

SUMMARY OF THE WCF'S BIOMONITORING ACTIVITIES IN 2009

African representation of the WCF

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Specific Studies and Biomonitoring in some National Parks and Classified Forests in Côte d'Ivoire and Liberia

General Introduction

Biomonitoring activities initiated by the Wild Chimpanzee Foundation (WCF) in Côte d'Ivoire since 2005 are still going on. Throughout the years, activity sites are diversified and specific studies are conducted. Indeed, work has begun in the Sapo National Park in Liberia. All these studies aim to identify forests where chimpanzees still live, and to know their abundance and the threats they face to. The studies also help official managers by providing essential data to optimize the management of protected areas. **To reach its objectives, the WCF works in close collaboration with local authorities like the 'Société de Développement des Forêts' (SODEFOR), the 'Office Ivoirien des Parcs et Réserves' (OIPR) and the 'Forestry Development Authority' (FDA), which are under the responsibility of the ministries in charge of the environment in their respective country.** Nature conservation NGOs present in the activity zones and local populations are always associated to the various activities, in active or passive ways.

The WCF proceeds by designing line transects that are systematically distributed on all the extent of concerned areas, to perform a representative sampling. The data collected allow constituting a database for each study area. Regular analyses of these data help to orientate and support all management activities. Since the beginning, technical guides explaining the general methodology are written and given to the managers of the various concerned areas. At the beginning and during the sampling phases, training and retraining of the field team members are performed. A synthesis of the phase results is made with all the partners involved in the programs during workshops held after data analysis. Local leaders among the managers of the protected areas are trained to assure the capacity transfer and the durability of biomonitoring activities in the management strategies of these areas.

Final reports presenting the synthesis of important results for every protected area are available.

Since the year 2008, no study was carried out in the Azagny National Park and in the Marahoué National Park; also in 2009, the biomonitoring program going on in the Banco National Park was interrupted. This report presents a synthesis of the essential results obtained in the 2009 biomonitoring activities, and also the major activities carried out in the Taï National Park (PNT), Sapo National Park (SNP), and Comoé National Park (PNC) and in the Cavally Classified Forests (FCC) and Goin Débé Classified Forest (FCGD) in Côte d'Ivoire and Liberia.

2009 Summary of activities and important results

1. Taï National Park (PNT)

Summary of the activities

Concerning the PNT, activities were conducted as usual (Table 1) with the finalization of the 4th phase's data collection on 359.5 km of transects (368 km expected). After reviewing the database with the original datasheets, analyses were performed. Results were discussed and validated during a workshop with all the partners of the OIPR. Afterward, a phase report was written to present the important results. The results of the 4th phase are presented globally, in terms of number of detection, i.e. the number of sites where signs/objects/animals were observed.

A regular follow-up of the activities and a control of the data quality allowed us to find some weaknesses in the implementation of the biomonitoring program. As solution, management measures and tools for the biomonitoring program were developed to control and assure at the same time the quality of data collected. The WCF thus benefited from the support of three volunteers who strongly helped in the supervision of the teams in the field since October 2009, at the start of the 5th phase of data collection. The preliminary data analyses during this phase, which is now ended, show an improvement in data quality with regard to the expectations.

Table 1: Synthesis of activities realized in the Taï National Park

Essential activities	Location	Period
Finalization of the data collection and data entry of the 4 th phase	Taï National Park	January 2009 – February 2009
Database correction after phase 4 with verification of datasheets	Soubré	March 2009
Analysis of the data of the 4 th phase and highlighting of certain irregularities	Soubré, Abidjan and Leipzig	April 2009 - May 2009
Preparation and realization of the workshop for the validation of the results of the 4 th phase	Abidjan and San Pedro	June 2009 - July 2009
Elaboration of a document of management and supervision measures to control data quality	Abidjan and Leipzig	August 2009 – September 2009
Phase 4 report writing	Abidjan and Soubré	August 2009 - September 2009
Training of field teams based on the irregularities found in previous phases	V6, Djouroutou and Taï	July 2009 - August 2009
Training of the WCF and OIPR staff to establish the team supervision to guarantee quality of the data to be collected	Soubré	September 2009
Field missions for data collection in phase 5; 4 missions supervised from September to December 2009	Taï National Park	September 2009 – December 2009
Second training to ensure the effective data quality control in the field (with assistance of the volunteers)	Soubré	November 2009
Analyses for data quality control with the assistance of volunteers	Soubré and Abidjan	November 2009 – End of the phase

Summary of the results

The fourth phase of data collection realized from August 2008 to February 2009, followed the same methodology as before. However, one of the important steps to obtain reliable results is the regular follow-up of field activities with a concern for data quality control. Following neglects noticed

during the phase 4, the program focused on the implementation of a data quality control to reduce biases in the following activities in 2009 (for the phase 5). The general conclusion for this phase 4 is that everything seems to be stable at the level of the fauna density, with a light increase in encounter rates of monkeys and duikers. The aggression signs remain distributed in the same way as in phase 3, but a considerable reduction of the encounter rate is noticed compared to previous phases. 171 traps and 131 cartridges were found, but their distribution is irregular (Figure 1). The poaching signs (poachers' camps, cartridges, gunshots and traps) were found on all the extent of the park with lower density around the research zone (station CRE). Hunting activities tend to decrease since phases 2 and 3.

