



**WILDLIFE CONSERVATION SOCIETY
2021 ANNUAL REPORT OF LAW ENFORCEMENT MONITORING,
EDUCATION & LIVELIHOOD SUPPORT
IN CROSS RIVER NATIONAL PARK (OBAN DIVISION)**



Prepared by
Peter Abanyam, Bassey Effiong, Chidiogo Ibenyenwa & Sunday Ova
WCS Nigeria Program

Summary

This report summarizes the results of law enforcement, education and awareness, and livelihood support activities implemented in the Oban Division of Cross River National Park (Oban) from January to December 2021 with support from the Wildlife Conservation Society (WCS). A total of 89 anti-poaching patrols were completed during this period over 632 patrol-days (4,017 man-days) covering a total distance of 6,126.2 kilometers. A total of 57 poachers were arrested and handed over to the park management for prosecution. The patrols also destroyed a total of 9,433 wire snares and 18 hunting/fishing camps found inside the park. Other signs of hunting recorded include 3,058 expended shotgun cartridges and 34 gunshots heard. Primates sighted include Preuss's red colobus monkey *Piliocolobus preussi* (sighted on four occasions), red-capped mangabey *Cercocebus torquatus* (6 sightings), Nigeria-Cameroon chimpanzee *Pan troglodytes ellioti* (4 sightings), red-eared monkey *Cercopithecus erythrotis* (9 sightings), drill *Mandrillus leucophaeus* (6 sightings), Mona monkey *Cercopithecus mona* (190 sightings), and putty-nosed monkey *Cercopithecus nictitans* (95 sightings). Other mammals recorded include white-bellied pangolin *Phataginus tricuspis*, forest elephant *Loxodonta cyclotis*, red river hog *Potamochoerus porcus* and African buffalo *Syncerus caffer*.

WCS also supported a number of conservation education activities around the park including 46 film shows viewed by a total of 4,761 people, two schools exchange visits, two teachers' training workshops, and 93 community meetings attended by a total of 1,596 people (including chiefs, women, and youth). Other activities implemented include seven guided field trips for 140 schoolchildren, visits to 147 schools by WCS and Cross River National Park (CRNP) education staff, and establishment of 49 new conservation clubs. A total of 563 customized notebooks, 56 pencils and 405 pens were distributed to students during the school visits.

The project continued to support cocoa and bush mango agroforestry on community land adjacent to the park to reduce rates of deforestation and pressure on the park. During this quarter, a total of 250 prospective beneficiary farmers and women groups were selected in 10 communities in Oban East and West. The selected farmers were trained in improved cocoa farming practices and sustainable bush mango harvesting and bush mango propagation. Ten cocoa and bush mango nurseries were established. A total of 24,160 improved cocoa seedlings were distributed to the farmers to replant existing old farms and a total of 1,665 improved bush mango seedlings were distributed to 150 women for planting on farms to boost production. WCS and CRNP staff visited all supported farms to monitor farmers' compliance with the terms of the conservation agreement signed. Additionally, WCS renovated and expanded the dilapidated Oban Conservation Education Centre that was constructed in the mid-1990s with EU funds. Two sites have been selected for the construction of two ranger posts in 2022 to enhance law enforcement operations. A ranger refresher training course was organized for 30 CRNP rangers over 42 days.

Background

Created in 1991 from existing forest reserves, the Cross River National Park (CRNP) is the most extensive area of tropical rainforests remaining in Nigeria today. The Park consists of two separate divisions: Oban and Okwangwo. The Oban Division covers an area of roughly 3,000 km² and is contiguous with the Korup National Park in Cameroon. Oban is recognized internationally as a biodiversity hotspot with high levels of species richness and endemism and is a particularly significant site for rare and threatened primate species including Preuss's red colobus (*Piliocolobus preussi*), Drill (*Mandrillus leucophaeus*), and Nigeria-Cameroon chimpanzee *Pan troglodytes ellioti*. Oban faces a huge threat from hunting to supply the lucrative bush meat trade and deforestation from commercial plantation agriculture. In 2011, WCS signed an MOU with the Nigeria National Park Service to support the protection of Cross River National Park. This was initially focused on strengthening law enforcement monitoring through facilitating regular anti-poaching patrols, but now expanded to include conservation education, and providing support to improve the livelihoods of the local communities, to reduce deforestation within and around the park. This report covers law enforcement, education, and livelihood activities supported by WCS in Oban during the period from January to December 2021.

Methods

Each month six to eight patrol teams each comprising at least six CRNP rangers and a WCS staff patrolled different areas of the park over periods of 8-10 days. The patrols are planned based on intelligence from informants, and results of previous patrols. The teams search areas where hunting activities were suspected or known to be high including valleys and river courses, following hunting trails and large mammal trails where they exist. Signs of human activity and wildlife were recorded using hand-held devices with the Spatial Monitoring And Reporting Tool (SMART) software installed. All wire snares and hunting camps observed were destroyed. Patrol data was analyzed using the SMART software. To raise levels of conservation awareness in the local communities and strengthening local support for conservation WCS supports a number field activities including establishment of conservation clubs, community meetings, film shows, and field trips implemented jointly by WCS and CRNP education staff. Different target groups including farmers, hunters, community leaders, schoolchildren, youth, women, and men are engaged in these activities, which promote sustainable management the forest resources. WCS also works with cocoa farmers and women groups in surrounding communities to improve the sustainability of cocoa farming and non-timber forest products (NTFPs) harvesting through training and provision of improved seedlings, planting material and other inputs.

