



West Africa Regional Pangolin Conservation Action Plan (2026-2056)



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Group photo of stakeholders present at the West African Pangolin Conservation Action Planning Workshop in Accra, Ghana (29 – 31 March 2023). [Online participants not pictured.]

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EXECUTIVE SUMMARY

West Africa is home to three of the world's eight pangolin species – white-bellied (*Phataginus tricuspis*), black-bellied (*P. tetradactyla*), and giant (*Smutsia gigantea*). Against the backdrop of astonishing human cultural and ethnic diversity, including over 400 major ethnic groups amongst the nearly 450 million people living in the region, pangolins stand out as culturally significant. Here, diverse local peoples from every West African range state have harvested pangolins for use in traditional African medicinal and religious practices, as wildmeat, and for ornamental uses, all of which contribute significantly to cultural heritage and economies, for millennia.

With the decline in Asian pangolins, however, on-going international demand for pangolins and their products, notably their scales, is increasingly being met by commercial-scale trade from West and Central Africa. Combined with the primary threat of extensive habitat loss, pangolins in this region have experienced significant declines, and all three West African pangolin species are now recognised as threatened on the IUCN Red List. White-bellied and giant pangolin meet the criteria for Endangered, and black-bellied pangolin meets the criteria for Vulnerable. Notably, the white-bellied pangolin is most likely the single most illegally traded wild mammal in the world. All three species are protected under domestic legislation, making it illegal to harvest them from the wild or consume them domestically, and are included in CITES Appendix I, making any international commercial trade also illegal.

In recognition of the plight of pangolins in this region, 85 participants representing diverse stakeholders from government agencies to NGOs, rehabilitators and researchers, made history by gathering for the West African Pangolin Conservation Action Planning Workshop in Accra, Ghana (25–27 September 2023) to tackle this problem. Guided by IUCN SSC Conservation Planning Specialist Group principles, participants crafted the West Africa Regional Pangolin Conservation Action Plan (2026–2056). This plan offers a comprehensive, collaboratively developed roadmap to reverse the alarming declines and secure pangolin populations across 11 West African range states, including consideration of Cameroon and Gabon, which play essential roles in trafficking into the region.

The Action Plan builds on an updated version of the 2020 Scoping Study for Pangolin Conservation in West Africa that incorporates the latest ecological, socio-economic, and trade insights from across the region as provided by the workshop participants. With this background, workshop participants identified the key pressures driving pangolin decline. Habitat loss and degradation remain the most significant threats, where West Africa only retains an estimated 18% of its forest cover, 22% of its woodlands, and 37% of its savanna and savanna mosaic land cover. Forests and natural ecosystems continue to be converted for agriculture, logging, mining, and expanding settlements. Local consumption, including for wildmeat, traditional medicinal and religious uses, remains widespread and unregulated. International demand for pangolin scales remains a significant driver of local hunting and large-scale trafficking, and West Africa has rapidly become a major hub for the global illegal pangolin trade. Gaps in laws, policies, and enforcement reduce the effectiveness of conservation efforts, including corruption, inconsistent application of wildlife and protected area laws, limited compliance with CITES, outdated legislation, and insufficient technical capacity. Limited knowledge of pangolin distribution, abundance, trade dynamics, and ecological needs currently serve as a barrier to effective, targeted intervention implementation and monitoring.

This Action Plan is organised around 6 major threat and intervention categories, within which we identify 16 goals that will collectively allow actors in West Africa to achieve their collective Vision for pangolins. Critically, the goals are tied to measurable outputs, actions, indicators, and timelines through 2056 to promote transparency, accountability, and coordinated regional progress.

EXECUTIVE SUMMARY (CONT.)

Vision: By 2056 we envision thriving and stable pangolin populations that are secure in their habitat and supported by: (i) local communities that are engaged and benefiting, (ii) strengthened national and transboundary collaborative networks, (iii) abundant and accessible research data, and (iv) sustainable financing.

1. Mitigating Effects of Habitat Loss and Degradation:

Conserving and restoring pangolin habitats should follow a multi-pronged approach, including improving the management of protected areas for pangolins; expanding the effective conservation estate for pangolins by integrating Other Effective Area-based Conservation Measures (OECMs) and developing pangolin-friendly agricultural practices and plantation management; rehabilitating degraded landscapes; and encouraging and fostering effective action by governments.

2. Mitigating Effects of Local Consumption and Trade:

Ensuring that the offtake and use of pangolins in all West African range states is actively regulated and sustainable will require identification and monitoring of wild pangolin populations and hunting hotspots; and by engaging local communities in pangolin conservation as frontline defenders by ensuring appropriate benefits and incentives to protect pangolins and their habitats.

3. Mitigating Effects of International Wildlife Trafficking:

Tackling pangolin trafficking can be facilitated by deploying stronger deterrence for poaching and trade across West Africa through crime prevention and strengthening the criminal justice system; working to reduce the illegal supply of pangolin products to international markets by deploying community-based approaches and working with foreign nationals, diaspora and commercial actors implicated in supply chains; developing tools and mechanisms to improve access to information, evidence and regular monitoring of pangolin trafficking supply chains and dynamics.

4. Improving Rescue, Rehabilitation and Reintroduction:

Rescue and rehabilitation of live pangolins seized from trade can be improved in West Africa by establishing fully operational rescue and rehabilitation centers in all range states; connecting these centers in a network to better share information, lessons learned, and mentorship opportunities; arming them with standardized operating procedures, guidance and tools; and ensuring that rehabilitated pangolins are reintroduced into safe habitats with cooperation from engaged and incentivized local communities.

5. Achieving One Health and Preventing Zoonotic Diseases:

Preventing the health risks associated with pangolin trafficking and consumption can be achieved via disease risk analysis systems rooted in One Health principles, as well as improved understanding of pangolins as pathogen reservoirs and transmitters.

