THE PROTECTED AREA SYSTEM OF ETHIOPIA: DEVELOPMENT, PRESENT STATE AND PERSPECTIVES TOWARDS THE '30X30 TARGET'

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ABSTRACT

Ethiopia is well-known for its outstanding biodiversity and importance as a water tower for surrounding countries. In the mid-1960s, conservation efforts focused on creating protected areas (PAs) that excluded human exploitation and targeted tourism. National Parks, Wildlife Reserves and especially Hunting Areas dominated the country's first PA map from 1973. Fifty years later, the map for Ethiopia on the World Database on Protected Areas, showing 17 per cent of Ethiopia's land cover as PAs, is outdated. While several PAs have been added over the years, there are non-functioning and de-gazetted PAs, especially non-operational hunting areas, that have not been removed from the database. We present updated maps, showing that 14 per cent of Ethiopia is currently protected by wildlife PAs (10 per cent) and Forest Priority Areas (4 per cent). With its declining wildlife and international tourism, and the under-funding of its PAs, Ethiopia's response towards the Global Biodiversity Framework '30x30 target' should prioritise improving PA quality by i) diversifying PA governance allowing increased community ownership, ii) diversifying PA management for increased efficiency, iii) promoting investments in PAs, and iv) setting realistic management objectives. There is considerable long-term potential (post-2030) to increase the number of conservation areas by recognising the many tiny church forests and vast pastoral territories as Other area-based Effective Conservation Measures (OECMs), while stimulating PAs' economic rationale beyond international tourism.

Key words: church forests, conservation overstretch, delegated management, OECMs, protected area map

INTRODUCTION

Ethiopia has some of the richest biodiversity in Africa, occurring across a highly diverse topography (Fashing et al., 2022). The country hosts 325 mammal species, including 64 endemic species such as Walia Ibex (*Capra walie*), Mountain Nyala (*Tragelaphus buxtoni*) and the monotypic genus of Gelada (*Theropithecus gelada*). Ethiopia's avifauna includes over 881 bird species, 18 of which are endemic including the monotypic genus of Stresemann's Bush Crow (*Zavattariornis stresemanni*), making Ethiopia a premier bird-watching destination. About 253 reptile, 79 amphibian and 177 fish species are known to occur in Ethiopia, of which 26, 38 and 41 species, respectively, are endemic (Asefa et al., 2024). Ethiopia's indigenous flora includes 5,219 species of plants, 647 of which are endemic, with economically important species such as frankincense and myrrh (Demissew et al., 2021). Ethiopia is home to two of 36 global biodiversity hotspots: the Afromontane hotspot and the Horn of Africa drylands.

Ethiopia's natural resources are of great economic importance (Van Zyl, 2015). With 72 per cent of the continent's landmass above 3,200m, Ethiopia's Afromontane ecosystems are critical catchments for the Nile and Shebelle-Juba river systems on which some 100 million and 15 million people in Egypt and Sudan, as well as Somalia depend.

In the 1960s, Ethiopia started developing a protected area (PA) network to conserve its wildlife and cater for international tourism. By 2024, the network had grown to 87 wildlife PAs and 58 forest reserves called Forest
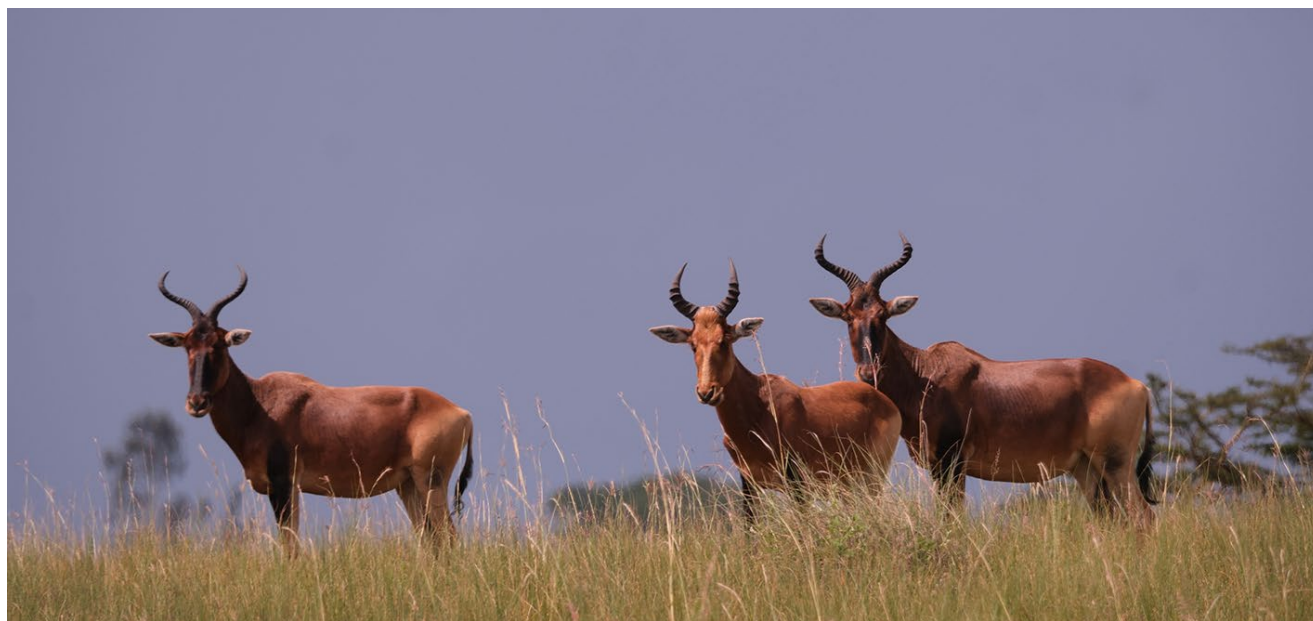
Photo1. Senkelle Swayne's hartebeest Sanctuary. Many of Ethiopia's protected areas have been created for the protection of (near-) endemic large mammals. Swayne's hartebeest is one of the few wildlife populations that are stable or increasing, likely because these parks have more (human & financial) resources © Paul Scholte, July 2024

Priority Areas (FPA). In recent years, reports have underscored the rapid decline of Ethiopia's wildlife, particularly its large mammals, even in the country's most iconic national parks (NP) (Admasu et al., 2023; Asefa et al., 2024). Several interacting factors are driving this decline, related to increasing human pressures such as livestock intrusion, agricultural expansion and habitat loss as well as limited financing for conservation (Admasu et al., 2020; Van Zyl et al., 2024). The combination of increasing human pressure and minimal financial resources resembles the situation in Central Africa where conservation is similarly overstretched (Scholte et al., 2022).

