with an estimated 300 to 400 people*



*Figure 9: Naam with an estimated 150 to 200 people on the western edge of the park.*



## **AGRICULTURE**

In Rasolo, agricultural activities spread out over several square km. The human footprint in other villages on the Tore-Rasolo and Rasolo-Naam axes remains rather low, with only sporadically some small settlements with small scale agricultural activity in the immediate vicinity of the road.

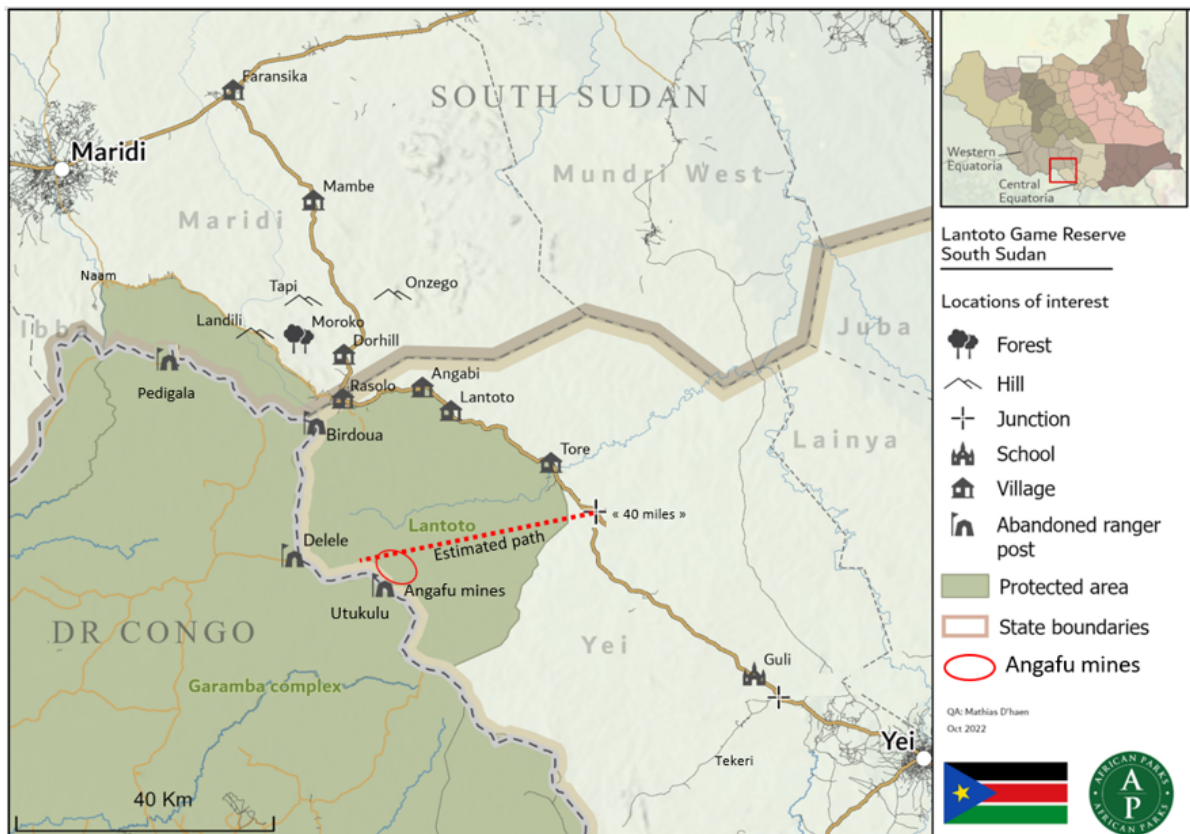
*Figure 10: Agriculture in Rasolo.*



## ANGAFU GOLD MINES

Several small open mines over a distance of a few hundred meters were found inside the Lantoto National Park close to the Congolese-South Sudanese border. However, the flooded mines seem to be non-active since at least some months, and possibly even years.

Figure 11: Location of Angafu mines.



## 4.5 Infrastructure

### ROAD

There is only one road bordering the park, connecting Yei and Maridi which is overgrown with vegetation. It connects Yei-Tore-Rasolo-Naam-Maridi. On the section from Yei to Rasolo, only few structural reparations are needed such as a bridge in Tore. The section that runs from Rasolo to Maridi via Naam is in a worse condition and requires significant effort to be reopened.

Figure 12: Observation of the road Tore-Rasolo.



#### **AIRSTRIP**

There is no airstrip in the Lantoto National Park or its immediate surroundings. The nearest available airstrips are in Yei and Maridi.

#### **4.6 Moroko Forest**

The Moroko forest is located 7km NW of RASOLO. ("Moroko" means as much as the "Dark" in the Baka language, see Figure 15). This primary forest, roughly estimated to be 60 to 70 km<sup>2</sup> large, owes its name to the very dense vegetation and the presence of large tree species. Research in this forest could possibly extend the known distribution of (bird)species into the Nile Basin.

Figure 13: Moroko Forest.