6. Mitigating the Effects of Administration and Policy Challenges:

Ensuring strong, efficient, and functional governance institutions for pangolin conservation can be achieved by addressing corruption and building improved capacity to implement CITES and other wildlife-related laws; strengthening the governance and operational capacity of diverse institutional actors in pangolin conservation; improving effective collaboration and coordination between agencies and local communities at the regional, national/local level; harmonising legal and policy frameworks by aligning national frameworks across the region and ensuring their ability to comply with international regulations; and establishing sustainable funding mechanisms dedicated to pangolin conservation.

EXECUTIVE SUMMARY (CONT.)

These recommendations represent the most comprehensive and regionally relevant guidance produced to date for pangolin conservation in West Africa. They draw on the expertise of specialists from 17 countries and reflect the first unified assessment of ecological data, community use systems, trafficking dynamics, and policy gaps in the region. Unlike isolated or project-specific guidance, this Action Plan offers a harmonized regional framework aligned with national priorities, CITES obligations, and the realities that enforcement authorities, protected area managers, and community partners face. Its strength lies not only in its depth of evidence but also in its co-development with a broad coalition of stakeholders representing all relevant sectors, whose diverse, on-the-ground experience ensures that the plan is grounded in real-world conditions and implementable across West African contexts. For these reasons, governments, conservation organisations, and donors should view the recommendations in this Action Plan as the authoritative roadmap for safeguarding West Africa's pangolins over the next three decades. We therefore urge all relevant actors to adopt and implement the recommendations found here to ensure that pangolins, once overlooked in the background of West Africa's cultural and ecological landscape, no longer slip through the cracks. Instead, they can thrive as an integral part of the region's natural and cultural heritage for generations to come.

SECTION 1. INTRODUCTION

Pangolins were effectively unknown to the global public a little more than a decade ago, but are now thought to be among the most heavily trafficked wild mammals in the world and are increasing in public visibility. The unsubstantiated link between pangolins and COVID-19 (see: Frutos et al., 2020) has further thrust them into the public spotlight. As a result, conservation action aimed at combating pangolin trafficking is increasing and pangolins are present on conservation agendas from the site to the federal and international levels. There are now strict regulations governing their international trade (CITES Appendix I, 2017), conservation action plans are guiding conservation action for almost half of all recognised species (i.e., [Sunda pangolin](#), [Philippine pangolin](#), [Chinese pangolin](#)), and there is increasing understanding of their biology, ecology, and cultural significance (Challender et al., 2020a; Heighton and Gaubert, 2021). Despite this increased global attention, pangolins are still at high risk due to on-going trafficking (Challender et al., 2020b; Emogor et al., 2021; Tinsman et al., 2023) and knowledge gaps related to basic pangolin biology, trade dynamics, impact of trade on pangolin populations, and other causes of population decline persist (Heighton and Gaubert, 2021; Pietersen and Challender, 2020). This is particularly true in West Africa (WA BiCC, 2020), the current hub of pangolin trafficking (Emogor et al., 2021; Heinrich, 2020), making this region a notably high risk region and priority area for pangolin conservation.

To draw increased attention and engagement for pangolin conservation in West Africa, the IUCN SSC Pangolin Specialist Group ([PSG](#)) and USAID [via the *West Africa Biodiversity and Climate Change* (WA-BiCC) and *West Africa Biodiversity and Low Emissions Development* (WABiLED) programs] collaborated to draft the, now updated, [Scoping Study for Pangolin Conservation in West Africa](#) (WA BiCC, 2023). They joined forces with Fauna & Flora to hold the *West African Pangolin Conservation Action Planning Workshop* (29 – 31 March 2023 in Accra, Ghana) and produce this *West Africa Regional Pangolin Conservation Action Plan (2026 – 2056)*.

The *Scoping Study for Pangolin Conservation in West Africa* (hereafter: Scoping Study) provided a seminal overview of the state of knowledge and conservation of pangolins in West Africa, including on-going research and conservation initiatives, recommended policy reforms, implementation strategies, and case studies for moving pangolin conservation forward in the region. Parts of Central Africa were included in the review due to the close ties between the two regions in terms of species and threats. The Scoping Study was used as a guide by 85 experts attending the *West African Pangolin Conservation Action Planning Workshop* (hereafter: Stakeholder Workshop) to elaborate critical actions needed to ensure the sustainability of pangolins in the region. Participants in the workshop were identified through a participatory stakeholder mapping process and represented parks and wildlife governmental authorities, enforcement and judicial governmental authorities, non-governmental organisations (NGOs), wildlife rescuers and rehabilitators, and individual researchers representing eight pangolin range states in West Africa, as well as Cameroon and Gabon due to associated pangolin trade links. The process was closely facilitated by the IUCN SSC Conservation Planning Specialist Group ([CPSG](#)).

The method of engagement used during the Stakeholder Workshop followed a robust and integrative conservation planning framework developed in line with CPSG principles. The aims of the Stakeholder Workshop were to establish a common baseline of understanding based on the Scoping Study outputs, obtain information necessary to update the Scoping Study from regional participants, undertake action planning through a common vision, and develop the way forward for the development and implementation of the *West Africa Regional Pangolin Conservation Action Plan* (hereafter: Action Plan). An additional aim was fostering dialogue amongst stakeholders to allow for the development of a regional pangolin conservation network, information and experience sharing, the initiation of regional collaborative and strategic actions, and identification of opportunities for cross-sectoral partnerships. All of which can permit effective conservation action implementation.

SECTION 1. INTRODUCTION (CONT.)

