CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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Species specific matters

Leopards (*Panthera pardus*)

QUOTAS FOR LEOPARD HUNTING TROPHIES

This document has been submitted by the Central African Republic[*] in relation to agenda item 29.2 on *Quotas for leopard hunting trophies*.

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CENTRAL AFRICAN REPUBLIC
Unity – Dignity – Work

Bangui, February 09, 2021

LEOPARD IN CENTRAL AFRICAN REPUBLIC

NON-DETRIMENT FINDINGS

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1. HISTORY OF LEOPARD EXPORT QUOTAS IN CENTRAL AFRICAN REPUBLIC

The first leopard export quotas were allocated to certain countries at the fourth meeting of the CITES Conference of the Parties (Gaborone, 1983) under Resolution Conf. 4.13. And it was at CoP6 (Ottawa, 1989) that an export quota of 40 leopard hunting trophies and skins for personal use was recommended and granted to Central African Republic (CAR). It is the country with the lowest leopard quota, after Uganda (28), and one of the few countries that has never requested an increase of its quota (Table 1).

Table 1. *CITES leopard quotas since CoP1 (Trouwborst et al., 2020; IUCN SSC Cat Specialist Group, 2019). Note: Years are those of the CoPs; new quotas and quota changes are shown in bold.*

	1983	1985	1987	1989	1992	1994	2002	2004	2007	2019
Botswana	**80**	80	80	**100**	100	**130**	130	130	130	130
C.A.R.	–	–	40	40	40	40	40	40	40	40
Ethiopia	–	–	**500**	500	500	500	500	500	500	500
Kenya	**80**	80	80	80	80	80	80	80	80	(80)
Malawi	**20**	20	20	20	**50**	50	50	50	50	(50)
Mozambique	**60**	60	60	60	60	60	60	60	**120**	120
Namibia	–	–	–	–	**100**	100	100	**250**	250	250
South Africa	–	–	–	**50**	**75**	75	75	**150**	150	150
Tanzania	**60**	**250**	250	250	250	250	**500**	500	500	500
Uganda	–	–	–	–	–	–	–	–	**28**	28
Zambia	**80**	**300**	300	300	300	300	300	300	300	300
Zimbabwe	**80**	**350**	**500**	500	500	500	500	500	500	500
Total	460	1140	1830	1900	2055	2085	2335	2560	2648	2648

2. LEOPARD STATUS IN CENTRAL AFRICAN REPUBLIC

2.1. LEOPARD DISTRIBUTION IN CENTRAL AFRICAN REPUBLIC

2.1.1. Leopard habitats in CAR

- **On a global scale**

Surprisingly, CAR appears to be one of the very first countries in the world that contributes the most to the preservation of natural habitats and the conservation of large fauna. Indeed, according to Lindsey et al (2017), CAR is one of the "top 10" "major performers" in megafauna conservation among 156 nations worldwide, ranking at the 6th position (Figures 1 and 2).

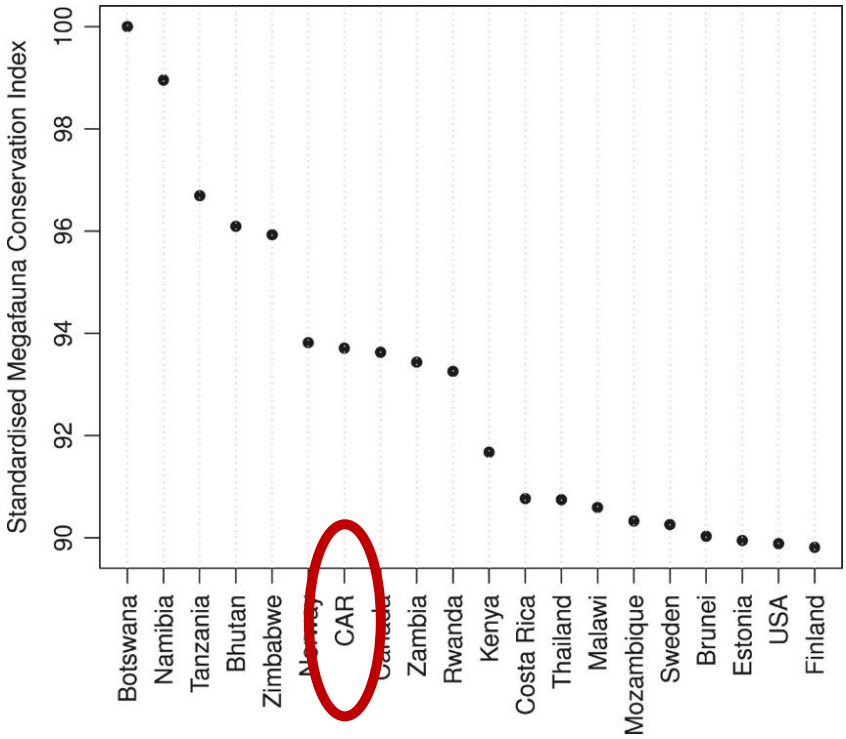


Figure 1: *Standardized megafauna conservation index[1] for the 20 best performing countries in the world (Lindsey et al., 2017). CAR is in 6th position worldwide.*

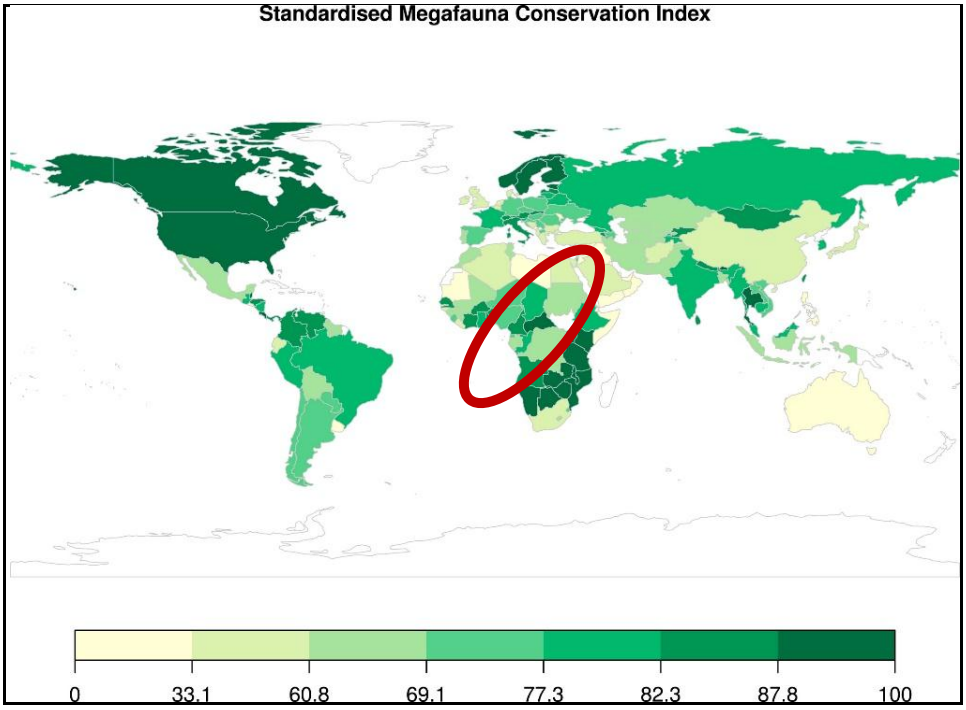


Figure 2: *World map of the standardized megafauna conservation index (Lindsey et al., 2017).*

[1] Composite index of the spatial, ecological and financial contribution of 152 countries to the conservation of the world's terrestrial megafauna.

This may be surprising indeed because the country (i) was ranked 188th out of 189 countries in the ranking of the world's states by the Human Development Index in 2018 (UNDP, 2019) and (ii) experienced a succession of turbulence with coups d'état, civil war and recurrent insecurity in its contemporary history.

Why has CAR been able to preserve its natural habitats so well over the last 30 years? This apparent paradoxical situation is the result of several concomitant and interdependent factors, in particular:

- Human density is very low in CAR, especially in the east and north of the country. With less than 7 inhabitants/km^2, CAR is the 3rd least densely populated country in sub-Saharan Africa. Moreover, its population growth is very low compared to other African countries;
- Agricultural cash crops (coffee and cocoa in forests; cotton and groundnuts in savannas) have either been virtually abandoned or have stagnated in the post-independence era, resulting in a limited agricultural encroachment over natural habitats;
- CAR has gazetted a very large number of Protected Areas over a very large area: nearly 75 Protected Areas in all, covering 228,319 km^2, i.e. 37% of the national territory.

Thus, CAR is one of the African countries with the smallest human footprint[2].

- **At the national scale**

The leopard is present in every type of habitats existing in CAR:

- Dense rainforest in the South-West and Bangassou Forest Area in the South-East;
- Woodland savanna of the West, Centre and East;
- Shrub savanna of the North;
- Forest-savanna mosaic in transition zones.

Indeed, the leopard has a great capacity of adaptation:

  - The leopard is very adaptable, and therefore can occupy a very wide range of natural environments.

The species is known to be ubiquitous. In Africa, it is found in dry bush, coastal, savanna, forest, mountain, swampy, semi-desert, and desert environments (Stein et al., 2016). The leopard can live in a variety of habitats if it finds a satisfactory biomass of prey (Hayward et al., 2007; Henschel et al., 2008). Its prey spectrum is very broad with at least 92 species in its diet across the Continent, ranging from arthropods to adult males of large antelopes (Bailey, 2005). In the Congo Basin, the leopard consumes at least 32 different species of prey. While the leopard consumes mainly ungulates, its diet also includes primates (baboons, chimpanzees and gorillas), rodents, pangolins and small carnivores (Ruggiero, 1991; Fay et al., 1995; Hart et al., 1996; Ray and Sunquist, 2001; Henschel et al., 2005; D'amour et al., 2006; Henschel et al., 2011). "*In northern CAR, the main prey [of the leopard] is the bushbuck (*Tragelaphus

[2] https://www.nature.com/articles/ncomms12558/figures/1; https://www.globalmapping.uk.com/africa-the-human-footprint-published-2005.html; https://www.google.com/search?q=Global+Human+Footprint-Central+African+Republic&client=safari&rls=en&sxsrf=ALeKk01TVunmLacL6eQ4jIZoUfG1bOEnOA:1600435861111&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjkyvKX6PLrAhURzIUKHehSBmoQ_AUoAnoECA0QBA&biw=1440&bih=747#imgrc=Efw4IRp1qMWabM

scriptus*), the red-flanked duiker (*Cephalophus rufilatus*) the common duiker (*Sylvicapra grimmia*), as well as the Buffon's* kob (Kobus kob)*"* (Delvingt and Lobão Tello, 2004).

