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Conservation overstretch and long-term decline of wildlife and tourism in the Central African savannas

Paul Scholte[1] | **Olivier Pays**[2,3] | **Saleh Adam**[4] | **Bertrand Chardonnet**[5] | **Hervé Fritz**[3,6] | **Jean-Baptiste Mamang**[7] | **Herbert H. T. Prins**[8] | **Pierre-Cyril Renaud**[2,3] | **Patrick Tadjo**[4] | **Mark Moritz**[9]

[1] Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Addis Ababa, Ethiopia

[2] LETG-Angers, UMR 6554 CNRS, Université d'Angers, Angers, France

[3] REHABS International Research Laboratory, CNRS-Université de Lyon 1-Nelson Mandela University, George, South Africa

[4] Ministry of Forestry and Wildlife, Garoua, Cameroon

[5] African Protected Areas & Wildlife, Paris, France

[6] Sustainability Research Unit, Nelson Mandela Metropolitan University, George, South Africa

[7] Anti-Poaching Unit, Economic Community of Central African States, Libreville, Gabon

[8] Animal Sciences Group, Wageningen University, Wageningen, The Netherlands

[9] Department of Anthropology, The Ohio State University, Columbus, Ohio, USA

Correspondence
Paul Scholte, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), P.O. Box 100009, Addis Ababa, Ethiopia.
Email: PaulT.Scholte@gmail.com

Article Impact Statement
Conservation overstretch—too few resources to protect vast areas—results in wildlife declines in Central Africa.

Abstract

When in 2010 the world's governments pledged to increase protected area coverage to 17% of the world's land surface, several Central African countries had already set aside 25% of their northern savannas for conservation. To evaluate the effectiveness of this commitment, we analyzed the results of 68 multispecies surveys conducted in the seven main savanna national parks in Central Africa (1960–2017). We also assembled information on potential drivers of large herbivore population trends (rainfall and number of rangers) and on tourist numbers and revenues. In six out of the seven parks, wild large herbivore populations declined dramatically over time, livestock numbers increased severalfold, and tourism, the pillar under a once thriving local wildlife industry, collapsed. Zakouma National Park (Chad) stood out because its large herbivore populations increased, an increase that was positively correlated with rainfall and number of rangers (a proxy for management inputs). With increasing insecurity and declining revenues, governments find themselves confronted with too few resources to protect vast areas. To deal with this conversation overstretch, we propose to extend the repeatedly promoted solutions—scaled up funding, enhanced management—with a strategic retreat, focusing scarce resources on smaller areas to save wildlife in the Central African savannas.

KEYWORDS
insecurity, large herbivores, livestock, protected areas, tourism, trophy hunting

Sobredimensionamiento de la Conservación y la Declinación a Largo Plazo de la Fauna y el Turismo en las Sabanas de África Central

Resumen: Cuando los gobiernos del mundo se comprometieron en 2010 a incrementar la cobertura de áreas protegidas al 17% de la superficie terrestre del planeta, varios países del centro de África ya habían dispuesto el 25% de sus sabanas ubicadas al norte de la región para la conservación. Para evaluar la efectividad de este compromiso, analizamos los resultados de 68 censos multiespecies realizados en los siete parques nacionales principales de la sabana en África Central (1960-2017). También ensamblamos información sobre los causantes principales de las tendencias poblacionales de los grandes herbívoros (lluvias, número de guardaparques) y sobre las cifras e ingresos del turismo. En seis de los siete parques, las poblaciones de los grandes herbívoros silvestres declinaron dramáticamente con el tiempo, el número de cabezas de ganado incrementó varias veces y el turismo, el pilar de una industria faunística próspera en su momento, colapsó. El Parque Nacional Zakouma en Chad resaltó debido a que las poblaciones de herbívoros grandes incrementaron en esta

localidad, un incremento que estuvo relacionado positivamente con las lluvias y el número de guardabosques (un sustituto para las aportaciones de manejo). Con el incremento en la inseguridad y la declinación de los ingresos, los gobiernos se encuentran de frente con muy pocos recursos para proteger áreas extensas. Para afrontar este sobredimensionamiento de la conservación, proponemos ampliar las soluciones que se promueven repetidamente – incrementos al financiamiento, manejo mejorado – con un repliegue estratégico, el cual enfoque los recursos escasos en las áreas más pequeñas para rescatar a la fauna de las sabanas del centro de África.

