WILDLIFE CONSERVATION SOCIETY MBE MOUNTAINS ANNUAL REPORT: JANUARY-DECEMBER 2021







Prepared by: Jonathan Eban WCS Nigeria Program

Summary

This report presents results of anti-poaching patrols conducted by 16 Mbe eco-guards in the Mbe Mountains from January to December 2021 and supported by the Wildlife Conservation Society (WCS). The report also outlines activities implemented by WCS in collaboration with the Conservation Association of Mbe Mountains (CAMM) to raise levels of conservation awareness and improve local livelihoods. A total of 83 patrols were completed during this period including joint patrols of the corridor between Mbe and the Okwangwo Division of Cross River National Park (Okwangwo) by Mbe eco-guards and Cross River National Park rangers. The patrols covered a total distance of 3,453 kilometers over 591 patrol days (2,821 patrol man-days). Seven offenders were apprehended and sanctioned. A total of 599 wire snares were removed from the forest and five hunting camps were discovered and dismantled. Other hunting signs observed include 355 expended shotgun cartridges and 27 gunshots heard. To evaluate the effectiveness of law enforcement action we compare the results of patrols in 2021 to those from previous years (2017-2020). In addition to human activities, eco-guards also recorded wildlife observations to monitor the abundance and distribution of large mammals during the patrols. Great apes were sighted on 22 occasions: 3 gorilla sightings and 19 chimpanzee sightings. A total of 82 ape nest sites were observed: 49 gorilla and 33 chimpanzee nest sites. Monkeys were sighted on 427 occasions during the year, including drill, Mona monkey, putty-nosed monkey, and red-eared monkey. Signs of forest elephant, red-river hog, buffalo, and bushbuck and other duikers were also observed. Activities implemented to raise levels of conservation awareness include field trips for schoolchildren, exchange visits between conservation clubs, school visits by WCS education team, and distribution of customized notebooks and other educational materials in schools. WCS celebrated World Environment Day, World Gorilla Day, World Pangolin Day, and other events in communities around Mbe to raise awareness. WCS continued to support farmers in Mbe to improve the sustainability of cocoa production through training in agricultural best practices and provision of high-quality cocoa seedlings used for a phased replanting of old farms to improve productivity and reducing deforestation from expansion. Women were trained in sustainable bush mango harvesting methods and provided with improved bush mango seedlings to boost production on farms to reduce their dependence on wild bush mango.

Introduction

Covering about 85km², the Mbe Mountains is an important habitat corridor linking the Afi Mountain Wildlife Sanctuary and the Okwangwo Division of Cross River National Park. In 2006, the nine communities that surround the Mbe Mountains formed the Conservation Association of the Mbe Mountains (CAMM) with support from the USAID-funded Sustainable Practices in Agriculture in Critical Ecosystems (SPACE) project, the Wildlife Conservation Society (WCS), the Cross River State Forestry Commission and other stakeholders. Since then, the Mbe Mountains have been managed as a community wildlife sanctuary by CAMM with the active and continued support of WCS. Activities implemented include daily law enforcement patrols conducted by a team of 16 eco-guards employed and trained by WCS and jointly managed by WCS and CAMM, education and awareness in schools and communities and supporting sustainable local livelihoods. As part of protection efforts, a CyberTracker-based monitoring project was introduced in the Mbe Mountains in 2009. In 2016, CyberTracker was replaced by Spatial Monitoring and Reporting Tool (SMART) software for law enforcement planning and

monitoring. This report details activities implemented by WCS in collaboration with CAMM in Mbe in 2021 including law enforcement, conservation education, and livelihood support.

Methods

Three to six 10-day patrols were completed each month by two teams of 6 to 8 eco-guards each based at different camps in the sanctuary and patrolling different sectors of the sanctuary simultaneously. Joint patrols of the Mbe-Okwangwo corridor were conducted by teams of eco-guards and CRNP rangers. Patrols followed existing trails but targeted known and suspected hotspots of human activities based on intelligence gathered from the surrounding villages and data from previous patrols. Data were collected using CyberTracker software on handheld computer devices and analyzed in SMART (http://smartconservationtools.org/). All offenders encountered were apprehended and all wire snares and hunting camps found were destroyed.

Results

Patrol effort: A total of 83 patrols were completed over 591 patrol days (2,821 patrol person-days) covering a total distance of 3,453 kilometers, a significant increase in patrol effort compared to last year (Table 1; Figures 2 & 3).