- The leopard is highly tolerant to human presence and activities, in comparison to other big cats (Sunquist and Sunquist, 2002; Balme et al., 2007).

It can be found in inhabited areas, in agro-pastoral areas and even in villages. In northern CAR, *"the leopard is notably present on the edge of villages, where small carnivores have disappeared. Its diet is extremely varied, from invertebrates to medium-sized antelopes (up to 120 kg), dogs and carrions"* (Delvingt and Lobão Tello, 2004). In the Congo Basin, studies show that even if leopards, like many other species, are negatively affected by roads and poaching (Laurance et al., 2006), they are generally more tolerant to habitat change than other large carnivores (Henschel, 2008; Croes et al., 2011). This behavioural plasticity enables leopard to survive in anthropized areas from which other big cats have disappeared or almost disappeared (Athreya et al., 2013, 2015; Strampelli et al., 2018).

2.1.2. Geographical distribution of leopard in CAR

- **At the national scale**

In 1988, more than 30 years ago, the leopard's range in CAR was estimated at 623,000 km², which covered almost the entire country (Martin and De Meulenaer, 1988). This placed CAR at the 13th position of the leopard's range countries, in terms of range area.

In 2016, the leopard's range in CAR covered an area of 369,000 km^2, or 59% of the country's total surface area (Jacobson et al., 2016; Figure 3). This estimate is the one presented in the IUCN Red List of Threatened Species (Stein et al., 2016) and the Guidelines for Leopard Conservation in Africa (IUCN SSC Cat Specialist Group, 2019). This places CAR at the 6th rank of the countries that contribute the most to the leopard's range in Africa.

This immense extent of the leopard's range in CAR is due to the very high availability of natural habitats of various types, which the leopard takes advantage of thanks to its behavioural plasticity.

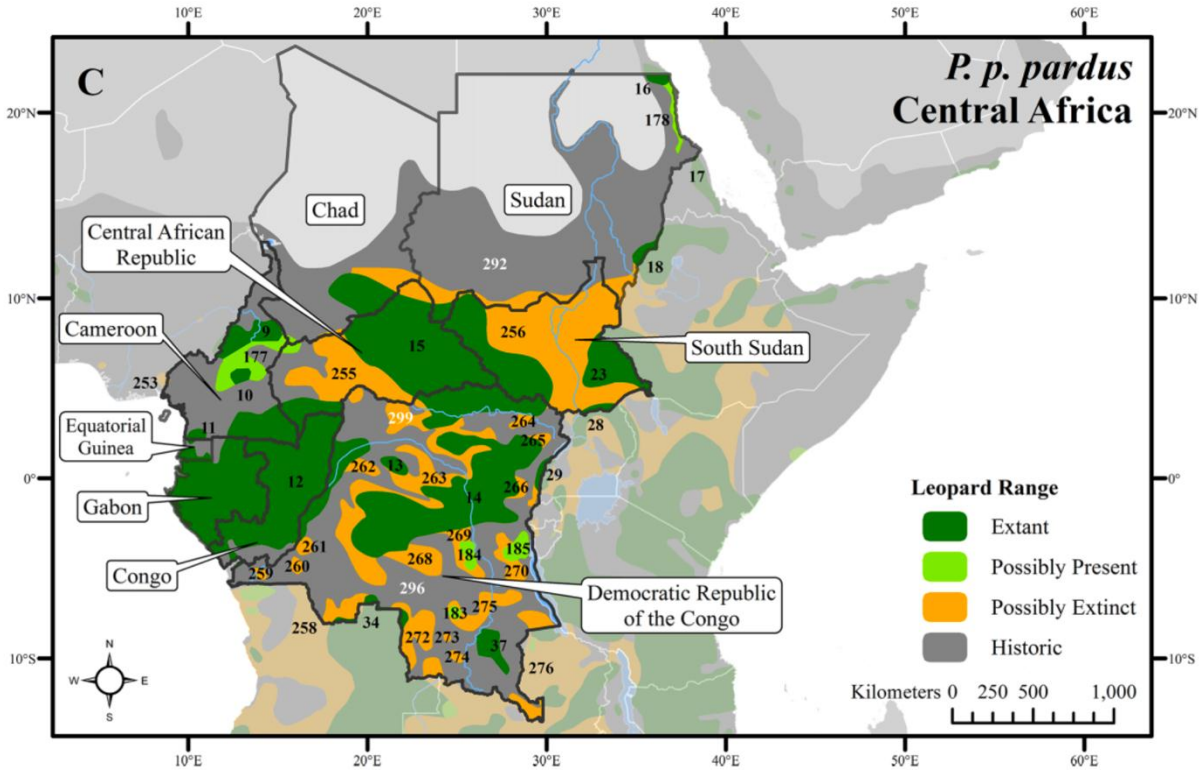


Figure 3. *Leopard's range in Central Africa (Jacobson et al., 2016).*

While countless leopard observations are made by rural populations throughout CAR, very few of these observations are reported in writing, simply because there is very little written material on wildlife in this country, and even fewer scientific articles, especially since the civil unrest of 2012. It should also be understood that, for a villager in CAR, seeing a leopard is nothing extraordinary and therefore does not deserve to be reported orally beyond their close circle, let alone make the effort to write a handwritten report.

The "Bush notebook" project (Boulet et al., 2008) is one of the very few initiatives to have recorded opportunistic observations at the scale of a country and even a sub-region, including in areas outside the National Parks. Between 2004 and 2008, the project recorded 95 leopard sightings in CAR, mainly in the Hunting Areas and Community-based Hunting Zones ("*Zones de Chasse Villageoise*", ZCV) in the north and east of the country (Figure 4). These opportunistic observations cannot, however, be translated in terms of abundance.

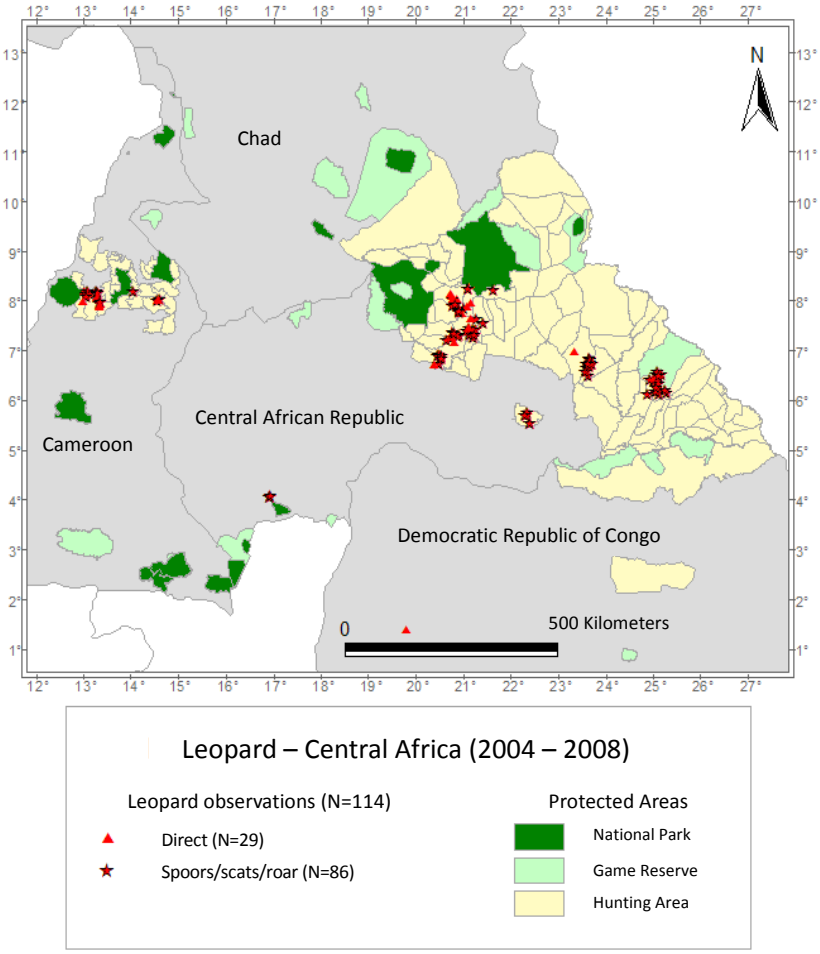


Figure 4: *Opportunistic leopard sightings in CAR between 2004 and 2008 (Boulet et al., 2008) (Note: the observations presented on this map are those that were transmitted to the authors; in no case do they represent the species' range).*

- **In the rainforest**

The leopard is present in every rainforest of the country, in the south-west and the south-east:

  - South-west rainforest

The leopard is resident in Dzanga-Ndoki National Park, Mbaéré-Bodingué National Park, Dzanga-Sangha Special Reserve, Ngotto Forest (Photo 1). Outside these Protected Areas, the leopard is also well known to local communities who do not actively hunt it but sometimes capture it accidentally i.e., unintentionally, in the traps they set for bushmeat species (consumption and trade).

On the other side of the border, in the Republic of Congo, in the Sangha Tri National Complex (TNS), which the Dzanga-Ndoki National Park is part of, in the heart of the Nouabalé-Ndoki National Park, recent leopard monitoring by camera trap has shown a 50% probability of leopard presence at the monitored sites, suggesting that the leopard population is thriving in the Congolese part of the Complex (Mavinga, 2018).