PALABRAS CLAVE
áreas protegidas, caza de trofeos, ganado, herbívoros grandes, inseguridad, turismo

INTRODUCTION

At the 2010 Convention on Biological Diversity summit, the world's governments agreed to expand protected areas to 17% of the world's land surface by 2020. Pending upcoming negotiations, this may be raised to 30% by 2030. Although these percentages are considered too low by some (Wilson, 2016), the annual costs of this commitment are considerable, especially for low-income countries, and were estimated at US$76 billion across all countries (McCarthy et al., 2012). Since the 1970s, the Central African countries of Chad, Cameroon, Central African Republic (CAR), and Democratic Republic of Congo (DRC) have set aside 25% of their northern savannas for conservation. We examined whether this commitment of 245,000 km^2 of conservation areas—the size of the United Kingdom—has been effective in protecting wildlife in the savannas of Central Africa.

Over the last decade, the decline of large wild herbivore populations has been documented for protected areas across West, Central, and East Africa (e.g., Caro & Scholte, 2007; Craigie et al., 2010; Ogutu et al., 2011). The reasons behind these declines have seldom been examined, which hampers the development of effective conservation policies (Scholte, 2011). Thus, we sought to understand the observed trends in large herbivore populations and document related economic changes. We examined the long-term trends of large herbivore populations based on 68 aerial and terrestrial surveys conducted from 1960 to 2017 in the seven main parks of the Central African savannas. We explored a set of potential drivers over this same time span that might help explain the observed population trends (Scholte, 2011). In addition, we examined changes in the number of tourists and amount of tourist revenues. We expected parks with negative conservation outcomes (i.e., declining wild herbivore populations) to have reduced conservation inputs (budgets and rangers), increasing pressures (human and livestock numbers), and reduced socioeconomic benefits (tourism) (Maxwell et al., 2020).

METHODS

Study area

We concentrated on the Central African savannas, as characterized by the East Sudanian savanna ecoregion. These savannas cover 1.06 million km^2, 25% of which has been conserved as national parks, game reserves, or low-intensity trophy-hunting zones (Doumenge et al., 2015; Dinerstein et al., 2017). This ecoregion had important local photographic tourism and trophy-hunting industries (Lescuyer et al., 2016; Roulet, 2004), and countries within it have comparable legal-political frameworks (Doumenge et al., 2015).

Large herbivore surveys

We focused on large, wild herbivores—elephant (*Loxodonta africana*), giraffe (*Giraffa camelopardalis*), buffalo (*Syncerus caffer*), and 10 antelope species (*Alcelaphus, Damaliscus, Eudorcas, Hippotragus, Kobus, Ourebia, Redunca*, and *Tragelaphus*)—as indicators of conservation outcomes because of their role as umbrella species, as suggested by the designation of six of the seven Central African national parks as important bird areas (Table 1; Fishpool & Evans, 2001; Macdonald et al., 2013); their economic value for tourism (Lescuyer et al., 2016); and the availability of long-term survey data (Scholte, 2011). Large herbivores, detectable through direct observations in multispecies aerial and terrestrial surveys, are >25 kg (e.g., red-fronted gazelle [*Eudorcas rufifrons*]) in the open savanna of Waza and Zakouma or >50 kg (e.g., kob [*Kobus kob*]) in the wooded savannas of Bénoué, Bouba Ndjida, CAR, and Garamba (Jachmann, 2002). The abundance of large herbivores was expressed as total metabolic biomass, based on species unit mass to the power 0.75 (kilograms), which allowed for comparison across species, including livestock (Cumming & Cumming, 2003).

Our analysis is based on data from the seven main savanna parks, selected based on criteria of size (>1700 km^2) and availability of at least four multispecies surveys of large herbivores conducted within the past three to five decades. Of the 68 aerial and terrestrial surveys, 38 are sample counts, of which 20 have information on confidence intervals (CIs); 30 total counts dominate recent time-series data, for more details, see Appendix S1.