In December 2022, 188 countries, including Ethiopia, agreed to increase the area of well-managed protected and conserved areas from a global target of 17 per cent in 2020 to 30 per cent by 2030, Target 3 of the Global Biodiversity Framework (GBF), also called the 30x30 target. While evaluating national targets, it was clear that maps showing the present extent of Ethiopia's PA network were incomplete and erroneous due to outdated databases. To assist in Ethiopia's response to the 30x30 target, we charted the PA network from its creation in the mid-1960s to gain a better understanding of its present state and challenges. We present an updated map of the various PA categories in the country, setting a baseline for future efforts. We subsequently summarise ongoing discussions on improving the quality and quantity of Ethiopia's PAs. As all present PAs, including Community Conservation Areas, are under governmental governance (see below), we use 'PAs' throughout the text.

DEVELOPMENT OF ETHIOPIA'S PROTECTED AREAS SYSTEM

Ethiopia's history of intensive land use dates back centuries. This history shows examples of conservation practice, such as in 530 CE, when the Byzantine ambassador to Aksum (North Ethiopia) noted that elephants were not allowed to be harassed (Phillipson, 2012). A millennium later, Emperor Zera Yaqob (1434–1468) brought seedlings of Juniperus trees from the woodland of Wof-Washa to the Wechecha Mountain close to present Addis Ababa (Pankhurst, 1989). Many of the country's c. 35,000 church forests date back centuries (Aerts et al., 2016).

In the mid-1960s, much later than in neighbouring countries, Ethiopia began formally setting aside land areas that excluded human exploitation (Debella, 2019). At the time, Emperor Haile Selassie visited Kenya where he saw the economic benefits of PAs through tourism (Blower, 2005). In 1963, Ethiopia invited UNESCO to recommend a PA network, that with subsequent surveys by mostly Kenya-based experts, led to the establishment of Awash NP, Omo NP and Simien Mountains NP in the late 1960s (Blower, 2005; Huxley et al., 1963). Follow-up surveys paved the way for the establishment of a suite of national parks including Abijata-Shalla Lakes NP, Bale Mountains NP, Gambella NP, Mago NP and Nech Sar NP in the early to mid-1970s (Blower, 2005; Bolton, 1976; Brown, 1969). The development of Ethiopia's PA network included the creation of a marine national park and several other PAs in what has since become Eritrea (Figure S1), while wildlife sanctuaries and reserves
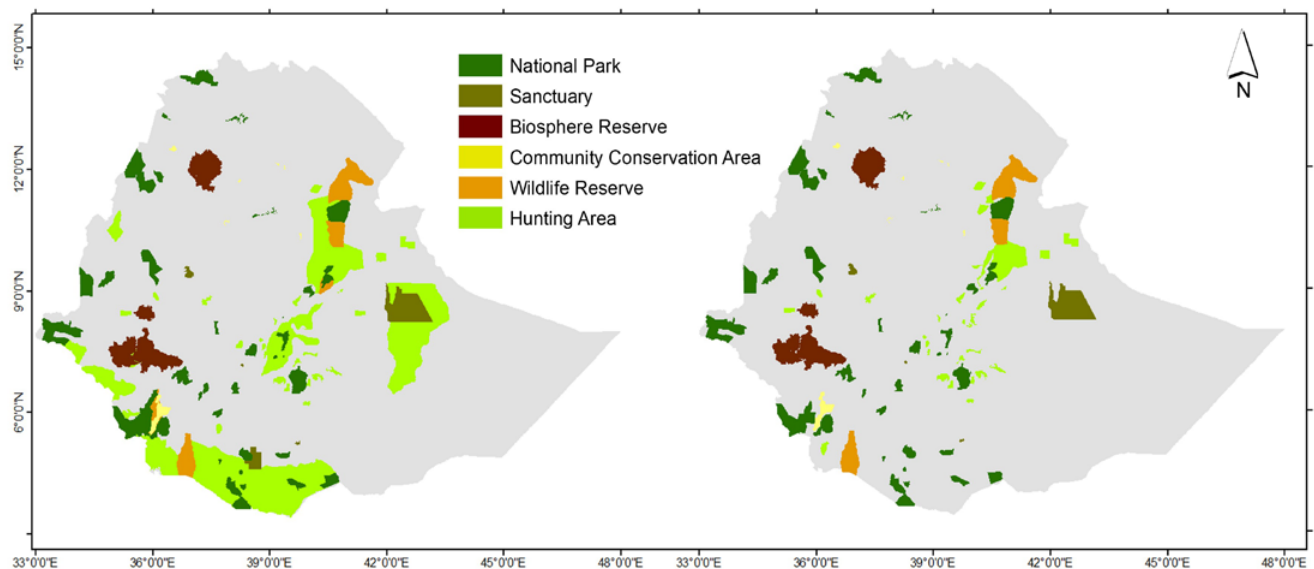
Figure 1. Wildlife Protected Area Map of Ethiopia
Figure 1A (left). Map of Ethiopia's Protected Areas as presented by the World Database on Protected Areas (UNEP-WCMC and IUCN 2024), (downloaded 25-05-2024)
Figure 1B (right) Actual wildlife protected area network in Ethiopia
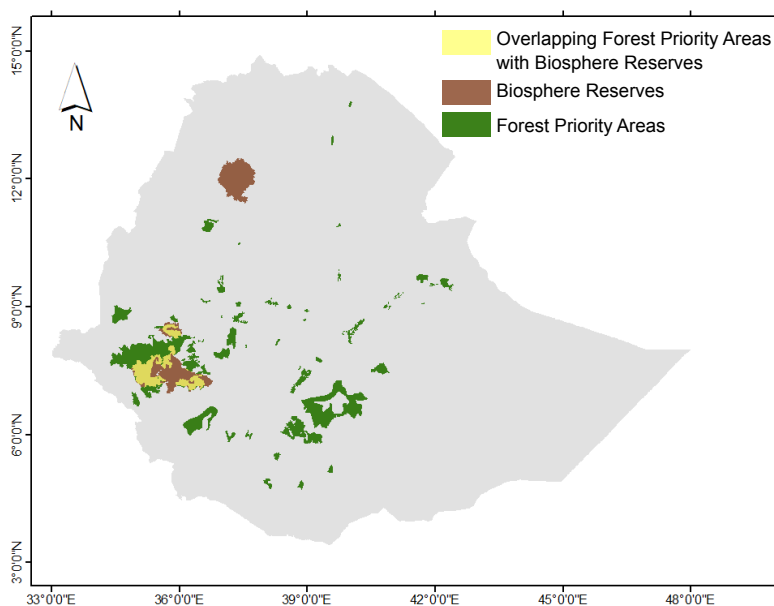
Sources: https://ebi.gov.et/biosphere/
https://afri-res.uneca.org/apps/ethiopia-national-forest-priority-areas