Law Enforcement Monitoring

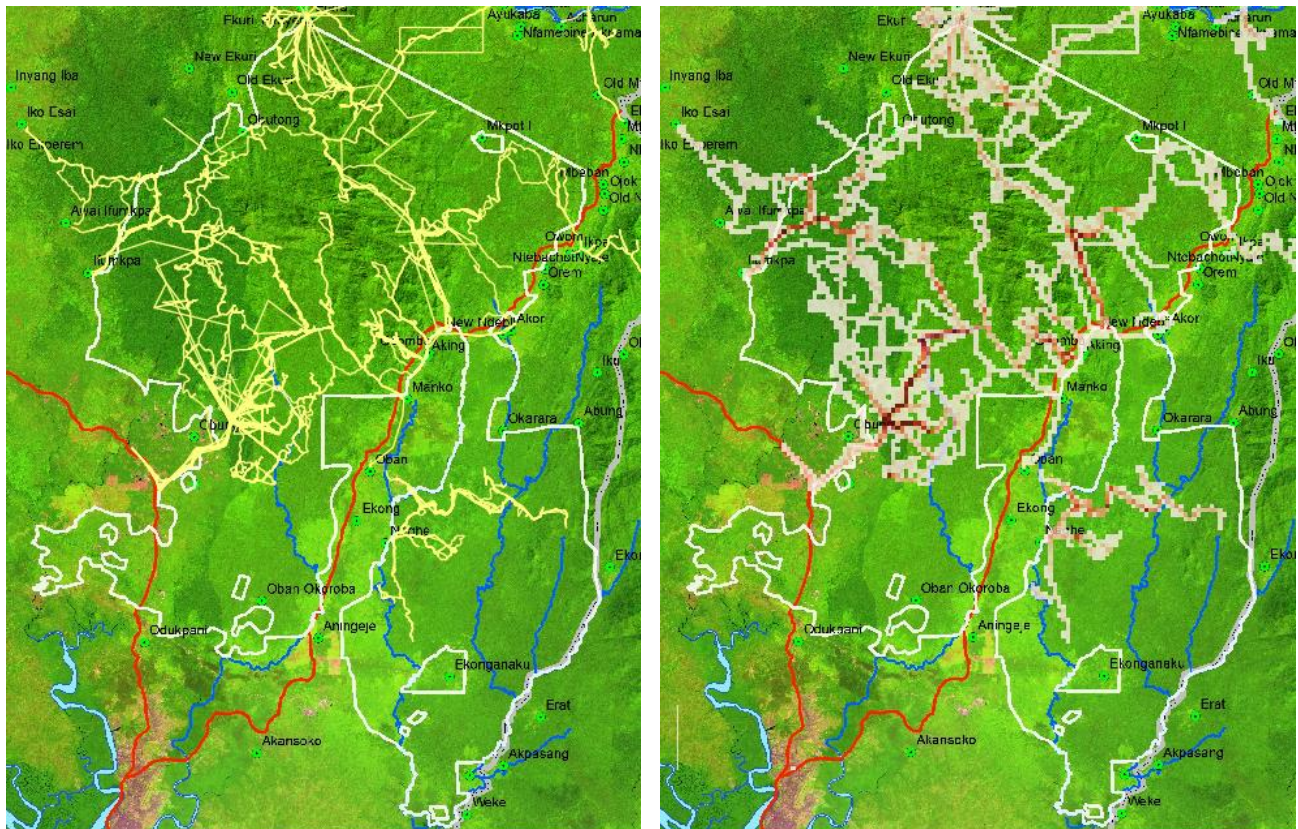
Patrol effort

Patrol effort (number of patrols and distance covered) increased considerably this year compared to previous years (see Table 1). A total of 89 long-distance foot patrols were completed over 632 patrol-days (4017 person-days) covering a total distance of 6,126.2 kilometers including new areas of the park previously not covered by patrols.

Table 1. Comparison of patrol effort from 2018 -2021

Activity	Year			
	2018	2019	2020	2021
Number of patrols	47	44	46	89
Number of patrol days	328	274	319	632
Total distance covered (km)	2,818.6	1,921.9	2,808	6,126.2

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



Human Activities

Hunting signs were encountered more frequently during patrols in 2021 compared with 2020 (Table 2). Patrols this year arrested a total of 65 offenders including 30 hunters and 8 farmers (Appendix 1). The patrols also removed 9,433 wire snares and destroyed 66 hunting camps. Other hunting signs observed include 3,058 expended cartridges and 34 gunshots heard (Table 2). Farm encroachment, illegal logging and collection of non-timber forest products were also observed (Tables 3-5). We continued to improve on patrol planning using data from previous patrols and intelligence from informants.

Table 2. Comparison of the encounter rate of hunting signs from 2018 -2021

Activity	Number of observations each year			
	2018	2019	2020	2021
Expended cartridges	1,472	1,787	1,966	3,058
Gunshots heard	35	21	18	34
Hunting camps	46	48	59	66
Wire snares	2,460	8,257	4,950	9,433
Total distance covered (km)	2,818.6	1,921.9	2,808	6,126.2

Table 3. The number of people seen by threat for the period, January 2021 to December 2021.

Threat	Number of people seen	Encounter rate per 10 km
Farming	7	0.011
Fishing	3	0.005
Hunting	26	0.042
Illegal Entry	2	0.004
Logging	10	0.016
NTFP Collection	2	0.004

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

Activity	Number of Incidents	Encounter Rate per 10 km
Farming and Land Clearing	23	0.038
Gunshot heard	34	0.055
Human Sign	26	0.042
Logging and Tree Cutting	22	0.036
NTFPs collection	3	0.005
People seen	46	0.075
Shed or Camp	85	0.138
Traps, Weapons & Equipment	1915	3.125

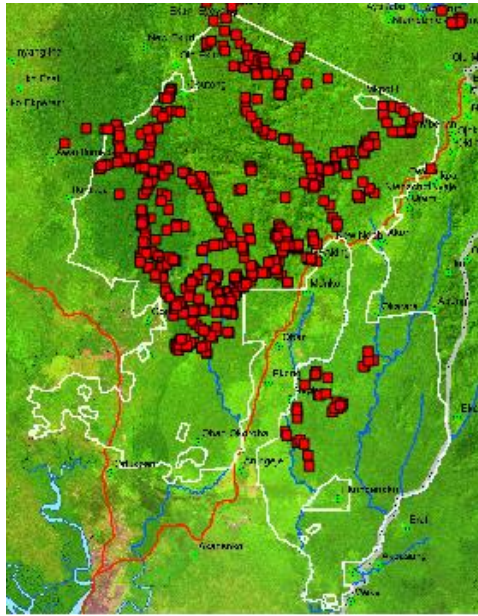
Table 5. Total signs of logging for the period January to December 2021.