In developing this Action Plan, the West African stakeholders for pangolin conservation sought to align with pertinent global and regional initiatives. This action plan fits the current framework of the United Nations Convention on Biological Diversity (CBD) - [Kunming-Montreal Global Biodiversity Framework - COP15](#) - specifically responding to Goal A (halting human-induced extinction of threatened species and increasing abundance of native wild species) and Goal D (providing the means of implementation through financial resources, capacity-building, and transfer of knowledge), as well as targets 1-5 (effective area management, halted extinction, and reduced unsustainable harvesting), 9 (management of wildlife benefits local people), 17 (implementation of biosafety measures), and 19-23 (capacity building, resources for implementation of measures, knowledge and technological transfer, and equitable opportunities). Regionally, this action aligns with efforts by ECOWAS member states to combat wildlife crime as outlined in the *West Africa Strategy on Combating Wildlife Crime* (see: [SC74 doc. 35.5](#)). In particular, the action plan underscores the importance of the development and training of relevant authorities and other stakeholders in combating wildlife crime, establishment of networks and task forces to counter transnational crime, and identification of national priorities and strategies. Further, this plan aims to help regional authorities meet their commitments to the Convention for the International Trade of Endangered Species of Fauna and Flora (CITES), including [Res. Conf. 17.10 \(Rev CoP19\)](#), such as implementation of legislation that aligns with CITES regulations, reinforcing enforcement efforts, strengthening inter-agency and international cooperation, capacity-building and acquisition of equipment for anti-poaching, increased awareness among local communities, and provisioning for sustainable livelihoods.

This document provides a brief overview of the [Scoping Study](#) and information updated during the Stakeholder Workshop (Sections 2 and 3), as well as the Action Plan to guide pangolin conservation in West Africa for the next 30 years into 2056 (Section 4). Though the pervasive threat of transboundary trafficking of pangolin scales and other products underscores many of the actions identified in this plan, unless specifically stated otherwise, this plan is meant to guide the conservation of pangolins for West African range States, including: Benin, Côte d'Ivoire, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Nigeria, Senegal, Sierra Leone, and Togo. Although not part of West Africa, stakeholders from Cameroon and Gabon played a significant role in developing this Action Plan due to their importance as source countries of pangolin products often trafficked out of Africa from West African countries. And, the recommendations found within guide conservation action for the three pangolin species of West Africa: white-bellied (*Phataginus tricuspis*), black-bellied (*P. tetradactyla*), and giant (*Smutsia gigantea*).

Section 2:

Pangolins in West Africa

West Africa Regional Pangolin Conservation
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SECTION 2. PANGOLINS IN WEST AFRICA

The information presented here is a summary of various sections of the [Scoping Study](#), and we recommend interested readers refer to that document for more detailed background information on the pangolins of West Africa.

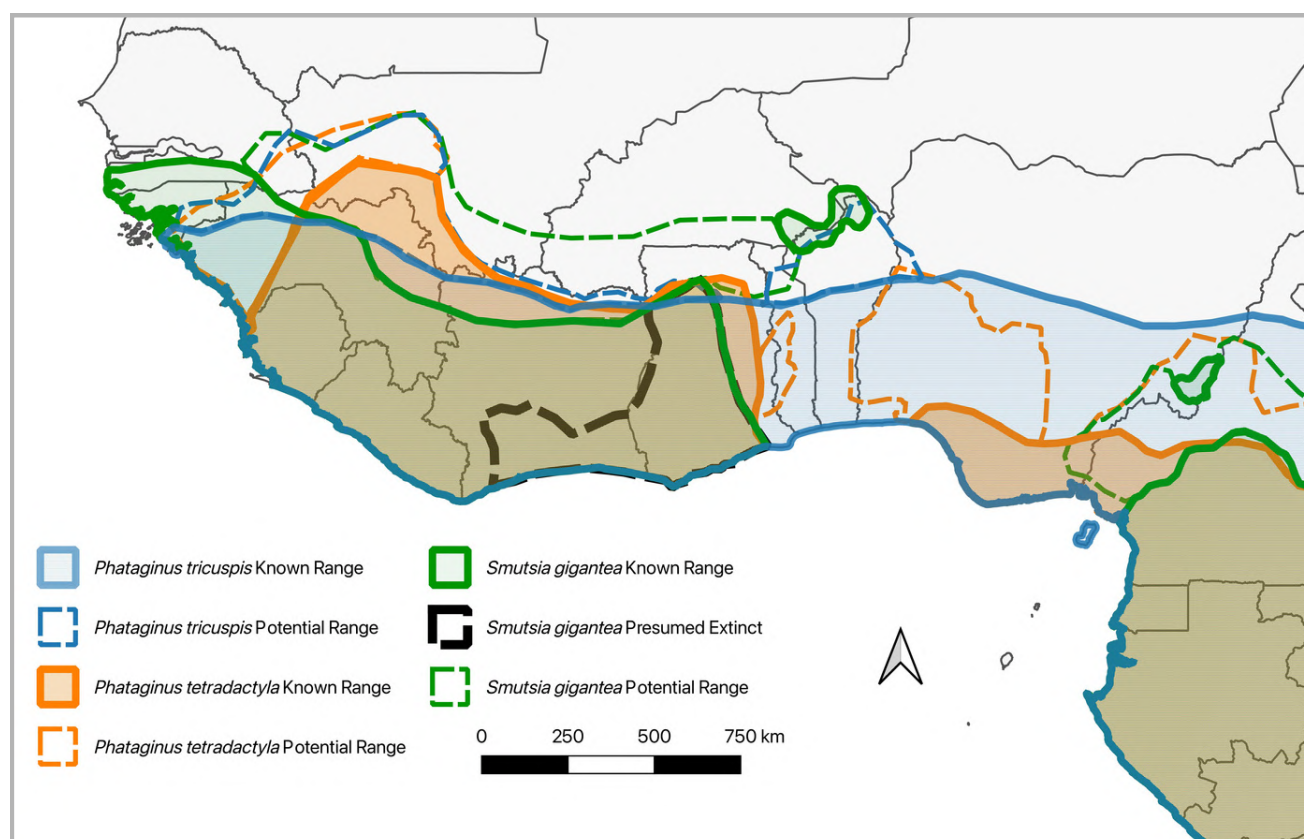
2.1 Biology and Ecology

Please refer to section 3.1 of the [Scoping Study](#) for more details.