Figure 2. Forest Priority Areas and overlapping Biosphere reserves

were planned in the more inaccessible parts of the country. Most of Ethiopia's PAs were created to protect large mammal populations, such as the endemic Walia Ibex (Simien Mountains NP), Mountain Nyala (Bale Mountains NP), Ethiopian Wolf (*Canis simensis*) (Simien Mountains and Bale Mountains NPs) and Swayne's Hartebeest (*Alcelaphus buselaphus swaynei*) (Senkelle Swayne's Hartebeest Sanctuary, Maze NP), (Photo 1). Controlled Hunting Areas, catering for trophy hunting mostly by international tourists, played an important role in the drier and sparsely inhabited parts of the country (Figure S1).

The development of Ethiopia's PA network during the 1960s and 1970s had some poorly documented antecedents (Petrides, 1961). Prior to the designation of Awash as a National Park, it was part of the larger Mata Hara Game Reserve, established during the Italian occupation (1936–1941), and later continued as 'Imperial Preserve'. The areas of present day Alledeghi Wildlife Reserve (WR) and Kafta-Sheraro NP seem to have held a similar status (Figure S2).

Photo 2. Bilen Hunting Area, with the only permanent water source for adjacent Alledeghi Wildlife Reserve. Almost all Ethiopian PAs are confronted with increasing livestock pressure, competing with wildlife and causing degradation of soil and vegetation © Paul Scholte, October 2023

PRESENT STATE OF ETHIOPIA'S PROTECTED AREA SYSTEM

Extent of Protected Area Network

The map of Ethiopia's PAs presented by the World Database on Protected Areas (WDPA) (UNEP-WCMC & IUCN, 2024) has been used and referred to in authoritative publications (e.g. Fashing et al., 2022; IUCN ESARO, 2024), see Figure 1A. However, the database is outdated, as a result of repeated additions without withdrawals. With the Controlled Hunting Areas and National Parks at the southern border, the WDPA map superficially resembles the 1973 Imperial Ethiopian government map (Figure S1).

We reviewed the existing database of federal and regional PAs (National Parks, Wildlife Reserves, Sanctuaries, Community Conservation Areas, Biosphere Reserves and Hunting Areas), removing non-existing hunting zones, and adapting for changing national park boundaries. Here we present the results. As of 2024, 14 per cent of Ethiopia's land area of 1.1 million km² is protected, 10 per cent through wildlife PAs and 4 per cent in Forest Priority Areas (Figures 1B and 2).

Ethiopia has three governance-based categories of wildlife PAs: a) Federal PAs; b) Regional PAs; c) UNESCO Man and Biosphere Reserves. The 13 federal PAs (33,232 km², or 3 per cent of Ethiopia's land cover) include two wildlife sanctuaries, one wildlife reserve and 10 national parks, all the responsibility of the Ethiopian Wildlife Conservation Authority (EWCA), under the Ministry of Tourism (Government of Ethiopia, 2007). These federal PAs are of i) outstanding importance, such as World Heritage sites (Bale Mountains NP, Simien Mountains NP) or exceptional importance (Abijata-Shalla Lakes NP, Omo NP, Senkelle Swayne's Hartebeest Sanctuary), ii) are covering or bordering two regional states (Alledeghi WR, Awash NP, Babile Elephant Sanctuary, Nech Sar NP) and/or iii) at international borders (Alatash NP, Gambella NP, Geralle NP, Kafta-Sheraro NP).

At regional level, 67 PAs are managed (52,538 km², 5 per cent), including several community conservation areas. Oromia, Ethiopia's largest regional state, has started a process of redesigning 30 PAs, reclassifying several hunting zones into other categories such as national parks. This will likely result in an increase of the PA coverage, estimated at c. 1 per cent of the country's territory

Five UNESCO Man and Biosphere reserves (MAB), four in forested south-west Ethiopia (13,928 km²), in addition to Lake Tana (6,959 km²), cover a total area of 20,887 km² or 2 per cent of the country's territory. Although labelled with the international UNESCO MAB status, they have no federal legal provisions or budget but are managed at the regional or local level, although reporting to UNESCO is managed at the federal level.

Recently, the size and importance of the Hunting Areas have been greatly reduced, with the few remaining operational hunting zones concentrated around Bale NP, targeting Mountain Nyala (Young et al., 2020). None of the other Hunting Areas are actively managed and have no effective conservation presence on the ground, See Photo 2.

Photo 3. Ranger outpost in Nech Sar NP. With only limited investments, working conditions in protected areas in Ethiopia remain basic © Paul Scholte, February 2024

Photo 4. Coffee ceremony inside Nech Sar NP. With c. 60 000 domestic visitors annually, this is the best visited national park in Ethiopia © Paul Scholte, June 2024

Ethiopia has 58 forest reserves, called Forest Priority Areas (FPA), that are state forests with the protection of biodiversity or land cover as their primary goal (Government of Ethiopia, 2024). They are identified at the national level by the Forest Development Authority (under the Ministry of Agriculture) and generally managed by regional state authorities. The extent of the FPA is 40,064 km², overlapping with the four forest UNESCO-MAB reserves over an area of 7,468 km², roughly half of their total area (Figure 2).