Type of logging evidence	Action Taken - Items	Age of Sign	Number of cut pieces	Number of Logs	Number of Planks	Number of Stumps
Logs	Seen Only	Very old		80		
Logs	Seen Only	Fresh		6		
Logs	Seen Only	Fresh		3		
Cut Pieces	Destroyed	Recent	1000			
Logs	Seen Only	Old		800		
Stump	Seen Only	Fresh				3
Logs	Seen Only	Fresh		2500		
Planks	Seen Only	Fresh			120	
Cut Pieces	Seen Only	Recent	86			
Cut Pieces	Seen Only	Recent	200			
Cut Pieces	Seen Only	Old	20			
Cut Pieces	Seen Only	Recent	600			
Logs	Seen Only	Fresh		5		
Planks	Seen Only	Fresh			10	
Cut Pieces	Seen Only	Old	50			
Logs	Seen Only	Old		20		
Cut Pieces	Seen Only	Old	80			
Logs	Seen Only	Fresh		6		
Logs	Seen Only	Fresh		50		
Logs	Seen Only	Fresh		7		
Logs	Seen Only	Fresh		10		

Table 6. Hunting signs recorded for the period, January to December 2021.

Sign	Number of Observations	Encounter Rate per 10km
Gunshots heard	34	0.055
Set wire snares	8,529	13.92
Unset wire snares	904	1.48
Empty cartridges	3,058	4.99
Hunting camps	66	0.11

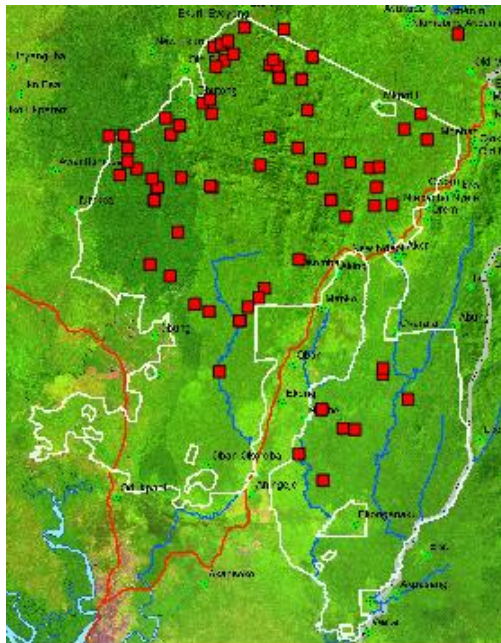
Figure 2. Distribution of all signs of human activity recorded during the period January to December 2021.



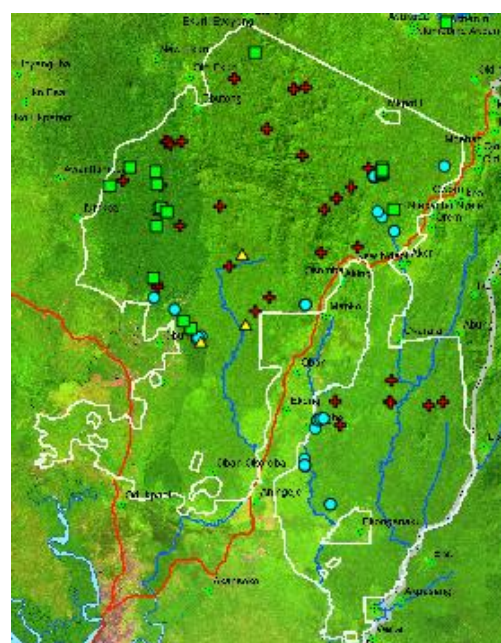
a) Wire snares



b) Empty cartridges



c) Sheds and camps



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

Primates

Table 7. Sightings of primate species for the period, January to December 2021

Species	Scientific name	Number of Sightings	Encounter Rate per 10km
Mona monkey	<i>Cercopithecus mona</i>	190	0.310
Putty-nosed monkey	<i>Cercopithecus nictitans</i>	95	0.155
Drill	<i>Mandrillus leucophaeus</i>	6	0.009
Unidentified monkey	-	2	0.003
Red-capped mangabey	<i>Cercocebus torquatus</i>	6	0.009
Nigeria-Cameroon chimpanzee	<i>Pan troglodytes ellioti</i>	4	0.007
Preuss's red colobus	<i>Piliocolobus preussi</i>	4	0.007
Red-eared monkey	<i>Cercopithecus erythrotis</i>	9	0.015

Table 8. Encounter rate of wildlife observed (all signs) January to December 2021.

