

**WILDLIFE CONSERVATION SOCIETY
CROSS RIVER NATIONAL PARK (OKWANGWO DIVISION)
QUARTERLY REPORT: JULY-SEPTEMBER, 2021**



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Summary

This report presents the results of ranger patrols of the Okwangwo Division of Cross River National Park (Okwangwo) facilitated and supervised by Wildlife Conservation Society (WCS) from July to September 2021, as well as conservation education and livelihood support activities implemented during the same period to raise levels of conservation awareness and local support. Thirty anti-poaching patrols were completed during this period covering a total distance of 1,838 kilometers over 234 patrol-days (1,366 person-days). No arrests were made within the reporting period. However, 5 hunting camps and 1,020 wire snares were discovered and destroyed. In addition to law enforcement, data were collected to monitor wildlife abundance and distribution. This quarter, great apes were sighted on two occasions, and 59 ape nest sites were encountered (36 gorilla, 16 chimpanzee and 7 unidentified). Other primates observed include red-eared monkey *Cercopithecus erythrotis* (sighted 5 times), Mona monkey *Cercopithecus mona* (sighted 64 times), putty-nosed monkey *Cercopithecus nictitans* (sighted 63 times), drill *Mandrillus leucophaeus* (sighted 15 times) and Preuss's monkey *Allochrocebus preussi* (sighted 3 times). Forest elephant (*Loxodonta cyclotis*) and African buffalo (*Syncerus caffer*) were sighted on twice respectively in the Okwa Hills area. No arrests were made by rangers during this quarter even though several offenders were encountered in the park. This could be an indication of decreasing motivation among rangers to make arrests given the lack of prosecution of previously arrested offenders. Therefore, it is important for the park's management to intensify efforts to prosecute arrested offenders. Prosecution of offenders is a stronger deterrent than "compounding" of offences, and it is strongly recommended. In addition to deterring potential offenders, higher prosecution rate will boost morale among rangers and improve overall effectiveness of protection efforts. A joint patrol with the police or the army around the periphery of the park is also recommended to check illegal logging and farm encroachment in the park.

To create conservation awareness in the communities around the park, a number of conservation education activities were implemented this quarter including eight school visits, four exchange visits between conservation clubs, and six guided field trips for schoolchildren. Others include community meetings in nine communities and film show in fifteen villages with a total audience of 1,967. WCS also used the occasion of World Gorilla Day to raise awareness about the conservation status of the Cross River gorilla in schools and communities around Okwangwo. All activities were implemented jointly by WCS and CRNP education staff with support from the Okwangwo Sector Officer. In addition, WCS continued to support the production and broadcast of the My Gorilla My Community radio program (MGMC), which has become increasingly popular, reaching more people within the Cross River gorilla landscape and across Cross River State.

WCS continued to support efforts to diversify local livelihoods in the landscape, focusing on training of farmers in sustainable cocoa production, and training of women's groups in sustainable bush mango harvesting, propagation, storage and marketing of bush mango. In addition to training, improved variety cocoa and bush mango seedlings were distributed to farmers and women to boost production on existing farmland. This quarter, a total of 38,667 improved cocoa seedlings were distributed to 119 trained farmers in 6 communities to replant existing old and increasingly unproductive farms. A total of 280 seedlings of early maturing and high yielding variety of bush mango were also distributed to trained women in Ukampor community in Okwa.

Background

WCS has supported protection efforts in CRNP since 2001. In 2011, WCS established a CyberTracker-based monitoring project in Okwangwo with technical assistance from the North Carolina Zoo, and funding from the Great Ape Conservation Fund of the US Fish and Wildlife Service, the Great Apes Program of the Arcus Foundation and others. The main objectives of this project are to strengthen existing law enforcement efforts by increasing the frequency, duration, coverage and efficacy of anti-poaching patrols and to monitor wildlife, human sign and the effectiveness of ranger patrols. In 2016, the law enforcement monitoring system in Okwangwo was upgraded to Spatial Monitoring And Reporting Tool (SMART: <http://smartconservationtools.org/>) allowing improved analysis and reporting. This report summarizes patrol data for the period from July to September 2021 and describes activities implemented to raise awareness and strengthen support for conservation.

Results

1. Law Enforcement

Ten camping patrols lasting 6 to 8 days each were completed per month by five teams of six rangers each. Teams patrolled different areas simultaneously targeting hunting “hotspots” identified in previous patrols and information gathered from villagers. Due to inadequate funds, patrols facilitated by WCS were focused at the Okwa Hills and Boshi Extension areas of the park, which are core areas used by gorillas. A small area to the east and the international boundary area between CRNP and Takamanda National Park were also covered. Data were recorded with handheld computers running CyberTracker software, which automatically records GPS coordinates for every observation, and analyzed using SMART software

Patrol effort

Thirty foot patrols were completed this quarter over 234 patrol days (1,366 person-days). The patrols covered a total distance of 1,838.4 kilometers (Figure 1; Table 1).

Figure 1. Patrol tracklogs and patrol effort in km walked per grid cell for the period July to September, 2021. Darker red color indicates areas of more intense patrol coverage.