- South-East rainforest (Bangassou Forest)

The leopard is well known to the inhabitants of the Bangassou Forest. In this forest, Roulet (2006a) conducted a scientific study "in the *Mourou-Fadama area (2,208 km²) where the local populations consider the species to be well represented*".

Photo 1: *Leopard in the Dzanga-Sangha Special Reserve (Photo credit: Web/Nuria Ortega).*

- **In the savanna**

The leopard is widely distributed in the savannas of the country, both in the gazetted Protected Areas and, because of its cryptic and adaptable traits, outside the Protected Areas in the so-called non-gazetted open areas.

- Northern savanna

The leopard is present in both National Parks of Bamingui-Bangoran and Manovo-Gounda St Floris. It is also present in all Hunting Areas and ZCVs where it was regularly observed until the departure of the hunting companies expelled by the rebels in 2012. But it is also present outside the Protected Areas where villagers know it well, even if it is less abundant. Delvingt and Lobão Tello (2004) observed that "*the species remains well represented in the northern region*".

- Eastern savanna

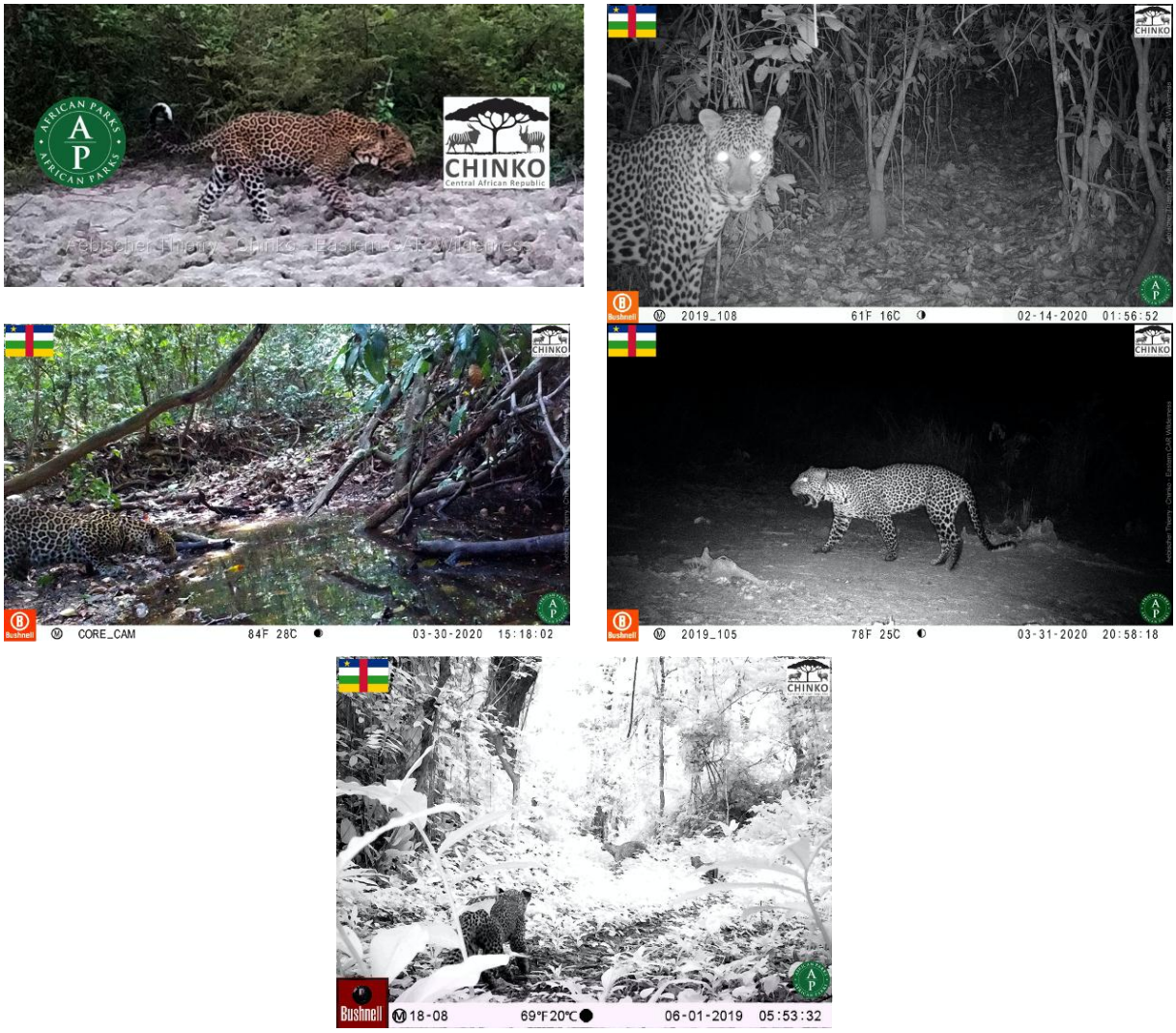
The East is a very sparsely populated region, and even uninhabited in some areas. As a result, the natural habitats are still almost intact. These regions fall entirely under the leopard's range.

In the Zemongo Wildlife Reserve (10,100 km²), on the CAR eastern border with South Sudan, Roulet et al. (2007) conducted a one-off scientific research mission during the 2006 dry season during which they recorded a wide distribution of leopard. The species appeared there as the most widespread wild carnivore.

In the Chinko Conservation Area, Aebischer et al. (2020 et al., pers. com.) have been carrying out ecological monitoring over an area of about 20,000 km^2 since 2012. The leopard is present across the entire area (Photos 2).

- Western and central savanna

The leopard is present just about everywhere, more abundant in intact or poorly transformed habitats, rarer without being completely absent in village farmlands. Its range extends as far as the borders of Cameroon and Chad.



Pictures 2. *Leopards observed by photographic traps in the Chinko Conservation Area in 2020 (Photo credit: African Parks).*

2.2. ABUNDANCE

2.2.1. National population

It is acknowledged that very little reliable data exist on the trends in leopard distribution and abundance across Africa (Stein et al., 2020). Thus, in CAR, as elsewhere in Africa, it is not

possible to give a robust estimate of the size of the national population of the species, and its temporal trends cannot be reliably assessed either.

The first attempt to estimate the population size of leopard in Africa was from Martin and De Meulenaer (1988). Using a simple model predicting leopard density as a function of rainfall, the authors estimated the leopard population in CAR at 41,546 (95% CI: 22,435 - 76,445) i.e., approximately 6.7 leopards/100 km^2. This placed CAR at the top of the list of African countries in terms of density for the species. Nevertheless, this approach was heavily criticized because its model did not account for the effect of essential factors such as mortality of anthropogenic origin and availability of prey (Norton, 1990). Consequently, CAR Authorities have always considered the estimate of Martin and De Meulenaer (1988) with caution. This is one of the reasons why CAR has never applied for an increase in quotas to CITES, even though the country had a higher density estimate than many other countries, several of which having higher export quotas than CAR.

2.2.2. Local abundances

Given the low number of scientific studies on wildlife in CAR in general, it is not surprising that there is little knowledge about local leopard densities in the country. Table 2 reports known leopard densities recorded in CAR and, for comparison, known leopard densities in similar ecosystems in two neighbouring countries.

Table 2. *Recorded leopard densities in CAR and two neighbouring countries taking into account the nature of similar ecosystems.*

Country	Study area			Leopard density (ind./100km²)	Reference
	Landscape	Region	Site		
CAR	Savana	Haut-Mbomou, South-East CAR	Chinko Conservation Area	1.7 – 6.1	Thierry Aebischer (unpubl. data, 2020)
	Rain forest	Ngoto Forest, South-West CAR	Close to Banga village	3	Vanthomme (2010)
			Far from Banga village	22	
Cameroon	Savana	National Parks and Hunting Areas of the North	2 NP & 21 Hunting Areas	1.31	Bauer et al. (2015)
			2 NP & 7 Hunting Areas	2.13	Kirsten et al. (2017)
	Rain forest	Campo-Ma'an National Park	In the National Park	22	Van der Hoeven et al. (2004)
			Out of the National Park	4	
			Entire study area	7	
Gabon	Rain forest	South-West Gabon	Ogooué-Maritime	20	Prins et Reitsma (1989)
		Lopé and Ivindo National Parks		2.7 – 12.1	Henschel (2008)

- **Chinko Conservation Area (South-East of the country)**

To date, the most scientifically robust and regular monitoring of leopard is carried out in the Chinko Conservation Area (CCA, Photos 2). This is the only area in the country where the leopard has been hunted in the last 6 years (see § 4.2.1.). Since 2012, the African Parks

scientific team has been carrying out a leopard track count there, following the method of Funston et al. (2010). In 2020, the leopard density in the CCA was estimated between 1.7 and 6.1 leopards/100 km^2 i.e., an estimated number of leopards between 341 and 1,207 for this area alone (Thierry Aebischer, unpublished data). This is a very conservative estimate. Indeed, the detection rate of tracks on the sub-optimal substrate of the zone is very low. Moreover, large parts of the CCA were not sampled during these track counts due to the lack of roads. They were however sampled through aerial survey and proved to be richer in prey and leopard than the parts of the area with roads. This is confirmed by the camera trap surveys. Consequently, the densities and numbers estimated through these track counts can be considered very conservative (Thierry Aebischer, pers. comm.).

- **Zemongo Wildlife Reserve (south-east of the country)**

In 17 days of scientific prospecting on foot in the Zemongo Wildlife Reserve, Roulet et al. (2007) observed that "*among the 9 wild carnivores present in the Reserve, the leopard is the species that has been encountered the most times: 14 indirect observations and 2 direct contacts"*. They added that " the *large populations of the 3 Suidae (warthog, red river hog and giant forest hog) - probably due to the ban on the consumption of pig meat by Muslims - sustain the leopard population ".*

- **Bangassou Forest (south-east of the country)**

In 24 days of counting on foot in the Mourou-Fadama zone, Roulet (2006a) was able to make "*5 direct/indirect leopard observations on 20% of the quadrats*". He commented that "the *low number of observations during the inventory in no way indicates a small leopard population given the leopard's nocturnal and discreet habits"*. He added that *"the number of potential prey and the quality of the biotopes surveyed in the area for this species suggest a large population"*. He proposed an annual hunting quota of 4 leopards in this area alone.