#### 4.7 Onzengo chain of inselbergs

Approximately 15km NW from RASOLO, the southern tip of the Onzengo chain of inselbergs is located (see Figure 16). This absolutely spectacular 45km range of granite domes stretches on the border between Mundri County and Yei County seems absolutely untouched. Interlocutors in RASOLO said that the southern tip is reachable during the dry season after a 4-5hours walk through the bush.

Figure 14: Onzengo chain of inselbergs.





#### 4.8 Potential for park extensions

The survey also included some reconnaissance flights outside the boundaries of Lantoto National Park to investigate potential for park extensions. Block 1 (801km<sup>2</sup>), south-east from Lantoto National Park and block 2 (840 km<sup>2</sup>) following the border with the DRC to the west of the park, have no human presence at all and have been identified as possible extension options for Lantoto National Park. The habitat consisting of densely forested savanna and forest is intact.

Figure 15: Areas of potential extension of Lantoto NP.

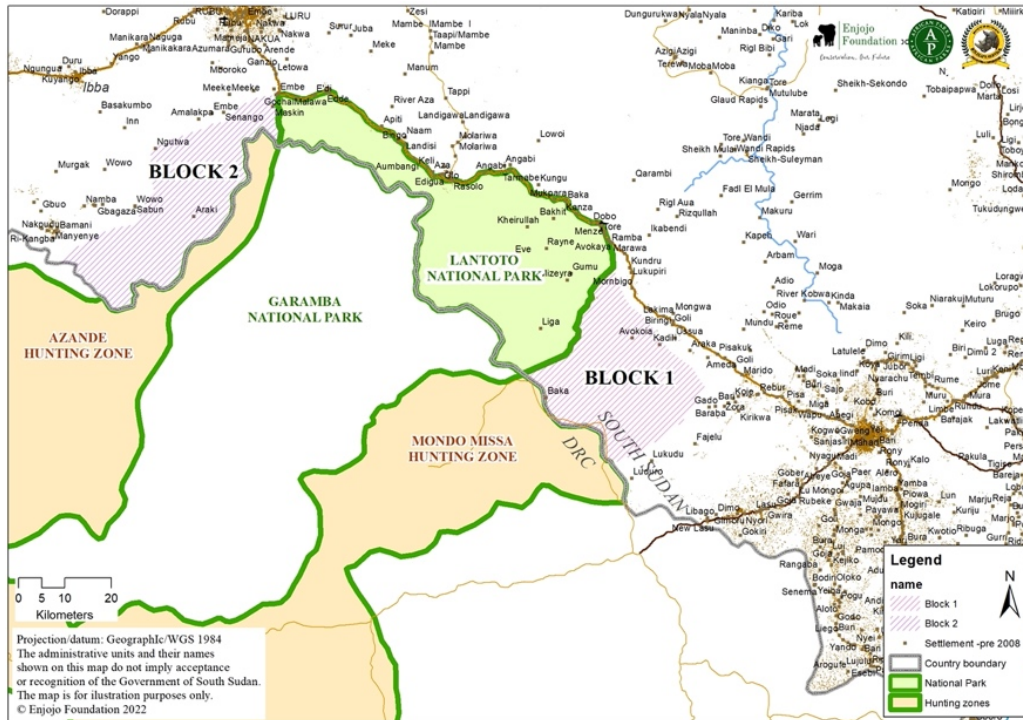


Figure 16: Possible park extension: Block 2



## 5. CONCLUSIONS

The survey constitutes an important dataset contributing to the assessment of the status of human activity, wildlife, and habitat of Lantoto National Park. The data collected during the survey together with data collected during field missions, will form the baseline for the development of management strategy/plan for the park. The management of the park shall as soon as possible establish presence, initiate active dialogue with communities, and secure a priority conservation area.

Lantoto National Park could support a unique assemblage of species given its position at the interface between the Sudanian-Guinean Savanna and Congolian Forest bioregions. The park's transboundary ecosystem with Garamba National Park in the DRC increases the overall value of the park for the protection of important species. A well-managed and secured Lantoto National Park will have a significant positive impact for the security and the biodiversity of the Lantoto-Garamba landscape as a whole.

### **General recommendations resulting from this survey:**

The survey presented constitutes an important information dataset, and the following steps are proposed to support the conservation of the Lantoto National Park:

- *Start to build a constituency for conservation through capacity building programs of local leaders in natural resource management and sensitize communities on the value of conserving Lantoto National Park.*
- *Engage community and government stakeholders in demarcation of the boundaries of Lantoto National Park and possible Park extensions and / or additional community conservancies.*
- *Continue transboundary collaboration and exchange of expertise with African Parks.*
- *Establish and maintain active inter-state relationship/dialogue with the authorities in the DRC.*
- *Establish terrestrial monitoring activities to obtain accurate information particularly on lions, leopards, elephants, and chimpanzees.*
- *Use the research and monitoring results to recommend management measures to ensure the long-term persistence of key wildlife species in the Lantoto National Park.*
- *Establish income generating businesses in the communities neighboring the park.*