Species	Scientific name	Number of Observations	Encounter rate per 10km
Mona monkey	<i>Cercopithecus mona</i>	558	0.911
Red river hog	<i>Potamochoerus porcus</i>	294	0.479
Bay duiker	<i>Cephalophus dorsalis</i>	127	0.207
White-nosed monkey	<i>Cercopithecus nictitans</i>	213	0.347
Preuss's red colobus	<i>Piliocolobus preussi</i>	1	0.001
Blue duiker	<i>Philantomba monticola</i>	176	0.287
Yellow-backed duiker	<i>Cephalophus silvicultor</i>	11	0.017
African forest elephant	<i>Loxodonta cyclotis</i>	132	0.215
Brush-tailed porcupine	<i>Atherurus africanus</i>	79	0.129
Forest buffalo	<i>Syncerus caffer</i>	58	0.095
Drill	<i>Mandrillus leucophaeus</i>	19	0.031
Common cusimanse	<i>Crossarchus platycephalus</i>	25	0.040
Grey parrot	<i>Psittacus erithacus</i>	2	0.003
Unidentified small duiker	-	9	0.015
Unidentified large duiker	-	9	0.015
Nigeria-Cameroon chimpanzee	<i>Pan troglodytes ellioti</i>	19	0.031
Helmeted guinea fowl	<i>Numida meleagris</i>	15	0.024
Unidentified monkey	-	48	0.078
Unidentified medium duiker	-	25	0.040
White-bellied pangolin	<i>Phataginus tricuspis</i>	10	0.016
Red-capped mangabey	<i>Cercocebus torquatus</i>	7	0.011
Green turaco	<i>Tauraco persa</i>	4	0.007
African pied hornbill	<i>Tockus fasciatus</i>	14	0.023
Red-eared monkey	<i>Cercopithecus erythrotis</i>	14	0.023
African civet	<i>Civettictis civetta</i>	13	0.021
Palm civet	<i>Nandinia binotata</i>	6	0.009

CONSERVATION EDUCATION

The Wildlife Conservation Society's conservation education and awareness program aims to sensitize local people to value wildlife and wild places. Using the focal group approach, youth, men, women, and children are engaged in discussions on sustainable management of forest resources. Through our school conservation clubs, conservation games, exchange visits, and field trips we teach schoolchildren basic ecological principles and biodiversity conservation.

School visits/ establishment of new conservation clubs

WCS and CRNP education staff visited 45 school around Oban in 2021. Activities implemented during the school visits include 40 to 45 minutes classroom lessons, conservation games, puzzles, poems, and songs. A total of 563 customized notebooks, 405 pens and 56 pencils were distributed to students during the visits.



School visits and conservation club activities during the period

Field trips

Seven field trips were organized this year (Table 9). Students were taken to the Aking axis of the park and to Erokut Gate. Two teachers and CRNP and WCS education staff facilitated each field trip.

Table 9. Field trips to Oban and education materials distributed

Schools	Attendance	Books	Biros
Ibenda community Secondary School, Nsan	20	20	10
St. Bernard Technical School, Obung	20	20	11
St. Michael Primary School, Oban	20	20	-
St. Kevin Primary School, Ekong	20	20	-
Model Primary School, Old Netim	20	10	7
Government Secondary School, Old Netim	20	9	10
Trinitas International Primary School, Oban	20	12	-



Field trips to Aking and Erokut Gate areas of CRNP.

Film shows

During the reporting period, WCS facilitated 46 film show shows in communities around the park to raise levels of conservation awareness. The films attracted a total of 4,761 viewers. The film shows provided opportunity for open interaction with communities on a variety of conservation problems including deforestation, bushmeat hunting, habitat loss and climate change.



Film shows at Mbeban and Ojor villages around the park.

Exchange visits

One exchange visit was facilitated between Government Migrant Primary School, Mangor and St. Mary's Primary School, Aking. A total of 45 customised notebooks and 17 pens were distributed to the pupils during the visit. Government Migrant Primary School, Mangor emerged winner in the competitive games organized as part of the activity.



Exchange visits at Aking and New Ekuri schools

Community meetings

A total of 93 community meetings were organised to create awareness and mobilize the communities to support ongoing conservation efforts including 38 general community meetings, 21 village council meetings, 16 meetings with youth, and 17 meetings with women's groups, reaching a total of 1,596 people.



WCS education staff facilitating community meetings

Teachers' training workshops

Two teachers' training workshops were organised during the first quarter of 2021 for 37 teachers in Oban East. The two days training, introduced teachers to concepts, instructional material, and methods of teaching conservation education, aimed at building capacity of teachers to expand and sustain work with school conservation clubs. The teachers were happy to receive the training and promised to apply the knowledge skills gained to strengthen and improve conservation clubs in the schools and increase awareness local support for conservation. The teachers were provided with teaching guides to assist them. A total of 53 posters (titled "Water Is Life") raising awareness about water pollution and promoting watershed conservation were distributed to the teachers.



Important celebrations During the Reporting Period

Earth Day Rally

To mark Earth Day 2021, WCS and CRNP education staff organized a rally with students and community members through some Oban communities. A total of 55 youths participated in the rally carrying placards with conservation messages such as "Save mother earth", "Say yes to conservation", "Make everyday earth day", "If trees die you die" etc.

Endangered Species Day

To commemorate endangered species day on the 21 May, the Oban education team visited Government Primary School Etara and engaged the pupils in a number of conservation education activities including identification of endangered species in Nigeria. The conservation status of each of the identified species including forest elephant, Cross River gorilla, West African lion, and Nigeria-Cameroun Chimpanzee and pangolins was discussed to raise levels of awareness. The pupils were divided into four groups, each team representing a threatened species. The groups embarked on a nature walk to collect natural materials (leaves, stones, sand, shells, sticks, flowers, etc.) to be used to make an animal collage with supervision. Pupils were guided to decorate the animals they represent using the natural materials collected. In the end, the images were posted on

the walls of the classroom. The students were excited and participated fully and actively in the activity.