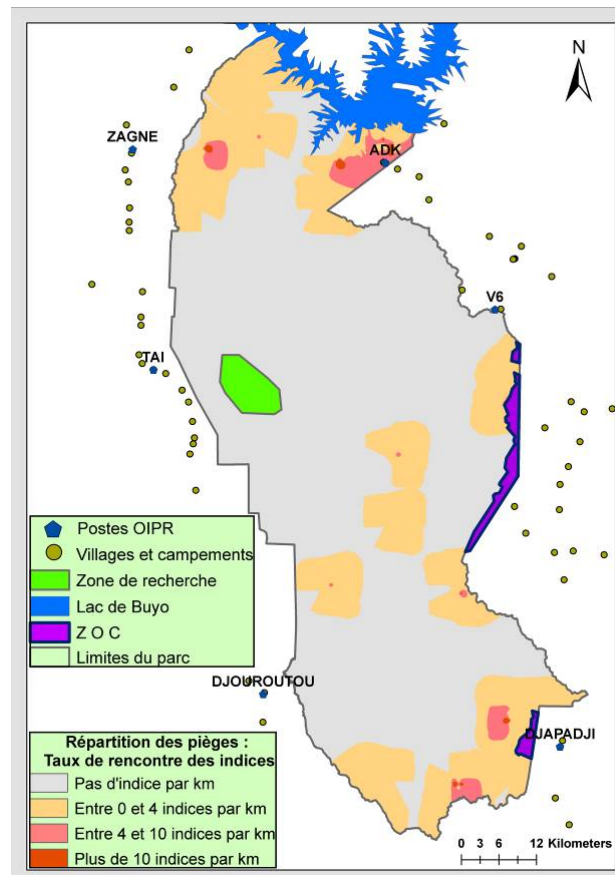


Figure 1: Distribution map of traps

Fauna species distribution maps, for examples chimpanzees and monkeys distribution (Figures 2 and 3), clearly show that the distribution varies a lot between species. A fine analysis shows that distribution of chimpanzees in the park is directly influenced by the presence of poaching activities. It also emerges that the scientific research activities around the station CRE have a positive influence by decreasing the rate of poaching (Köndgen et al. 2008). Monkeys are in high density in the north, in the west and a little bit in the southeast of the park. Elephants are mainly present in the southwest and west of the park.

These results allow setting up a good surveillance system. The essential recommendations are: to continue surveillance patrols in the park to dissuade the poaching activities, to increase the number of patrols in zones with high animal density to allow a natural recolonization of the more disturbed zones, and to continue the annual monitoring of fauna to follow their status and their evolution in the park.

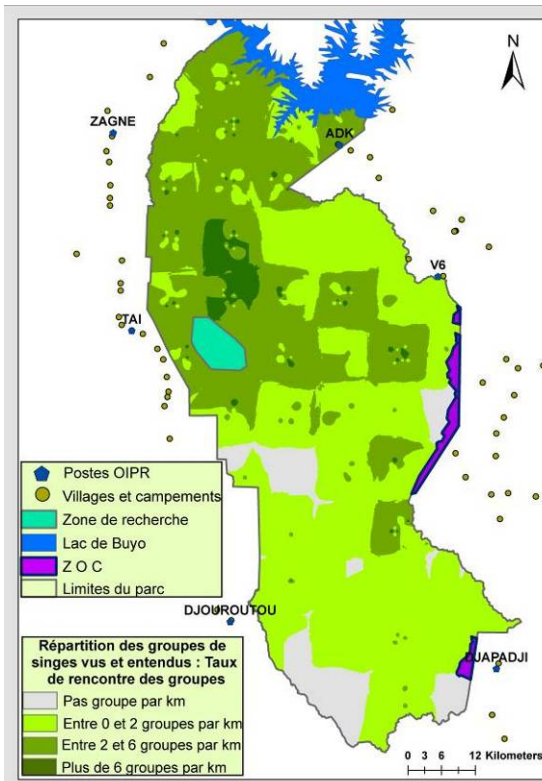


Figure 2: Distribution map of monkey species

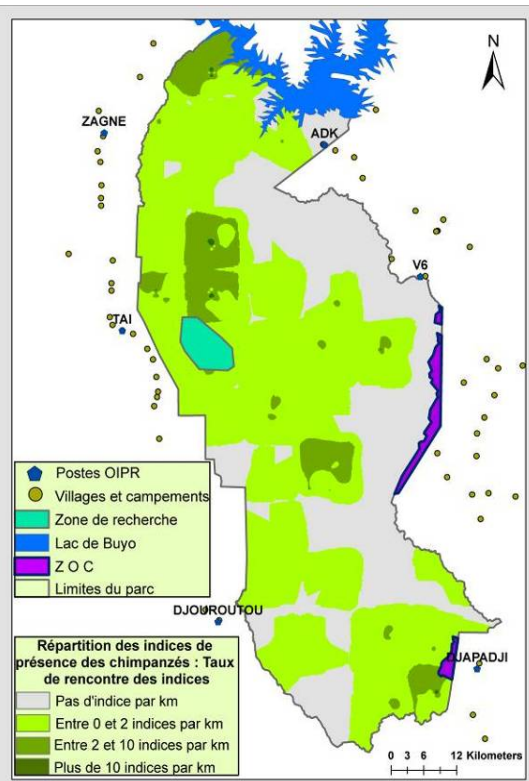


Figure 3: Distribution map of chimpanzees

It will also be necessary to : orientate the local development initiatives, the awareness and ecotourism activities according to the results of the biomonitoring program; set up measures of hygiene for all people that enter the park to avoid diseases transmission between humans and animals; assure the durability of the research and ecotourism programs which by their permanent presence, can effectively decrease poaching activities; abolish illegal settlements which by their closeness to the park have a negative influence on the fauna and the flora ; and maintain the data quality control system to guarantee data reliability.

To do so, it is imperative to guarantee the long-term funding of the current conservation strategies in the Taï National Park.