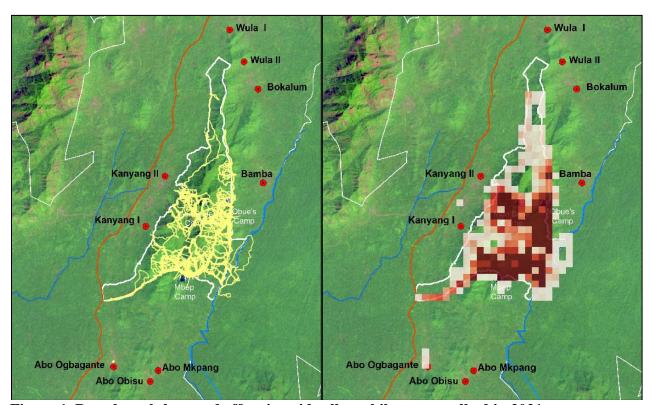


Figure 1. Patrol track-logs and effort in grid cell per kilometer walked in 2021. (NOTE: Darker red color indicates areas of more intense patrol coverage).

Table 1: Comparison of patrol effort in the Mountains from 2017–2021

	2017	20118	2019	2020	2021
Number of patrols	58	65	93	123	83
Number of patrol days	405	417	594	780	591
Total distance	2,554	2,801	3,641	4,810	3,453

Average distance and length of patrols per month



Figure 2. Average distance covered and time taken per patrol per month for 2021.

Total patrol distance and length per month

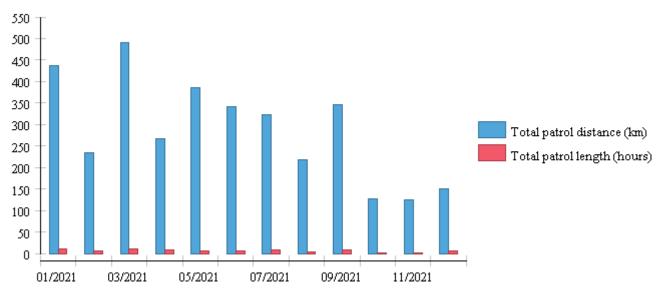


Figure 3. Total patrol distance and time per month for 2021.

Law Enforcement

Seven people including a hunter and five loggers were apprehended during patrols in 2021. Offenders arrested in the sanctuary were reported to CAMM for sanctions while those arrested during patrols of the corridor between Mbe and the Okwangwo Division of Cross River National Park were handed over to the park authority for prosecution (Appendix II). A total of 599 wire snares were removed from the forest and five hunting camps uncovered were dismantled. Other signs of hunting recorded include 355 expended shotgun cartridges and 27 gunshots heard (Table 6; Appendix 1). While patrol effort (number of patrols and distance covered) in 2021 was lower compared to last year because of a change in patrol strategy, encounter rate of hunting signs such as wire snares, expended shotgun cartridges and hunting camps decreased (Table 2).

Table 2: Comparison of encounter rate of hunting signs in Mbe 2017 to 2021

	Encounter rate per 10km						
Sign	2017 2018 2019 2020 20						
Wire snares	5.41	7.75	13.5	9.42	1.17		
Gunshot heard	0.09	0.12	0.08	0.04	0.07		
Expended cartridges	1.21	1.20	1.31	1.05	1.03		
Hunting camps destroyed	0.04	0.02	0.02	0.04	0.01		
Number of patrol days	405	417	594	780	591		
Distance covered (km)	2,554	2,801	3,641	4,810	3,453		
Rangers per 10 km2	1.6	1.9	1.9	1.9	1.9		

Table 3. Summary of number of people seen by threat during patrols in 2021.