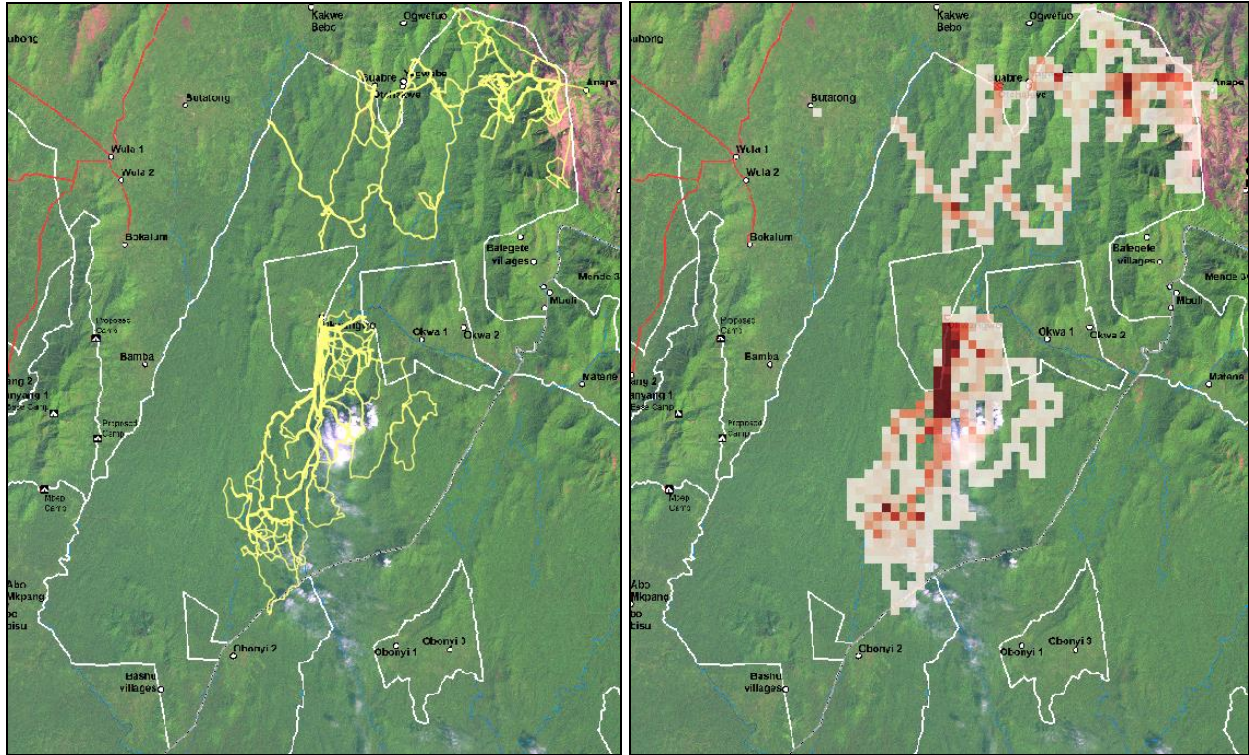


Table 1. Summary of patrol effort for the period July to September, 2021.

Patrol ID	Number of Patrols	Number of Days	Distance (km)	Person - Days
CRNP-OK_000362	1	8	79.8	48
CRNP-OK_000363	1	8	52.3	40
CRNP-OK_000364	1	8	54.9	40
CRNP-OK_000365	1	8	65.2	48
CRNP-OK_000366	1	8	69.7	48
CRNP-OK_000367	1	8	73.2	48
CRNP-OK_000368	1	7	46.8	42
CRNP-OK_000369	1	7	54.6	42
CRNP-OK_000370	1	8	83.2	48
CRNP-OK_000371	1	8	49.0	40
CRNP-OK_000372	1	7	69.9	42
CRNP-OK_000373	1	7	44.0	42
CRNP-OK_000374	1	7	57.8	42
CRNP-OK_000375	1	7	47.1	42
CRNP-OK_000376	1	7	59.8	42
CRNP-OK_000377	1	8	47.0	40
CRNP-OK_000378	1	8	58.9	48
CRNP-OK_000379	1	8	49.1	48
CRNP-OK_000380	1	8	78.8	48
CRNP-OK_000381	1	8	50.9	40
CRNP-OK_000382	1	8	52.0	48
CRNP-OK_000383	1	8	73.3	48
CRNP-OK_000384	1	8	73.5	48
CRNP-OK_000385	1	8	72.0	48
CRNP-OK_000386	1	9	49.9	56
CRNP-OK_000387	1	8	68.0	48
CRNP-OK_000388	1	8	61.5	48
CRNP-OK_000389	1	8	90.4	48
CRNP-OK_000390	1	8	46.8	48
CRNP-OK_000391	1	8	58.8	48
Total	30	234	1838.4	1366

Average distance and length of patrols per month

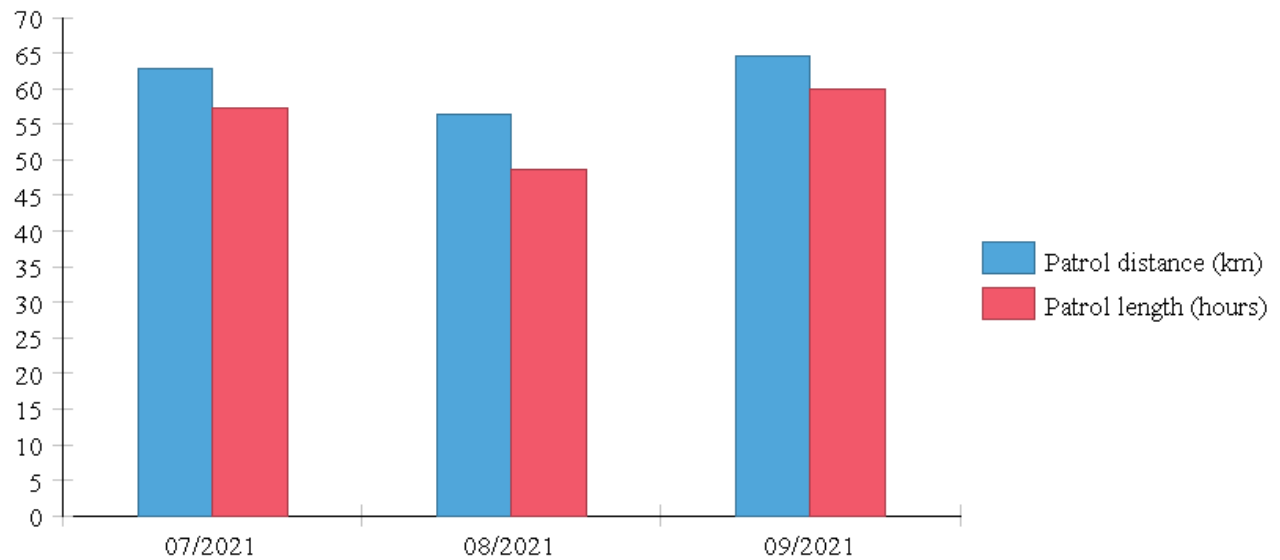


Figure 2. Average distance covered and time taken per patrol per month for the period July, to September, 2021.