2. Comoé National Park (PNC)

Summary of the activities

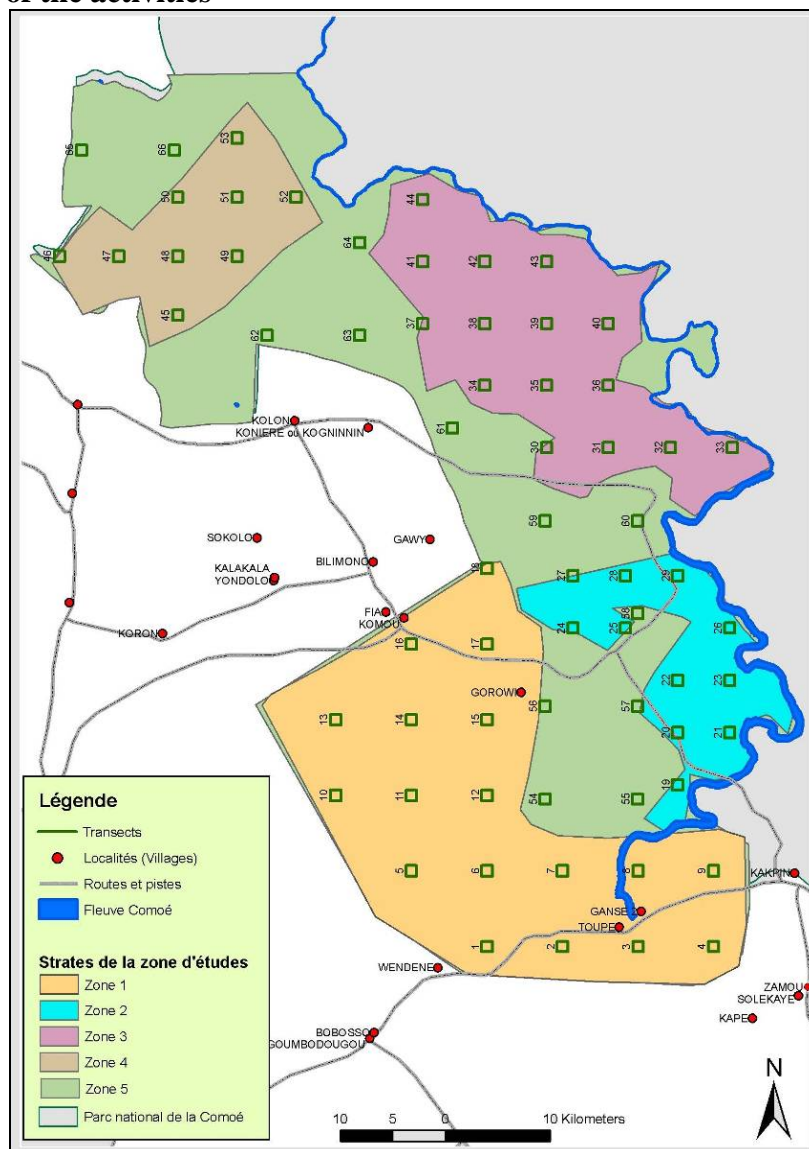


Figure 4: Study area and sampling design in PNC

Table 2: synthesis of the activities realized in the PNC

Main activities	Location	Period
Implementation of the sampling set-up and mission preparation	Leipzig and Abidjan	March, 2009
Data collection in the PNC and the GEPRENAF zone	Comoé National Park	April, 2009 - May, 2009
Data entry and analysis	Abidjan	May, 2009 - June, 2009
Report writing	Abidjan	July, 2009

The main activity realized in the PNC in 2009 consists of a survey on chimpanzees; this study took into account the human pressures and some key species like the elephant. This study covered a large

zone of the western part of the Comoé River (in the park) and a part of the GEPRENAF zone (Figure 4). Contrary to the PNT where there are permanent teams for data collection, the work in the PNC engaged teams established for the occasion. Besides the staff WCF, agents of the OIPR and auxiliaries from the local community had been trained to be a part of the 3 teams which worked over one month for data collection. The sampling design consisted of 66 transects of 4 km each distributed between 5 zones by stratification.

Important results

Sampling effort represented 54% (143.5 km sampled out of 264 km designed) because of logistic constraints and difficulties to access the centre of the study area. We observed in total 57 signs of chimpanzee evidence on sampled transects (Figure 5).