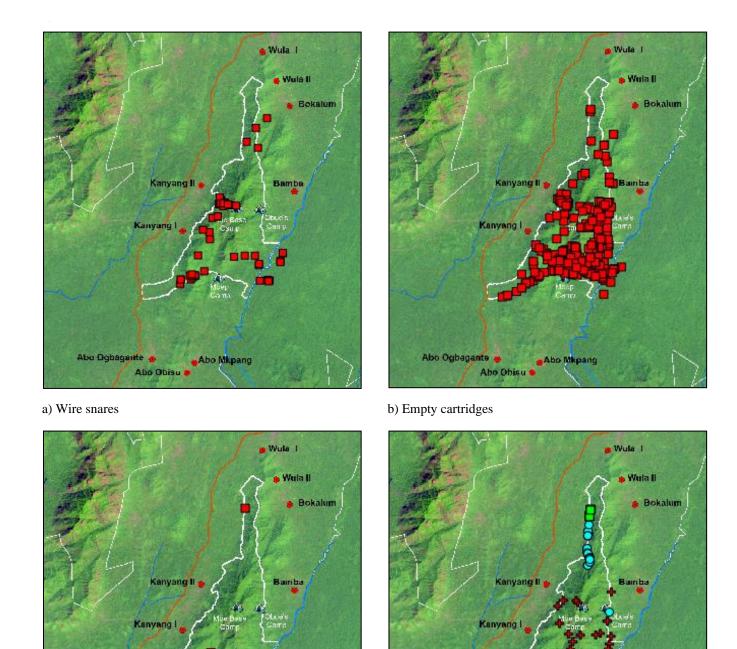
Threat	Number of people seen	Encounter rate per km
Hunting	2	0.000
Logging	5	0.001
NTFP Collection	1	0.000

Table 4. Total encounter rates of signs of human activity recorded during patrols in 2021.

Activity	# incidents	Encounter rate/km
Farming and land clearing	24	0.007
Gunshot heard	26	0.008
Human sign	186	0.054
Logging and tree cutting	19	0.006
NTFPs	2	0.001
People seen	5	0.001
Shed or camp	7	0.002
Traps, weapons & equipment	323	0.094

Table 5. Details of logging activity recorded during patrols in 2021.

Type of logging evidence	Action taken - items	Age of sign	Tree species
Stump	Seen only	Fresh	Other
Cut Pieces	Seen only	Fresh	Iroko
Cut Pieces	Seen only	Fresh	Unknown
Logs	Seen only	Fresh	Other
Cut Pieces	Destroyed	Fresh	Unknown
Stump	Seen only	Fresh	Unknown
Stump	Seen only	Fresh	Unknown
Stump	Destroyed	Fresh	Other
Stump	Seen only	Fresh	Other
Cut Pieces	Seen only	Fresh	Unknown
Stump	Seen only	Fresh	Other
Stump	Seen only	Fresh	Other
Cut Pieces	Seen only	Recent	Ebony
Stump	Seen only	Recent	Ebony
Cut Pieces	Seen only	Fresh	Ebony
Logs	Destroyed	Fresh	Unknown
Cut Pieces	Destroyed	Fresh	Other
Logs	Destroyed	Fresh	Other
Stump	Seen only	Fresh	Other
Logs	Seen only	Fresh	Other
Stump	Seen only	Recent	Other



c) Sheds and camps

Abo Ogbagante 🐞

Abo Ohisu

Abo Mkpang

d) Farms in circle, gunshots heard in crosses, logging in squares, and NTFP collection in triangles

Abo Obisu .

Abo Mkpang

Abo Ogbagante 😹

Figure 4. Location of all signs of human activity recorded during patrols in 2021.

Table 6. Hunting signs recorded during patrols in 2021.

Sign	# observations	Encounter rate per km
Gunshots heard	27	0.008
Set wire snares	599	0.173
Unset wire snares	25	0.007
Empty cartridges	355	0.103
Hunting camps	5	0.001
Total	1,011	0.292

Wildlife Observations

Great Apes

Great apes were sighted 22 times (Table 7) by eco-guards during patrols in 2021. Gorillas were sighted on three occasions including a group of six individuals. Chimpanzees were sighted 19 times with 4 to 18 individuals counted. In addition to sightings, 82 ape nest sites were observed: 49 gorilla nest sites (including two containing 15 nests fresh nests) and 33 chimpanzee nest sites with the largest site containing 15 nests (Table 10). Other ape evidence recorded include fresh breakings, trails, dung, feeding remnants and vocalizations.

Table 7. Great ape sightings during patrols in 2021.