Total patrol distance and length per month

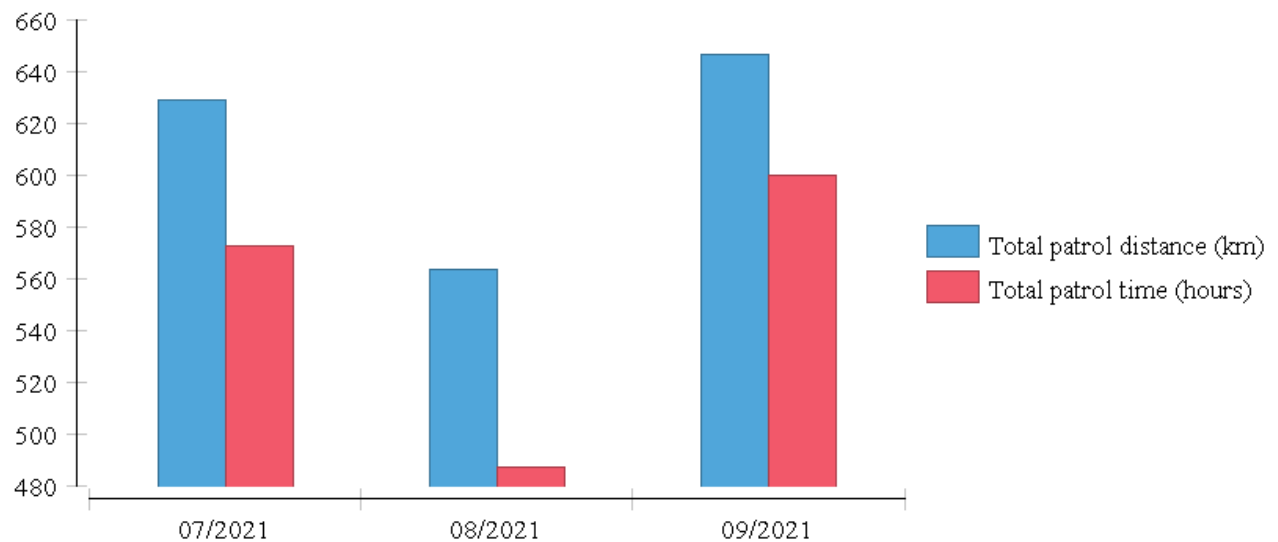


Figure 3. Total patrol distance and time per month for the period July to September, 2021.

While there have been regular patrols of Okwangwo, prosecution of arrested offenders has been limited due to certain constraints. To effectively deal with poaching (including elephant poaching), illegal logging and other illegal activities in the park, it is important for park management to intensify efforts to prosecute arrested offenders. Prosecution of offenders is a stronger deterrent than “compounding” of offences, and it is strongly recommended. In addition to deterring potential offenders, higher prosecution rate will boost morale among rangers and improve overall effectiveness of protection efforts. The lack of prosecution of arrested offenders is beginning to have affect law enforcement in Okwangwo, especially arrests. While data from the patrols show that several offenders (19) were encountered in the park during the reporting period (see Table 2), none was successfully arrested. Rangers appear to have lost interest in arresting offenders because of the low rate of prosecution of previously arrested offenders. Illegal activities will continue in the park except the perpetrators are properly prosecuted and punished for their wrongdoing. Five hunting sheds and 1,020 set wire snares were discovered and destroyed, and 16 new farms were encountered inside the park (Tables 4 & 5). Illegal logging, especially of ebony (*Diospyros spp*), is still a threat in Okwangwo. Prosecution of arrested loggers and their sponsors is the sure method to achieve deterrence. Combating logging in the park has been made more difficult by communities’ collusion with the loggers, giving them logging rights and permission and accepting money from them. The communities also charge ‘evacuation fee’, ‘landing fee’, community development fee’ etc on the loggers to generate revenue.

Table 2. Summary of arrests and other law enforcement for the period July to September, 2021.

Leader	Waypoint Date	Action Taken	Home Village	Threat
Sunday Oyong Eban	Jul 12, 2021	Observed Only		NTFP Collection
Sunday Oyong Eban	Jul 12, 2021	Observed Only		NTFP Collection
Sunday Oyong Eban	Jul 9, 2021	Observed Only		NTFP Collection
Sunday Oyong Eban	Jul 9, 2021	Verbal Warning		NTFP Collection
Sunday Oyong Eban	Jul 9, 2021	Observed Only		NTFP Collection
Sunday Oyong Eban	Jul 9, 2021	Observed Only		NTFP Collection
Sunday Oyong Eban	Jul 9, 2021	Verbal Warning		Roads and Tracks
Sunday Oyong Eban	Jul 10, 2021	Observed Only	Okwa I	NTFP Collection
Emmanuel Dibang	Jul 10, 2021	Unsuccessful Pursuit		Trapping
Emmanuel Dibang	Jul 13, 2021	Unsuccessful Pursuit		Trapping
Edet Etim Ekor	Sep 27, 2021	Unsuccessful Pursuit		Trapping
Edet Etim Ekor	Sep 23, 2021	Unsuccessful Pursuit		Trapping
Edet Etim Ekor	Aug 14, 2021	Unsuccessful Pursuit		Trapping
Edet Etim Ekor	Sep 13, 2021	Unsuccessful Pursuit		Trapping
Edet Etim Ekor	Sep 16, 2021	Unsuccessful Pursuit		Trapping
Christopher Offorbuike	Jul 11, 2021	Observed Only		NTFP Collection
Christopher Offorbuike	Jul 13, 2021	Observed Only		NTFP Collection
Christopher Offorbuike	Jul 13, 2021	Observed Only		NTFP Collection
Magnus Ukpeve	Sep 15, 2021	Unsuccessful Pursuit		Trapping

Table 3. Number of people seen by threat for the period July to September, 2021.

Threat	Number of People seen	Encounter rate per km
Hunting	8	0.004
NTPF Collection	10	0.005

Table 4. Total encounter rates of signs of human activity for the period July to September, 2021.

Activity	Number of Incidents	Encounter Rate per km
Domestic Animals	1	0.001
Farming and Land Clearing	16	0.009
Gunshot heard	22	0.012
Human Sign	102	0.055
Logging and Tree Cutting	12	0.007
NTPFs	1	0.001
People seen	19	0.010
Shed or Camp	9	0.005
Traps, Weapons & Equipment	266	0.145

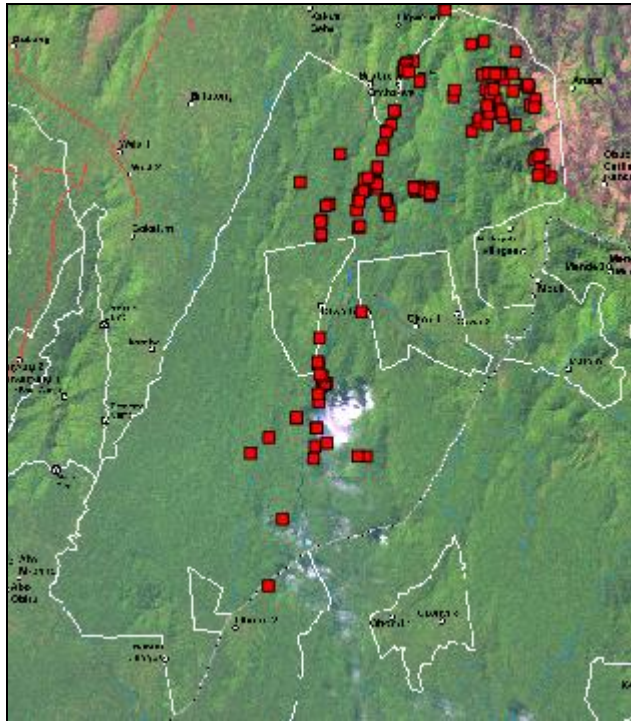
Table 5. Specific evidence of logging activity for the period July to September, 2021.