World Chimpanzee Day

On the 14th of July 21, WCS joined the rest of the world to celebrate world chimpanzee day. We projected a video of chimpanzees in the wild to the pupils of Government Primary School, Ntebachot. In addition, we outlined important facts about the species to the pupils including their status in the wild, their calls, movement patterns, intelligence capacity, gestation, and the threats to their survival. Pupils of Presbyterian Church of Nigeria Primary School, Iko Esai were also engaged in some activities to highlight the conservation status of the chimpanzee art competition, poem recitation, etc. The pupils were excited and participated fully in the activities.

World Nature Conservation Day

The 28th of July was earmarked for the celebration of nature conservation all over the world. We commemorated this day by holding a seminar on the importance of conservation for the women in Akor community. A pre and a post test was administered to help evaluate the women's understanding of the concept of conservation and preservation. Before the seminar, only 43 % (7 out of 16) of the women understood conservation and preservation and agreed that we should conserve. By the end of the seminar, 62.5% (10 out of 16) understood the concept of conservation and agreed that it would be wise to conserve our natural resources. In addition to the explanations, the women were engaged in playing a conservation game using candies, spoons, forks and sticks to buttress the importance of conservation. Questions asked by the women were answered by the education team.

World Ranger Day

The 31st of July each year is set aside to recognize and celebrate the rangers who risk their lives to protect our wildlife and wild places. A session tagged "Meet Your Forest Heroes" was used to educate pupils and students at St. Lawrence Primary School and Government Secondary School Ifumkpa about the national park and the work that rangers do to protect it. The Ifumkpa Station Officer, Mr. Ndoma Peter, emphasized the importance of the work of rangers to conservation, the challenges rangers face in the forest as they carry out their duties and role that students can play as conservation ambassadors. The students made presentations on the implications of encroaching on the national park and the duties of a ranger. Other activities carried out on the occasion include road walk, 10 km run and parade by park rangers.



Rangers marking World Ranger Day

World Gorilla Day

The world gorilla day was marked on the 24th of September all over the world. Being an important endangered species to WCS, we marked the day by raising awareness on the species in schools in the week of the celebration. Facts about the species were shared and pupils drew pictures of the species to identify it. In one of the schools, the pupils demonstrated the foraging habit of the species.

Renovation of Oban Education Centre

During the reporting period, the Oban Education Center renovated with funding support from the EU was commissioned by the Programme Manager, Health, Nutrition and Resilience of the EU Delegation to Nigeria and ECOWAS, Mr. Temitayo omole, supported by the Conservator of Park. The Oban Education Centre was originally constructed with EU funds during 1994-1995 but was abandoned and gradually deteriorated. The entire roof of the building as well as the dilapidated doors, windows, tiles, ceiling and furniture were replaced, and the building was extended to include additional room and convenience to accommodate more students and project staff. The toilets and showers were replaced and the walls of the building repainted. The front entrance stairs were rehabilitated and a new signpost acknowledging funding support from the EU was installed to enhance visibility of the intervention. The commissioning was attended by students, women, youth and traditional rulers in the area who expressed appreciation for the support from the EU to revitalize the education program in Oban. Activities at the occasion include inspiring drama and poetry presentations by conservation clubs supported by the project.

Livelihood Support

Training of cocoa farmers and bush mango women's groups

A total of 100 cocoa farmers were trained and equipped with the knowledge and skills to transition to conservation cocoa practices, and 150 women were trained in sustainable bush mango harvesting and propagation. The training covered a number of topics including farm planning, cocoa nursery establishment, seedling propagation and spacing, pruning, on soil fertility management, harvesting, processing (fermentation & drying), bagging and marketing, cocoa farm rehabilitation, and use of organic pesticides. In addition to training, a total of 24,160 improved cocoa seedlings (from nurseries established by WCS with the TC hybrid cocoa variety developed at the Cocoa Research Institute of Nigeria) were provided to the trained farmers to replant existing old farms to increase productivity, and 1,665 improved bush mango seedlings (from nurseries established by WCS with improved seeds developed by the National Horticultural Research Institute in Ibadan) to 150 women to plant on their farms. Ten new cocoa nurseries were also established this year aiming to produce around 48,000 additional seedlings for distribution to farmers in 2022. All nurseries were developed with the active involvement of the local communities helping to build their capacity. Nursery attendants were recruited from the local communities, helping to create much needed additional employment for the local population. We will establish new bush mango nurseries in Year 3 to provide seedlings to more women. The WCS and CRNP staff regularly visited the farms supported by the project to assess progress including seedling survival, the extent to which the farmers were applying best practices promoted in the training provided, and the farmers' compliance with the terms of conservation agreement signed to limit deforestation from cocoa production.

In addition to training and providing improved seedlings to women, the project supported the formation of 10 women's groups in communities around the park to assist the women overcome the constraints of remote location, high transportation costs, limited knowledge, and the lack of business skills that limit their bargaining power with buyers. Better access to markets will allow the women to sell bush mango at higher prices and generate greater income. Training provided for the groups include record-keeping, financial management, thrift, credit, bulk purchasing and storage, and marketing.



Cocoa training sessions organized for beneficiaries in target communities



Nursery establishment in Ekong Anaku & Old Ekuri



Cocoa and bitter bush mango (*Irvingia wombolu*) nurseries developed by WCS

Farm Mapping & Monitoring

To ensure that the support provided to improve the sustainability of cocoa production in landscape does not inadvertently lead to further deforestation, all farms selected for support were mapped and confirmed to be outside the protected area and away from forest. Subsequently, the farms were

visited regularly and monitored by the project's livelihood team to ensure that agricultural best practices promoted in the training provided were applied and the farms were not expanded into any area of intact forest or the park.