Pangolins are unique mammals, characterized by their scale-covered bodies, lack of teeth, and elongated tongue (Gaudin et al., 2020). The extant pangolins belong to the family Manidae, which contains eight currently recognised species in three genera. The four African pangolins are split between the genera *Phataginus* and *Smutsia*, while the four Asian pangolins are in the genus *Manis*. The white-bellied pangolin (*Phataginus tricuspis*), black-bellied pangolin (*P. tetradactyla*), and giant pangolin (*Smutsia gigantea*) are distributed in West Africa, while the Temminck's pangolin (*S. temminckii*), Africa's fourth species, is absent from the region but is present in restricted parts of Central Africa. While all pangolins are ant and termite specialist feeders, contrary to historical belief, they are not closely related to anteaters and are instead related to carnivores (Gaubert et al., 2018).

Species Distribution Map

Please refer to the [Scoping Study](#) for species-specific maps and more details on each species range.



West African Ranges for the Three Native Pangolin Species. The three West African pangolin species are broadly co-distributed across the region, though black-bellied pangolins are absent from the Dahomey Gap and giant pangolins have suffered local extinctions. In addition to the known ranges, suspected/possible ranges areas are indicated for each of the three species which should be validated.

White-bellied pangolin (*Phataginus tricuspis*)

The white-bellied pangolin was first described in 1820 from Guinea (Jansen et al., 2020). It is a small species, with adults weighing up to 3.5 kg and measuring from 61 to >103 cm in length. They are easily differentiated from black-bellied pangolins by their light-coloured skin and body hair (i.e., not black), as well as their tricuspid, lattice-like scales that are uniformly light-coloured (i.e., grey, tan, reddish, etc...) and uniform in size and shape (i.e., enlarged scapular scales absent) (Jansen et al., 2020).

In West Africa, white-bellied pangolins are broadly distributed from Guinea-Bissau through Nigeria, including throughout the southern forested belt and into the wooded savannah regions of each country. Outside of West Africa, they are found throughout all forested countries of Central Africa, extending as far east as southwestern Kenya, Burundi and northwestern Tanzania, and as far south as northwestern Zambia and northern Angola (Jansen et al., 2020; Kingdon et al., 2013). Recent molecular analysis identified six distinct lineages, suggesting the presence of geographically segregated cryptic species throughout its range, though further work remains before taxonomic changes can be proposed (Gaubert et al., 2016).

Very little ecological research has been conducted on this species, but they are commonly encountered and likely the most abundant of Africa's pangolins. White-bellied pangolins occur in diverse forest types, including tropical lowland forests, swamp forests, coastal mangroves, savannah-forest mosaics, and agricultural landscapes with forest replacement habitats (Akpona et al., 2008; Sodeinde and Adedipe, 1994). Very little is understood about factors influencing micro-habitat and resource selection, including any niche separation with the syntopic black-bellied pangolin. They are primarily nocturnal, semi-arboreal, and appear to occupy relatively small home ranges (Jansen et al., 2020; Pagès, 1975).

White-bellied pangolins reproduce year-round, with females observed mating soon after giving birth (Jansen et al., 2020; Pietersen et al., 2019). Further research is needed to understand their habitat selection, movement ecology, prey selection, reproductive patterns, and survival to better inform conservation and management efforts. Understanding their use of degraded and altered habitats is also crucial due to the significant loss of forest habitat in their range, and preliminary evidence suggests they are quite adaptable to human-mediated landscapes.



Photo: © Hugues Akpona

Black-bellied pangolin (*Phataginus tetradactyla*)

The black-bellied pangolin was first described in 1766 from West Africa (Linnaeus, 1766), and was previously placed in the monotypic genus *Uromanis* (Pocock, 1924). It is generally thought of as the smallest pangolin species, with adults weighing up to 3.4 kg and measuring 81-121 cm in total length (Gudehus et al., 2020). They have distinctive black skin and hair, with bicoloured scales (black with yellow/orange tips) that are heterogeneous in size and shape (i.e., see enlarged scapular scales). The scales are also stronger, thicker, and fewer in number compared to white-bellied pangolins (Gudehus et al., 2020). Contrary to prior belief, and the origin of their former English common name the long-tailed pangolin, their tails are not significantly or proportionally longer than those of white-bellied pangolins.

In West Africa, black-bellied pangolins are found ranging from southern Mali, Sierra Leone and southeastern Guinea, through Liberia, Côte d'Ivoire, and into southwest Ghana. They are not present in the Dahomey Gap countries of Togo and Benin, but reappear in western Nigeria and range throughout the forested south of this country. Outside West Africa, they are distributed mainly within southern Cameroon and the Congo Basin forest block (Ingram et al., 2019a). Reported presence in Uganda's Semuliki National Park (Kityo et al., 2016) may further support this as a bleed through area for Congolese fauna into East Africa. Further research is required to confirm their existence anywhere in Angola (Gudehus et al., 2020; Kingdon et al., 2013). However, their presence and distribution in many countries across their range is not well understood and may be either under or over-estimated partly due to confused identification with white-bellied pangolins or the fact that it is a highly arboreal species that is much more rarely observed.

The black-bellied pangolin is the least-studied pangolin species worldwide, with limited knowledge about its natural history and ecology. It is rarely encountered in biodiversity surveys, but some information has been gathered from its presence in wildmeat markets (Gudehus et al., 2020). Black-bellied pangolins inhabit a wide range of habitats, including forests, mangroves, savannah-forest mosaics, and riparian forests. They appear to be strictly diurnal and are highly arboreal, spending most of their time high in the canopy with limited ground movements.

Reproduction occurs throughout the year, and females mate soon after giving birth (Kingdon et al., 2013). Further research is needed to understand their habitat selection, movement patterns, prey selection, reproductive characteristics, and survival to better inform conservation and management efforts. To date, no phylogenetic or phylogeographic studies have been implemented for this species, though evidence for cryptic lineages in the sympatrically-distributed white-bellied pangolin, its apparent absence from the Dahomey Gap, and preliminary indications of phenotypic variation across its range suggest cryptic diversity may be present and warrants further study.