Type of evidence	Action Taken - Items	Age of Sign	No. of cut pieces	No. of Logs	No. of Stumps	Tree Species
Logs	Seen Only	Recent		0		Ebony
Logs	Seen Only	Fresh		27		Ebony
Logs	Seen Only	Fresh		25		Ebony
Cut Pieces	Seen Only	Fresh	8			Ebony
Stump	Seen Only	Fresh			3	Unknown
Logs	Seen Only	Old		2		Ebony
Logs	Seen Only	Fresh		13		Ebony
Logs	Seen Only	Fresh		3		Ebony
Logs	Confiscated	Fresh		1		Ebony
Logs	Seen Only	Fresh		12		Ebony
Cut Pieces	Seen Only	Fresh	3			Ebony
Cut Pieces	Seen Only	Fresh	9			Ebony

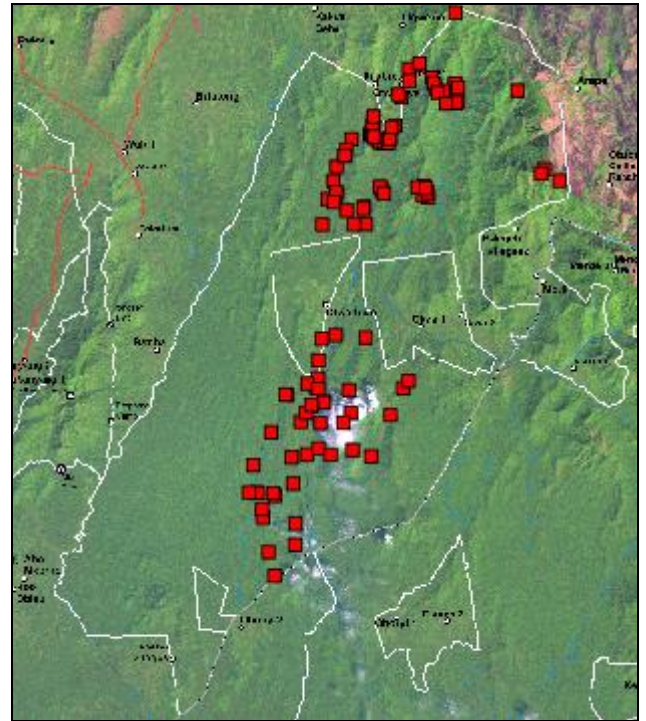
Table 6. Hunting signs recorded for the period July to September, 2021.

Sign	Number of Observations	Encounter Rate per km
Gunshots heard	22	0.012
Set wire snares	1020	0.555
Unset wire snares	4	0.002
Empty cartridges	173	0.094
Hunting camps	5	0.003

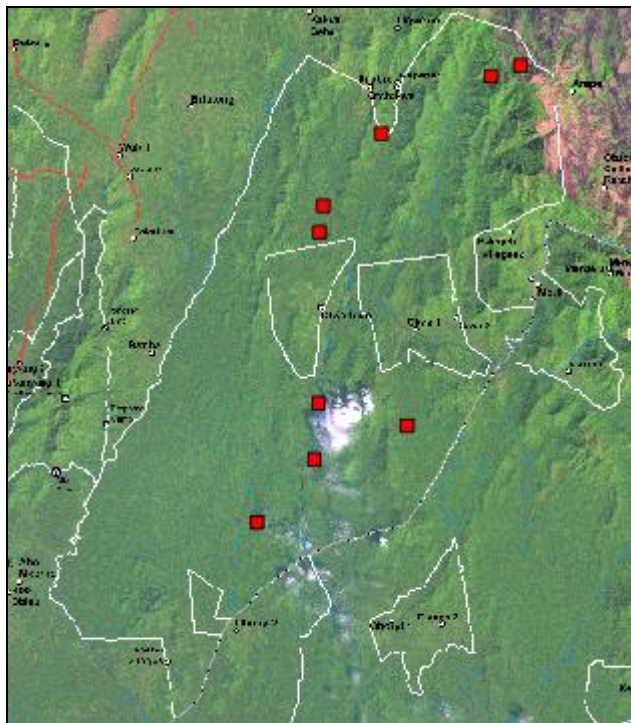
Figure 3. Distribution of all signs of human activity recorded during the period July to September, 2021.



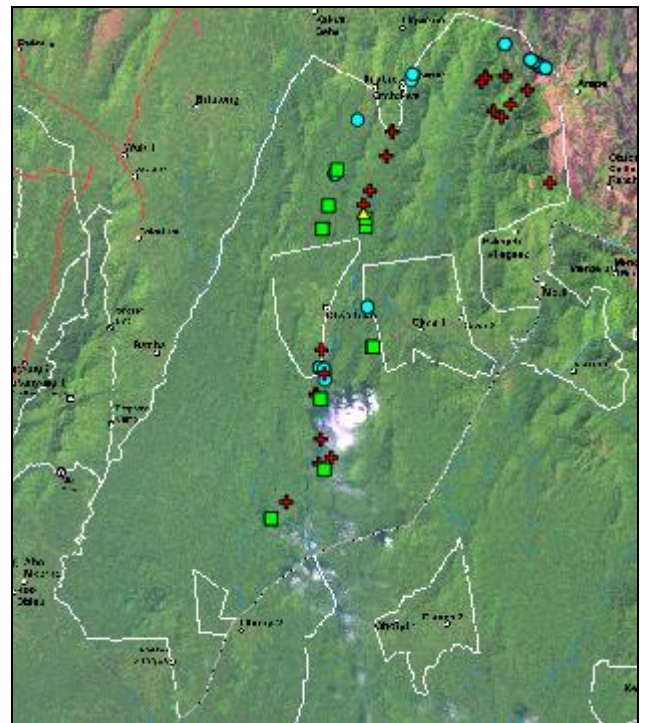
a) Wire snares



b) Empty cartridges



c) Sheds and camps



d) Farms (circles), gunshots heard (crosses), logging (squares), and NTFP collection (triangles)