Ethiopia has identified 92 Key Biodiversity Areas, including 69 Important Bird Areas and 17 Important Plant Areas, most of which overlap with the PA and FPA categories mentioned above[1].

Challenges

Sixty years after their creation, Ethiopian PAs are struggling with declining wildlife and loss of habitat (Admasu et al., 2023). With Ethiopia's growing population, competition between agriculture and conservation is increasing (Tessema et al., 2019). There are also rising human–wildlife conflicts, especially with the highly threatened Savanna Elephant population in Babile Elephant Sanctuary and the regional Chebera-Churchura NP.

Systematic data on management effectiveness exist for only a few Ethiopian PAs. Management Effectiveness Tracking Tool (METT) scores are available, but generally not repeated over time. Only Simien NP (51.5 per cent in 2018) and Bale NP (57 per cent in 2017) have moderate scores, with Kafta-Sheraro NP (46 per cent, prior to the northern war), and much lower scores for Omo NP (32

per cent in 2021), Chebera-Churchura NP (30 per cent), Mago NP (15 per cent) and Babile Elephant Sanctuary (13 per cent).

Ethiopia's PA network is under considerable financial strain. Corrected for inflation, operations budgets (minus staff salaries) of all 13 federal PAs combined, declined from *c.* 1.3 million US$ in 2017 to *c.* 0.5 million US$ in 2023 (Van Zyl et al., 2024). A spend of 15 US$ per km² is amongst the lowest on the African continent, and a fraction of what is deemed necessary (Lindsey et al., 2018; Scholte et al., 2021; Van Zyl et al., 2024) (Photo 3).

While tourism was a driving motivation for the creation of Ethiopia's PAs, international tourism has declined considerably since COVID-19 and the following period of insecurity, and has not recovered since, whereas domestic tourism has rebounded (Van Zyl et al, 2024) (Photo 4). It is a struggle for PAs to balance the needs of domestic and diaspora tourists, who have expectations such as social interactions, different from the classical wildlife focus of international tourism; both have cultural heritage as common interest (Scholte et al., 2023). Large-scale tourism development (roads, luxury lodges, fences) have recently been initiated in Awash NP, Bale Mountains NP and Chebera-Churchura NP as part of the home-grown economic reform programme. Special attention will be required to limit negative impacts on wildlife and its habitat.

Recognition of the financial value of PAs by the scientific and conservation community has increased, especially for the provision of ecosystem services, such as water provision, pollinator services and carbon stocks. The

Table 1. Federally managed PAs: their present and proposed IUCN categories

Name of protected area	Existence of management plan?	Present[1]	Proposed IUCN PA category Scenario 1 Upscaled protection[2]	Proposed IUCN PA category Scenario 2 Improved protection[3]	Proposed IUCN PA category Wardens & HQ-staff Workshop[4]
Abijata-Shalla Lakes National Park	Yes	II	IV	IV (lakes and shores) V (terrestrial parts)	II
Alitash National Park	No	II	NA[5]	NA[5]	NA[5]
Alledeghi Wildlife Reserve	No	IV	II	IV	II
Awash National Park	Yes	II	II for the southern parts IV for the northern parts	IV III for Fantale Crater	II
Babile Elephant Sanctuary	Yes	IV	IV	V	II
Bale Mountains National Park	Yes	II	NA[6]	II	NA[6]
Gambella National Park	No	II	NA[6]	II	NA[6]
Geralle National Park	Yes	II	NA[6]	II	NA[6]
Kafta-Sheraro National Park	Yes	II	NA[7]	NA[7]	NA[7]
Nech Sar National Park	Yes	II	II	II for western and central parts V for eastern parts	II
Omo National Park	Yes	II	NA[6]	II	NA[6]
Senkelle Swayne's Hartebeest Sanctuary	Yes	IV	IV	IV	NA[6]
Simien Mountains National Park	Yes	II	NA[6]	II	NA[6]

[1] Although several documents assign IUCN PA categories to Ethiopia's PAs, they are all preliminary and informal.

[2] Under upscaled protection, we define this as a **significant improvement** of the management compared to the status quo, by upscaling it to another level of impact on the ground, e.g. by increasing funding by an order of magnitude.

[3] Under improved protection, we define this as a **slight to moderate improvement** of the management compared to the status quo, addressing the main weaknesses of management with funding remaining in the same order of magnitude.

[4] A workshop with park wardens and HQ staff was held in Addis Ababa in May 2024 to review these categories.

[5] Not assessed because of lack of information.

[6] Not assessed as no need: either relatively well managed (Bale, Simien), management outsourced (Gambella) or otherwise without major challenges (Geralle, Omo, Senkelle).

[7] Not assessed because of lack of information. Since the finalisation of the management plan, Kafta-Sheraro has been overrun during the northern war.

value of the ecosystem services of federal Ethiopian PAs has been estimated at an annual 325 million US$ in 2015. Despite PAs bringing an estimated five to thirty-fold return on investment (Van Zyl, 2015), PA budget allocations continue to shrink. Apparently, the message of the financial value of PAs has not reached decision makers yet.

Given the challenges of increasing anthropogenic threats and limited funding for conservation, wildlife populations have been in decline over recent decades, a trend mirrored globally (WWF, 2024). Only relatively well-resourced PAs, such as the relatively large Bale Mountains NP with

financial-technical support from Frankfurter Zoological Society, or the small Maze NP and tiny Senkelle Swayne's Hartebeest Sanctuary with proportionally larger governmental budgets, have large mammal populations that remained stable or even increased.

With the above-mentioned challenges and a human population of 130 million, increasing annually by 2.6 per cent, the expansion of Ethiopia's PA network to meet the 30x30 target seems unrealistic.