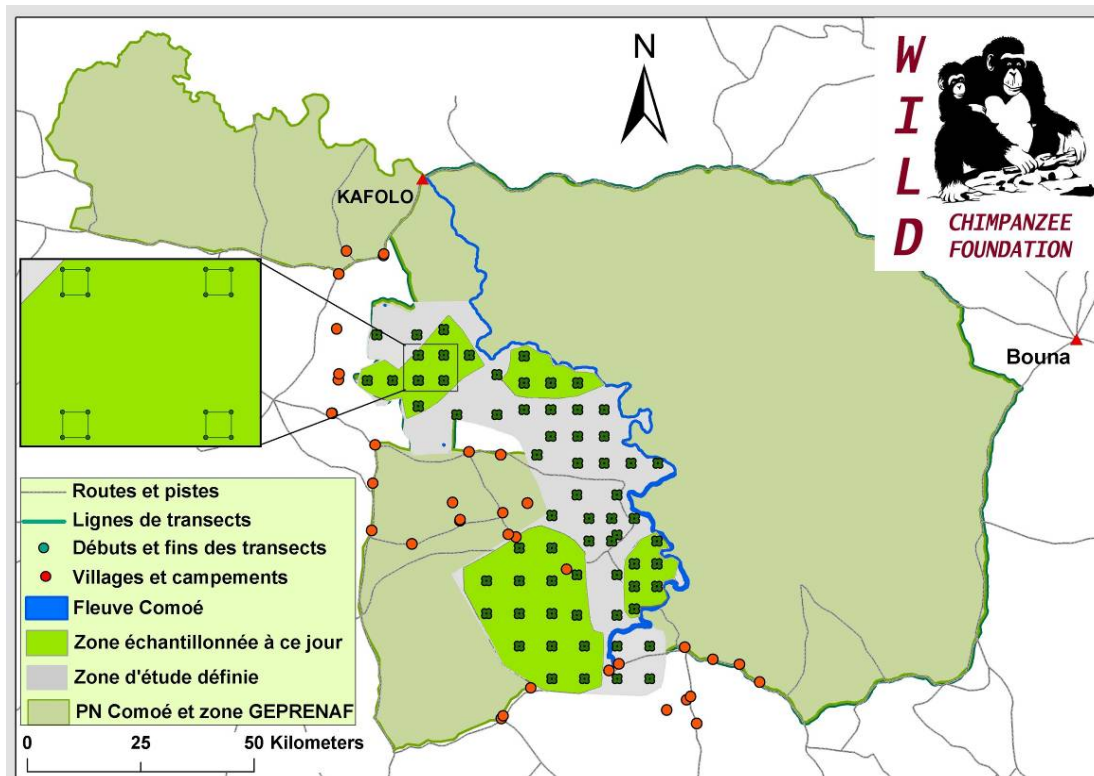
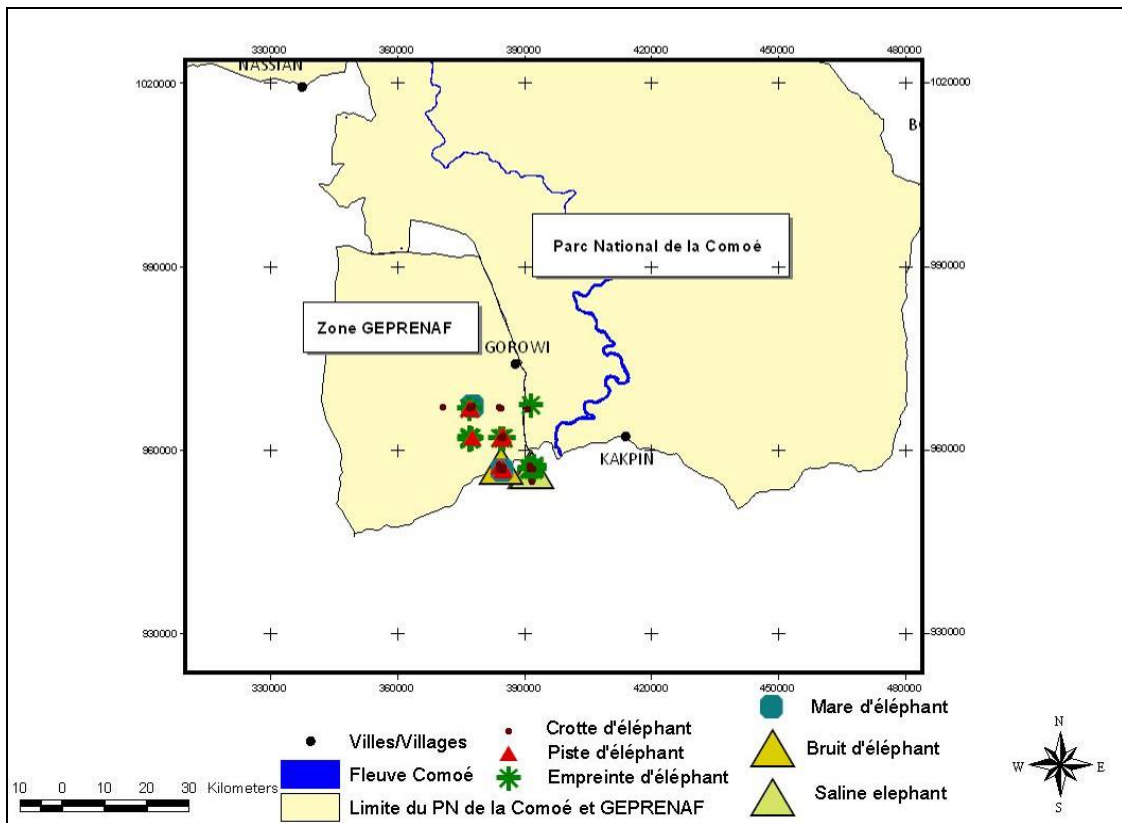
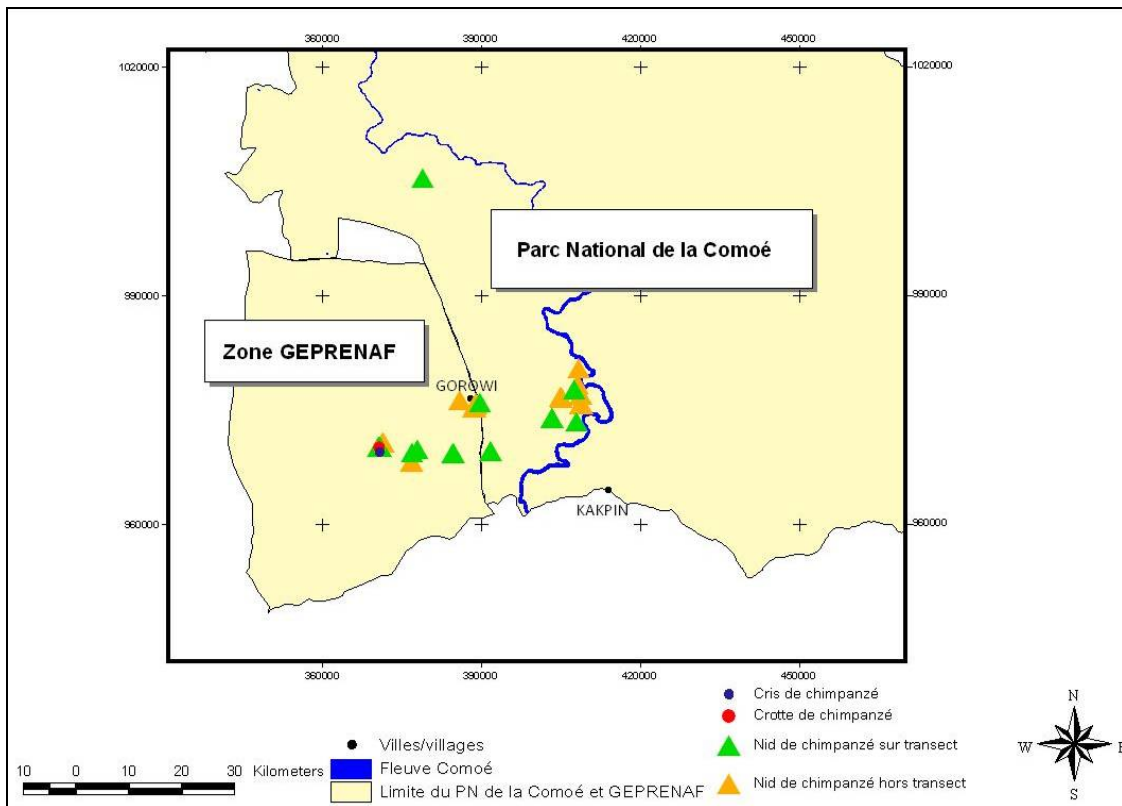


Figure 5: Sampled zones in the study area

The distribution of chimpanzees' evidence signs, which are mainly nests (96.4% of nests) shows that the species is more abundant in the southern part of the study area, both in the PNC and the GEPRENAF zone (Figure 6).