Wildlife Observations

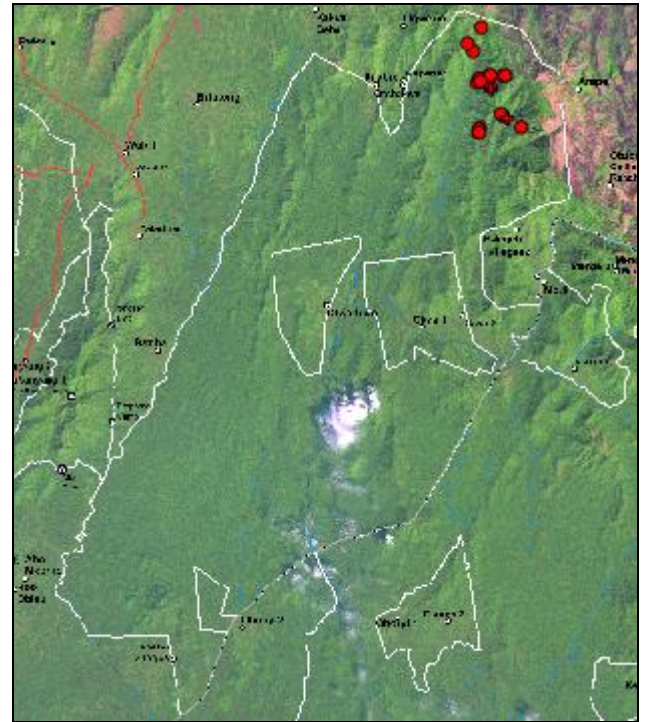
Great Apes

Chimpanzees were sighted on two different occasions in the Boshi-Extension area of the park. In addition to sightings, a total of 59 great ape nest sites were encountered during the patrols: 36 gorilla, 19 chimpanzee and 4 unidentified (Tables 6 & 7).

Figure 4. Ape sightings and nest sites recorded for the period July to September, 2021. Nest sites shown as circles, sightings shown as crosses.



a) Gorillas



b) Chimpanzees

Table 9. Nest sites recorded for the period July to September, 2021.

Species	Nest site type	Age	Dung present	No. of ground nests	Total No. of nests
Chimpanzee	Night nest(s)	Recent	false	0	6
Chimpanzee	Night nest(s)	Recent	false	0	5
Chimpanzee	Night nest(s)	Recent	true	0	6
Chimpanzee	Night nest(s)	Old	false	0	6
Chimpanzee	Night nest(s)	Old	true	0	3
Chimpanzee	Night nest(s)	Old	false	0	8
Chimpanzee	Night nest(s)	Fresh	false	0	8
Chimpanzee	Night nest(s)	Recent	false	0	6
Chimpanzee	Night nest(s)	Fresh	false	0	4
Chimpanzee	Night nest(s)	Fresh	false	0	8
Chimpanzee	Night nest(s)	Recent	false	0	5
Chimpanzee	Night nest(s)	Recent	false	0	6
Chimpanzee	Night nest(s)	Fresh	false	0	4
Chimpanzee	Night nest(s)	Old	false	0	6
Chimpanzee	Night nest(s)	Fresh	false	0	5
Chimpanzee	Night nest(s)	Fresh	false	0	5
Chimpanzee	Night nest(s)	Fresh	false	0	8
Chimpanzee	Night nest(s)	Recent	true	0	4
Chimpanzee	Night nest(s)	Fresh	true	0	6
Gorilla	Night nest(s)	Fresh	true	1	6
Gorilla	Night nest(s)	Fresh	true	2	8
Gorilla	Night nest(s)	Fresh	true	2	5
Gorilla	Day nest(s)	Fresh	true	1	3
Gorilla	Day nest(s)	Fresh	true	1	4
Gorilla	Night nest(s)	Recent	true	3	3
Gorilla	Night nest(s)	Fresh	false	2	6
Gorilla	Night nest(s)	Recent	false	2	6
Gorilla	Night nest(s)	Fresh	true	2	5
Gorilla	Night nest(s)	Fresh	true	1	2
Gorilla	Night nest(s)	Fresh	false	3	3
Gorilla	Day nest(s)	Fresh	false	1	1
Gorilla	Night nest(s)	Fresh	false	1	4
Gorilla	Night nest(s)	Recent	true	1	3
Gorilla	Night nest(s)	Recent	true	2	5
Gorilla	Night nest(s)	Fresh	true	1	3
Gorilla	Night nest(s)	Recent	true	2	5
Gorilla	Night nest(s)	Fresh	true	1	4
Gorilla	Night nest(s)	Fresh	false	1	1
Gorilla	Night nest(s)	Recent	true	5	8
Gorilla	Night nest(s)	Recent	false	2	
Gorilla	Night nest(s)	Fresh	true	2	2
Gorilla	Night nest(s)	Recent	true	3	5
Gorilla	Day nest(s)	Recent	true	2	
Gorilla	Night nest(s)	Fresh	true	1	3
Gorilla	Day nest(s)	Fresh	false	1	
Gorilla	Night nest(s)	Old	false	1	4
Gorilla	Night nest(s)	Fresh	true	1	4
Gorilla	Night nest(s)	Recent	false	1	4
Gorilla	Day nest(s)	Fresh	true	1	1
Gorilla	Night nest(s)	Fresh	true	1	3

Species	Nest site type	Age	Dung present	No. of ground nests	Total No. of nests
Gorilla	Night nest(s)	Recent	false	2	5
Gorilla	Night nest(s)	Fresh	true	1	2
Gorilla	Night nest(s)	Recent	true	2	5
Gorilla	Night nest(s)	Recent	true	2	3
Gorilla	Night nest(s)	Fresh	false	1	4
Unidentified great ape	Night nest(s)	Fresh	false	0	2
Unidentified great ape	Night nest(s)	Fresh	false	0	1
Unidentified great ape	Night nest(s)	Recent	false	0	3
Unidentified great ape	Night nest(s)	Fresh	false	0	2

Monkeys

Monkeys were sighted a total of 150 times by rangers during patrols this quarter - drill, Mona monkey, red-eared monkey, white-nosed monkey and Preuss's monkey (Figure 5; Table 8).