Photo 5. Church forest, Tigray. Conserved for centuries as holy sites, the trees in these church forests are the only remaining natural vegetation, surrounded by agricultural or bare land. The 35 000 church forests in Ethiopia are candidates to be considered as OECMs © Paul Scholte, October 2008

PERSPECTIVES TOWARDS 30X30: PA MANAGEMENT QUALITY

Following the CBD-COP 15 in December 2022, the Ethiopian Wildlife Conservation Authority (EWCA) declared that it would prioritise improved management (quality) over expansion (quantity) of its PA network. We present four approaches, to be pursued concurrently, that may enhance the quality of PA management in Ethiopia.

Diversifying PA governance

Ethiopia's wildlife PAs, including Community Conservation Areas, are under governmental governance (Figure 1B). Diversified PA governance can bring more ownership for local communities, guaranteeing legitimacy and voice, achieving transparency and accountability and enable governance vitality and capacity to respond, criteria of the IUCN Green list (IUCN, WCPA & ASI, 2019)[2].

The status and governance (state versus communities) of Community Conservation Areas needs to be further developed as they lack clarity on respective roles, leading to power struggles between regional authorities and local communities. This is further complicated as local communities rely on government officials to enforce the law.

Although Ethiopia has earmarked PAs at its international borders as PAs under federal governance, this has not led to systematic transboundary collaboration. For example, Gambella NP shares with Boma NP (South Sudan) the annual migration of over six million antelopes, making it Africa's largest and longest large mammal migration (Kauffman et al., 2021). There is no formal collaboration between the countries, however. Successful transboundary initiatives such as the Mountain Gorilla parks in East-Central Africa could be used as inspiration, starting locally with transboundary multinational anti-poaching teams, gradually developing into more formal inter-governance structures (COMIFAC, 2013).

Diversifying PA management

Collaborative Management Partnerships (CMPs) have been deployed to enhance PA management effectiveness (Baghai et al., 2018). With the Global Biodiversity Framework, CMPs have received new impetus, requiring protected and conserved areas to be 'effectively conserved and managed'.

In Africa, some 277,515 km² (12 per cent) of PAs are under co-management or delegated CMPs, with African Parks managing an area larger than the UK (Scholte, 2022; World Bank, 2021). The three CMP models are i)

financial-technical-support, ii) co-management, and iii) delegated management (Baghai et al., 2018). The co-management model can be differentiated into bilateral co-management with parties working side by side, and integrated co-management based on a special purpose vehicle such as a nationally registered trust, foundation or not-for-profit company, to undertake PA management.

The financial-technical support of the Frankfurt Zoological Society (FZS) (Bale NP), African Wildlife Foundation (Simien NP) and till recently German Technical Cooperation (Nech Sar NP) have been a lifeline to these parks. FZS expressed the ambition to develop its support into integrated co-management or delegated management. Delegated management involves the transfer of management responsibilities from a public partner (generally a government body) to another partner (generally an international NGO). These partnerships, also called public-private partnerships (PPP), are characterised by a long (≥10 year) contractual base, under which the public partner delegates all or some of its mandate, with the private partner having autonomy over finances, with a transparent accounting system, as well as human resources, allowing it to attract competent staff and flexibility to discipline personnel (Baghai et al., 2018; Scholte et al., 2021; Scholte, 2022; World Bank, 2021). Delegated management has a bumpy past in Ethiopia, starting in 2004 with African Parks taking up the management of Nech Sar and Omo NPs, an arrangement that lasted only two years. However, in December 2024, African Parks signed a 10-year contract with the Gambella regional state government and EWCA for the management of Gambella NP, see Supplementary Online Material for a historic review.

The Gambella delegated management contract follows the 2008 Wildlife Proclamation that gives EWCA the mandate to contract private partners for services inside PAs, referred to as the 'concession model'. According to staff of the Ministry of Finance, this concession model does not allow private partners to benefit from privileges such as revenue retention, tax exemption, etc. The 2018 Private-Public Partnership (PPP) proclamation provides this possibility, however. A pre-feasibility study is prepared by EWCA for approval by the PPP Board, which includes representatives of the relevant ministries conferring governmental support of any approved PPP project. Subsequently, EWCA may invite, through public tendering or direct demand, private partners to present business plans for selected PAs to be under delegated management. These business plans form the basis for a feasibility study, including results of negotiations with regard to tax exemption and revenue retention, to be approved by the PPP Board.

Other elements considered to establish a PA-PPP are the status of government employees, human–wildlife conflicts (role for the government versus private partner), trophy hunting activities, benefit sharing schemes, etc.

Several Ethiopian national private companies and NGOs have shown interest in the PPP PA model, which would unlock this national capital for PA management, a model that Nigeria has successfully adopted[3].

Promoting private investment in PAs

Recently, we analysed the potential of long-term financing mechanisms for federally managed PAs (Van Zyl et al., 2024). The mechanisms included increasing park entrance fees and the expansion of concessions, establishing Payment for Ecosystem Services (PES) schemes, including carbon storage, a conservation trust fund and increased operational efficiency.

The recently initiated Digital Matchmaking Platform[4] aims to assist EWCA and regional PA authorities in attracting private investments as an alternative financing instrument. The platform is a management tool within EWCA that connects PA investment opportunities with prospective investors. The involvement of private actors in the financing of PAs is guided through clear rules, roles and responsibilities, guided implementation processes, and monitoring. In addition, an illustrated investment catalogue was developed to attract potential investors in tourism and other services in Ethiopia's federally managed PAs[5].

Improving PA management by setting realistic management objectives

Defining realistic management objectives, supported by the (re-)assignment of the appropriate IUCN PA categories, may guide better PA management. Given the overwhelming challenges facing Ethiopia's PA management, for several PAs, neither current management plans nor IUCN PA categories consider the full implications of these realities. PAs with unrealistic management objectives will struggle to achieve them as PA staff will lack motivation and scarce resources will likely be used inefficiently and ineffectively. For example, with *c.* 66,000 people living in the 887 km^2 Abijata-Shalla Lakes NP, it is difficult to enforce park regulations and decide which activities should be tolerated, resulting in the paralysis of the PA management. By accepting realities on the ground and adapting the management objectives accordingly, these objectives may become more achievable, motivating the PA staff and channelling available resources more efficiently.