Tourism

The number of tourists in the three national parks in North Cameroon, Waza, Bénoué, and Bouba Ndjida was based on internal reports of the Ministry of Forestry and Wildlife

TABLE 1 Details of protected areas, drivers of change, revenue sources, and main insecurity events in the Central African savannas[a]

Protected area, country[b]	Size (km^2)[b]	Designation[b]	Management agency[c]	Average rainfall reference station (mm $year^{-1}$)[a]	Human population density (no. km^{-2})[d]	Ranger number start-end (average)[a]	Revenue source[e]	Main insecurity event
Waza National Park, Cameroon	1700	Biosphere Reserve, Important Bird Area	state	575	47	10–30 (20)	tourism	2010: Boko Haram Nigeria 2014: Boko Haram in surrounding area, arrival pastoralists fleeing Boko Haram[f]
Bouba Ndjida National Park, Cameroon	2200	none	state	1489	16	7–30 (19.6)	tourism in park, hunting in surrounding hunting zones	2010–2012: cross-border poaching elephants by people on horseback 2014: arrival pastoralists fleeing Boko Haram[g]
Bénoué National Park, Cameroon	1800	World Heritage, Biosphere Reserve, Important Bird Area	state	1489	23	6–31 (22.1)	tourism in park, hunting in surrounding hunting zones	2014: arrival pastoralists fleeing Boko Haram[g]
Zakouma National Park, Chad	3300	Important Bird Area	state, since 2010 private	1017	4	30–72 (61.5)	tourism	1979–1982: civil war 2005–2009: Darfur conflict 2006–2008: rebel attacks on capital N'djamena, elephant poaching by people on horseback (from Darfur?)[h]
North Central African Republic, including Bamingui-Bangoran, Manova-Gounda-St. Floris parks and surrounding hunting zones	65,000	World Heritage, Important Bird Area	state, since 2017 private, hunting zones are managed privately	1125	3	30–37 (64.4)	hunting in surrounding hunting zones	1980s onward: poaching groups from Sudan and Chad 2012–2015: Seleka insurgency[i]
Garamba National Park, DRC	5350	World Heritage, Important Bird Area	state, since 2005 private	1305[j]	7	NA-288 (NA)	tourism	1996–1997: rebels occupying park 2003–2005: invasion by people on horseback 2009: attacks Lord Resistance Army[i]

[a]For drivers that fluctuate over time, see Appendix S5.
[b]Doumenge et al. (2015).
[c]Scholte et al. (2021).
[d]Human population within 50 km of the park boundary, situation in 2000 (about halfway through the data time series) (Brugière et al., 2015).
[e]Lescuyer et al. (2016); Roulet (2004); Scholte (2021a).
[f]Moritz et al. (2019); Pennaz et al. (2018); Scholte (2021b).
[g]Pennaz et al. (2018).
[h]Debos (2016).
[i]Lombard (2020).
[j]Hillmann Smith et al. (2015).

delegations of Far North and North Cameroon reported in Flizot (1962, 1968, 1974) and complemented with data we collected. Scholte (2005) compiled data for Waza National Park until 2003, which was updated in 2020 (Scholte, 2021b).

The number of trophy hunters in Cameroon (1968–1977) was based on Esser (1983) and for later years on Njoya (2008), complemented by internal reports of the North Region Delegation of the Ministry of Forestry and Wildlife (Lescuyer et al., 2016). Because hunting companies are reluctant to share data on revenues, we did not have data other than estimates for 2012 (Lescuyer et al., 2016). We, therefore, used hunting taxes from the same sources to estimate hunter numbers (Esser [1983], Njoya [2008], and Lescuyer et al. [2016] Internal Ministry of Forestry and Wildlife reports). Taxes constituted an estimated 20% of trophy hunting revenues at the individual trophy hunting enterprises in Cameroon (Lescuyer et al., 2016).

We obtained numbers of photographic tourists to Zakouma National Park (Chad) from the park's internal tourism reports. Revenues of photographic tourism in Zakouma National Park were based on the revenues of the two lodges in the park. Revenues included most of the spending of tourists inside the park, but excluded transport costs to the parks and can, therefore, be considered local revenues.

The number of trophy hunters in CAR from 1997 to 2007 was based on Roulet (2004) and Roulet et al. (2008) and was supplemented with data from internal reports and exchanges with wildlife service personnel.

Numbers of trophy hunters in Chad and around Garamba (DRC) and photographic tourists in North CAR and Garamba are negligible and were not used in our analyses (Hillman Smith et al., 2015).

Drivers

Five-year rainfall running averages were calculated from historical data from rainfall stations that were closest to the protected areas and had long-term data: Ndjamena (Waza), Sarh (Zakouma), Ngaoundéré (Bénoué and Bouba Ndjida), and Ndélé (CAR) (Beauvilain, 1995; Doukpolo, 2014). We updated the averages with data from the national meteorological services. There were no systematic annual rainfall data available for Garamba.