Figure 5. Monkey sightings recorded for the period July to September, 2021

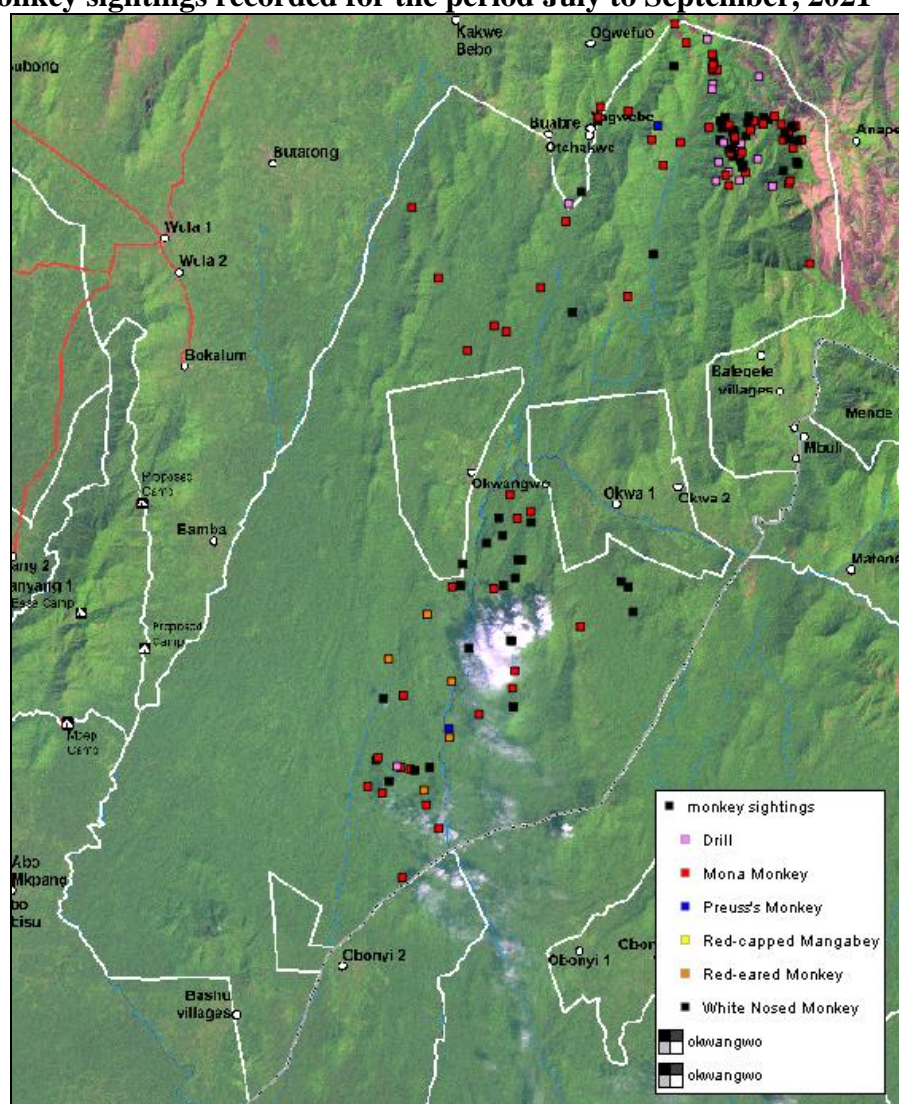


Table 10. Number and encounter rate of monkey species observed for the period July to September, 2021.

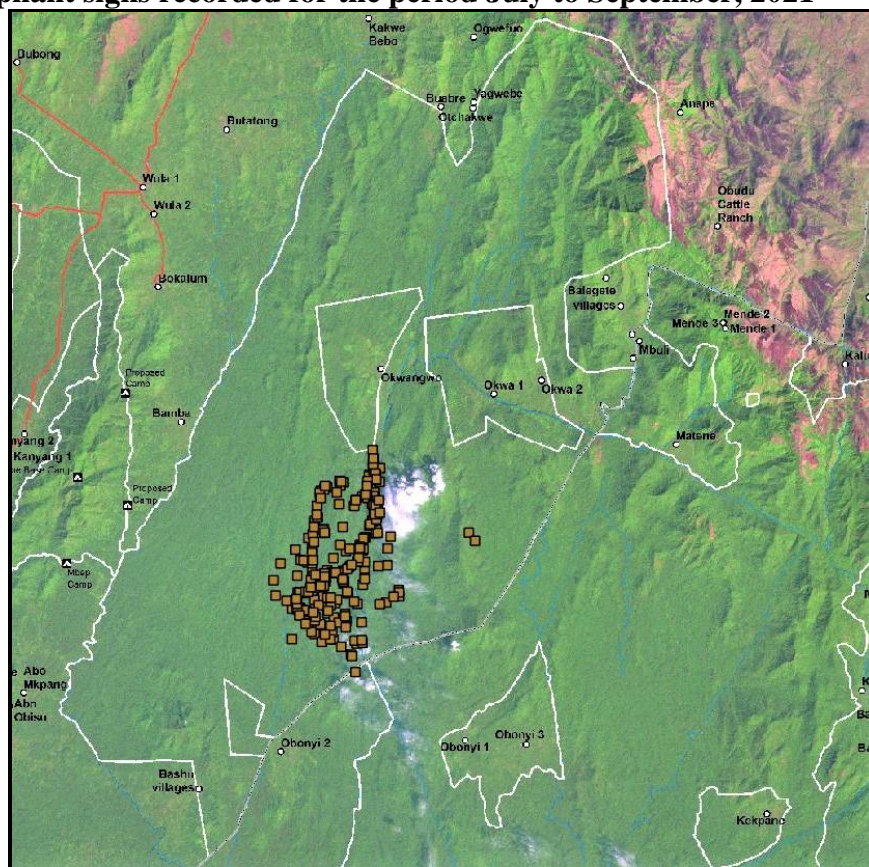
Species	Number of observations	Encounter rate
Drill	15	0.008
Mona monkey	64	0.035
Preuss's monkey	3	0.002
Red-eared monkey	5	0.003
White-nosed monkey	63	0.034

Other Wildlife

Elephants

Herds of forest elephant (*Loxodonta cyclotis*) were sighted on two occasions, and fresh signs (dung, feeding remains, trails) were observed frequently in the Okwa Hills and the lowland area to the west (Figure 7). With patrols in the adjoining Takamanda National Park (TNP), it has been observed that elephant poachers access the Saltlick and other areas of Okwangwo used by elephants through TNP to hunt elephants in Okwangwo. Although there were no confirmed reports of elephant poaching during this quarter, not fewer than four elephants have been killed in Okwangwo this year by poachers from Cameroon who access the Okwangwo through TNP.

Figure 7. Elephant signs recorded for the period July to September, 2021





Camera trap photos of Mountain monkey (Preuss's monkey) and forest elephants

Other Wildlife

Other large mammals sighted include African buffalo, yellow-backed duiker, blue duiker and herds of red river hog. Indirect signs such as dung and feeding remains encountered were also recorded (see Appendix II for encounter rate of all animals signs recorded).

Recommendations

- Prosecution of arrested offenders is considered to be a stronger deterrent than “compounding” of offences, and it is highly recommended. In addition to deterring potential offenders, a higher rate of prosecution will boost morale among rangers and improve overall effectiveness of protection efforts.
- Increase surveillance on the Butatong-Okwabang road to check transport of ebony and other forest products illegally extracted from the park. Arrested illegal ebony loggers and their sponsors should be prosecuted when arrested to deter others.
- Regular refresher ranger training for all rangers in Okwangwo to sharpen their skills and raise morale.
- Park boundaries need to be cleared and marked to facilitate law enforcement.
- Occasional targeted patrols of Okwangwo by a joint team of rangers, the Police and the military would be useful

2. Conservation Education and Awareness

Exchange Visits

This quarter, WCS facilitated four exchange visits involving eight school conservation clubs in Okwangwo with 415 students participating (Table 1). The aim of the exchange visits was to facilitate exchange of knowledge and experiences among the conservation club members. During the visits, the students were guided through a variety of activities to encourage learning including conservation games, quiz and drama carried out in a competitive manner with winners receiving gifts as an incentive to encourage active participation.

