**4.7. Example of ecological monitoring in the savannah: Comoé National Park in Côte d’Ivoire**

Comoé National Park (CNP) is located in the north-east of Côte d’Ivoire and covers 1,149,450 hectares (or over 2.8 million acres). It is the largest protected area in West and Sub-Saharan Africa. This park is representative of Côte d’Ivoire’s savannah biomes. It was classified Biosphere Reserve in 1982, and World Heritage in 1983.

At the CNP, pressures have increased during the long political and military crisis the country went through between 2002 and 2011. These threats have caused a resurgence of gold-mining, illegal transhumance and poaching, which led to the depletion of some animal species such as chimpanzees, elephants and lions.

In 2010 and 2014, the return of social and political stability has allowed for two aerial samplings to take place in the CNP with the technical support of the Wild Chimpanzee Foundation (WCF) and the GIZ. This study-unit is based on the results of these two surveys, which were a form of surveillance aiming at rediscovering the state of the park and its values, and to reorganise management based on the identified priorities. Let’s remember that surveillance is not the same thing as monitoring, and that it is based on a series of samplings repeated over time, providing baseline data for the later implementation of ecological monitoring.

The studied area covers 16,703 km². It is made of the CNP and two Biodiversity Hotspots (BH), Warigué in the North, and Monts Tingui in the South.

In 2010 and 2014, the data collection methodology consisted in systematically overflying the studied zone by sampling line-transects of different lengths. The sampling system included 45 transects tilted at 20 degrees to the north, and laid out regularly and systematically 6 km apart from each other.

In total, 2,955.68 km of transects were overflown, among which 70% were located in the CNP. The sampling rate of the surveyed zone was 6.21%.

In 2010, a total of 8,477 direct mammal observations were made. Among these, with 90% of all individuals seen, domestic animals (especially oxen) were the most encountered animals.

With 756 individuals (8.92%), the second-most prevalent species encountered were the wild bovine species including hartebeests, buffaloes, Defassa waterbucks, kobs, bushbucks, roan antelopes and some duikers. As for the primates, two chimps and 30 long-tailed monkeys among which olive baboons, patas and green monkeys were observed.

Also, the spatial distribution maps showed that the fauna was distributed unevenly throughout the park, and indicators of anthropic activities were found in the park as well as on the outskirts.

The +6,000 domestic animals observed in the CNP during the 2010 overflight was reduced times 100 in 2014 (to around 60), while the number of wild animals has increased times 1.39, going from 752 to 1,047 individuals.

Furthermore, 86.99% of domestic animal observed in the surveyed area in 2010 were found within CNP, while in 2014, that number went down to 4.58%.

In both 2010 and 2014, the spatial distribution of bovine species covered almost the entire surveyed area. But in 2014, the distribution of bovine observations over the entire park was less even. However, that same year, the maximal encounter rate (7.9 individuals/km) exceeds that of 2010 (6.7 individuals/km) where areas of high encounter rates of bovine species were more isolated. Thus, the chances of finding wild animals are higher in the central parts of the CNP.

In 2010, rates of human-activity encounters higher than 1 indicator per km were essentially found around the park, where more than 3 indicators/km were observed in the entire area - this is proof of great anthropic pressure. In 2014, the encounter rate of these indicators decreased in the CNP going from 4.57 indicators/km to 1.51 indicators/km. Between 2010 and 2014 in the CNP, there was indeed a significant difference between the encounter rates of anthropic activity indicators at the α = 0.05 threshold (w = 98463; p-value=0.00)

These aerial surveys give fundamental results on the state of the main species still present (potential PA values) and of some of their attributes: their number, distribution, group composition and threats they are facing. Carrying out surveys on the same zones and in similar conditions shows the shifting trends of the attribute at times where it is key to be able to closely monitor park management decisions in the context of the park’s recovery.

Great conservation efforts have thus been made by managers, and the data collected shows the results thereof. But monitoring and actions must continue because anthropic pressures on the CNP are still present, namely in its peripheral zones - this could have negative impacts on the balance of the CNP ecosystem.