The number of park rangers was used as a proxy for management inputs and budgets (Bruner et al., 2001) and was obtained from annual reports and communications from park wardens and wildlife authorities (Flizot, 1962, 1968, 1974; Scholte, 2005). There were no annual data available on the number of park rangers in Garamba.

Data analyses

To accommodate the heterogeneity of the 68 surveys, we modeled the change of metabolic biomass of large wild herbivores over time with generalized additive models (GAM), which have been used to analyze wildlife trends (Ogutu et al., 2011). We included year as a fixed factor with a negative binomial error distribution and log-link function and used a cubic B-spline covariance structure with a cubic difference penalty on the B-spline coefficients based on the gam function in the mgcv R package (Eilers & Marx, 1996; Wood, 2006). For GAMs, chi-square (χ^2) tests with estimated degree of freedom were used to assess the significance of model smooth terms (i.e., time) (Wood, 2006). These tests give an approximate p value for the null hypothesis (Wood, 2013); as for gams, the likelihood ratio statistic did not follow a χ^2 distribution (Hastie & Tibshirani, 1990). Confidence intervals around predicted values (indicating uncertainty) increased steeply with long bouts between consecutive surveys. We, therefore, checked that significant trends over time were unequivocal by plotting fitted values (±CI). The same procedure was applied for metabolic biomass of livestock, the number of tourists, tourism taxes and revenues, and numbers of rangers.

Rainfall variation over time (i.e., deviation of 5-year average annual value) was examined using generalized least-squares (GLS) regression based on a first-order autoregressive procedure with correlation = corAR1 and gls function in the nlme R package (Zuur et al., 2009).

To test for the effects of the potential drivers of rainfall and rangers on wild and domestic herbivore biomass in the protected areas, as well as the number of tourists, tourism taxes, and revenues, we used GLS regressions based on a first-order autoregressive procedure. When data were not available from the same years, regressions were performed using predicted values from GAM and regression models described above. When possible, all independent variables were included in a comprehensive full model for the larger data sets. When colinearity between independent variables occurred, drivers were tested separately.

RESULTS

There was an overall striking decline in large wild herbivore populations in the seven Central African savanna main national parks (Figure 1). Since the early 1980s, populations of wild, large herbivores declined steadily in the national parks in Cameroon ($\chi^2 > 5.412$, df > 1.00, $p < 0.020$) and in North CAR ($\chi^2 = 218.60$, est. df $= 3.05$, $p < 0.001$) and in Garamba National Park, DRC ($\chi^2 = 17.78$, est. df $= 1$, $p<0.001$). In contrast, in Zakouma National Park (Chad) wild, large herbivore numbers increased steadily since the mid-1980s ($\chi^2 = 14.90$, est. df $= 1.00$, $p < 0.001$).

In the 1980s, pastoralists from Chad and Sudan moved into conservation areas of North CAR with their livestock ($\chi^2 = 13.39$, est. df $= 2.32$, $p = 0.002$). In Cameroon, livestock movement into national parks and hunting zones was more recent ($\chi^2 > 42.02$, est. df > 2.26, $p < 0.001$). The decline in large herbivore populations generally started before the number of livestock increased in protected areas (Figure 1). Statistical details on the variation of wild and domestic herbivores with time are in Appendix S2.

There were several possible interrelated causes for the long-term decline of large herbivore populations in the Central African savannas, including rainfall variability, decreased numbers of park rangers, and low operational budgets (Table 1).