Table 2.1: Number of participants at Schools exchange visits July to September 2021

Date	School(s)	No of students
July 8	St. Michael International School Bateriko & JADEE International Nursery/Primary School Butatong	97
July 23	Government Primary School Bakie & Primary School Baggabo Bumaji	90
Sept. 20	ThankGod International Nursery and Primary School Bunu & Ushie Nursery/Primary School Bakuruku Bumaji	104
Sept. 21	St. Augustine Primary School Bambariku & Holy Trinity Primary School Baggo Bumaji	124

Field Trips

Field trips are a valuable way to connect young people to nature. They tend to produce lasting experiences that help to inspire them to value and support nature conservation. WCS regularly organizes guided field trips for conservation clubs at the sites where we work in Cross River to build that connection. This quarter, WCS organized guided field trips for six conservation clubs in Okwangwo, with a total of 171 pupils/students participating (Table 2.2). The field trips provided pupils/students the opportunity to learn about the rainforest, threats to wildlife, and ongoing efforts to save species from extinction. WCS and CRNP field staff shared their knowledge and experiences with the students during the field trips.

Table 2.2: Number of participants in field trips organized from July to September 2021.

Date	School(s)	No of pupils/students
July 8	JADEE International Nursery/Primary School Butatong	24
July 14	Primary School Ogwefor Bumaji	30
Aug. 23	Community Secondary School Butatong	24
Sept. 20	Government Primary School Bakie	27
Sept. 22	Government Secondary School Obudu Cattle Ranch	25
Sept. 30	Government Primary School Butatong	41



Field trip with Dowell Intellect's Academy Kanyang (right) and Government Secondary School Obudu Cattle Ranch (left) to montane forest on the Obudu plateau

School Visits

WCS and CRNP visited eight schools to create conservation awareness among schoolchildren (Table 2.3). Lessons and outdoor activities were organized to teach the children about conservation and natural resource management. Other activities conducted include visit to logging sites, quiz competition and conservation games including puppet show. A total of 90 customized notebooks produced to promote conservation awareness for forest elephants and 120 pens were distributed to conservation club members and teachers. Eight posters produced to improve awareness on endangered species and watershed protection were distributed to each school club during the visits.

Table 2.3: Schools visited in Okwangwo July to September 2021.

Date	Name of schools visited	Exercise books & pens distributed
8/7/2021	St. Michael Primary School Bateriko	20 notebooks
8/7/2021	JADEE Int. Nursery and Primary School Butatong	20 notebooks
23/7/2021	Primary school Bakie Bumaji	30 notebooks
23/7/2021	Government Primary School Baggabo Bumaji	20 notebooks
20/9/2021	Holy Trinity Primary School Baggo	30 pens
20/9/2021	St. Augustine Primary School Bambariku	30 pens
21/9/2021	Community Secondary School Bumaji	30 pens
22/9/2021	Community Secondary School Obudu Cattle Ranch	30 pens



Students learning about the rainforest during a visit to Secondary Commercial School Bateriko

Film Shows

Great apes films were presented in four communities in Okwangwo during this quarter to create conservation awareness (Table 2.4). The films were viewed by a total of 1,967 people. Human activities that threaten wildlife and the forest such as hunting, farm encroachment, illegal logging, and bush burning were discussed during the film shows.

Table 2.4: Villages and schools in Okwangwo visited for film show and estimated number of viewers

S/no	Date	Name of Community	Attendance
1	12/7/2021	Okwa I	120
2	23/7/2021	Baggo	106
3	26/7/2021	Okwamu Becheve	74
4	17/8/2021	Busi VI	145
5	19/8/2021	Butataong	60
6	22/8/2021	Bashu Kaku	170
7	26/8/2021	Kigoh Becheve	220
8	27/8/2021	Okpazange	92
9	29/8/2021	Bajiki Bumaji	215
10	11/9/2021	Bogo	71
11	13/9/2021	Kundeve I	59
12	14/9/2021	Kundeve II	87
13	19/9/2021	Bago/Bunu Bumaji	303
14	20/9/2021	Bambariku	120
15	21/9/2021	Oguefor	125

Community Meetings

WCS facilitated nine community meetings in Okwangwo to discuss threats to the park including hunting, farm encroachment and illegal logging (Table 5).

Table 2.5. Attendance at community meetings in Okwangwo July to September, 2021

S/no	Date	Village	Attendance
1	17/8/2021	Busi VI	45
2	22/8/2021	Bashu Kaku	60
3	26/8/2021	Kigoh Becheve	25
4	29/8/2021	Bajiki Bumaji	15
5	10/9/2021	Bogo	32
6	13/9/2021	Kundeve I	18
7	14/9/2021	Kundeve II	45
8	20/9/2021	Bunu	51
9	21/9/2021	Bakie	28

World Gorilla Day

WCS used the occasion of World Gorilla Day to raise awareness about the conservation status of the Cross River gorilla in schools and communities around Okwangwo. Schoolchildren, teachers, rangers, women, youth and community leaders were gathered to discuss Cross River gorilla conservation.



Camera trap Photo of Cross River gorilla at Afi Mountain Wildlife Sanctuary (left), and a cross section of participants during the World Gorilla Day Celebration.

My Gorilla My Community radio program

Launched in 2015, the MGMC radio program has continued to draw large audiences within and outside the Cross River gorilla landscape. WCS continued to support the production and broadcast of the program, which reaches over 100,000 people within the Cross River gorilla landscape and over one million in the entire Cross River State. Regular monitoring visits to communities by the program manager and coordinator of the Cross River gorilla campaign for WCS and feedback from listener groups help to adapt and improve the program. This quarter, emphasis was on prevention of bush fire as we gradually approach the dry season.

3. Support for Sustainable Livelihoods

Training of cocoa farmers and women's groups

Working with agricultural extension staff of the Agricultural Development Program of the Cross River State Ministry Agriculture, WCS provides regular training in improved farming practices including appropriate spacing, pruning, use of shade trees, soil fertility management and fire management for farmers around the park. While a training was not organized for farmers around the park this quarter, a total of 38,667 improved seedlings of cocoa raised from cocoa pods obtained from the Cocoa Research Institute of Nigeria (CRIN) were distributed to 119 selected and trained farmers from 6 communities. All beneficiaries signed a conservation agreement and have had their farms verified prior to receiving the seedlings. Beneficiaries will use seedlings to replace old and unproductive trees or plant in already deforested land outside of the national park. In addition, 280 seedlings of high and early bush mango were distributed to selected and trained women of Ukampor community in the Bumaji axis of the park.