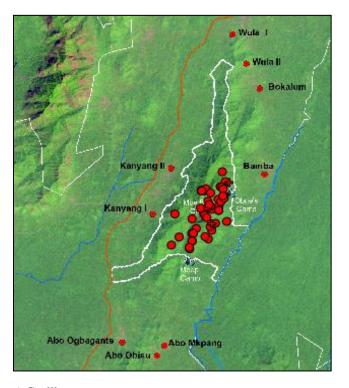
Date	Species	Total sighted
Jan 4, 2021	Chimpanzee	9
Jan 11, 2021	Chimpanzee	3
Jan 11, 2021	Chimpanzee	5
Jan 27, 2021	Chimpanzee	18
Feb 6, 2021	Chimpanzee	4
Mar 15, 2021	Chimpanzee	5
Mar 17, 2021	Gorilla	6
Apr 17, 2021	Chimpanzee	6
Apr 18, 2021	Chimpanzee	16
Apr 26, 2021	Gorilla	1
May 23, 2021	Chimpanzee	11
May 24, 2021	Chimpanzee	13
Jun 7, 2021	Chimpanzee	7
Jun 19, 2021	Chimpanzee	9
Jun 20, 2021	Chimpanzee	6
Jul 28, 2021	Chimpanzee	11
Aug 22, 2021	Chimpanzee	5
Aug 22, 2021	Chimpanzee	5
Sep 10, 2021	Chimpanzee	7
Nov 27, 2021	Chimpanzee	16
Nov 28, 2021	Gorilla	2
Dec 22, 2021	Chimpanzee	12

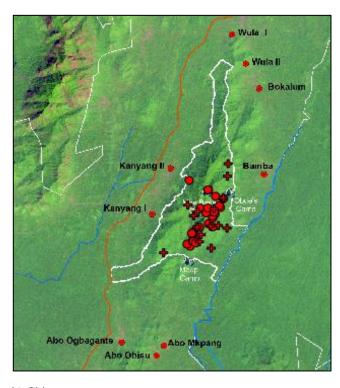
Table 8. Number and encounter rate of nest sites recorded during patrols in 2021.

Species	Number of nest sites	Encounter rate per km
Chimpanzee	33	0.010
Gorilla	49	0.014
Total	82	0.024

Table 9. Encounter rates of great ape sightings & nest sites in Mbe 2017 to 2021

Encounter rate per 10km	2017	2018	2019	2020	2021
Gorilla groups seen	0.03	0.004	0.01	0.02	0.009
Chimpanzee group seen	0.01	0.02	0.03	0.03	0.05
Gorilla nest sites	0.27	0.16	0.20	0.14	0.14
Chimpanzee nest sites	0.04	0.05	0.11	0.04	0.09
Unidentified ape nest sites	0.0	0.01	0.002	0.0	0.0
Number of patrol days	405	417	594	123	83
Total distance covered (km)	2,554	2,801	3,641	4,810	3,453





a) Gorillas b) Chimpanzees

Figure 5. . Location of nest sites and ape sightings recorded during patrols in 2021. (NOTE: Nest sites shown as circles, sightings shown as crosses).

Table 10. Nest sites recorded during patrols in 2021.