Besides chimpanzees, we observed evidence of elephants presence at an encounter rate of 0.90 signs/km, and illegal human activities at 0.72 signs/km. The spatial distribution shows that the signs of elephants' presence are for the greater part outside the park, in the South of the GEPRENAF zone (Figure 7).



On the other hand, aggressions on the fauna were observed in all the sampled zones, but signs of hunting activities like poachers' camps are concentrated in the southern part (Figure 8) where elephants and chimpanzees seem to be abundant.

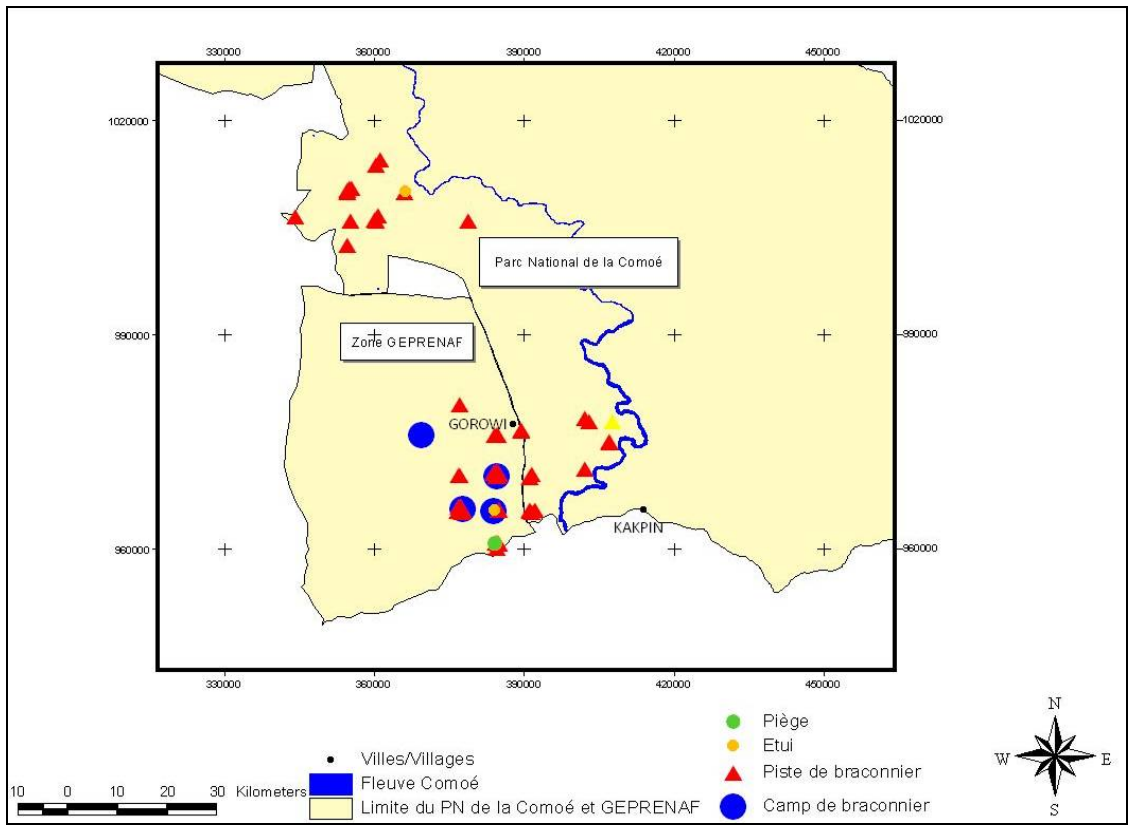


Figure 8: Distribution of human aggression signs in the study area

3. Cavally Classified Forest (FCC) and Goin-Débé Classified Forest (FCGD)

Summary of the activities

Human resources: 2 teams trained in 2006 required to be strengthened, and 4 young local residents of the Cavally classified forest were recruited in October, 2008 and trained in December, 2008. The first mission of the first phase of data collection in the FCC began in December 2008; and the 2nd phase of data collection in the FCGD began in May 2009 (Table) 3).

Table 3: Implementation schedule of the activities in the FCC and FCGD

Periods	Phases	Missions	Forests
December 08	Phase 1	Mission 1	FC Cavally
January 09	Phase 1	Mission 2	FC Cavally
February 09	Phase 1	Mission 3	FC Cavally
March 09	Phase 1	Mission 4	FC Cavally
April 09	Phase 1	Mission 5	FC Cavally
May 09	Phase 2	Mission 1	FC Goin-Débé
June 09	Phase 2	Mission 2	FC Goin-Débé
July 09	Phase 2	Mission 3	FC Goin-Débé
August-09	Phase 2	Mission 4	FC Goin-Débé
October 09	Phase 2	Mission 5	FC Goin-Débé
December 09	Phase 2	Mission 6	FC Goin-Débé

Synthesis of the main results

Summary of the results of phase 1 in the FCC: Two teams participated in the data collection and sampled in total 129.8 km length of transect. The difficulties to walk in areas with disturbed forest did not allow the teams to survey all transects as planned in the survey design. Therefore, for this first survey, the data were collected on only 93.4 % of transects targeted for the whole survey (Figure 9). Several information were collected on the fauna (Mammals, Birds, Reptiles), on certain environmental factors and the anthropogenic activities.

Quantitative estimations were not possible because very few observations were made for numerous species and this did not allow calculating a density or abundance in a mathematically reliable way.

The spatial distribution maps showed that the FCC is recently exploited by farmers in the North and southeast areas of the forest. The very numerous existing tracks allow hunters, people who dig to find toothpick, gold miners and farmers to circulate on all the extent of the forest.

The signs of presence of chimpanzees were mainly met on the southern part of the forest at an encounter rate of 2.93 nests for 10 km walked in the forest.

Summary of the results of phase 2 in FCGD: The second phase of data collection was mainly conducted in the forested central zone of the forest, in May 2009, where numerous nests of chimpanzees had been identified in 2007. This large central forested area was in 2007 a secondary forest degraded by logging activities. But no evidence showed that this area had been infiltrated by farmers.