- **Bamingui Bangoran National Park and Biosphere Reserve (north of the country)**

In 2018, a pedestrian survey[3] was carried out in the Bamingui Bangoran National Park and Biosphere Reserve. It roughly estimated the leopard population in the Park at more than 100 individuals, along with other species such as buffalo (*Syncerus caffer),* defassa waterbuck (*Cobus ellipsiprymnus defassa),* red river hog (*Potamochoerus porcus*), Buffon's cobus, black-fronted duiker (*Cephalophus nigrifrons),* blue duiker (*Cephalophus monticola),* black-and-white colobus *(Colobus guereza),* lion (*Panthera leo),* and spotted hyena (*Crocuta crocuta*).

2.3. TEMPORAL TRENDS

In 1988, more than 30 years ago, the leopard's range in CAR had been estimated at 623,000 km², which is almost the entire country (Martin and De Meulenaer, 1988). This placed CAR at the 13th rank of the leopard's range countries, in terms of range area (Table 3).

In 2016, its range covered 369,000 km^2 i.e., 59% of the total area of the country (Jacobson et al. 2016, Figure 1). This estimate has been taken up by Stein et al (2016) and IUCN SSC Cat

[3] https://ecofaune.org/sondage-pedestre-dans-le-parc-national-bamingui-bangoran

Specialist Group (2019). This places CAR at the 6th rank of the countries that contribute the most to leopard's range in Africa (Table 3).
A comparison of the figures between 1988 and 2016, although difficult because of the difference in the methods used, would however indicate that the leopard's range in CAR:

- has decreased by 40% over these three decades;
- has considerably less decreased in CAR than in the other range countries however, as CAR would have ascended from rank 13th to 6th of these countries during the period (Table 3).

Table 3. *Leopard's range in CAR and Africa: assessment of the area in 1988 and 2016 (using different methods) and reduction between the two dates; rank of CAR in comparison to the other countries of the leopard's range in terms of preservation of the leopard's range.*

Leopard range			**in 1988**	**in 2016**
in CAR	Area	km²	623,000	369,000
	Decrease	%	40.7	
in Africa	Area	km²	20,271,800	6,613,000
	Decrease	%	67.4	
Rank of CAR among the 40 countries of leopard range		Rank of CAR / 40 countries	13th	6th
References			Martin & De Meulenaer 1988	Jacobsen 2016; Stein et al. 2016; IUCN SSC CSG 2019

Moreover, there is a striking convergence between:

- **CAR's 6th position in the world ranking of the best performing countries in megafauna conservation** (Lindsey et al., 2017); and,
- **CAR's 6th position in the ranking of the countries contributing the most to the leopard's range in Africa** (Jacobson et al., 2016; Stein et al., 2016; IUCN SSC Cat Specialist Group, 2019).

This cannot be a coincidence. On the contrary, there is a strong coherence between:

- the relatively good preservation of the landscape; and,
- the leopard's relatively good conservation status.

As mentioned above (see § 2.1.1), the impact of man on nature in CAR remains moderate due to socio-economic development, which is severely hampered by a very complicated security situation.

Today, the Chinko region in Haut-Mbomou, in the east of the country, is the only region of the country where regular scientific monitoring of leopard is carried out, which shows that (Table 4):

- between 2012 and 2017, the number of leopards declined by 50% following the massive arrival of transhumant cattle herders (Aebischer et al., 2020);
- since 2017, the leopard population has risen back to the level observed in 2012 (Thierry Aebischer, unpublished data 2020), notably thanks to the increased protection provided not only by African Parks but also by the few hunting companies still present in the area.

It should be noted that before the arrival of African Parks in 2014, these hunting companies had long been the only protectors of large carnivores against transhumant pastoralists and poachers in the area.

Table 4. *Leopard densities in the Chinko Conservation Area since 2012, estimated by track counts (Aebischer et al., 2020; Thierry Aebischer, unpublished data).*

Year	Number of leopards /100 km^2 *	Number of leopards in 6,000 km^2	Number of leopards across the 20,000 km^2 monitored in the ACC**
2012	1.6 to 5.8	97 to 346	322 to 1,143
2017	0.8 to 3.2	50 to 191	164 to 632
2018	1.2 to 4.5	74 to 271	245 to 897
2019	1.6 to 5.8	99 to 350	327 to 1,155
2020	1.7 to 6.1	103 to 365	341 to 1,207

* The method used is track counts (see Aebischer et al., 2020). The track detection rate on sub-optimal substrate in the study area is obviously very low, hence the densities and absolute numbers derived from these track counts can be considered as very conservative minimum numbers.

** Only an extrapolation. Large areas of the core of the CCA, in particular the central part in the south, don't have roads and therefore couldn't be included in the track count analysis. Data from aerial surveys suggest that this central part is at least as rich in wildlife, or even richer for some species such as buffalo and leopard, as the rest of the study area. Therefore, extrapolating the densities found in the study area to the entire CCA probably underestimates the actual densities by a large margin.

2.4. POTENTIAL THREATS

Throughout its range in Africa, the leopard is potentially threatened by conflict with pastoralists, poaching, loss of prey, loss of habitat, and poorly managed trophy hunting (Stein et al., 2020).

2.4.1. Conflict with pastoralists

This is the main threat to these large predators in eastern CAR (Aebischer et al., 2020), as it is the case elsewhere in West and Central Africa (Brugière et al., 2015).

The leopard is well known in CAR for being responsible for damage to domestic animals, especially dogs and small ruminants, both in the bush, the forest and in the villages at night. Every livestock breeder there knows this, whether sedentary or transhumant.

Since the 1980s, large numbers of transhumant pastoralists and their livestock have flocked from the arid regions of the Sahel to northern and eastern CAR in search of water and pasture (Zecchini and Mattiello, 2016). This has exacerbated conflicts between the large carnivores, lion, leopard, cheetah (*Acinonyx jubatus*), wild dog (*Lycaon pictus*), hyena, and herders who use all possible means to limit attacks on their livestock, including by killing predators such

as leopards (Martin and De Meulenaer, 1988). For example, in the sub-prefecture of Djemah, close to the CCA, 78 heads of cattle have been injured or killed by leopards since 2016, and 6 leopards have been killed in retaliation by villagers (Djemah village committee, pers. comm. 2020). The attacks have only increased since 2016, which the villagers attribute to an increase in the leopard population in the region, an increase also observed by private operators in the hunting zones (Alain Lefol, pers. comm.) and by African Parks scientists (Thierry Aebischer, see § 2.3).

2.4.2. Poaching

- **Intentional**

While there is no apparent market or sale of leopard skins within the country (Martin and De Meulenaer, 1988; Roulet, 2006b), some leopards are poached in CAR and their skins trafficked across the region. In the 1980s, Martin and De Meulenaer (1988) estimated that about 100 leopards were poached annually for their skins. There has been little continuous monitoring of this illegal activity in the country. Between March 2009 and December 2011 however, the Wildlife Law Enforcement Strengthening Project (*Renforcement de l'Application de la Loi Faunique*, RALF), implemented by the government, WWF-RCA, and the organization LAGA, showed that in Bangui and its surroundings, between 1 and 6 skins were confiscated each year (Yarissem et al., 2011). In the CCA region and its periphery, more than 10 cases of poaching per year have been observed since 2016, with more than 4 annual seizures of skin, teeth, claws, bones (Thierry Aebischer, pers. comm.). A few leopard traps and carcasses have also been found by private operators in the region (Alain Lefol and Jacques Lemeaux, pers. comm.).

These events of intentional poaching are mainly carried out by foreign merchants accompanying transhumant pastoralists who seek skins for trade in the region e.g., in Cameroon and Ivory Coast (Martin and De Meulenaer, 1988; Roulet, 2006b; Ondoua Ondoua et al., 2017; Aebischer et al., 2020). However, in the absence of a systematic monitoring, given the small numbers of wildlife officers compared to the large areas to be monitored, it is impossible to measure the extent of poaching with any certainty.

- **Unintentional**

In addition to intentional poaching, leopards, like other large predators, can sometimes be caught in traps set by villagers to catch wild ungulates for bushmeat (Chardonnet et al., 2010; Eric Turquin, pers. comm.).

2.4.3. Loss of prey

CAR has been experiencing a decline of its large fauna since the mid-1980s, notably elephant (*Loxodonta africana*), buffalo, giraffe (*Giraffa camelopardalis*), Eastern giant eland (*Tragelaphus derbianus gigas*), roan antelope (*Hippotragus equinus*), tiang (*Damaliscus lunatus tiang*), Lelwel hartebeest (*Alcelaphus buselaphus lelwel*), defassa waterbuck and Buffon's kob, notably due to intensive poaching (Bouché et al. 2009, 2012). The leopard's preferred prey in the Congo Basin are small and medium-sized mammals e.g., warthog (*Phacochoerus africanus)*, Western giant forest hog (*Hylochoerus meinertzhageni rimator)*, red river hog, duikers (*Cephalophus spp.)*, bushbuck, primates (Henschel et al., 2011). The biomass of these prey remains sufficient for the predator (Aebischer et al. 2020, Photos 3),

despite the poaching of these species and their significant consumption as bushmeat in the country (Fargeot et al., 2017). Thus, the loss of prey does not appear to be a major threat to leopard in CAR.

Pictures 3. *Ungulates observed in 2020 in Hunting Areas n° 37, 42 and 43 (Photo credit: A. Lefol), with from top to bottom and from left to right: Western bongo (*Tragelaphus eurycerus eurycerus*), Eastern giant eland, buffalo, giant forest hog, defassa waterbuck, red river hog.*

2.4.4. Loss of habitat

Unlike most other African countries, the habitat loss in CAR is not a major threat to leopard conservation today. There are several reasons for this (Table 5):

- Human demographic growth in recent decades has been much lower in CAR than in the other countries of the Continent: between 1984 and 2019, the CAR population grew by an average of 1.9% per year, compared with an average of 2.7% for sub-Saharan Africa as a whole. Even today, with a human population of only 6 million inhabitants, CAR still ranks among the countries with the lowest human density on the Continent: 7.5 inhabitants/km^2 *vs.* 50.8 inhabitants/km^2 on average in sub-Saharan Africa.