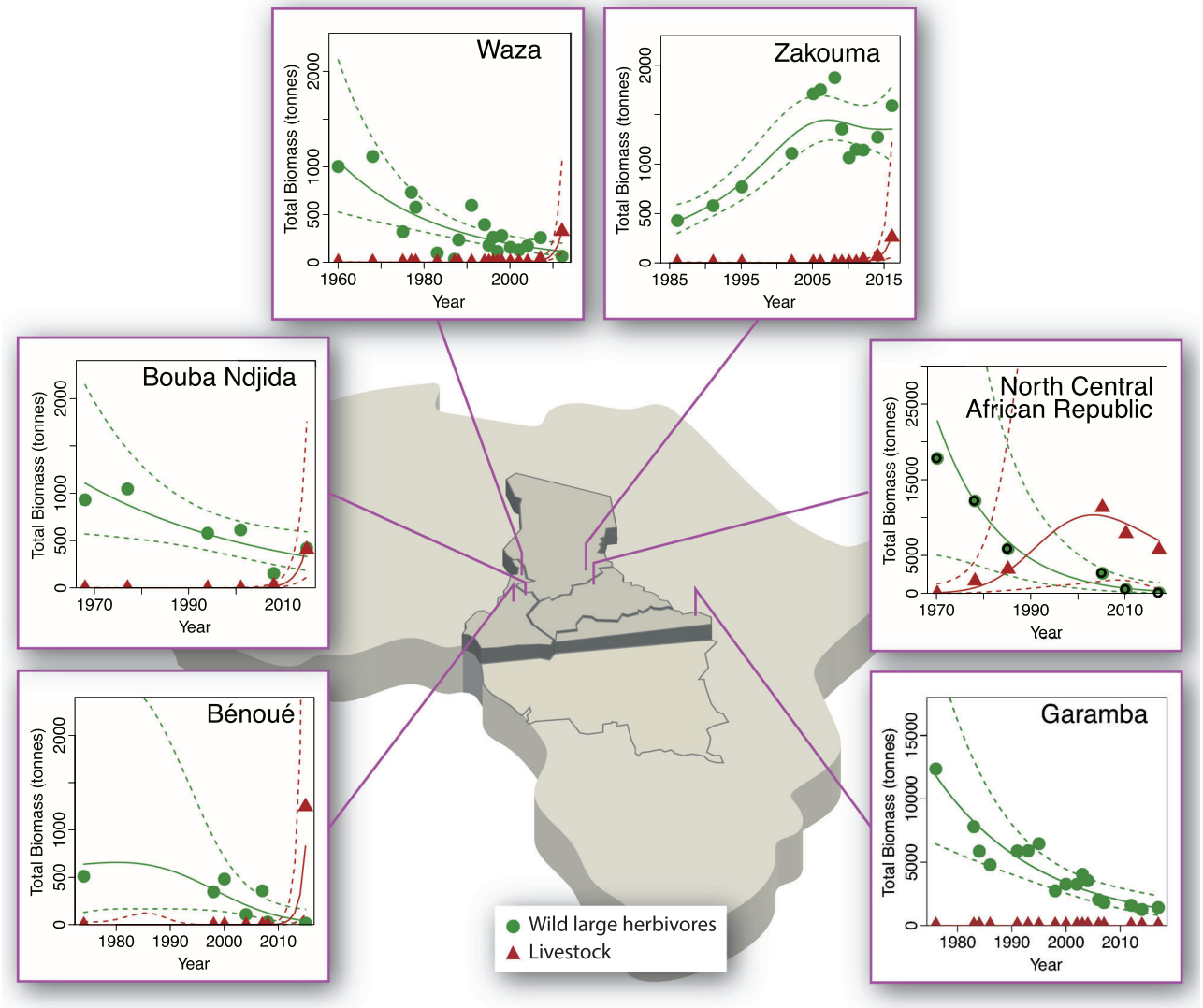

FIGURE 1 Total biomass of large wild herbivores and livestock in national parks in the Central African savannas, 1960–2017 (solid lines, model terms; dashed lines, 95% CIs). Smoothed relationships between total metabolic biomass and time are from nonparametric generalized additive models. The North Central African Republic contains Bamingui-Bangoran National Park, Manovo-Gounda-St. Floris National Park, and adjacent trophy-hunting areas. The national parks Waza, Bouba Ndjida, and Bénoué are in Cameroon, and Zakouma is in Chad (Table 1)

First, rainfall in the Central African savannas on average decreased over the last decades (Appendices S3 & S5). In two of the parks—Zakouma and Bouba Ndjida—the amount of rainfall was correlated with lower herbivore populations (respectively, $\beta = 0.4$ [SE 0.190], $F = 119.1$, $p < 0.001$; $\beta = 11.4$ [SE 3.1], $F = 13.5$, $p < 0.05$) (Appendix S4). Second, the number of rangers fluctuated over time ($\chi^2 > 17.02$, est. df > 3.79, $p < 0.003$) (Appendix S5). Only in Zakouma did the number of rangers increase consistently over time ($\chi^2 = 10.85$, est. df $= 1.54$, $p = 0.005$), and we found that when the number of park rangers increased, large herbivore populations increased as well ($\beta = 1.3$ [SE 0.2], $F = 45.5$, $p < 0.001$) (Appendix S4). Third, since the late 1980s, the operational budget of Zakouma met its financial needs, currently an annual US$800/km^2 (Lindsey et al., 2018; Scholte et al., 2021). Garamba (>2005) and Bouba Ndjida (>2016) only recently had adequate budgets. These three parks represented <10% of the Central African conservation area (Table 1).