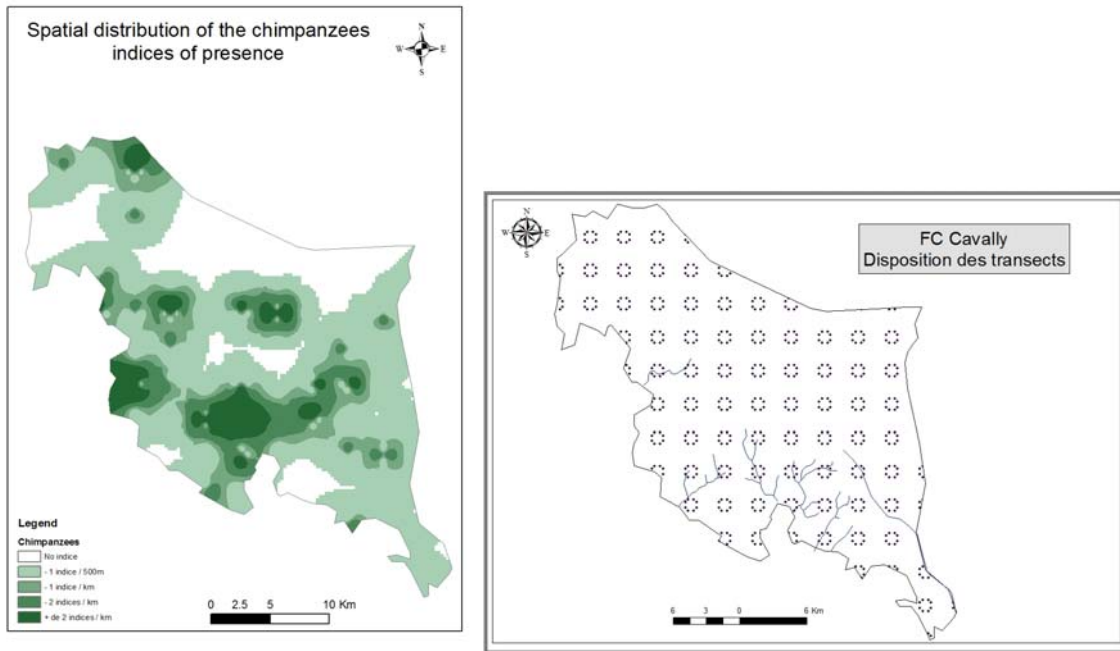


Figure 9: a) Distribution of chimpanzee signs. b) Sampling design in the FCC

The political situation of the country as well as the increase of the cost price of the cocoa have led in 2008-2009, to a massive infiltration of farmers in the last remaining forested zones of the western of the country, including the Goin-Débé classified forest. So, detections in 2009 show a different figure because this zone is currently well infiltrated. Indeed, numerous clearings were observed on all the surveyed area. The first results obtained in the western areas which had not been surveyed during the first phase because of security problems, are rather encouraging when considering the data about the presence of chimpanzees.

2 missions were initiated this year in this zone, but the conflicts between the local population and the SODEFOR made the access to the forest very difficult and the survey was stopped. The few results we obtained show that this zone is degraded with numerous camps, fallows, cocoa plantations. Nevertheless it is a zone where still survives chimpanzees and so the WCF asked the SODEFOR to resolve the conflicts with the population infiltrated to be able to resume the inventories in the zone during the next phase.

The degraded zone in the southeast (Figure 10) was not sampled this year deliberately because it was already in 2007 mainly occupied by human houses as well as by cocoa plantations.

The presence of chimpanzees in the FCGD seems to be more important than in the FCC by comparing the encounter rates of certain signs of presence (Table 4); but with the continuous and advanced degradation level of the FCGD, only a updating of data, would allow to have a clear position on current status of chimpanzees in the FCGD. The final report of biomonitoring for the FCGD will be available in 2010.

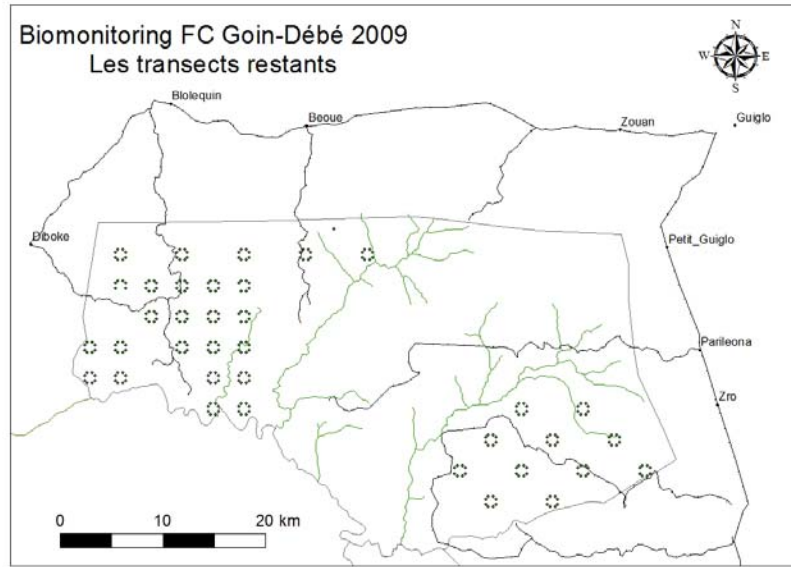


Figure 10: Distribution of none sampled transects during phase 2 in the FCGD

Table 4: Comparison of encounter rates of some chimpanzee presence signs in the FC Cavally (2009) and FC Goin-Débé (2007)

	Encounter rate/10km	
	FC Cavally 2009	FC Goin-Débé 2007
Chimpanzees heard	0.69	0.75
Chimpanzees seen	0.08	0.00
Chimpanzee nests	2.93	5.66
TOTAL	3.70	6.41

4. Sapo National Park (SNP)

The activities realized in the Sapo National Park (Figure 11) are within a collaboration effort between IUCN/MIKE and the WCF to manage a project of elephants and chimpanzees survey in the park. The objectives of the project for the chimpanzee part were to:

- Estimate density, abundance and spatial distribution of chimpanzees in the SNP.
- Identify threats and other factors influencing the distribution and the density of chimpanzees.
- Contribute to update the SNP management plan to ensure the long-term survival of chimpanzees and their environment.
- Strengthen capacities of the SNP staff and the local populations in monitoring great apes in the tropical rainforest.
- Strengthen the capacities of the SNP managers in organizing and analyzing survey data.
- Gain the support of the local population for the conservation of the SNP by involving them in the research projects.
- Provide a model of collaboration between different organizations in the study of key species by harmonizing methodologies and reducing expenditures and efforts.