Photo: © Marine Montblanc

Giant pangolin (*Smutsia gigantea*)

The giant pangolin was first described in 1815 from the type locality of the "River Niger" (Illiger, 1815). It is one of two African species in the genus *Smutsia*, which are characterised as large, ground-dwelling species with short and sparse hairs on the ventral part of the body. The giant pangolin is thought to be the largest pangolin species in the world, with adults weighing up to 50 kg and reaching total lengths of up to 180 cm. It can be easily identified by its size, elongated snout, and scale size and shape. The body scales are arranged in a linear grid at an oblique angle and are very large and dense (Hoffmann et al., 2020). There is no confusion with scales of the smaller *Phataginus* species, though it is as yet unclear how to distinguish them on the basis of morphology alone from those of *S. temminckii*.

In West Africa, giant pangolins range from eastern Senegal and southern Mali fairly continuously through to eastern Nigeria (Ingram et al., 2022; Ndiaye et al., 2024; Sayer and Green, 1984); though rampant local extinctions mean it may no longer be present in Benin, Burkina Faso, Ghana, Niger, Togo, and most of Nigeria, where it is only known in Gashaka Gumti National Park (African Nature Investors Foundation, unpub. data). Outside West Africa, they are found throughout Central Africa east to parts of Kenya, Rwanda, South Sudan, Tanzania, and Uganda (Kingdon et al., 2013). Their previously assumed presence on Bioko Island is most likely erroneous and attributable to mainland carcasses brought for sale at markets. They are the most documented African pangolin species in, for example, camera trap studies throughout the forests of West and Central Africa (e.g., Bruce et al., 2018a, 2018b; Khwaja et al., 2019; Lehmann et al., 2020; Matthews et al., 2023; Mouafo et al., 2023), and their presence has been confirmed in a diverse range of habitats, including primary and secondary forests, forest-savannah mosaics, wetlands, gallery forests, and grasslands. There is some evidence suggesting that swampy habitats and proximity to water is important (Hoffmann et al., 2020; Kingdon et al., 2013), but the extent to which this is true is unclear.

More generally, there has been very limited prior research on their natural history and ecology, and a better understanding of their habitat selection and distribution constraints, especially in degraded and altered habitats, is needed. Giant pangolins are primarily nocturnal and exclusively terrestrial, relying on burrows and other resting spots like hollowed logs. They do not appear to maintain exclusive territories and can share burrows with other species (Gudehus et al., 2020; Lehmann et al., 2020).

Little is known about their reproductive cycles, such as breeding season and gestation period. Additional research on habitat use, movement patterns, reproductive behaviour, and survival of giant pangolins is needed to better inform targeted conservation and management efforts for this species. As yet no phylogenetic or phylogeographic research has been undertaken on giant pangolins, though there is some preliminary evidence for morphological variation across its range.



Photo: © Tanzania Carnivore Program/ZSL/WCS/TAWIRI

Identifying Characteristics of West Africa's Three Pangolin Species

White-bellied pangolin (*Phataginus tricuspis*)



Photo: © Rod Cassidy



White/tan skin and hair color



Scales are uniform color and can be brown to russet to brownish yellow



Scale shape is uniform with no enlarged scales on body

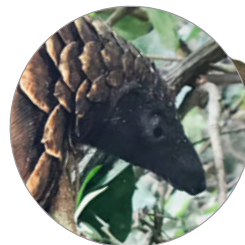
Black-bellied pangolin (*Phataginus tetradactyla*)



Enlarged scapular scales



Scales are two-toned fading from dark brown to yellowish edges

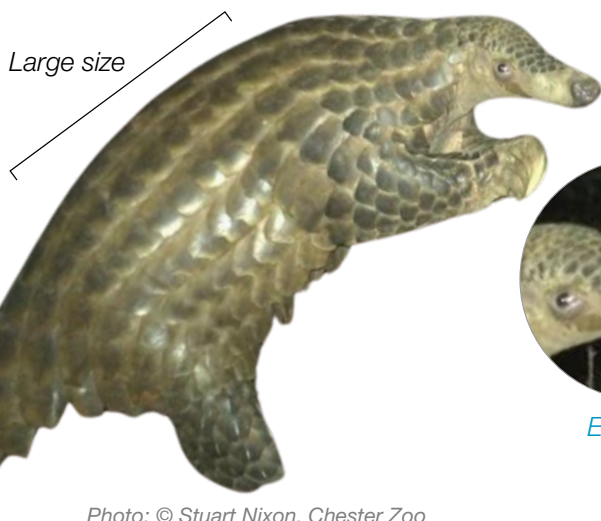


Black skin and hair

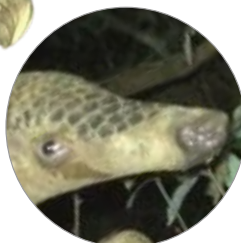


Photo: © Rod Cassidy

Giant pangolin (*Smutsia gigantea*)



Large size



Elongated Snout



Scales are big and thick

Photo: © EAGLE Network

Photo: © Stuart Nixon, Chester Zoo

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2.2 Distribution, Status, and Population Trends

Please refer to sections 4.1 & 4.2 of the [Scoping Study](#) for more details.

Though the three pangolin species found in West Africa are fairly widely distributed, relatively little is known about their exact distribution and the factors that drive distributional limits (e.g., Challender and Waterman, 2017). What is known was summarized in the Scoping Study and improved since 2020 both due to increased research efforts (e.g., Difouo et al., 2023; Ingram et al., 2022; Mouafo et al., 2021; Segniagbeto et al., 2021; Simo et al., 2020; Zanvo et al., 2020) and as part of inputs made by participants to the Stakeholder Workshop.

Similarly, our understanding of pangolin abundance and population trends for each species is extremely limited. Many assumptions are made on the basis of local ecological knowledge and wildmeat market monitoring, combined with indicators of population decline such as habitat loss and seizure data. Pangolins are very difficult to detect in their natural habitats using conventional methods (e.g., Khwaja et al., 2019). This problem of detecting pangolins is so acute that, thus far, two scientific articles (Ingram et al., 2019b; Willcox et al., 2019) and a methodological guide ([IUCN SSC PSG, 2022](#)) are the only reference documents on methods for monitoring wild pangolins that have been developed and made freely available to help overcome these barriers. Despite these knowledge gaps, regional stakeholders have substantial reason to believe that all three species are in severe decline in most range States, with possible exceptions related to the difficult-to-access black-bellied pangolin in sites with intact forest and white-bellied pangolins in some parts of their range (see the Scoping Study)

2.3 Socio-Economic & Cultural Significance

Please refer to section 3.2 of the [Scoping Study](#) for more details.