- The agricultural area in CAR increased by only about 2% between 1984 and 2016, compared to 30% in sub-Saharan Africa, and only represents 8% of the country's surface area today, whereas it accounts for 44% of the subcontinent's surface area. And this very limited growth in cultivated area only concerns subsistence agriculture; in fact, there has been an agricultural decline in cash crops due notably to the collapse of the coffee, and cotton value chains.

This explains why CAR today still has huge areas of intact or only slightly altered natural habitats, with an area of natural or little anthropized vegetation of 613,000 km^2 (Ernst et al., 2012).

Table 5. *Human population and agricultural area in CAR and sub-Saharan Africa (vs. rest of Africa (Source: World Bank[4]).*

	Human demography		**Agricultural area**	
	Population growth 1984-2019 (%)	Population density (inhab./km2)	Increase in agricultural area 1984-2016 (%)	% of national area
CAR	1.9	7.5	2	8
Sub-Saharan Africa	2.7	50.8	30	44

2.4.5. Attacks on people

- **Accidents in the savanna**

In the sub-prefecture of Djemah, on the edge of the CCA, an average of 1 to 2 people has been killed and 4 others wounded each year since 2016 because of leopard attacks (Djemah village committee, pers. comm.). These attacks incite villagers to kill leopards in retaliation (6 leopards have been killed in this way since 2016).

- **Accidents in the rainforest**

"In 2010, two local hunters were injured by leopards in Mbaéré, Ngala Prefecture [dense rainforest ecosystem]. *Each time, it was a bushmeat hunter who, while checking his traps, found a leopard accidentally caught in one of his snares. Both were injured while trying to free the leopards. In both cases, there was no intentional poaching."* (Eric Turquin, pers. comm.).

[4] https://databank.banquemondiale.org/indicator/SP.POP.TOTL/1ff4a498/Popular-Indicators, https://databank.banquemondiale.org/source/world-development-indicators#

2.4.6. Trophy hunting

Trophy hunting is legal, managed and controlled in CAR but remains very limited and localized since the 2012 turmoil. In 8 years, the legal harvest of leopards has been restricted to 26 individuals for the whole country i.e., less than 4 per year, and only in the Chinko region. Moreover, the harvest has always remained well below the quotas established under Resolution Conf. 10.14 (Rev. CoP16), so that trophy hunting is not a threat, and probably never has been for the species in the country (Aebischer et al., 2020).

3. LEOPARD CONSERVATION AND MANAGEMENT IN CENTRAL AFRICAN REPUBLIC

3.1. LEGAL AND ADMINISTRATIVE FRAMEWORK

3.1.1. Wildlife Management Code and Wildlife Protection Areas Code

The management and exploitation of wildlife in CAR is almost exclusively based on Ordinance No. 84-045 of 27 July 1984, known as the "Wildlife Code". It defines the various types of Protected Areas, their legal status, the modalities of their categorisation and their administration. It establishes a wildlife protection regime, regulates customary and sport hunting, the capture of wild animals and the marketing of hunting products. Infringements of this code, their detection and punishment are also provided for. It is the Ministry of Water, Forests, Hunting and Fishing ("*Ministère des Eaux, Forêts, Chasse et Pêche*", MEFCP), through its Directorate of Wildlife and Protected Areas, which is responsible for the management of wildlife and Protected Areas, and is in charge of enforcing the Wildlife Code.

It should be noted that in CAR, as in most sub-Saharan African countries, legislation also provides for articles guaranteeing the defence of persons and property in the event of aggression by wild animals (Articles 94 to 97 of Ordinance 84.045). For example, the principle of self-defence legally authorizes the elimination of a predator that attacks people or domestic animals. In the texts, retaliatory actions are officially placed under the responsibility of the MEFCP.

This Code has just been revised, validated by the Government Texts Commission, and promulgated by the Head of State under N° 20.026 of 30 November 2020 after its adoption by the National Assembly. The revised version of the Code, entitled *Code for the Management of Wildlife and Protected Areas in Central African Republic*, takes into account new management concepts such as:

- The involvement of local and indigenous communities in the management of wildlife and Protected Areas;
- The criminalisation of poaching;
- The legal designation of ZCVs, Community Wildlife Areas (*Domaines Faunique Communautaires*, DFCs) and Community Hunting Zones (*Zones de Chasse Communautaire*, ZCCs);
- Taking into account the requirements of Conventions and Treaties;
- The creation of a National Agency for the Management of Protected Areas;
- New forms of wildlife valuing;
- Revision of the status of some protected species;

- **The Direction de la Faune et des Aires Protégées (DFAP, Direction of Wildlife and Protected Areas) is promulgated "CITES Management Authority" and the University of Bangui "CITES Scientific Authority".**

3.1.2. Forest Code

In addition to the Wildlife Code, CAR has a Forestry Code which requires, among other things, that the exploitation of forest products takes into account the requirements of forest heritage conservation and biological diversity. This Forest Code also covers points relating to the sustainable management of wildlife and the bushmeat sector.

3.1.3. Environmental Code

There is also an Environmental Code which places special emphasis on the protection, use, conservation and scientific exploitation of the biological diversity. For example, its articles 87 to 100 relating to environmental impact studies and public hearings strengthen the management of wildlife and the bushmeat sector.

3.1.4. International Conventions and Treaties

At the international level, in addition to CITES, CAR has ratified several international conventions and treaties relating to the protection of biodiversity and Protected Areas (Box 1).

Box 1: International conventions and treaties relating to the protection of biodiversity and Protected Areas ratified by CAR

- London Convention (1933): Convention Relative to the Preservation of Fauna and Flora in their Natural State
- Algiers Convention (1968): African Convention for the Conservation of Nature and Natural Resources
- RAMSAR Convention (1971): Convention on Wetlands of International Importance especially as Waterfowl Habitat
- UNESCO Convention (1972): Convention concerning the Protection of World Cultural and Natural Heritage
- Washington Convention (1973): Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Bonn Convention (1979): Convention on the Conservation of Migratory Species of Wild Animals
- Bern Convention: Convention on the Conservation of European Wildlife and Natural Habitats
- Rio Convention (1992) on Climate Change
- Convention on Biological Diversity (1992)
- United Nations Convention against Transnational Organized Crime (15 November 2000)
- United Nations Convention against Corruption (31 December 2003)
- Lusaka Agreement on Co-operative Enforcement Operations directed at Illegal Trade in Wild Fauna and Flora (1996)
- Tripartite Cooperation Agreement on the Fight Against Cross-Border Poaching (N'Djamena AT-LAB) signed on 8 November 2013 between CAR, the Republic of Cameroon and the Republic of Chad, with as area of application the North-East of Cameroon, the South of Chad and the North of CAR.
- Cooperation Agreement relating to the establishment of the Sangha Trinational, signed in Yaounde on 7 December 2000 between CAR, the Republic of Cameroon and the Republic of Congo.
- Paris Agreement for the Conservation of Gorillas and their Habitats signed in 2007
- Treaty relating to the conservation and sustainable management of Central African forest ecosystems and establishing the Central African Forest Commission (COMIFAC) signed in 2005.

3.2. MANAGEMENT PLANS AND NATIONAL STRATEGIES

With the support of technical partners, the CAR Government has undertaken, from 2015 onwards, the development of legal and strategic tools to guide the management of wildlife resources in the country. These tools include the new Code for the Management of Wildlife and Protected Areas, the national wildlife management policy and the national strategy and action plan to combat poaching and wildlife crime in CAR.

3.2.1. National wildlife management policy

The main objective of this new national wildlife management policy is to set up an overall framework for the sustainable management of wildlife resources at the national level, particularly in:

- The institutional strengthening of the wildlife sector;

- The management of Protected Areas;
- The sustainable valuing of wildlife;
- Improving governance and strengthening law enforcement;
- The promotion of better environmental and social practices for the sustainable use of other natural resources;
- Ecological monitoring, research and training.

The wildlife management policy will be implemented at the national level through five-year action plans and specific strategies. These plans and strategies will constitute unifying and dynamic documents translating the orientations contained in this policy into practice. The articulations of this policy are also taken into account in the Wildlife Code.

3.2.2. National strategy and action plan for the fight against poaching and wildlife crime in Central African Republic

The national strategy and action plan to combat poaching and wildlife crime in CAR were developed in a participatory manner, with the combined effort of the MEFCP's technical and financial partners, sectoral administrations, national experts, local communities, representatives of the civil society and Non-Governmental Organisations (NGOs) involved in the fight against wildlife crime. This technical document provides a framework for the interventions of the main actors in the fight against poaching and wildlife crime (MEFCP, Central African armed forces, customs, police, gendarmerie, justice, local communities, media and NGOs) with the aim of significantly reducing all forms of illegal exploitation of wildlife resources.

CAR has also developed a communication strategy in relation to the fight against wildlife crime, which aims to enable the MEFCP to mobilise the participation of different groups of actors working the fight against poaching and wildlife crime.

3.2.3. Management plan for large carnivores

After the last CITES CoP in Geneva in August 2019, the *Direction de la Faune et des Aires Protégées* (Department of Wildlife and Protected Areas) of MEFCP planned to organise a national workshop to develop a management plan for large carnivores. The workshop was postponed due to lack of funding but remains a priority for the *Direction de la Faune et des Aires Protégées*. It is envisioned that this management plan will take up the recommendations of the Guidelines for Leopard Conservation in Africa (IUCN SSC Cat Specialist Group, 2019).

3.3. PROTECTED AREAS

CAR is one of the African countries with the highest percentage of its territory gazetted as Protected Areas, all categories combined (Lindsey et al. 2007, 2017). The total area of protected areas covers around 229,000 km^2 i.e., 37% of the national territory (Table 5, Figure 5), which is exceptional, not only in Africa but also in the world.