We conducted an assessment of the federal PAs to evaluate the IUCN PA categories based on two scenarios (Table 1). Scenario 1 assumed significantly upscaled (human and financial) resources for PA management, whereas the more realistic scenario 2 assumed improved management based on present resources. Park wardens and EWCA headquarter staff hesitated to propose PA categories other than II (National Park), possibly because of a reluctance to 'downgrade' the PA. Bridging the gap between 'aspiration' and 'realism' will require further consideration by EWCA management.

In addition, considering the challenges linked with the 30x30 target, with adapted IUCN categories, the reporting on Ethiopia's PAs to the WDPA, UNESCO and others will be more specific.

PERSPECTIVES TOWARD 30X30: QUANTITY

To date, Ethiopia only has PAs and does not have conserved areas with conservation outcomes as secondary management objectives. Such 'Other Effective area-based Conservation Measures' (OECMs) have become critical for reaching the 30x30 target.

Despite their small size (average 2.5 ha), but with their large number (c. 35,000), Church Forests represent an important area for conservation on the largely denuded montane plains of North and Central Ethiopia (Aerts et al., 2016), see Photo 5. This potential could be further increased through restoration measures that enlarge their size and interconnect where possible. In November 2023, the Ethiopian Orthodox Church opened a (voluntary) national register, an essential step for recognition as an OECM. Although the contribution of Church Forests to the total conserved area will be limited (<0.5 per cent), the close association between faith and forest may provide an important stimulus to conservation.

In Ethiopia, community conservation areas are few and small, and incorporated into the (regional) PA networks (Figure 1B). Community conservation areas have the potential to enhance community well-being while protecting biodiversity, as frequently demonstrated. If communities collaborate to manage natural resources, recognition of these areas as OECMs could be an appropriate alternative, allowing recognition of community rights, and triggering the development of community conservancies.

The largest contribution OECMs could make are in the extensive drylands in eastern Ethiopia where Indigenous pastoral communities have successfully managed their territories for centuries, yet whose lives are under stress from climate change and rangeland degradation, see Photo 6. Moreover, East Ethiopia is poorly represented in

Photo 6. Somali Region, Eastern Ethiopia. For centuries, pastoral communities have managed this area, the botanically richest part of the country, including myrrh and frankincense species (depicted in the background). Covering approximately one third of the country, their potential contribution towards the 30x30 target is considerable © Paul Scholte, October 2023

the PA network (Figures 1A, 1B), despite its exceptional botanic richness (Demissew et al., 2021). Experiences from Kenya show the potential of conservancies that invest in wildlife toursim by strengthening community organisational development, alongside the continuation of pastoralism. Reconciling conservation with pastoralism has challenges however, as changing grazing strategies may lead to land fragmentation (Lesorogol & Lesorogol, 2024).

UNESCO-MAB reserves in their totality (core, periphery and transition zones) have been incorporated into the Ethiopian wildlife PA network as well as under the Forest Priority Areas (Figures 1 A, 1B). This not only creates overlap (Figure 2) but seems inaccurate, given the non-protection objectives of periphery and especially transition zones, which are predominantly agricultural lands. These periphery and transition zones could become OECMs, although discussions continue in South Africa where UNESCO-MAB reserves have earlier been proposed as OECMs (Paterson, 2023).

CONCLUSIONS AND RECOMMENDATIONS

Over the past 60 years, Ethiopia has developed a system of 87 PAs covering most of its ecosystems, except for the eastern drylands, and formally protecting its emblematic wildlife. At federal and regional levels, institutions and procedural frameworks have been established, however Ethiopia's PA system is under growing pressure due to competing land uses and limited funding. The 2022

Global Biodiversity Framework (GBF) and its 30x30 target is a unique occasion to draw (inter-) national attention to the importance of Ethiopia's biodiversity and ecosystem services, and support appropriate measures, listed below, to counter the downwards trend.

- With 14 per cent of land area under protection, the current size of Ethiopia's PA network is lower than earlier reported, and below the GBF global 30x30 target. This should not divert attention from prioritising improving the quality of Ethiopia's PAs, including several de facto paper parks. We recommend the integration of the revised Wildlife PA and Forest Priority Areas databases into international databases such as the WDPA. This may also clarify the situation of UNESCO-MAB Reserves.

- Collaborative Management Partnerships (CMP) have played an important role in Ethiopia, mainly through technical and financial support to government-managed PAs. Delegating PA management has had a challenging history in Ethiopia, but there is renewed optimism with African Parks recently signing (December 2024) a management contract for Gambella NP. Simultaneously there is an initiative for the development of a systematic PPP approach, following a new PPP law and regulations. EWCA and private partners can develop a PPP project, subject to approval by the PPP Board, that could stimulate new private partners and increased investments. Ethiopia has national private companies and individuals with adequate (financial and human) resources that have shown interest in taking a role in PPP.

- Multiple long-term financing mechanisms have been identified for Ethiopian PAs, including payment for ecosystem services, although they are expected to take some years to develop. To complement accrued financing through forthcoming CMPs (see above), a digital matchmaking platform and investment catalogue have recently been initiated to attract (private) investment into Ethiopia's federally managed PAs. It is too early to propose follow-up steps, but a close involvement of EWCA is important.

- For federally managed PAs, we stress the need to set more realistic management objectives to drive efficient use of scarce management resources. This may help to address the required change in focus of PAs with the rise in domestic and diaspora tourism, in contrast to the slow recovery of international tourism.

- Ethiopia has limited experience in diversifying the governance of protected areas, in particular including communities, that is expected to increase the quality of PA management. In addition, the global 30x30 target and the central role that OECMs may play offer a unique possibility to revisit and expand its PA and conservation area network, including in the country's poorly covered east. There is a need to evaluate the importance of biodiversity and ecosystem services in and outside the network, including Key Biodiversity Areas. Potential OECMs, offer complementary services to PAs, as church forests (combining faith and conservation) and pastoral territories (livestock production and botanical diversity) show. To avoid any confusion with more restricted PA management, the special conditions of OECMs need to be communicated clearly to communities and authorities, and supported by international definitions and up-to-date databases, particularly the WDPA.

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SUPPLEMENTARY ONLINE MATERIAL

Supplementary text. History of delegated management in Ethiopa (2004–2024).