Summary of the activities

To reach the aforementioned objectives, the following activities (Table 5) were conducted in 2009 in association with the Liberia FDA (Forestry Development Authority).

Table 5: Summary of the activities realized in Sapo National Park

Main activities	Location	Period
Preparation of the pilot phase and the nest decay study	Abidjan, Monrovia, SNP	May 2009
Training of 18 FDA agents with FDA auxiliaries from the local population	Sapo National Park	June 2009
Pilot phase and beginning of the nest decay study with three teams	Sapo National Park	June 2009
Nest decay study with 6 marked batches of nests, and revisits	Sapo National Park	June 2009 - December 2009
Data entry, data analysis of the pilot phase and report writing	Abidjan	July 2009 - August 2009
Sampling design for the survey on transects and preparation of field missions	Abidjan, Monrovia, SNP	October 2009
Retraining and data collection on 44 km of transects	Sapo National Park	November 2009 - December 2009

Training sessions, pilot phase data collection, nest decay study and sampling on transects were realized beside FDA and MIKE with support from Fauna and Flora International, Conservation International and WWF.

Since the beginning of 2010, the data analyses were performed and the report is being finalized.



Figure 11: location of the Sapo National Park in Liberia

Some key results

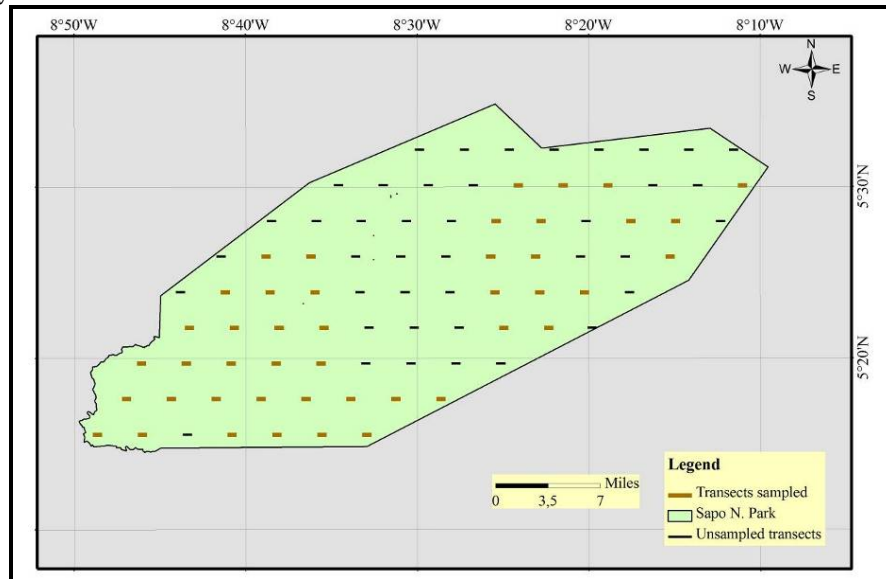


Figure 12: Sampling design and completed transects

Pilot phase: We covered a total distance of 77.6 km and observed 216 chimpanzee nests; this represents an encounter rate of 2.78 nests/km. This result allowed estimating a total distance of approximately 27 km to be sampled to reach a 20% coefficient of variation (CV) in the density estimates if nest distribution if uniform across the park.

Nest decay study: We marked a total of 295 nests and revisited 285, among them 84 nests were completely degraded. It allowed estimating the decay mean time at 100.69 days, in the Sapo National Park.

Sampling on transects: In total, 85 1km transects were distributed systematically on all the extent of the park (Figure 12), only 44 were sampled mainly because the difficult access to mining zones. 178 nests were detected (4 nests/km) and the nests density estimate was 99.49 nests/km². The spatial distribution of chimpanzee nests (Figure 13) shows three large zones of chimpanzee concentration in the SNP.

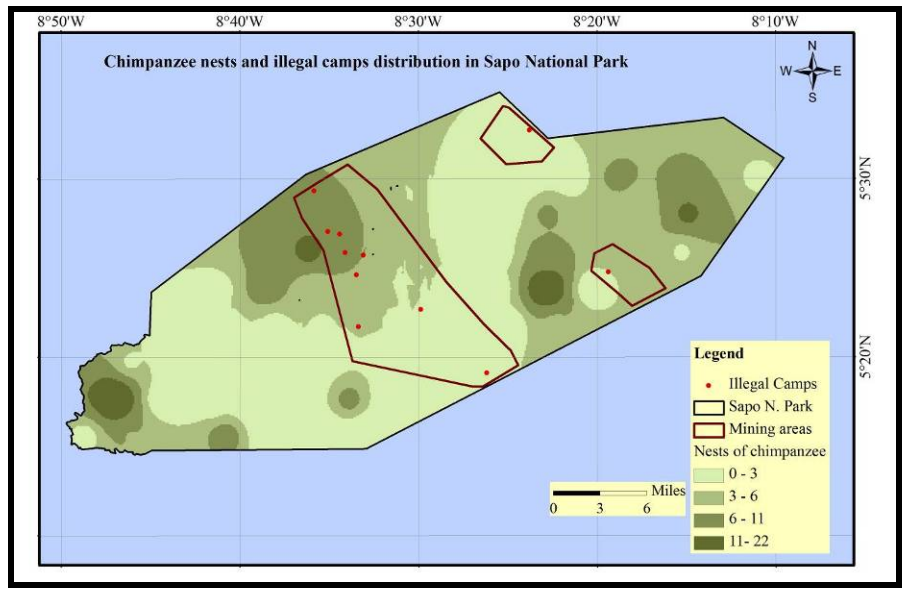


Figure 13: Distribution of chimpanzee nests in Sapo National Park

The chimpanzee density estimation gives an average of 0.86 chimpanzees/km², varying between 0.57 and 1.31 (with 20.99% CV). Several other signs of presence like nut-cracking sites, drumming and shouts were registered on transects and out of transects.