As an economic resource, West African pangolins are highly sought as wildmeat and in traditional African medicine and religion. While offtake for these purposes in West Africa is not yet well understood, c. 400 000 individuals or more are being hunted annually from Central African forests (Ingram et al., 2018). Internationally, these species are subject to unprecedented demand from Asian markets, mostly for traditional medicine uses (Ingram et al., 2019c; Mambeya et al., 2018; Zanvo et al., 2021). The sale of pangolins to meet domestic and international demand likely generates non-negligible revenues for some local actors who rely heavily on biodiversity as a natural resource (Booth et al., 2021; Ingram et al., 2021).

Culturally, many ethnic groups across West Africa use pangolin parts in traditional African medicine, particularly the scales, to treat a wide range of illnesses. They are also used in symbolic and religious practices, including protection against attacks by dangerous animals and protection against the "black dragon" (e.g., Soewu et al., 2020). Though pangolins are largely believed to have significant ethnopharmacological and sacred value, some ethnic groups have negative perceptions of them. For example, the Mvae people in Cameroon consider the black-bellied pangolins to be a bad luck omen, and pangolin sightings are linked to death. Other ethnic groups, such as the Toma, Guerzé, and Manon (Guinea), consider pangolins as totems.

Despite the availability of essential data on the socio-economic importance and cultural significance of pangolins for local populations in West Africa, there are still many knowledge gaps that need to be filled to achieve effective, widespread support among local communities for pangolin conservation. This requires a comprehensive understanding of pangolins as symbols, their significance in West African cosmology, and the implementation of targeted actions that maintain taboos and reinforce the cultural protection of the different species in their natural habitats.

2.4 Zoonotic Disease and One Health

Please refer to section 3.4 of the [Scoping Study](#) for more information, as well as the PSG website for regularly updated information on diseases and One Health as related to pangolins. Also see Section 4.3.E Zoonotic Disease and One Health in this document for additional information on pangolin pathogens and the One Health approach.

The global COVID-19 pandemic, caused by the Severe Acute Respiratory Syndrome Coronavirus 2 virus (SARS-CoV-2), has underscored the importance of considering the risk of emerging disease associated with wildlife trade. In 2020, some of the first cases of the pandemic were associated with a wildlife market in Wuhan, China and closely related strains of the virus have been found in multiple wildlife species, including pangolins. Though a pangolin-CoV has been documented in Chinese (*Manis pentadactyla*) and Sunda (*M. javanica*) pangolins in trade, there is no evidence that pangolins were being traded in the Wuhan wildlife market at the time of the pandemic. The genetic similarity between Pangolin-CoV and SARS-CoV-2 initially prompted some researchers to speculate that pangolins may have been implicated as intermediate hosts at the origins of the pandemic (Liu et al., 2020). However, there is no evidence, conclusive or otherwise, of the involvement of wild or trafficked pangolins as an intermediate host to SARS-COV-2 (Frutos et al., 2020; Lee et al., 2020).

Despite this inconclusive research, largely animal welfare-focused stakeholders and the global media capitalised on the story that pangolins might be intermediate hosts and initiated global calls to shut down or tightly regulate wildlife trade and wet markets. Some pangolin range States, such as Gabon, China and Vietnam, temporarily closed wildlife markets and/or outlawed consumption of wildlife, particularly pangolins and bats. Most of these lockdown measures or bans have since been lifted at least in practice if not in policy and their efficacy is not yet clear. Regardless, increased awareness of disease risk associated with wildlife trade and an increased awareness of the plight of pangolins are arguably positive outcomes. Though most likely unrelated, the COVID-19 pandemic underscored significant gaps in our understanding of the potential disease risks associated with pangolin hunting, trade, and consumption (Mohapatra et al., 2016; Wicker et al., 2020). While further research is needed, this plan takes a conservative approach to risk mitigation by underscoring the need for greater awareness and proactive implementation of prevention measures for pangolins in West Africa.

2.5 Legislation and Law Enforcement

Please refer to sections 4.3 & 4.4 of the [Scoping Study](#), and the PSG is maintaining a [legal atlas of range state national legislation related to pangolins](#) across the world.

Legislation in West African Range States

Pangolins are specifically and widely referenced in range state domestic and international legislation. There is, however, inconsistency across legislative mechanisms as to how pangolins are referred. Though the eight recognised species are placed by the scientific community into three genera (*Manis*, *Phataginus*, *Smutsia*), international and national legislation have not fully adopted these classifications. All pangolins are listed under the genus *Manis* in the CITES Appendices. In contrast, domestic legislation throughout West Africa variably refers to pangolins in the three genera, with at least one country also still referring to black-bellied pangolins in the genus *Uromanis*. Consistency across legislation is needed to ensure effective application of laws, especially in light of international trade legislation and research suggesting the existence of yet-to-be recognised pangolin species.

Internationally, all eight pangolin species are included in CITES Appendix I, which prohibits the international trade of pangolins, their parts and derivatives for commercial purposes. This listing entered into force in January 2017 following unanimous decision by the Parties at CITES CoP17 (Johannesburg, 2016). Pangolins have been subject to various processes and decisions under CITES,

including going through the Review of Significant Trade process (Challender and O’Criadain, 2020). At CoP17, the Parties adopted [Resolution Conference 17.10](#) to guide national and international cooperative efforts on the conservation and management of pangolins. Domestically, West and Central African countries are quite variable both in the existence of national legislation and the technical and financial capacity to effectively implement CITES.

National legislation throughout West and Central Africa recognises and protects native pangolin species to varying degrees, either as Integrally Protected or Partially Protected. Some discrepancies exist, such as Sierra Leone only protecting *Smutsia* pangolins and Guinea-Bissau listing the black-bellied pangolin as absent. Penalties for wildlife crimes related to pangolins vary among countries, with some having minimal fines and sentences that may not deter poachers from taking pangolins from the wild or traffickers from trading their parts ((see additional information in [CITES SC69 Doc. 57](#) and [CoP20 Doc. 79.1](#)). Overall, efforts are being made to align naming conventions, and update and strengthen national legislation to protect pangolins and regulate their trade.