Capacity Building and Development of Park Infrastructure

During the reporting period, WCS organized a 42-day ranger refresher training for 30 CRNP rangers, 15 each from Oban and Okwangwo. With funds from the EU, WCS renovated and expanded the Oban Conservation Education Centre that was originally constructed with EU funds during 1994-1995 but was abandoned and gradually deteriorated. The entire roof of the building as well as the dilapidated doors, windows, tiles, ceiling and furniture were replaced, and the building was extended to include additional room and convenience to accommodate more students and project staff. The toilets and showers were replaced and the walls of the building repainted. The front entrance stairs were rehabilitated and a new signpost acknowledging funding support from the EU was installed to enhance visibility of the intervention. The renovated Education Centre was commissioned by the Programme Manager, Health, Nutrition and Resilience of the EU Delegation to Nigeria and ECOWAS, Mr. Temitayo omole, in November 2021, supported by the Conservator of Park. The commissioning was attended by students, women, youth and traditional rulers in the area who expressed appreciation for the support from the EU to revitalize the education program in Oban. Activities at the occasion include inspiring drama and poetry presentations by conservation clubs supported by the project. WCS also completed the construction of three narrow box culverts along the Butatong-Okwangwo road as well as the rehabilitation of the Okwaban-Butatong and Ranch-Anape dirt roads, which provide access to strategic ranger stations. Together with CRNP management, we have agreed a design for the construction of ranger posts in Oban and Okwangwo. Sites for the ranger posts have been selected and the process is ongoing to engage a civil engineer who will supervise construction. Construction of the ranger posts will commence in early 2022. Participatory retracing and demarcation of enclave boundaries together with PkS and the enclaved communities (Okwa I, Okwa II, and Okwangwo) is ongoing. We also started discussions with a communications and intelligence tools company, Kinetic 6, to install a radio system for Cross River National Park, potentially a HF system with transmitter masts/base stations at Park headquarters in Akamkpa and at six ranger posts: Aking, Ifumkpa, Butatong, Okwangwo, Anape, and Bashu. We have already purchased inReach Explorer Handheld Satellite Communicators with GPS Navigation that allow two-way text messaging to complement any radio system installed.



Before



After



Rangers at a refresher training course & the Oban Education Centre renovated by WCS

EU Monitoring Visit

In November 2021, WCS and CRNP received Mr. Temitayo Omole, Programme Manager, Health, Nutrition and Resilience representing the European Union in Nigeria, on a three-day monitoring visit to assess progress on the EU-funded PREFEC project in Cross River State. Mr. Omole visited the CRNP Headquarters in Akamkpa held a meeting with the park management and WCS to discuss project progress. He also visited the Erokut Gate Camp to inspect a ranger refresher training that was holding there and supported by the EU-funded project, with a walk in the park. The EU representative also visited and interacted with project beneficiaries in Neghe, Aking and Osomba and visited some cocoa and bush mango farms supported by the PREFEC project, and also commissioned the renovated Oban Conservation Education Centre.



Photos from the EU monitoring visit to Cross River National Park

Recommendations

- We encourage the Park management to make greater effort to prosecute all arrested offenders to serve as a deterrent to others and maintain morale among the rangers who put in a great amount of effort and take risks to make arrests.
- Communication devices should be provided to enhance information sharing between patrol teams, and between patrols and management.
- Increase support for sustainable diversified livelihoods to reduce dependence on the forest.
- Funds permitting, consider providing scholarships to students from the local communities.

Acknowledgments

Funding for this project was provided by the European Union Commission and the Great Ape Survival Partnership (GRASP). We have also enjoyed donations, continuous support, and collaboration from the North Carolina Zoo on this project since inception. WCS appreciates the support and collaboration of the Cross River National Park. WCS is formally registered in Nigeria through an agreement with the Ministry of Budget and National Planning of the Federal Republic.

Appendices

Appendix 1. Summary of arrests for the period January 2021 to December 2021.

Leader	Waypoint date	Action taken	Home village	Name	Threats	Outcome
Bassey Effiong	14-Jan-21	Arrested	Ifumkpa	Benson Agu	Fishing	Charged to Court
Bassey Effiong	15-Jan-21	Arrested	Uruang	Imoh Sunday	Logging	Charged to court
Bassey Effiong	15-Jan-21	Arrested	Uruang	Jerimaiah Okon	Logging	Charged to court
Leonard Akwo	25-Jan-21	Arrested	Ikpai	Raymond Usang	Hunting	Charged to Court
Leonard Akwo	10-Feb-21	Arrested	New Ekuri	Cosmos Mbe	Hunting	Handed over to the CRNP
Leonard Akwo	10-Feb-21	Arrested	New Ekuri	Bernard Mbe	Hunting	Handed over to the CRNP
Cyril Maurice	19-Feb-21	Verbal warning	Ojor	Bassey Egbe	Hunting	-
Dominic Abel	20-Feb-21	Arrested	Etara	Emmanuel Asam	Fishing	-
Dominic Abel	20-Feb-21	Arrested	Etara	Franklin Asam	Fishing	-
Dominic Abel	20-Feb-21	Arrested	Ekuri	Mbe Ike	Fishing	-
Aondona Michael	20-Feb-21	Verbal warning	Aningeje	Uduak Neabasi	Farming	-
Delvis Okon	21-Feb-21	Arrested	Aningeje	Esther Mathew	Farming	Handed over to the CRNP
Delvis Okon	21-Feb-21	Arrested	Aningeje	Akaniyene Ebork	Farming	Handed over to the CRNP
Delvis Okon	21-Feb-21	Verbal warning	Aningeje	Patience Wilson	Farming	Handed over to the CRNP
Delvis Okon	21-Feb-21	Verbal warning	Aningeje	Okon Udo	Farming	-
Leonard Akwo	22-Feb-21	Arrested	Etara	Usman Bello	NTFPs harvesting ("cattle stick")	Handed over to the CRNP
Leonard Akwo	22-Feb-21	Arrested	Etara	Saminu Kumar	NTFPs harvesting ("cattle stick")	Handed over to the CRNP
Leonard Akwo	22-Feb-21	Arrested	Etara	Tukur Abdulahi	NTFPs harvesting ("cattle stick")	Handed over to the CRNP
Leonard Akwo	22-Feb-21	Arrested	Etara	Inunsa Bello	NTFPs harvesting ("cattle stick")	Handed over to the CRNP
Leonard Akwo	22-Feb-21	Arrested	Etara	Tukur Nuhu	NTFPs harvesting ("cattle stick")	Handed over to the CRNP
Cyril Maurice	25-Feb-21	Arrested	Obung	Etim Effiong	Hunting	Handed over to the CRNP
Ntui Ojong	17-Mar-21	Arrested	Etinan	Anietie Udoh	Illegal entry	Charged to court
Ntui Ojong	17-Mar-21	Arrested	Etinan	Ubong Udoh	Illegal entry	Charged to court
Bassey Effiong	13-Apr-21	Arrested	Obung	Godwill Oren	Hunting	-
Bassey Effiong	13-Apr-21	Arrested	Obung	Norbert Oren	Hunting	Compoundment
Bassey Effiong	16-Apr-21	Arrested	Obung	Aniendi Etim	Farming	Compoundment
Bassey Effiong	16-Apr-21	Arrested	Obung	Imebong Akpan	Farming	Compoundment
Bassey Effiong	16-Apr-21	Arrested	Obung	Etim Effiong	Farming	Compoundment
Leonard Akwo	17-Apr-21	Arrested	Old Ekuri	Felix Okoma	Hunting	Handed to CRNP