The number of tourists ($\chi^2 > 5.82$, est. df > 4.99, $p < 0.001$) and trophy hunters ($\chi^2 > 56.51$, est. df > 4.36, $p < 0.001$) and the revenues they generated ($\chi^2 > 25.9$, est. df > 1.91, $p < 0.001$) recently collapsed (Figure 2). Reaching its peak in the mid-1980s, the number of tourists to the Cameroonian national parks declined steadily and eventually collapsed when Boko Haram attacks in Far North Cameroon started in 2013. The numbers of trophy hunters in Cameroon remained remarkably stable, although hunting revenues declined. In the CAR, trophy hunting collapsed. Garamba's small-scale tourism based on domesticated elephants ended decades ago because of insecurity (Hillman Smith et al., 2015).

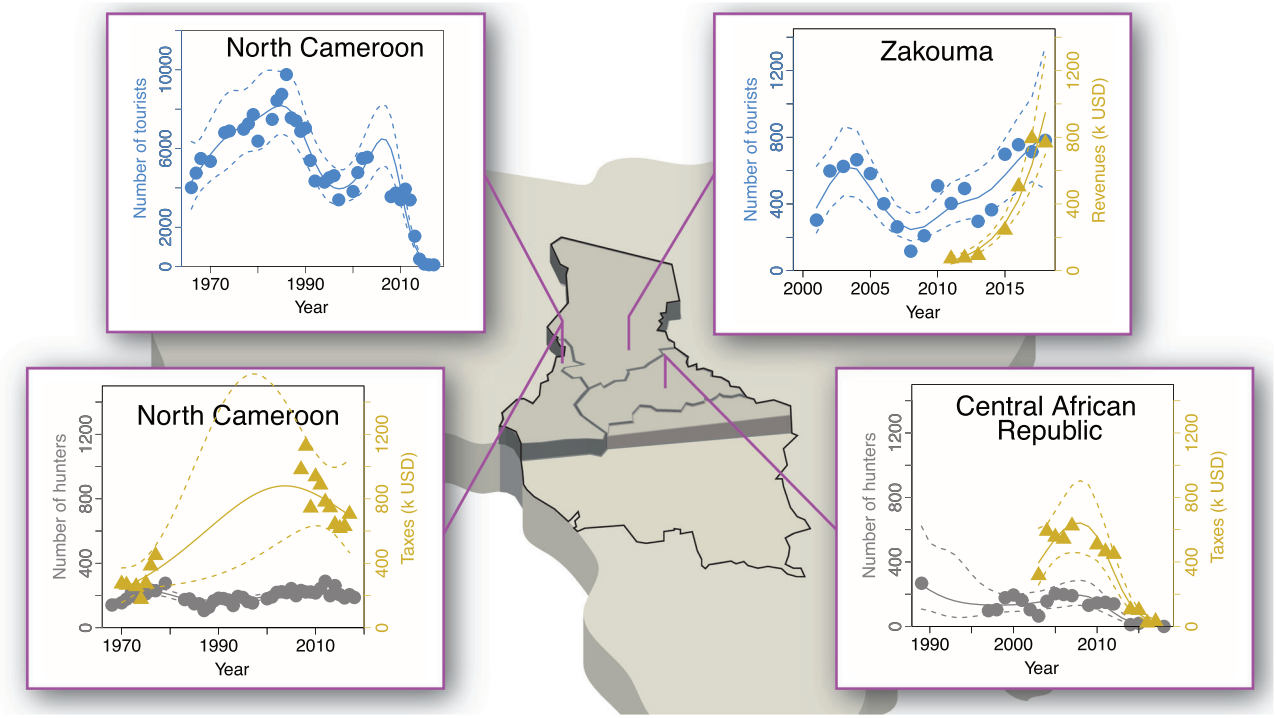

FIGURE 2 Number of tourists in and revenues generated for protected areas in the Central African savannas, 1965–2018 (solid, lines, model terms; dashed lines, 95% CIs). Smoothed relationships between the numbers of tourists (including trophy hunters) and revenues (including taxes) are from nonparametric generalized additive models. North Cameroon (tourists) shows results for the national parks Waza, Bouba Ndjida and Bénoué, and North Cameroon (hunting) shows results for the hunting zones surrounding Bouba Ndjida and Bénoué (see also Table 1)