Establishment and monitoring of cocoa nurseries

This quarter WCS distributed the last batch of cocoa seedlings from established nurseries around six benefiting communities. Plans for new nursery will begin as soon as benefiting communities are decided and nursery sites identified. WCS targets to reduce deforestation by encouraging farmers to replant existing old and less productive farms with improved variety of cocoa purchased from the Cocoa Research Institute of Nigeria to distribute to already trained farmers (who have signed conservation contracts to limit deforestation), the new variety is expected to increase efficiency of existing farms, increase farmers' income and reduced deforestation by reducing the need to clear more forest for increased production.



A cocoa nursery site at Ukampor (left) and distribution of cocoa seedlings in Bamba

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Appendices

Appendix I. Patrol effort statistics July to September, 2021.

Date	Number of Patrols	Distance (km)	Number of Hours	Number of Rangers
2021-07-08	4	33.9	38.4	24
2021-07-09	5	42.6	32.2	30
2021-07-10	5	44.6	36.1	30
2021-07-11	5	50.2	41.5	30
2021-07-12	5	33.4	37.3	30
2021-07-13	5	42.7	34.3	30
2021-07-14	5	39.9	46.5	30
2021-07-15	5	29.7	30.7	30
2021-07-19	4	19.2	14.9	24
2021-07-20	5	52.1	33.5	30
2021-07-21	5	37.0	37.6	30
2021-07-22	5	41.2	38.2	30
2021-07-23	5	43.9	36.1	30
2021-07-24	5	42.4	47.8	30
2021-07-25	5	23.6	31.1	30
2021-07-26	5	47.6	33.1	30
2021-07-27	1	4.6	3.1	6
2021-08-12	5	23.5	22.0	25
2021-08-13	5	42.5	33.7	25
2021-08-14	5	42.9	44.8	25
2021-08-15	5	43.5	44.7	25
2021-08-16	5	45.5	34.5	25
2021-08-17	5	51.9	34.0	25
2021-08-18	5	28.7	20.5	25
2021-08-23	5	30.7	24.7	30
2021-08-24	5	43.5	34.4	30
2021-08-25	5	39.4	34.1	30
2021-08-26	5	39.0	39.1	30
2021-08-27	5	31.6	37.0	30
2021-08-28	5	34.6	34.7	30
2021-08-29	5	30.7	29.7	28
2021-08-30	5	35.2	19.5	28
2021-09-11	5	25.3	25.8	24
2021-09-12	5	40.1	31.2	24
2021-09-13	5	49.1	38.9	30
2021-09-14	5	33.8	34.3	30
2021-09-15	5	56.1	50.7	30
2021-09-16	5	31.1	54.4	30
2021-09-17	5	39.7	38.4	30
2021-09-18	6	45.5	31.3	30

Appendix II. Encounter rate of wildlife species observed during patrols July to September, 2021.
Species not encountered during patrols are not shown.

Common name	Scientific name	Encounter rate per km
Brush-tailed porcupine	<i>Atherurus africanus</i>	0.242
Unidentified monkey	-	0.233
Red river hog	<i>Potamochoerus porcus</i>	0.228
Blue duiker	<i>Philantomba monticola</i>	0.175
Mona monkey	<i>Cercopithecus mona</i>	0.173
Common mongoose	<i>Crossarchus sp</i>	0.170
Forest elephant	<i>Loxodonta cyclotis</i>	0.140
Yellow-backed duiker	<i>Cephalophus silvicultor</i>	0.139
White-nosed monkey	<i>Cercopithecus nictitans</i>	0.123
Nigeria-Cameroon chimpanzee	<i>Pan troglodytes ellioti</i>	0.051
Cross River gorilla	<i>Gorilla gorilla diehli</i>	0.030
Unidentified large duiker	-	0.027
African buffalo	<i>Syncerus caffer</i>	0.023
Drill	<i>Mandrillus leucophaeus</i>	0.020
African civet	<i>Civettictis civetta</i>	0.015
Pangolin	<i>Phataginus tricuspis</i>	0.015
Unidentified great ape	-	0.013
Cane rat	<i>Thryonomys swinderianus</i>	0.012
Unidentified medium duiker		0.009
Bay duiker	<i>Cephalophus dorsalis</i>	0.005
Red-eared monkey	<i>Cercopithecus erythrotis</i>	0.005
Unidentified small duiker	-	0.005
Rock fowl	<i>Picathartes oreas</i>	0.004
Preuss's monkey	<i>Cercopithecus preussi</i>	0.003
Palm civet	<i>Nandinia binotata</i>	0.002

Appendix III. Ranger work time for the period July to September, 2021.

Name	Number of Patrols	Number of Patrol Days	Number of Patrol Hours	Patrol Distance (km)
Akuba Emmanuel	1	8	52.4	69.7
Bartholomew Adie Abu	1	8	58.7	90.4
Bassey Vincent Igiri	6	46	323.9	372.3
Charles Otu	1	7	61.0	54.6
Christopher Offorbuike	2	15	116.6	106.9
Cosmas Esor Akam	5	39	265.6	370.4
Cosmas Kekong Nigbo	1	7	59.8	46.8
CRNP Student IT	1	8	53.1	79.8
CRNP Student IT	1	7	59.8	46.8
Dominic Effiom Edet	3	24	158.7	177.5
Douglas Odu	2	6	43.5	49.1
Edet Etim Ekpore	5	38	252.5	238.8
Edward Oyong Osor	1	8	53.1	79.8
Emmanuel Dibang	3	21	153.3	168.5
Eric Ajom Ahotne	1	8	72.4	54.9
Ignatius Kechi Etum	2	17	150.6	111.4
Jerome Anya Anya	5	38	249.7	239.0
John Effiom Usim	5	37	226.0	258.7
Jonas Ekpa Ashikubre	4	31	218.4	227.3
Joseph Erim Mkpaa	4	24	152.8	180.9
Joseph Esale Onu	5	31	200.9	188.2
Jurry Anom	2	16	107.9	99.3
Kelvin Barnabas Menge	7	55	384.7	516.8
Kennedy Missang Oyama	3	23	160.2	150.3
Kingsley Otu Osang	7	44	303.2	388.5
Magnus Ukpeve	4	32	235.3	195.1
Martin Ekun	2	15	106.5	110.1
Mathias Bisong Ashu	3	23	159.7	193.4
Ndifon Amon Ojang	3	23	169.9	173.7
Oru Patrick Erom	1	8	55.6	58.8
Peter Amoman Oshioka	5	39	284.1	290.0
Richard Emmanuel Ayum	4	32	211.6	244.2
Spencer Kecho Kecho	4	31	221.8	218.3
Stephen Odu Arop	6	47	312.4	432.6
Sunday Oyong Eban	2	16	110.3	156.4
Valentine Okon Effim	2	15	97.4	120.8
William Utang Esira	3	23	170.2	146.0