Leonard Akwo	17-Apr-21	Arrested	Old Ekuri	Ernest Friday	Hunting	Handed to CRNP
George Itambu	20-Apr-21	Arrested	Mankor	NA	Hunting	Charged to Court
Delvis Okon	14-May-21	Arrested	Okarara	Udo Sunday	Hunting	Handed over to CRNP
Bassey Effiong	17-May-21	Arrested	Akpabuyo	Asuquo Isemen	Hunting	Handed over to CRNP
George Okpan	29-May-21	Verbal warning	Kwara	Tanko Odey	Logging	-
George Okpan	29-May-21	Verbal warning	Kwara	Tanko Odey	Logging	-
George Okpan	29-May-21	Verbal warning	Enugu state	Chidioke Mba	Logging	-
Bassey Effiong	13-Jun-21	Arrested	Akpabuyo	Etteka Okon	Hunting	Handed over to CRNP
Bassey Effiong	13-Jun-21	Arrested	Akwa Ibom	Jeremiah John	Hunting	Handed over to CRNP
Leonard Akwo	15-Jun-21	Arrested	Owai	Oku Brutus	Hunting	-
Leonard Akwo	15-Jun-21	Arrested	Owai	Prince Mbui	Hunting	-
Leonard Akwo	15-Jun-21	Arrested	Owai	John Akama	Hunting	-
Patrick Omo	22-Jun-21	Arrested	Osomba	Felix Ebebe	Hunting	Handed over to CRNP
Patrick Omo	22-Jun-21	Arrested	Osomba	Boniface Ofri	Hunting	Handed over to CRNP
David Clement	7-Jul-21	Arrested	Iko-Ekperem	Arong Osiyang	Logging	Handed over to CRNP
Christopher A.	8-Jul-21	Arrested	Owom village	Godwin Okon	Hunting	Handed over to CRNP
Felix Emmanuel	8-Jul-21	Arrested	Ekuri	Moses Alamo	Hunting	Handed over to CRNP
Felix Emmanuel	8-Jul-21	Arrested	Ekuri	Jeremiah Okumor	Hunting	Handed over to CRNP
Felix Emmanuel	8-Jul-21	Arrested	Ekuri	Christopher Alamo	Hunting	Handed over to CRNP
Felix Emmanuel	13-Jul-21	Arrested	Akpabuyo	Idongesiet Idiong	Hunting	Charged to Court
Bassey Effiong	22-Jul-21	Arrested	Ekiti State	Henry Sandy	Logging	Handed over to CRNP
Bassey Effiong	22-Jul-21	Arrested	Ondo State	Bengal Christopher	Logging	Handed over to CRNP
Leonard Akwo	10-Sep-21	Arrested	Ifumkpa	Timothy Ike	Hunting	Handed over to CRNP
Leonard Akwo	14-Sep-21	Arrested	Ojor	Kese Etim	Hunting	Handed over to CRNP
Bassey Effiong	17-Sep-21	Arrested	Odukpani	Ekandem Inyang	Logging	Handed over to CRNP
Bassey Effiong	17-Sep-21	Arrested	Odukpani	Samuel Edet	Logging	Handed over to CRNP
Asuquo Edet	22-Sep-21	Arrested	Nsan	Nsikak Bassey	Hunting	Handed over to CRNP
Leonard Akwo	15-Oct-21	Arrested	Kaduna	Ahmadu Sule	Logging	Charged to court
Leonard Akwo	15-Oct-21	Arrested	Kaduna	Ismail Shehu	Logging	Charged to court
Leonard Akwo	15-Oct-21	Arrested	Kaduna	Hassan Umar	Logging	Charged to court
Leonard Akwo	18-Oct-21	Arrested	Ikono	Okon Effiong	Farming	Handed to CRNP
Leonard Akwo	18-Oct-21	Arrested	Ikono	Hassana Okon	Farming	Handed to CRNP
Leonard Akwo	18-Oct-21	Arrested	Ikono	Goodness Okon	Farming	Handed to CRNP
Delvis Okon	24-Oct-21	Arrested	Dubau	Muhammad Bello	Logging	Handed over to the CRNP