Law Enforcement for Pangolins in West Africa

There is significant variation among the range States in terms of legal mandates and capacity for wildlife and CITES Management Authority agencies. While there are some partnerships between wildlife management agencies, NGOs and national law enforcement agencies, there is limited access to training, legislation and species awareness, as well as technology at regional ports. However, there are ongoing initiatives to build and/or reinforce the capacity of ports and other border crossing stakeholders, including law enforcement agents, as well as judicial sector stakeholders. Recent trainings have been implemented in Cote d’Ivoire, Ghana, Liberia, Nigeria, and Togo specifically targeting airports, seaports, interior border crossings, and financial institutions. Efforts are underway to reinforce, sustain, and expand these initiatives, including a Training of Trainers in 2024 for some beneficiaries of these programs. There is also a lack of formalized databases for wildlife crime and law enforcement, however see [West Africa-TWIX](#). Cross-sectoral partnerships, particularly with the EAGLE Network and Wildlife Justice Commission, focus on awareness-raising, education, and capacity-building. However, in many countries, it is unclear whether wildlife authorities have police powers or must work with other governmental agencies.

With the ECOWAS Heads of State implementing the West Africa Strategy for Combating Wildlife Crime by December 2023, new regulations make it mandatory for all 15 countries to work collaboratively. CITES Management Authorities throughout the region will be pivotal in ensuring the success of these coordinated efforts, including adapting the regional strategy into National Wildlife Crime strategies and establishing National Wildlife Enforcement Task Forces for better inter-agency coordination. This initiative, which is already underway in several countries like Nigeria and Niger, presents a significant opportunity to enhance wildlife protection efforts. Overall, there is a deficit of wildlife law awareness and capacity across general enforcement agencies, and transboundary collaboration and integrated training opportunities have lagged in West Africa.

Pangolin Scales Trafficked in Bags



Photo: © Matthew Shirley



Photo: © EAGLE Network

Section 3: Threats Overview

West Africa Regional Pangolin Conservation
Action Plan 2026-2056

SECTION 3. THREATS OVERVIEW

Through interviews with regional experts, the Scoping Study reported habitat loss driven by logging and both subsistence and commercial agriculture; exploitation for local and international consumption of pangolin parts and derivatives; and the non-application of, and non-compliance with, wildlife laws, as the most significant threats to pangolins in West and Central Africa (see: Section 4.5 and Table 4.5.1 of the [Scoping Study](#)). As part of the West African Pangolin Conservation Action Planning workshop (Accra, 2023), participants ranked all identified threats.

For the habitat loss and degradation (green), forestry/logging was seen as the greatest threat to pangolins throughout West and Central Africa (Table 3.1; see [Scoping Study](#) for full table). At the country level, Benin and Cote d'Ivoire put less emphasis on this threat than other countries. Subsistence agriculture, followed by commercial agriculture, were the next threats of most concern, while pollution was seen to be the least concerning threat related to habitat loss and degradation. Bush fires and urbanization were cited as important threats not previously recognised under habitat loss.

For hunting, harvest and trade (red), international demand continued to be seen as the greatest threat within West Africa (see also Table 4.5.1 of the Scoping Study). Whereas in Central Africa, national-level commercialisation was seen as a greater threat, particularly by Gabon, which may not be as impacted by offtake to supply international demand (Table 3.1; Scoping Study). Behind international demand, the forested countries of West Africa identified household consumption and local or national traditional medicinal or religious use as a larger threat than subsistence commercialization, whereas the Dahomey region countries identified the inverse.

The non-application of wildlife laws was voted the greatest administrative threat (orange) for all countries, except Benin and Sierra Leone, which also highlighted the non-application of protected areas laws as important. The non-application of protected areas laws and non-compliance with CITES laws were similarly ranked as the second most voted administrative threats. Other administrative threats included outdated legislation, lack of training relevant to wildlife law enforcement, and corruption (Table 3.1; Scoping Study).

Related to climate change (blue), habitat modification and changes in prey availability were seen as the most threatening ramifications (Table 3.1; Scoping Study). "Other threats" related to climate change included human migration, drought, and zoonotic disease spillover.

The Scoping Study (Section 4.5.1 to 4.5.4) summarizes what is known and believed about these threats for West African pangolins, supplementing published accounts with the perspectives of regional stakeholders. Overviews of each threat theme and possible actions (Habitat loss and degradation; International wildlife trafficking; Local consumption and trade; Administrative and policy challenges; Rescue, rehabilitation and reintroduction; Disease and one health) are further discussed in the Action Planning section of this report (Section 4).

Table 3.1: Threats to Pangolins Ranked by Importance

Threats to pangolins ranked by importance. Workshop participants ranked each threat from one (most significant) to four (least significant). The values in each column are the percentage of votes received for each threat. For ease of reading, threats are grouped into themes and percentages colour-coded as a heatmap, where higher the frequency of votes the darker the relevant colour for each category. Only two votes were allowed per person for Hunting, Harvesting and Trade, Climate Change, and Administrative categories, hence scores are only given for columns One and Two. This process is based on the opinions of stakeholders, which can vary greatly, through expert elicitation during the action planning workshop (Accra, Ghana 2023). See the [Scoping Study](#) for the full table per country and region.