Some of these Protected Areas are cross-border. For example, the Dzanga-Nodki National Park and the Dzanga-Shanga Reserve are part of the Sangha Trinational, a cross-border agreement between CAR, Cameroon, and Congo.

Table 5. *Types, number and size of Protected Areas in CAR.*

Protected Areas	Number	Total area (km^2)	% of national area
Gazetted Hunting Areas (leased Hunting Areas & ZCV)	58	158,982	25.5
National Parks and Reserves	18	70,145	11

Among these Protected Areas, we note the predominant and major importance of Hunting Areas, which are Protected Areas duly classified administratively (Table 5), often even before the gazetting of National Parks and Reserves:

- 48 Hunting areas covering an area of 132,078 km^2;
- 10 *Zones Cynégétiques Villageoises* (ZCV: community-based Hunting Areas) covering an area of 26,904 km^2.

In CAR, Hunting Areas cover an area of approximately 25% of the national territory, more than twice the size of the National Parks and Reserves. This is a factor higher than the African average rate of 1.2 times the size of National Parks, underlining the importance of hunting for the defence of natural habitats and biodiversity in general in the country. The Hunting Areas in CAR are connected to National Parks and Reserves with which they form real mega-ecosystems (Figure 5).

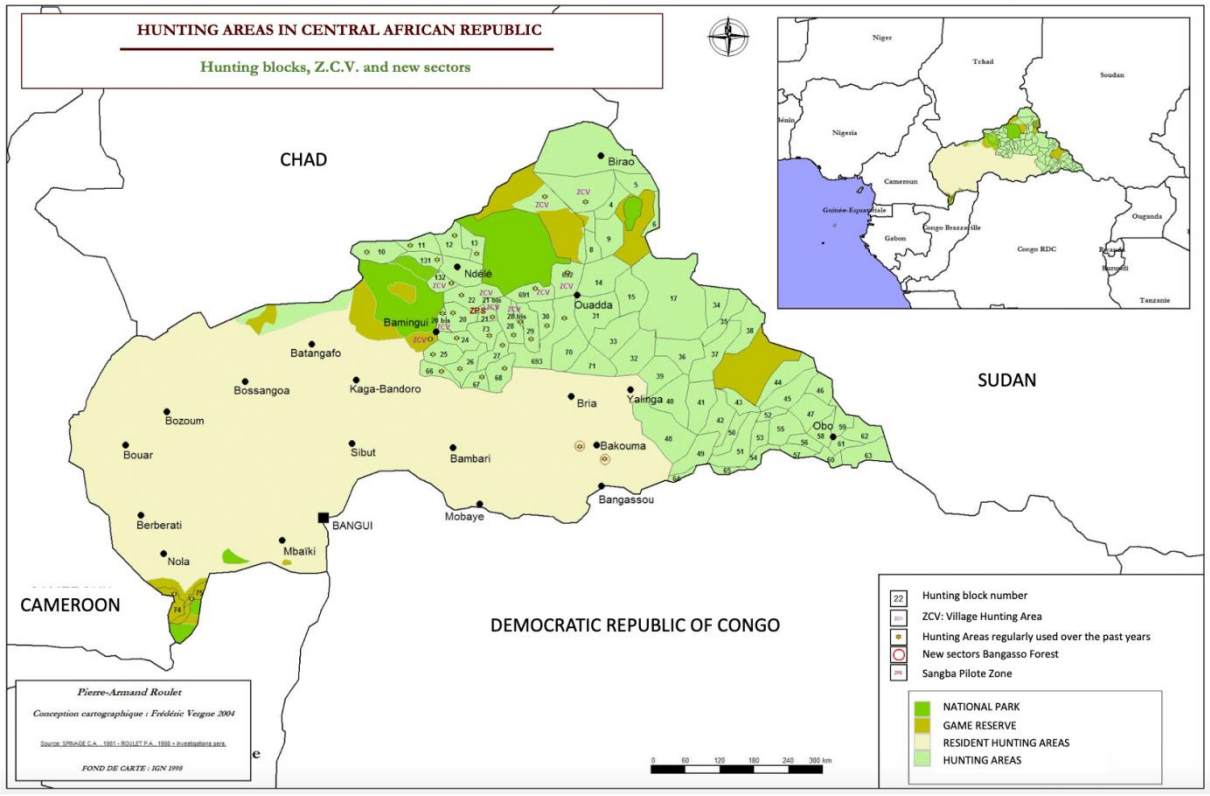


Figure 5 *Map of Protected Areas in CAR (Roulet, 2006b).*

3.4. PARTNERS COMMITTED TO THE PROTECTION OF WILD HABITATS AND SPECIES IN CAR

The MEFCP is the central body in charge of the protection of wild habitats and species in the country. MEFCP carries out the monitoring of Protected Areas, often in conjunction with conservation programmes, safari companies and managers of ZCVs who significantly contribute to the management of wildlife and Protected Areas. Several international institutions and NGOs accompany, or have also accompanied the conservation and management of wildlife in CAR[5].

The interventions of several conservation agencies and programmes (WWF, European Union, IUCN) in the Protected Areas of the South-West (WWF: Dzanga-Sangha Protected Areas and Mbaéré-Bodingué National Park) or of the North (WCS: Manovo Gonda Saint Floris and Bamingui-Bangoran National Parks), African Parks in the Chinko Region, have shown very positive results in terms of conservation and management of Protected Areas. There has been a significant increase in the numbers of most endangered animal species, and a decrease in the pressure on wildlife such as poaching.

3.5. ANTI-POACHING

Several entities are involved in the fight against poaching in CAR:

- **State entities**

- The MEFCP advises the government in terms of anti-poaching policy, and monitors the application of all draft texts of a legislative or regulatory nature relating to wildlife crime;
- The "*Compte d'Affectation Spéciale pour le Développement Forestier"* (CAS-DF, Special Allocation Account for Forest Development), which is fed by part of the forestry and hunting taxes, that finance anti-poaching operations in agreement with the public treasury;
- The Ministry of National Defence which, together with the MEFCP, provides armament and vehicles;
- The Central African Armed Forces within the framework of missions with MEFCP, in the days before the military-political crisis which began in December 2012, were called upon every year from November to April;
- The Ministry of Justice for the prosecution of wildlife offences on the basis of reports drawn up by sworn officers of the Ministry in charge of wildlife and that of Public Security, as well as by sworn hunting guides.

- **Non-state entities**

[5] e.g. The African Development Bank (ADB), the World Bank (WB), the Economic Community of Central African States (ECCAS), the Central African Forest Commission (COMIFAC), the Food and Agriculture Organization of the United Nations (FAO), the Organization for the Conservation of African Wildlife (OCFSA), the United Nations Development Programme (UNDP), the Agence Française de Développement (AFD), the International Union for Conservation of Nature (IUCN) and the World Wide Fund for Nature (WWF), the Wildlife Conservation Society (WCS), the Tri-National Sangha Foundation, the European Union with the ECOFAC programme (Conservation and rational use of Forest Ecosystems in Central Africa), the PACEBCo project (Programme d'Appui to la Conservation des Ecosystèmes du Bassin du Congo), RAPAC (Réseau des Aires Protégées d'Afrique Centrale), John Aspinall Foundation, Help, Jane Goodall Foundation, African Parks.

- Public Private Partnership programmes e.g., WCS, WWF, African Parks programmes, which involve Ecoguards or trackers in several National Parks, Wildlife Reserves and peripheral areas;
- Community Associations involved in wildlife management: The local communities benefiting from ZCVs, through their respective ZCV Local Management Associations (RALGEST-ZCV), maintain an anti-poaching unit, known as village game guards;
- Tourism hunting companies: according to specifications urging them to ensure anti-poaching in their sector(s), according to decree n°78-107 of 2 February 1978, hunting guides have the possibility of being sworn in and acquiring the status of "wildlife protection auxiliaries". This enables them to report offences, seize weapons, equipment, vehicles, meat, animal remains and trophies and to draw up official reports. Like the RALGEST-ZCVs, all the tourism hunting companies that were present in the country until December 2012 had an anti-poaching team.

3.6. LEOPARD-HUMAN POPULATION CONFLICT MITIGATION

In CAR, the management of human-wildlife conflicts is traditionally dealt through the authorisation "to repel from their land animals which would put their livestock and crops in immediate danger" (Title IV, Art. 211 of the Wildlife Code). A lethal control administrated by the wildlife services may be requested in the event of an identified danger (Title IV, Art. 212), with a detailed report sent to the Minister in charge of wildlife (Title IV, Art. 213).

Nevertheless, the knowledge and use of preventive procedures must be promoted by the wildlife services (Title IV, Art. 210). CAR is therefore developing a series of strategies for the mitigation of the human-wildlife conflicts, following the example of the National Strategy for the Management of Human-Elephant Conflict in Central African Republic 2019 - 2023 published in January 2018. It is planned that the strategy specific to the resolution of the human-leopard or human-large carnivore conflict in CAR will be developed during the development of the national management plan for large carnivores, which is currently awaiting funding. Where damage cannot be avoided despite the measures put in place, owners are entitled to compensation from the government (Title IV, Art. 215).

4. LEOPARD HUNTING IN CENTRAL AFRICAN REPUBLIC

4.1. TROPHY HUNTING IN CAR

4.1.1. Leasing of hunting areas

The conventional Hunting Areas are leased to hunting companies according to an auction system. Then, agreements are signed between the State and the leasing company/concessionary, which are valid for 10 years, renewable, a period considered sufficient to allow the tenant to both conduct a policy of wildlife management on its concession and to make its investments profitable.

The ZCVs (Community-based Hunting Areas) are organised into management committees elected by community members. The village communities are, upstream, responsible for the development of the ZCVs (suggesting hunting quotas, opening roads, developing camps, water holes, ecological monitoring, anti-poaching, etc.) and, downstream, they are benefitting from the income generated through the wildlife use (hunting fees, concession fees) by the

economic partners that are the hunting companies. A system of five-year agreements is set up, signed by all the stakeholders in the ZCVs, which can be revised annually in the event of non-compliance with the clauses specified by one of the signatories.