Species	Nest site type	Dung present	Age of sign	Number of ground nests	Total number of nests
Chimpanzee	Night nest(s)	true	Fresh	1	5
Chimpanzee	Night nest(s)	true	Fresh	3	6
Chimpanzee	Night nest(s)	false	Recent	0	15
Chimpanzee	Day nest(s)	false	Fresh	0	7
Chimpanzee	Night nest(s)	false	Recent	4	11
Chimpanzee	Night nest(s)	false	Fresh	0	8
Chimpanzee	Night nest(s)	false	Recent	0	9
Chimpanzee	Night nest(s)	true	Fresh	0	2
Chimpanzee	Night nest(s)	true	Fresh	5	13
Chimpanzee	Night nest(s)	true	Fresh	0	4
Chimpanzee	Night nest(s)	true	Fresh	0	11
Chimpanzee	Night nest(s)	false	Fresh	0	1
Chimpanzee	Night nest(s)	false	Recent	0	12
Chimpanzee	Night nest(s)	false	Old	0	5
Chimpanzee	Night nest(s)	false	Fresh	0	4
Chimpanzee	Night nest(s)	false	Recent	0	8
Chimpanzee	Night nest(s)	true	Fresh	0	13
Chimpanzee	Night nest(s)	true	Fresh	0	11
Chimpanzee	Night nest(s)	false	Fresh	0	4
Chimpanzee	Night nest(s)	false	Fresh	2	6
Chimpanzee	Night nest(s)	false	Recent	0	4
Chimpanzee	Night nest(s)	false	Recent	0	12
Chimpanzee	Night nest(s)	false	Fresh	0	9
Chimpanzee	Night nest(s)	true	Fresh	2	6
Chimpanzee	Night nest(s)	false	Fresh	0	8
Chimpanzee	Night nest(s)	false	Fresh	4	4
Chimpanzee	Day nest(s)	false	Fresh	0	3
Chimpanzee	Night nest(s)	false	Recent	0	9
Chimpanzee	Night nest(s)	true	Fresh	0	14
Chimpanzee	Night nest(s)	false	Fresh	0	9
Chimpanzee	Night nest(s)	false	Fresh	0	11
Chimpanzee	Night nest(s)	true	Fresh	0	8
Chimpanzee	Night nest(s)	false	Fresh	0	9
Gorilla	Night nest(s)	false	Old	5	5
Gorilla	Unknown	false	Fresh	1	1
Gorilla	Night nest(s)	true	Fresh	1	1
Gorilla	Night nest(s)	false	Fresh	6	6
Gorilla	Night nest(s)	true	Fresh	1	1
Gorilla	Day nest(s)	false	Recent	1	4
Gorilla	Day nest(s)	false	Fresh	1	1
Gorilla	Night nest(s)	false	Fresh	5	9
Gorilla	Night nest(s)	false	Recent	7	7
Gorilla	Night nest(s)	true	Fresh	5	7
Gorilla	Night nest(s)	false	Recent	6	11
Gorilla	Night nest(s)	true	Fresh	7	7
Gorilla	Night nest(s)	true	Fresh	2	15
Gorilla	Night nest(s)	false	Recent	2	2

Species	Nest site type	Dung present	Age of sign	Number of ground nests	Total number of nests
Gorilla	Night nest(s)	true	Fresh	3	7
Gorilla	Night nest(s)	false	Recent	8	8
Gorilla	Night nest(s)	true	Fresh	4	4
Gorilla	Night nest(s)	true	Fresh	6	6
Gorilla	Night nest(s)	false	Recent	2	2
Gorilla	Night nest(s)	false	Recent	8	13
Gorilla	Night nest(s)	true	Fresh	5	6
Gorilla	Day nest(s)	false	Fresh	1	1
Gorilla	Night nest(s)	false	Recent	5	5
Gorilla	Day nest(s)	false	Fresh	1	
Gorilla	Day nest(s)	false	Fresh	1	1
Gorilla	Night nest(s)	false	Recent	8	8
Gorilla	Night nest(s)	false	Fresh	1	1
Gorilla	Night nest(s)	true	Recent	3	11
Gorilla	Night nest(s)	false	Fresh	2	4
Gorilla	Night nest(s)	false	Fresh	2	2
Gorilla	Night nest(s)	false	Recent	3	8
Gorilla	Night nest(s)	false	Fresh	3	5
Gorilla	Night nest(s)	false	Fresh	1	1
Gorilla	Night nest(s)	false	Fresh	5	5
Gorilla	Night nest(s)	false	Fresh	6	6
Gorilla	Night nest(s)	true	Fresh	8	8
Gorilla	Night nest(s)	true	Fresh	4	4
Gorilla	Night nest(s)	false	Recent	9	11
Gorilla	Night nest(s)	true	Fresh	9	9
Gorilla	Night nest(s)	false	Recent	7	7
Gorilla	Night nest(s)	true	Fresh	1	1
Gorilla	Day nest(s)	false	Fresh	1	1
Gorilla	Night nest(s)	false	Fresh	1	1
Gorilla	Night nest(s)	true	Fresh	3	9
Gorilla	Night nest(s)	true	Fresh	4	4
Gorilla	Night nest(s)	true	Fresh	3	10
Gorilla	Night nest(s)	true	Fresh	5	15
Gorilla	Night nest(s)	false	Recent	4	4
Gorilla	Night nest(s)	true	Fresh	3	4

Monkey Sightings

Monkeys sighted by eco-guards during patrols in 2021 (Table 11; Figure 6) include drill (*Mandrillus leucophaeus*), red-eared monkey (*Cercopithecus erythrotis*), Mona monkey (*Cercopithecus mona*), and putty-nosed monkey (*Cercopithecus nictitans*).