DISCUSSION

Until the early 2000s, large, wild herbivore populations in the main protected areas of the Central African savannas declined less dramatically compared with large mammals in West Africa (Craigie et al., 2010; Scholte, 2011). The dynamics of underlying drivers differed. In Central Africa, rainfall rebounded following the 1970–1980s droughts; human pressures, including livestock, generally declined; and protected areas were conserved with limited inputs and funding (Scholte, 2011). We found that large wild herbivore declines in the Central African savannas continued to decline over the past 10–20 years, was followed by an increase in the number of livestock, and now resembles the situation in West Africa (Craigie et al., 2010).

We reviewed the explored drivers to build an understanding of the reasons behind the recently accelerated wildlife declines in the Central African savannas. Livestock dominated all parks except Zakouma (Chad) and Garamba (DRC), the latter to the south of the pastoralists' range (Moritz et al., 2013). Our results indicated that pastoralists, reportedly driven by insecurity (Table 1), moved into parks that were earlier emptied of wildlife. However, the presence of livestock may now impede wildlife recovery through spatial interference or resource competition (Voeten & Prins, 1999; Hibert et al., 2010). Rainfall—a driver of primary production—was correlated with large herbivore trends in the parks with medium and high wild herbivores biomass (i.e., Bouba Ndjida and Zakouma). We hypothesize that for the five parks with low wild herbivores' biomass, human influences obscure such natural processes. For example, Bénoué experienced a three-fold increase in human population due to immigration from 1998 to 2013, which negatively correlates with large wild herbivore biomass (Adam, 2013; Scholte & de Groot, 2010). The number of rangers, a proxy for management inputs to tropical wildlife conservation (Bruner et al., 2001), was positively correlated with wild herbivore biomass in Zakouma, but fluctuated in the other parks (Appendix S5). Zakouma stood out due to long-term (>30 years) financial support from the European Union and a political commitment from the Chadian government (Scholte et al., 2018). In addition to these general drivers, there were site and time-specific drivers, such as upstream dam construction in Waza (1979) (Scholte et al., 2007) and massive elephant poaching in Zakouma (2006–2009), which stemmed from an overspill of the conflict in neighboring Darfur when conservation efforts were temporarily reduced (Poilecot, 2010). None of the explored drivers alone explained the observed declines. Our results hint at the existence of interactions between drivers, which have also been observed in individual parks (Scholte et al., 2007). This interaction holds in particular for insecurity that affects parks in the Central African savannas by triggering livestock movements into the last remaining wild places and ultimately inside the parks.

We considered large wild herbivores umbrella species (MacDonald et al., 2013). Two other wildlife groups—top mammal and bird predators—allow comparison, although they have not

been surveyed following our applied criteria for rigourousness (see Methods). Of the top mammal predators, wild dogs have been extirpated, cheetahs are found in very low numbers in Zakouma only, and lions have declined in the three Cameroonian protected areas (no quantitative trend data were available for the other protected areas) (Bauer et al. 2015; Brugiere et al. 2015). Birds of prey populations in North Cameroon showed declines similar to those of the large herbivore species in Waza national park and its environs, whereas surveys from the Bénoué-Bouba Ndjida protected area complex suggested more stable populations (Buij et al. 2013). Declines of top mammal predators were more pronounced than wild large herbivore declines, whereas birds of prey showed more limited declines. Based on expert opinions, top mammal predator declines have been correlated with declines in their prey, primarily wild large herbivores (Lindsey et al. 2017). Declines of birds of prey have been primarily linked to changes in land use, stressing the importance of larger protected areas (4000 km^2) (Buij et al. 2013). We conclude that large herbivores can, indeed, be considered umbrella species, but there is the need to clarify specific requirements of other taxa in redesigning protected areas.