In the Hunting Areas granted to private operators, the right to hunt is reserved for the concessionaires and their beneficiaries, without however impeding the exercise of traditional hunting. Similarly, the game meat obtained through tourism hunting belongs to the villagers closest to the hunting grounds. A hunter abandoning the meat of an animal he has hunted on the hunting grounds is required to inform the first villager he meets or the first camp he reaches.

4.1.2. Hunted species

The Code provides in its appendices the statutes of the different animal species. Its provisions take into account the International Union for Conservation of Nature (IUCN) Red List classification and the CITES appendices. Wild fauna is divided into three types of status (Class A, Class B of Group 1, and Class B of Group 2) which determine their degree of protection according to criteria of endemism, intrinsic value or rarity, while taking into account international agreements. The leopard is in Class B of Group 1, a partially protected species that can be the object of strictly controlled trophy hunting, only on males and old individuals, but which cannot be the object of customary hunting (hunting for the subsistence of the hunter(s) and that of other members of the village community). The leopard was originally listed as a Class A, fully protected species. It was downlisted in 1990.

4.1.3. Method of hunting quota allocation

The allocation of hunting permits, hunting guide licences, Hunting Areas per hunting company, the establishment of annual quotas per zone and, finally, the establishment of hunting fees and taxes (for hunting per species, leased zone, import of hunting weapons, costs of permits and licences, company patents, etc.) fall within the competence of the State services. The MEFCP, through its Wildlife Department, is responsible for the administration and control of hunting activities. Increasingly, the partnerships established with conservation programmes mean that decisions, for example on the allocation of quotas, although they are ultimately taken unilaterally by the competent ministry, are most often taken on the recommendation of these programmes.

The annual hunting quotas determined for each leased Hunting Area and/or ZCV are proposed by the leasing company at the end of the previous hunting season. These proposals are examined at the annual meetings of the Quota Allocation Commission organised by the Direction of Wildlife and Protected Areas, on the basis of all available information relating to the dynamics of animal populations, quotas and offtakes out in their Hunting Areas.

Hunting quota allocations are based on the following criteria: (i) the size of the Hunting Areas, which is a determining factor, (ii) estimates of the temporal trends of animal populations made by MEFCP decentralised agents and conservation programme staff, (iii) monitoring of the success rates of hunting companies, (iv) analysis of hunting effort and quota realization rates, (v) monitoring of the quality - size - of the trophies harvested. These different methods are grouped under the generic term of adaptive management (WWF, 1997).

4.2. LEOPARD QUOTAS AND OFFTAKES

4.2.1. Quotas allocated and realized

Until the start of the politico-military crisis in CAR in 2012/2013, the annual quota was 40 leopards for an average annual offtake of 16 i.e., an average quota realization rate (or offtake rate) of 40% (Table 6). With this crisis and the massive departure of hunting companies (see § 4.4), the harvest has fallen drastically to an average of 0.5 leopard per year since the 2014/2015 season. And no leopard has been taken during the last 3 seasons. After the crisis, quotas were adjusted accordingly. Thus, since the 2015/2016 season, an average of 5.4 leopards has been allocated each year.

The only leopards harvested since 2014/2015 were in the hunting areas of the CCA. However, considering the minimum estimate of 164 leopards made in this region (see § 2.3.1, Table 4), and the average annual harvest of 0.5, this means that an annual maximum of only 0.3% of the population would have been harvested since 2014/2015 in this region. Furthermore, with a total area of 72,500 km^2 of Protected Areas, the average annual harvest rate since 2014/2015 has been 0.007 leopard/1,000 km^2 in the CCA region. It has thus remained well below recommended thresholds, for example 1 leopard/1,000 km^2 in Tanzania (Packer et al., 2011).

Table 6. *Leopard quotas and harvest in CAR since the 2002/2003 hunting season (Source:* Direction de la Faune et des Aires Protégées, *MEFCP).*

Hunting season	Leopard quota	Leopard offtake	Quota realization rate
2002/2003	40	8	20
2003/2004	40	15	37.5
2004/2005	40	12	30
2005/2006	40	20	50
2006/2007	40	16	40
2007/2008	40	20	50
*	*	*	*
2012/2013	40	23	57.5
*	*	*	*
2014/2015	40	1	2.5
2015/2016	4	1	25
2016/2017	9	1	11.1
2017/2018	5	0	0
2018/2019	5	0	0
2019/2020	4	0	0

* Missing years correspond to data lost, damaged, or destroyed during the years of turmoil the country went through.

4.3. BENEFITS OF TOURIST HUNTING IN CAR

4.3.1. Ecological benefits

With the Hunting Areas (conventional Hunting Areas and ZCV), CAR's Protected Areas are almost twice as large as if they were limited to National Parks and Reserves alone. Thus, all the biodiversity in the National Parks and CCA benefits from the buffer effect of the Hunting Zones, which, when leased:

- Hold the influx of transhumant pastoralists and their huge herds of livestock, unanimously recognised as the main threat to the region's ecosystems;
- Limit poaching pressure, both large-scale and local poaching; the lease agreement requires the leasing company to support the wildlife Authority in the fight against poaching.

In addition, strictly protected wild animal species (non-game species) are also effectively protected by the leased Hunting Zones, including charismatic species as the giraffe in northern CAR (the endangered subspecies of the Kordofan giraffe, *Giraffa camelopardalis antiquorum*) and the chimpanzee in the east of the country (the endangered subspecies of the Central chimpanzee, *Pan troglodytes troglodytes*).

Hunting Areas in CAR, when leased by hunting companies that do invest in their management, play an essential role in the defence of natural habitats and the protection of the wildlife that resides there (Cooney et al., 2017). They help to slow down human expansion on natural habitats (Lindsey et al., 2007) and strengthen networks of protected areas. In addition, hunting zones, located on the periphery of National Parks and other Reserves, act as buffers reducing the edge effect of human activities (Woodroffe and Ginsberg, 1998). In addition, they act as biological corridors and contribute to the development of local communities (Bouché et al., 2009, 2010).

The buffer role of hunting areas is particularly important in countries where (and/or during periods when) photo tourism is too low for National Parks to generate enough money for their management and protection (Wilkie et al., 2001). Unfortunately, this is now being seen throughout Africa with the current COVID-19 crisis responsible for the collapse of photographic tourism in National Parks and the concomitant explosion of poaching[6]. In CAR, photographic tourism in National Parks is not developed, and has been almost non-existent since 2012. The country's National Parks and Reserves are so poorly frequented that they are not financially self-sufficient. The State is therefore struggling to develop these protected areas and ensure their continued protection (Blom et al., 2004; Roulet, 2006b).

4.3.2. Economic benefits

- **Hunting tourism**

Since the 1996-1997 hunting season, hunting tourism has generated a minimum total of 6 million Euros in CAR (minimum because data are missing for 5 seasons, Figure 6). However, due to the multiple politico-military crises and to poaching, this revenue has decreased significantly from 2003-2004 onwards. And in the 2019-2020 financial year, only 5,042 Euros were recovered. The sport hunting sector, although disrupted by poaching and insecurity, continues to generate significant revenues for some local populations and communes, and remains an important source of employment at the local level, where economic alternatives are lacking.

Thus, at the beginning of the 2000s, the hunting sector still generated more than 1,200 jobs in the country. Considering that a permanent salary sustains directly or indirectly a dozen

[6] https://www.cnbc.com/2020/04/24/coronavirus-poachers-kill-more-animals-as-tourism-to-africa-plummets.html

people, a minimum of 10,000 people benefited from the hunting tourism sector in CAR at the time. With the decline of the hunting activity, these figures have decreased.

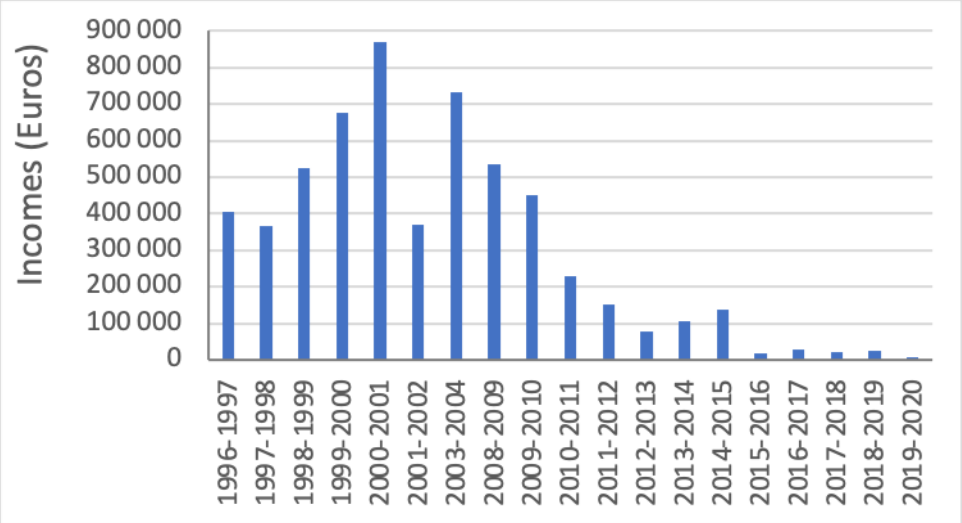


Figure 6: *Revenues generated by sport hunting in CAR between 1996 and 2020 (Source:* Direction de la Faune et des Aires Protégées, *MEFCP).*

The amounts of the various taxes relating to hunting activities vary according to the type of hunter (hunting licence, gun licence), the species harvested (trophy fees), the surface of the Hunting Areas (concession fees), etc. Tax rates also differ at institutional levels. The modalities for setting taxes between conventional Hunting Areas and the more recently developed ZCVs also vary (Table 7 a,b). The level of decentralisation of taxes to the benefit of the beneficiary populations of the ZCVs is one of the highest in sub-Saharan Africa. The leopard is historically one of the flagship species in trophy hunting in CAR, one of the most sought-after, with the highest trophy fee and generating high annual revenues.