Table 11. Monkey sightings during patrols in 2021

Species	Number of observations	Encounter rate
Drill	58	0.017
Mona monkey	223	0.065
Red-eared monkey	35	0.010
Putty-nosed monkey	111	0.032
Total	427	0.124

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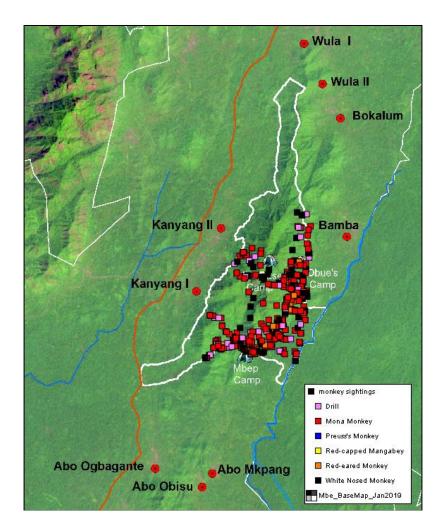


Figure 6. Monkey sightings in Mbe Mountains in 2021.

Other Large Mammals

Fresh and recent signs of other large mammals were also collected. Species recorded include forest elephant (*Loxodonta cyclotis*), buffalo (*Syncerus caffer*), tree pangolin (*Phataginus tricuspis*), water chevrotain (*Hyemoschus aquaticus*), African palm civet (*Nandinia binotata*), genet (*Genetta sp*), yellow-backed duiker (*Cephalophus silvicultor*), bay duiker (*Cephalophus dorsalis*), bushbuck (*Tragelaphus scriptus*), and red river hog (*Potamochoerus porcus*). See Appendix III for details. Forest elephant signs were frequently observed in the lowland area between Mbe and the Okwangwo Division of Cross River National Park (Okwangwo).

EDUCATION, LIVELIHOOD, AND CAPACITY BUILDING SUPPORT TO CAMM

Conservation Education

Activities implemented to raise levels of awareness and local support include field trips for students to conservation sites, school visits by WCS education team, exchange visits between school conservation clubs, community meetings, and distribution of customized notebooks and other educational materials in schools. Thanks to farmer and hunter sensitization efforts during community meetings there were no fire incidents in the Mbe mountains in 2021. Fires spreading from nearby farms into forest during the farming season is a problem in Mbe. Annually celebrated Environmental days including World Environment Day (June 5), World Gorilla Day (September 24), and World Pangolin Day (February 3) among others were marked with rallies and other awareness event in Mbe communities.

Support for Sustainable Livelihoods

WCS continued to work with cocoa farmers and women's groups in Mbe to improve the sustainability of cocoa production and bush mango harvesting. WCS trained cocoa farmers in agricultural best practices and provided high-quality seedlings for replanting existing old farms to improve productivity and reduce deforestation from expansion. Women's groups were also trained in sustainable bush mango harvesting methods and provided with improved bush mango seedlings to boost production on farms to reduce dependence on wild bush mango. Farm supplies including wheelbarrows, tarpaulins and rain boots were also distributed to farmers. All farms supported by the project were mapped and monitored. WCS also continued to mentor women groups previously trained and registered as cooperatives to increase access to market and income generated from bush mango.

Other Support to CAMM

WCS supported quarterly meetings of CAMM including meetings to reorganize the three organs of the association as well as resolve the protracted disagreement on a benefit sharing formula for CAMM communities. WCS also supported a process to review the CAMM constitution to make the association more sustainable. Construction of a CAMM headquarters at Bamba was completion with the support of WCS.

Acknowledgements

WCS is formally registered in Nigeria through an agreement with the Ministry of Budget and National Planning of the Federal Republic of Nigeria. We are immensely grateful to the Great Ape Conservation Fund of the United States Fish and Wildlife Service. We are also grateful to all other donors who supported our work in the Mbe Mountains in 2021 including Critical Ecosystem Partnership Fund (CEPF), Darwin Initiative, Rainforest Trust, J.R.S. Biodiversity Foundation, Cleveland Zoo, Palmyre Zoo, and Berggorilla and Regenwald Direkthilfe. WCS is also grateful for the long-term collaboration and support from the Conservation Association of the Mbe Mountains (CAMM). WCS acknowledges the key role played by the Ministry of Climate Change and Forestry and the Cross River State Forestry Commission who is the legal custodian of all forests and wildlife in Cross River State.