Large wild herbivores stand out for their economic importance. For decades, tourism has been the pillar of a thriving local wildlife industry, attracting governmental investments (Roulet, 2004; Lescuyer et al., 2016). The declining number of photographic tourists in North Cameroon runs in parallel with declining large wild herbivore population numbers, a relation sometimes reported as causal (Naidoo et al., 2016). We suggest an alternative explanation: reduced governmental investments in park management and tourist infrastructure due to structural adjustments since 1990 (Tchoungui et al., 1995). The already ailing photographic tourism crashed with the attacks of Boko Haram in Waza in 2013, which also affected the parks outside their direct influence (Pennaz et al., 2018; Scholte 2021b). Trophy hunting seemed to be more resilient to insecurity, as shown in Cameroon; its collapse in the CAR resulted from severe insecurity. In addition to insecurity, hunting enterprises, which were already barely profitable in 2012, are under pressure by a globally declining trophy-hunting industry (Lescuyer et al., 2016; Lindsey et al., 2016). We conclude that not only has wildlife seriously declined, but the economic basis of tourism and hunting on which conservation has long relied has also almost disappeared.

These developments are in line with our initial expectations that parks with declining wild herbivore populations are confronted with reduced conservation inputs, increasing security threats, and reduced socioeconomic benefits. Moreover, the case of Zakouma suggests that despite the threats of droughts and insecurity, wildlife and tourism may thrive in parks with long-term funding and political support. The success of Zakouma—which represents 2% of the Central African conservation area—notwithstanding, the message is unmistaken and grave: declining large wild herbivore populations, massive intrusion of livestock, and collapse in tourism revenues are the results of conservation overstretch in the Central African savannas in which conservation areas too large and expensive to manage.

Currently, conservation in the Central African savannas is at an impasse. To save the remaining wildlife, long-term funding needs to be increased by an order of magnitude (McCarthy et al., 2012; Lindsey et al., 2018), but insecurity in the region prevents this from happening. First, tourists are unlikely to return because of the insecurity, which is depriving protected areas from critical revenue sources and is amplified by the COVID-19 crisis (Lindsey et al., 2020). Second, scaling up external funding by an order of magnitude is not realistic because funders may be reluctant to commit to long-term projects given the bleak security prospects of the region. Third, militarized conservation in high-risk regions negatively affects neighboring communities and will damage the reputations of agencies and donors involved in these parks (Duffy et al., 2019).

Short-term financial injections are not a solution if it is not accompanied by structural changes to conservation practices. After the elephant slaughter in Bouba Ndjida in 2012, international donors raised a record amount of US$60 million. Yet, a decade later, the protection of Bouba Ndjida and neighboring parks remains challenging. Structural changes in conservation practices can involve the delegation of day-to-day park management to private partners with more technical and administrative capacities than governments. This delegated management has become common in the Central African savannas and includes Garamba (since 2005), Zakouma (2010), and North CAR (2018) (Scholte et al., 2018). Increased funding and improved park management have been repeatedly promoted to stop wildlife declines (e.g., Bruner et al., 2001; Lindsey et al., 2018; Maxwell et al., 2020). However, the absence of recovery of wildlife populations in Garamba (Figure 1), as well as our experience in conservation in Central Africa over the last decades, suggests that this will not be sufficient in the current insecurity context.

To save the remaining wildlife in Central Africa, it may be necessary to organize a strategic retreat, in which limited financial and human resources are focused on those areas with wildlife potential that are sufficiently large, about 4000 km^2, to support large herbivore and other wildlife populations and temporarily withdraw from those areas that are currently protected in name only. This requires the commitment of governments, donors, and conservation organization alike to channel resources from orphaned parks to the parks with wildlife potential. The case of Zakouma—the only protected area in the Central Africa savanna where wildlife populations and tourism increased—suggests that long-term commitment and concentrating funding on a few parks is a viable option.

Although downgrading, downsizing, and degazettement have been viewed as a threat to protected areas (Mascia et al., 2014), we argue that these methods, with exception of degazettement, can be used in situations of conservation overstretch. Our goal here is not to reject conservation ambitions—we share the concern that humankind is not doing enough to stop the loss of biodiversity. Instead, we propose to extend the range of solutions––scaled-up funding, improved management—with a strategic retreat, focusing scarce resources on areas where they will have the greatest probability of saving wildlife in the Central African savannas. It is our hope that from these well-protected nuclei, a viable conservation network will ultimately be rebuilt.

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ORCID

Paul Scholte https://orcid.org/0000-0003-3813-7363
Olivier Pays https://orcid.org/0000-0001-8268-1804
Hervé Fritz https://orcid.org/0000-0002-7106-3661
Herbert H. T. Prins https://orcid.org/0000-0003-1131-5107
Pierre-Cyril Renaud https://orcid.org/0000-0003-1776-4923
Mark Moritz https://orcid.org/0000-0003-0644-0069

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