Figure S1. 1973 Imperial Ethiopian Government Map, showing Ethiopia's Conservation and Controlled Hunting Areas.

Figure S2. 1961 map, presenting areas of potential value as national parks and related reserves in Ethiopia, including those established, or indicated during Italian occupation (cf. Petrides, 1961).

ENDNOTES

[1] https://www.keybiodiversityareas.org; /https://tipas.kew.org/; https://datazone.birdlife.org/country/factsheet/ethiopia

[2] https://iucngreenlist.org/

[3] https://www.africanatureinvestors.org/

[4] http://dmmp.ewca.gov.et/

[5] PDF) WILDLIFE INVESTEMENT CATALOGUE Final Version compressed (researchgate.net)

REFERENCES

Admasu, S., Scholte, P. & Berhanu, L. (2023). The state of protected areas and conservation of Ethiopia's iconic large mammals. *Journal of International Wildlife Law & Policy,* 26, 222–237.

Admasu, S., Tadele, H., Tessema, M. & Tefera, Z. (2020). Underfunding, the challenge of federally managed protected areas of Ethiopia. *International Journal of Biodiversity and Conservation*, 12(4), 316–325.

Aerts, R., Van Overtveld, K., November, E., Wassie, A., Abiyu, A., Demissew, S., Daye, D. D., Giday, K., Haile, M., … Teketay, D. (2016). Conservation of the Ethiopian church forests: threats, opportunities and implications for their management. *Science of the Total Environment*, 551, 404–414.

Asefa, A., Maryo, M., Abebe, Y. D., Debella, A. R., Dalle, G., Tessema, M. & Wakjira, K. (2024). State of Ethiopia's vertebrate fauna: implications for implementation of the post-2020 global biodiversity framework. *SINET: Ethiopian Journal of Science*, 47(2), 170–186.

Baghai, M., Miller, J., Blanken, L., Dublin, H., Fitzgerald, K., Gandiwa, P., Laurenson, K., Milanzi, J., Nelson, A. & Lindsey, P. (2018). Models for the collaborative management of Africa's protected areas. *Biological Conservation*, 218, 73–82.

Blower, J. (2005). In Ethiopia. Moray, UK: Librario Publishing.

Bolton, M. (1976). Ethiopian Wildlands. London, UK: Collins and Harvill Press.

Brown, L. (1969). Observations on the status, habitat and behaviour of the mountain nyala Tragelaphus buxtoni in Ethiopia. Mammalia, 33(4), 545–597.

COMIFAC (2013). Les aires protégées transfrontalières de l'espace COMIFAC. Leçons apprises et perspectives. Yaoundé, Cameroon.

Debella, H. J. (2019). "Command and control": 75 Years of quasi wildlife policy analysis of Ethiopia. Journal of International Wildlife Law & Policy, 22(1), 33–54.

Demissew, S., Friis, I. & Weber, O. (2021). Diversity and endemism of the flora of Ethiopia and Eritrea: state of knowledge and future perspectives. Rendiconti Lincei. Scienze Fisiche e Naturali, 32, 675–697.

Fashing, P. J., Nguyen, N., Demissew, S., Gizaw, A., Atickem, A., Mekonnen, A., Nurmi, N. O., Kerby, J. T. & Stenseth, N. C. (2022). Ecology, evolution, and conservation of Ethiopia's biodiversity. Proceedings of the National Academy of Sciences, 119(50), e2206635119.

Government of Ethiopia (2007). Proclamation No. 541/2007. Development, Conservation and Utilization of Wildlife. Proclamation, Page 37.34

Government of Ethiopia (2024). Regulation no. 544/2024. Forest development, protection and utilization. Federal Negarit Gazette, 15335–15366.

Huxley, J., Gille, A., Monod, M., Swift, L. & Worthington, E. (1963). *The Conservation of Nature and Natural Resources in Ethiopia*. Report to the Government of Ethiopia, UNESCO/NS/NR/47.

IUCN ESARO (2024). The state of protected and conserved areas in Eastern and Southern Africa, 2nd ed. *State of Protected and Conserved Areas Report Series No. 1*. Gland, Switzerland: IUCN.

IUCN, WCPA & ASI. (2019). *IUCN Green List of Protected and Conserved Areas: User Manual*, Version 1.2. Gland, Switzerland: IUCN.

Kauffman, M. J., Cagnacci, F., Chamaillé-Jammes, S., Hebblewhite, M., Hopcraft, J. G. C., Merkle, J. A., Mueller, T., Mysterud, A., Peters, W. ... Steingisser, A. (2021). Mapping out a future for ungulate migrations. *Science*, 372(6542), 566–569.

Lesorogol, C. & Lesorogol, P. (2024). Community-based wildlife conservation on pastoral lands in Kenya: A new logic of production with implications for the future of pastoralism. *Human Ecology*, 52(1), 15–29.

Lindsey, P. A., Miller, J. R., Petracca, L. S., Coad, L., Dickman, A. J., Fitzgerald, K. H., Flyman, M. V., Funston, P. J., Henschel, P., … Knights, K. (2018). More than $1 billion needed annually to secure Africa's protected areas with lions. *Proceedings of the National Academy of Sciences*, 115(45), E10788–E10796.

Pankhurst, R. (1989). Some notes on deforestation and afforestation in Ethiopia prior to World War I. *Walia,* 12, 10–20.

Paterson, A. (2023). Other Effective Area-Based Conservation Measures, biodiversity stewardship and statutory intervention – A South African perspective. *Potchefstroom Electronic Law Journal*, 26(1), 1–31.

Petrides, G. (1961). Can a precious 'living museum' survive present trends? *WildLife*,7–11 & 24–26.

Phillipson, D. W. (2012). *Foundation of an African Civilisation. Aksum & the Northern Horn 1000BC–AD1300*. Suffolk/New York: James Curry.

Scholte, P. (2022). Fifteen years of delegated protected area management in West and Central Africa: five recommendations to guide maturity. *Oryx*, 56, 908–916.