Appendix I: Patrol effort and human activity and great ape observations in Mbe Mountains 2017 to 2021

Sign	2017	2018	2019	2020	2021
Wire snares	1,382	2,171	4,913	4,529	599
Gunshots heard	22	35	28	10	27
Expended cartridges	308	336	476	505	355
Farms	10	NA	94	43	NA
Hunting camps	10	7	6	20	5
People apprehended	23	31	28	36	8
Gorilla groups sighted	8	1	4	10	3
Chimpanzee groups sighted	2	6	10	15	19
Gorilla nest sites	69	45	73	65	49
Chimpanzee nest sites	9	14	39	21	33
Unidentified ape nest sites	0	3	1	0	0
Patrol days	405	417	594	780	591
Distance covered (km)	2,554	2,801	3,641	4,810	3,453

Appendix II. Details of Arrests in Mbe Mountains in 2021.

Date	Name	Home village	Threat	Action taken	
Jan 15, 2021	Ahmed Liman	Abo Ogbagante	NTFP collection	Apprehended and handed over to the Police	
Jan 20, 2021	Jimmy Abang	Bamba	Gun hunting	Arrested by CRNP rangers. Offence	
				"compounded"; fine paid to CRNP	
Sep 17, 2021	Christopher Isaac	Wula I	Logging	Apprehended. Bail sum of 50,000 Naira paid,	
				and 50,000 Naira fine paid to CAMM	
Sep 17, 2021	Felix Declan	Wula I	Logging	Apprehended. Bail sum of 50,000 Naira paid,	
				and 50,000 Naira fine paid to CAMM	
Sep 17, 2021	Alex Kuchevae	Wula I	Logging	Apprehended. Bail sum of 50,000 Naira paid,	
				and 50,000 Naira fine paid to CAMM	
Sep 18, 2021	Dickson Andrew	Wula I	Logging	Apprehended. Bail sum of 50,000 Naira paid,	
				and 50,000 Naira fine paid to CAMM	
Sep 18, 2021	Otobong Ime	Wula I	Logging	Apprehended. Bail sum of 50,000 Naira paid,	
			_	and 50,000 Naira fine paid to CAMM	

Appendix III. Encounter rate of wildlife species observed during patrols in 2021. (NOTE: Species not encountered during patrols not shown).

Species common name	Scientific name	# observations	Encounter rate/km	
Red river hog	Potamochoerus porcus	2428	0.703	
African brush-tailed porcupine	Atherurus africanus	2213	0.641	
Unidentified monkey		1435	0.416	
Cusimanse	Crossarchus sp	1320	0.382	
Unidentified medium duiker		1020	0.295	
Unidentified small duiker		1016	0.294	
Mona monkey	Cercopithecus mona	962	0.279	
Unidentified large duiker		788	0.228	
White-crested hornbill	Tropicranus albocristatus	783	0.227	
Turaco		738	0.214	
Tree pangolin	Phataginus tricuspis	584	0.169	
Putty-nosed monkey	Cercopithecus nictitans	554	0.160	
Crested guinea fowl	Guttera pucherani	547	0.158	
Blue duiker	Philantomba monticola	418	0.121	
Drill	Mandrillus leucophaeus	320	0.093	
Yellow-backed duiker	Cephalophus silvicultor	319	0.092	
Nigeria-Cameroon chimpanzee	Pan troglodytes ellioti	306	0.089	
Palm civet	Nandinia binotata	186	0.054	
Unidentified great ape		166	0.048	
Cross River gorilla	Gorilla gorilla diehli	146	0.042	
Grey-necked picathartes	Picathartes oreas	84	0.024	
Crested servaline genet	Genetta cristata	71	0.021	
Red-eared monkey	Cercopithecus erythrotis	64	0.019	
African forest elephant	Loxodonta cyclotis	31	0.009	
Cane rat	Tryonomys swinderianus	29	0.008	
Bay duiker	Cephalophus dorsalis	23	0.007	
Ogilby's duiker	Cephalophus ogilbyi	17	0.005	
African civet	Civettictis civetta	10	0.003	
African grey parrot	Psittacus erithacus	6	0.002	
Water chevrotain	Hyemoschus aquaticus	3	0.001	
Buffalo	Syncerus caffer	2	0.001	