Table 7. *Distribution of the main taxes in a) conventional Hunting Areas, b) ZCVs in CAR (Roulet et al., 2008).*

a)

	Public Treasure (Bangui)	**Forest Fund** (MEFCPT Bangui)	**Communes** (communal budget)
	national	national	local
Permit (hunting, weapon)	100%	-	-
Guide and aspiring guide licence	-	55%	45%
Company license	45%	-	55%
Concession fees (750 FCFA x km^2 area)	-	40%	60%
Trophy fees (50% upfront)	50%	25%	25%

b)

	Public Treasure (Bangui)	**Forest Fund** (MEFCPT Bangui)	**Communes** (communal budget)	**Village communities** (community office)	**Hunting area management committee** (technical staff)
	national	national	local	local	local
Permit (hunting, weapon)	100%	-	-	-	-
Guide and aspiring guide licence	-	55%	45%	-	-
Company license	45%	-	55%	-	-
Concession fee (750 FCFA x km^2 area)	-	-	20%	50%	30%
Utilization of the ZCV (according to the value of the allocated quota)	-	-	-	50%	50%
Trophy fees (50% upfront)	-	20%	15%	30%	35%
Additional trophy fees (if animal harvested +50%)	-	20%	15%	30%	35%
Meat trade	-	-	-	100%	-

- **Photographic tourism**

In comparison, photographic tourism in Protected Areas is practically non-existent nowadays, except in the Dzanga-Sangha National Park (south-west) where WWF organises international tourist trips to visit the *Dzanga Baïe* saltlicks (forest elephants being the main attraction) and groups of gorillas that have undergone habituation programmes by teams of primatologists working on site. The former tourist camps of the Manovo-Gounda-St Floris National Park have not received any visitors in recent years (financial management issues, obsolete infrastructures, security problems on the roads etc.). The revenues generated by photographic tourism thus represent only a few hundred thousand CFA francs.

4.3.3. Social benefits

The revenues generated by the ZCVs and DFCs contribute, on the one hand, to building and making operational socio-community infrastructures such as schools, health centres, village pharmacies and drinking water points, and, on the other hand, to carrying out surveillance operations in the ZCVs and granting maintenance payments to the elderly. Village communities also benefit from seasonally developed tracks and roads for hunting and anti-poaching needs. Part of this revenue is used to supply a microcredit fund known as the Inter-Community Eco-Development Fund (FICED).

4.4. DECLINE OF PHOTOGRAPHIC AND HUNTING TOURISM IN CAR

Historically, the number and surface of Hunting Areas have always varied in CAR. Between 1984 and 2003, the number fluctuated between 20 and 50, and the total area between 40,000 km² and 140,000 km², with no continuous trend (Roulet, 2006b).

In the 1980s, CAR was hosting up to 400 hunting tourists per year. Before the outbreak of the politico-military crisis, these figures hovered around 200 e.g., 203 in 2004-2005, 198 in 2005-2006, 191 in 2006-2007. *Coups d'état* attempts and regime change in recent years

(particularly in 1996, then 2001 and 2003) have led to a drop in the number of these tourists e.g., 67 clients in 2002-2003. Since the end of 2012 and the start of the political-military crisis in CAR, almost all hunting tourism companies have ceased their activities. With the massive arrival of the Seleka rebels in December 2012, almost all hunting camps were looted within a few days. All the Hunting Areas in the northern and north-eastern parts of the country, hotbeds of the rebellion, were hit hard by the civil war. Fuel, vehicles, food and equipment were stolen, and hunting camps were burnt down. The financial loss combined with the galloping insecurity (with, in addition to the rebels, the concomitant presence of the *Lord's Resistance Army in the* South-East), have pushed the vast majority of these companies to close down and abandon their area(s). Of the 15 companies still in operation in 2011-2012, only 3 remained the following season, and only 2 from the 2015-2016 season onwards. That is to say, the abandonment of more than 30 Hunting Areas, for a surface area of more than 50,000 km² left to its own devices, thus open to all abuses (Figure 7). At the same time, the number of hunting tourists has fallen from around a hundred per year to less than ten since 2015-2016 (Figure 8), and revenue has collapsed (Figure 6).

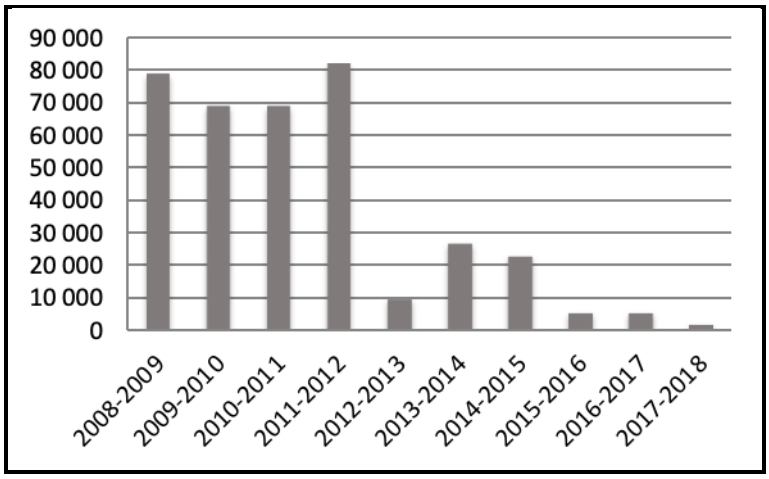


Figure 7: *Evolution of the surface area (km²) of active Hunting Areas, i.e. amended, managed, protected, with allocated quotas and client arrivals (Source:* Direction de la Faune et des Aires Protégées, *MEFCP).*

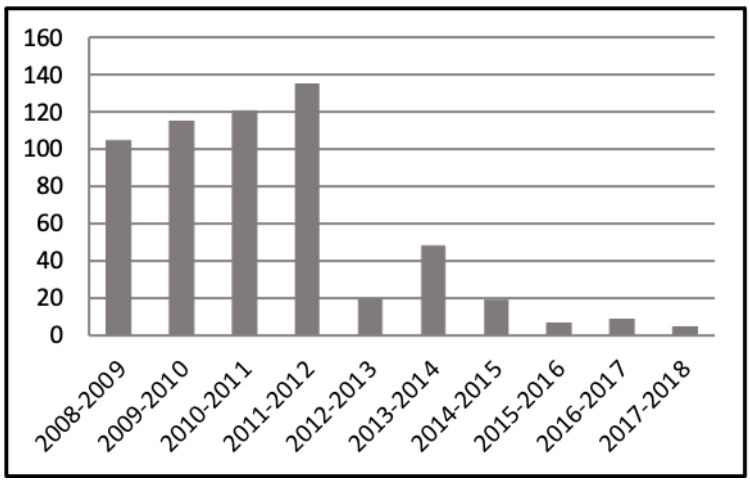


Figure 8: *Evolution of the number of hunting clients in CAR (Source:* Direction de la Faune et des Aires Protégées, *MEFCP).*

The abandonment of these huge areas of natural habitats is very quickly followed by the arrival of tens or even hundreds of thousands of transhumant cattle and their herders, but also of poachers and traffickers, mainly from Sudan and Southern Sudan, but also from Chad and even Cameroon, some with poison and heavy weapons, causing significant wildlife declines (Bouché et al., 2012; Aebischer, 2019; Aebischer et al., 2020).

5. CONCLUSION AND NON-DETRIMENT FINDING

- The leopard is still widely distributed in CAR, thanks to the combination of factors such as low human density, a large area of natural habitats unaltered by agricultural development, a very extensive network of Protected Areas, and the combined protection from the State and partners such as the European Union, NGOs and hunting companies.

- In the Chinko Conservation Area, the only area of the country where the species is still hunted by the very few hunting companies still present, the leopard population is increasing, and the current very low harvest rates do not represent a threat to the species.

- Before the political crisis of 2012/2013, when all the hunting companies were still present and covered the entire hunting network of the country, leopard harvest remained below 23 per year. From the early 2000s until the political crisis, these numbers were stable or even increased, indicating that they did not represent a threat to the leopard population in CAR.

- The leopard is a flagship species for hunting in CAR. It attracts clients and foreign currency more than most other trophy species and represents a major part of the economic spin-offs of the activity and the direct benefits returned to the communities. It is therefore one of the main species that justifies the defence of a considerable portion of the Central African Republic territory, and private sector investment in the country's numerous Hunting Areas and ZCVs. Leopard quotas are thus essential to maintain these conservation partner actors still in place today, and to bring back those who had to leave the country during the last political crisis.

- Indeed, CAR needs all the actors involved to conserve its nature. At present, these actors are extremely few:

    - the State has very few resources and concentrates them on major priority concerns: security, governance, humanitarian aid, public health, education and development;
    - The State therefore needs all the good will it can muster, so it needs the support of the civil society, which can contribute to the national effort for nature conservation;
    - In the civil society, NGOs play a key role with their own funding and their ability to raise funds from international donors: African Parks, WCS, WWF, etc.;
    - In the civil society, there is also the private sector and its economic operators: the few hunting companies that survived the 2012 tragedies are courageously playing their role and making their contribution to nature conservation in the leased concessions.

- The few actors who are still active must all be encouraged to stay in place and continue their efforts despite the ups and downs of current events and the obstacles they encounter. As far as the hunting companies are concerned, it is imperative that they can continue thanks to the quotas allocated by the administration. If these quotas are abolished 'unilaterally and without consultation' by the countries that send tourists, blocking the import of trophies, the few actors still present in the field will be forced to leave the area and make way for the environmental criminals. Herds of cattle will replace wildlife. Poachers in large numbers will replace the few legal tourist hunters. Slash-and-burn agriculture and charcoal making will destroy natural habitats. In the end, developed countries would be responsible for environmental degradation in a developing country.

- Based on these observations and considerations, the leopard harvest in CAR has so far been and still is not detrimental to the species, and the quota of 40 approved by CITES is sustainable. We therefore recommend that this export quota included in Resolution Conf. 10.14 (Rev. CoP14), a quota for leopard hunting trophies and skins for personal use, be maintained.

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