Scholte, P., Brugière, D. & Agnangoye, J.P. (2021). Chapter 3. *Public-private partnerships in the management of Central Africa protected areas : lessons learned and perspectives*. In Doumenge C., Palla F., Itsoua Madzous G. (Eds.), State

of Protected Areas in Central Africa –2020. (pp 98-129) Yaoundé/Gland : OFAC-COMIFAC,UICN,. https://www.observatoire-comifac.net/publications/edap

Scholte, P., Kamgang, S. A. & Sabuhoro, E. (2023). Beyond the big five and birds: Divergent ecotourism perspectives in rapidly changing Africa. *Animal Conservation*, 26(4), 443–445.

Scholte, P., Pays, O., Adam, S., Chardonnet, B., Fritz, H., Mamang, J. B., Prins, H. H., Renaud, P. C., Tadjo, P. & Moritz, M. (2022). Conservation overstretch and long-term decline of wildlife and tourism in the Central African savannas. *Conservation Biology*, 36(2), e13860.

Tessema, M. E., Wakjira, K. & Asefa, A. (2019). Threats and their relative severity and driving forces in the African Elephant range wildlife protected areas of Ethiopia. *International Journal of Biodiversity and Conservation*, 11(7), 187–198.

UNEP-WCMC & IUCN (2024). *Protected Planet: The World Database on Protected Areas (WDPA) and World Database on Other Effective Area-based Conservation Measures (WD-OECM)* www.protectedplanet.net.

Van Zyl, H. (2015). *The Value and Potential of Protected Areas in Ethiopia*. Internal Report of SCPASE project and the Ethiopian Wildlife Conservation Authority, Addis Ababa, Ethiopia.

Van Zyl, H., Admasu, S. & Scholte, P. (2024). *Finance Baseline, Finance Needs and Long-term Funding Mechanisms*. BFP-III Strategic Advisory to EWCA on Financial Sustainability. Internal report to EWCA, Addis Ababa, Ethiopia.

World Bank (2021). *A resource guide to support partnerships that conserve protected areas and promote sustainable and inclusive development: Collaborative Management Partnership Toolkit.* Washington, DC.

WWF (2024). *Living Planet Report 2024*. Gland, Switzerland: WWF.

Young, N. E., Evangelista, P. H., Mengitsu, T. & Leisz, S. (2020). Twenty-three years of forest cover change in protected areas under different governance strategies: A case study from Ethiopia's southern highlands. *Land Use Policy*, 91, 104426.

RESUMEN

Etiopía es bien conocida por su extraordinaria biodiversidad y su importancia como depósito de agua para los países circundantes. A mediados de la década de 1960, los esfuerzos de conservación se centraron en la creación de áreas protegidas (AP) que excluían la explotación humana y se orientaban al turismo. Los Parques Nacionales, las Reservas de Fauna Silvestre y, sobre todo, las Zonas de Caza dominaban el primer mapa de AP del país de 1973. Cincuenta años después, el mapa de Etiopía de la Base de Datos Mundial sobre Áreas Protegidas, que muestra el 17% de la superficie de Etiopía como AP, está obsoleto. Aunque se han añadido varias AP a lo largo de los años, hay AP que no funcionan y AP desclasificadas, especialmente zonas de caza no operativas, que no se han eliminado de la base de datos. Presentamos mapas actualizados, que muestran que el 14 por ciento de Etiopía está actualmente protegido por AP de vida silvestre (10 por ciento) y Áreas Forestales Prioritarias (4 por ciento). Con su fauna silvestre en declive y el turismo internacional, y la falta de financiación de sus AP, la respuesta de Etiopía hacia el objetivo «30x30» del Marco Global de Biodiversidad debería dar prioridad a mejorando la calidad de las AP mediante i) la diversificación de la gobernanza de las AP permitiendo una mayor propiedad comunitaria, ii) la diversificación de la gestión de las AP para una mayor eficiencia, iii) la promoción de inversiones en AP, y iv) el establecimiento de objetivos de gestión realistas. Existe un potencial considerable a largo plazo (después de 2030) para aumentar el número de áreas de conservación a través de reconociendo los numerosos y diminutos bosques eclesiásticos y los vastos territorios de pastoreo como Otras Medidas de Conservación Efectiva basadas en el área (OECM), al tiempo que se estimula la razón económica de las AP más allá del turismo internacional.

RÉSUMÉ

L'Éthiopie est bien connue pour sa biodiversité exceptionnelle et son importance en tant que château d'eau pour les pays environnants. Au milieu des années 1960, les efforts de conservation se sont concentrés sur la création de zones protégées (ZP) qui excluaient l'exploitation humaine et ciblaient le tourisme. Les parcs nationaux, les réserves de faune et de flore et surtout les zones de chasse ont dominé la première carte des aires protégées du pays en 1973. Cinquante ans plus tard, la carte de l'Éthiopie figurant dans la base de données mondiale sur les zones protégées, qui indique que 17 % de la couverture terrestre de l'Éthiopie sont des zones protégées, est dépassée. Bien que plusieurs aires protégées aient été ajoutées au fil des ans, il existe des aires protégées non fonctionnelles et des aires protégées déclassées, en particulier des zones de chasse non opérationnelles, qui n'ont pas été supprimées de la base de données. Nous présentons des cartes actualisées, qui montrent que 14 % de l'Éthiopie sont actuellement protégés par des aires protégées de faune et de flore (10) et des zones forestières prioritaires (4 %). Avec le déclin de la faune sauvage et du tourisme international, et le sous-financement de ses aires protégées, la réponse de l'Éthiopie à l'objectif « 30x30 » du Cadre mondial pour la biodiversité devrait donner la priorité à l'amélioration de la qualité des aires protégées en i) diversifiant la gouvernance des aires protégées pour permettre une plus grande appropriation par les communautés, ii) diversifiant la gestion des aires protégées pour une plus grande efficacité, iii) promouvant les investissements dans les aires protégées, et iv) fixant des objectifs réalistes pour la gestion. Il existe un potentiel considérable à long terme (après 2030) pour augmenter le nombre d'aires de conservation en reconnaissant les nombreuses petites forêts d'églises et les vastes territoires pastoraux comme d'autres mesures de conservation efficaces basées sur les aires (OECM), tout en stimulant la raison d'être économique des aires protégées au-delà du tourisme international.