Delvis Okon	24-Oct-21	Arrested	Dubau	Abduraman Iliah	Logging	Handed over to the CRNP
Bassey Effiong	12-Nov-21	Arrested	Nsofang village	Monday Jonah	Hunting	Handed to CRNP
Bassey Effiong	13-Nov-21	Arrested	Nsofang village	Patrick Igri	Hunting	Handed to CRNP
George Okpan	25-Nov-21	Arrested	Obung	Ambor Usunishie	Hunting	Handed to CRNP
Bassey Effiong	10-Dec-21	Arrested	Akwa Ibom	Nse Obong Ini	Hunting	Handed to CRNP
Bassey Effiong	12-Dec-21	Arrested	Akwa Ibom	Ekpeno Sunday	Logging	Handed over to the CRNP
Bassey Effiong	12-Dec-21	Arrested	Akwa Ibom	Micheal Udoh	Logging	Handed over to the CRNP
Bassey Effiong	12-Dec-21	Arrested	Akwa Ibom	Ukeme Ekong	Logging	Handed over to the CRNP
Bassey Effiong	12-Dec-21	Arrested	Akwa Ibom	Sony John	Logging	Handed over to the CRNP

Appendix 2. Summary of patrol effort for January 1, 2021 to December 31, 2021.

Patrol ID	Number of Patrols	Number of Days	Distance (km)	Person - Days
CRNP-OB_000222	1	6	63.8	36
CRNP-OB_000223	1	10	68.1	60
CRNP-OB_000224	1	10	103.7	70
CRNP-OB_000225	1	7	60.6	49
CRNP-OB_000226	1	7	71.6	28
CRNP-OB_000227	1	7	60.1	49
CRNP-OB_000228	1	7	70.4	56
CRNP-OB_000229	1	7	76.9	28
CRNP-OB_000230	1	5	66.6	35
CRNP-OB_000231	1	9	106.2	36
CRNP-OB_000232	1	8	85.0	48
CRNP-OB_000233	1	8	62.5	56
CRNP-OB_000234	1	10	73.2	60
CRNP-OB_000235	1	10	75.0	70
CRNP-OB_000236	1	7	66.8	42
CRNP-OB_000237	1	7	98.0	49
CRNP-OB_000238	1	7	59.2	49
CRNP-OB_000239	1	6	76.2	36
CRNP-OB_000240	1	8	75.2	48
CRNP-OB_000241	1	8	84.9	64
CRNP-OB_000242	1	8	90.7	56
CRNP-OB_000243	1	7	70.4	56
CRNP-OB_000244	1	7	87.9	49
CRNP-OB_000245	1	7	54.3	49
CRNP-OB_000246	1	7	65.1	42
CRNP-OB_000247	1	4	30.6	24

CRNP-OB_000248	1	6	57.3	36
CRNP-OB_000249	1	8	54.7	48
CRNP-OB_000250	1	10	108.5	70
CRNP-OB_000251	1	8	81.0	72
CRNP-OB_000252	1	7	57.7	42
CRNP-OB_000253	1	7	68.2	42
CRNP-OB_000254	1	7	55.0	42
CRNP-OB_000255	1	6	71.6	36
CRNP-OB_000256	1	8	96.0	56
CRNP-OB_000257	1	11	83.8	110
CRNP-OB_000258	1	8	56.8	48
CRNP-OB_000259	1	8	74.5	65
CRNP-OB_000260	1	7	91.9	28
CRNP-OB_000261	1	6	62.6	36
CRNP-OB_000262	1	6	52.0	36
CRNP-OB_000263	1	4	18.1	24
CRNP-OB_000264	1	8	51.4	55
CRNP-OB_000265	1	8	96.7	40
CRNP-OB_000266	1	10	63.3	70
CRNP-OB_000267	1	8	72.2	64
CRNP-OB_000268	1	7	80.0	49
CRNP-OB_000269	1	7	79.3	35
CRNP-OB_000270	1	7	38.6	49
CRNP-OB_000271	1	5	51.6	35
CRNP-OB_000272	1	10	85.2	50
CRNP-OB_000273	1	10	132.3	60
CRNP-OB_000274	1	10	66.9	80
CRNP-OB_000275	1	9	84.2	63
CRNP-OB_000276	1	7	81.8	36
CRNP-OB_000277	1	7	46.8	28
CRNP-OB_000278	1	7	60.0	22
CRNP-OB_000279	1	7	47.3	35
CRNP-OB_000280	1	10	91.0	60
CRNP-OB_000281	1	8	97.2	40
CRNP-OB_000282	1	8	110.2	48
CRNP-OB_000283	1	8	94.0	80
CRNP-OB_000284	1	7	85.1	28
CRNP-OB_000285	1	5	54.9	31
CRNP-OB_000286	1	7	47.1	49
CRNP-OB_000287	1	5	59.7	40
CRNP-OB_000288	1	8	98.7	56
CRNP-OB_000289	1	9	69.7	55
CRNP-OB_000290	1	7	78.1	42

CRNP-OB_000291	1	8	58.1	64
CRNP-OB_000292	1	6	47.0	36
CRNP-OB_000293	1	5	100.6	30
CRNP-OB_000294	1	7	129.7	28
CRNP-OB_000295	1	8	78.7	40
CRNP-OB_000296	1	6	59.5	18
CRNP-OB_000297	1	10	82.7	60
CRNP-OB_000298	1	8	74.1	75
CRNP-OB_000300	1	6	56.4	30
CRNP-OB_000301	1	7	58.5	49
CRNP-OB_000302	1	6	49.2	30
CRNP-OB_000303	1	8	82.6	64
CRNP-OB_000304	1	5	53.3	20
CRNP-OB_000305	1	5	31.1	35
CRNP-OB_000306	1	7	55.5	42
CRNP-OB_000307	1	5	62.7	25
CRNP-OB_000308	1	5	30.6	35
Total	86	632	6126.2	4017
NB: Field data for three patrol legs could not be retrieved from the SMART device.				