The sampling also took into account several species of duikers, elephants and human aggressions in the park. Human aggressions were encountered at 1.49 signs/km and were essentially composed by poaching activities (Figure 14), keeping in mind that the mining zones were not sampled. The human aggressions in the park and the population pressure around the park are the factors which mostly influence the spatial distribution of chimpanzees in the SNP.



Figure 14: Photo of poachers' camp in the park

5. Sustainable management in classified Forest

The WCF works in close collaboration with the SODEFOR and the location population to set up a sustainable management system.

The initial program planned to revise the management plan of the classified forests of Goin-Débé and Cavally including the criteria for the sustainable management of forest, as well as new activities was based on the results of the biomonitoring for the conservation of fauna. In the sight of the first results of the 2nd phase of the biomonitoring program in the FC Goin-Débé (See chapter 3) showing the high intensity of forest degradation due to farming, in addition to the problems of insecurity in the forest, it was decided on one hand with the FFEM (Fonds Français pour l'Environnement Mondial) financing the project that the management plans of installation had to be redo and on the other hand that urgent actions must be set up to stabilize the situation and protect the forested zone. So the WCF has:

- Organized meetings in the various villages of the classified forest of Goin-Débé in July, 2009 to present the situation and the consequences of forest degradation, as well as to ask for the support of the villagers who understood the situation and asked the WCF to help them to protect their forest.

- Created and presented in 10 villages of the classified forests of Cavally and Goin-Débé, a play on the problem of forest degradation in Côte d'Ivoire and conflicts for forested land in August, 2009.

- Organized a session of sensitization in October, 2009, the sensitization was realized by the FSC Côte d'Ivoire team for the certification of forests in all the villages of the classified forest of Cavally; this was about to explain the importance of forest conservation and the positive fallout of doing a sustainable management plan in the forest.

- Done a feasibility study in November, 2009 by a local expert for the implementation of a system for sustainable management of the classified forest of Cavally; this system would allow improving the management plan by analyzing the weak points observed on the existing.

- Organized a workshop in Guiglo on November, the 13th 2009 with the authorities of the region, as well as the village headmen, the actual ministry of 'Environnement, des Eaux et Forêts', the General Manager of the SODEFOR, and the executives and the elected members of the region for the rehabilitation of the classified forest of Goin-Débé. In total 19 recommendations were accepted by all participants at the workshop. Security actions for the area followed by surveillance activities of the forest were set up after the workshop.

- Prepared with the SODEFOR, the surveys that will be necessary for the realization of new management plans for the classified forests of Goin-Débé and Cavally. This program is financed by the FFEM on funds given to the SODEFOR.

- Asked for supplementary funds for the surveillance of forests by eco-guards to stop the clearing of the forest and fight against poaching activities. These demands are in progress.

Perspectives for year 2010

For the year 2010, our activities are going to continue on all protected areas where we have been working, however, we are expecting opportunities for the other areas such as the Banco National Park, the Nimba Concession on the Liberian side and the Grebo National Forest (proposed as national park in Liberia).

1. Tai National Park

- Data analysis and report of the fifth phase,
- Summary workshop of the fifth phase and the retraining,
- Renewal of certain equipments,
- Reinforcement of the capacities of the OIPR GIS and biomonitoring service,
- Restart of the data collection for the sixth phase.

2. Comoé National Park

- Surveys of the large mammals by flight,
- Data analysis and report writing for the aerial survey,
- Acquisition of materials for the ground data collection activities,
- Training of the data collection teams for the ground survey,
- Data collection, data analyses and report writing,
- Reinforcement of the capacities of the managers.

3. Classified Forests of Goin-Débé and Cavally

- Continuation of the data collection,
- Data analysis and report writing,
- Retraining of the data collection teams,
- Training of the fauna service of the SODEFOR

4. Sapo National Park

- Opportunity with the Tai-Sapo Corridor Project and the Pan African.

5. Banco National Park

- Opportunities for a continuation of the activities.

6. Grebo National Forest

- Opportunity with the Tai-Sapo Corridor Project and the Pan African.

7. Nimba Concession (Liberia)

- Opportunities for the beginning of activities with Arcelor Mittal Liberia.

8. Sustainable management in the classified forest

- Conducting management surveys and socio economical studies in the classified forests of Goin-Débé and Cavally for the management plan.
- Writing the management plans including the sustainable management techniques of forests and the conservation of biodiversity according to the results of the fauna and flora surveys.
- Implementation of local villagers committee for surveillance in order to stabilize aggressions to fauna and flora.
- Support the SODEFOR fauna service for the implementation of fauna surveys in other natural classified forests of Côte d'Ivoire.

General conclusion

The biomonitoring activities introduced by the WCF in Côte d'Ivoire, is globally taking place well, in spite of certain technical difficulties met on the ground. Now the system is running well in general in Côte d'Ivoire and it greatly benefits to the managers of the protected areas, the OIPR and the SODEFOR. They thus adopted the program and are satisfied by its inestimable contributions for the conservation activities.

An extension of the activities in the sub-region is in progress since 2008 with works in Guinea and now in Liberia (in 2009). This evolution of the activities represents an important contribution to the improvement of the management strategies of protected areas at the regional level. The only evil which would happen would be the spontaneous stop of these programs due to the lack of funds. It is thus important that any structure or every thorough landlord worrying about the conservation of the nature and about a good management plan of natural resources joins us for the fulfillment of this "natural" duty.

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Fauna and Flora International (FFI)
WCS (Wildlife Conservation Society),
Université de Cocody, Abidjan, Côte d'Ivoire
Université d'Abobo Adjamé, Abidjan, Côte d'Ivoire
Forestry Development Authority of Liberia
Conservation International
Fauna & Flora International
MIKE (Monitoring the Illegal Killing of Elephants)
Max-Planck-Institute for Evolutionary Anthropology
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