Table 3.1: Threats to Pangolins Ranked by Importance

<i>Habitat Loss and Degradation</i>	1	2	3	4
Logging/Forestry	22.4	2.7	1.4	0
Subsistence Agriculture	6.8	8.2	3.4	0.7
Commercial Agriculture	3.4	8.8	8.2	1.4
Industrial or Subsistence Pollution	0	2.7	2	2.7
Mining or quarrying	2	5.4	10.9	1.4
Other	1.4	1.4	2	0.7
<i>Hunting, Harvest, and Trade</i>	1	2	3	4
Local or National Traditional Medicine or Religious Use	4	15.2	-	-
Household Consumption	7.1	11.1	-	-
Subsistence Commercialization	7.1	8.1	-	-
National-Level Commercialization	8.1	6.1	-	-
International Demand	25.3	8.1	-	-
<i>Administrative</i>	1	2	3	4
Non-application of Wildlife Law	35.9	6.5	-	-
Non-application of Protected Areas Law	5.4	17.4	-	-
Non-compliance with CITES Law	3.3	19.6	-	-
Other	1.1	10.9	-	-
<i>Climate Change</i>	1	2	3	4
Habitat Modification	47.8	2.2	-	-
Prey Availability	4.4	30	-	-
Other	3.3	12.2	-	-

Section 4: Conservation Strategy & Action Plan

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SECTION 4. CONSERVATION STRATEGY AND ACTION PLAN

4.1 Conservation Planning Approach

Successful conservation planning enhances the effectiveness of conservation action by encouraging a thorough analysis of an exhaustive set of information, identifying achievable and well-defined goals, including input from multiple perspectives, and representing agreement amongst diverse and representative stakeholders. This Action Plan was developed by following such a process. To help reinforce the implementation of the plan, this process also encouraged dialogue and experience sharing amongst stakeholders, initiation of regional collaborative and strategic actions, and identification of opportunities for cross-sectoral partnerships.

Major goals targeted during the West African regional conservation action planning workshop (Accra, 2023) included the following:

- Ensure a deeper understanding of the current state of pangolin knowledge and conservation through presentations, expert panels, and breakout group discussions;
- Update the original Scoping Study from December 2020;
- Draft and validate the Vision for pangolin conservation in West Africa;
- Determine the regional priority actions to combat identified threats;
- Develop a logical framework matrix (logframe) as the basis of the Action Plan;
- Validate the roadmap for drafting, reviewing, and finalizing the Action Plan;
- Discuss and formalize the network of West African pangolin stakeholders to build and strengthen cross-sectoral partnerships across the region and aid in implementing the Action Plan.

Post-workshop, the action plan was developed through an iterative review process by a drafting committee (made up of experts from each major field of pangolin conservation: research, rehabilitation, NGO management, governmental management), a reviewing committee (made up of the workshop organising team), and, finally all relevant stakeholders present at and absent from the workshop. A workshop report was produced that provides full documentation of the process and can be made available by the IUCN SSC Pangolin Specialist Group upon request.

4.2 30 Year Vision for Pangolin Conservation in West Africa



By 2056 we envision thriving and stable pangolin populations that are secure in their habitat and supported by:

Local communities that are engaged and benefiting	Strengthened national and transboundary collaborative networks	Abundant and accessible research data	Sustainable financing
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4.3 Action Plan and Goals

The Action Plan is separated into six major threat response and/or action-based themes:

- (A) habitat loss and degradation,
- (B) local consumption and trade,
- (C) international wildlife trafficking,
- (D) rescue, rehabilitation and reintroduction,
- (E) zoonotic disease and One Health, and
- (F) administration and policy.

Each thematic section includes an opening summary of the relevant regional threats related to it for pangolins in West Africa (the problem statement) and information on any current major actions in West Africa (with more information to be found in the [Scoping Study](#)).

Following the introduction, each subsection then presents the proposed actions developed during the workshop in the form of a logical framework table that also shows the relevant Goals and Outputs under which each Action is grouped. Where further explanation is needed, each section also includes narrative paragraphs for each Output and Goal. The aim of these narrative paragraphs is to help provide a baseline understanding and supplementary information for implementing parties.

Though we use the collective word “pangolin(s)” throughout the Action Plan, each of West Africa’s three pangolin species are ecologically unique and, therefore, each of the identified threats impact them in unique ways. Because of this, implementing stakeholders should consider that each recommended Goal, Output and Action should be applied individually to each of the three species and that any interventions for one species may or may not benefit the others. Unless stated otherwise in the logframe table, each Action targets all range states to achieve national Outputs and Goals. This approach ensures positive regional outcomes, even if the pace of pangolin conservation varies among range states.

Theme A: Habitat Loss and Degradation	
GOAL A1	Pangolin habitat is sustainably conserved and at least 30% of degraded habitats restored in each range state by 2040.
Theme B: Local Consumption and Trade	
GOAL B1	Offtake and use of all three West African pangolin species is actively regulated and sustainable in all range states by 2040.
GOAL B2	Local communities are effectively engaged in long-term and sustainable conservation of all three pangolin species in West Africa by 2040.
Theme C: International Wildlife Trafficking	
GOAL C1	Strong deterrents against pangolin trafficking are effectively deployed across West Africa by 2034.
GOAL C2	Supply of pangolin products available to be trafficked is reduced by 50% or more by 2035.
GOAL C3	Improved systems and infrastructure for investigating and monitoring pangolin trade spatio-temporal dynamics leads to increased detection, interdiction and criminal justice by 2035.

Theme D: Rescue, Rehabilitation, and Reintroduction

GOAL D1	At least one fully functional pangolin rescue and rehabilitation center is operating in each range state in West Africa by 2035.
GOAL D2	Information and data sharing are promoted through an inclusive West African Network for the rescue, rehabilitation and release of all three West African pangolin species by 2030.
GOAL D3	Effective release site selection protocols and post-release monitoring approaches and tools are developed for the three West African pangolin species by 2030.
GOAL D4	Rescue and rehabilitation centers are all actively engaged in participatory, co-designed community-based conservation interventions with communities adjacent to the center and release sites by 2033.

Theme E: Zoonotic Disease and One Health

GOAL E1	A disease risk analysis (DRA) system based on One Health principles is established to assess and prevent the health risks associated with pangolin harvest, consumption and trade by 2030.
GOAL E2	Pangolin health and disease risks associated with pangolin trade are better understood through targeted research and monitoring by 2035.

Theme F: Administrative and Policy Challenges

GOAL F1	Effective application of laws, including for CITES implementation, critical habitat protections, and judicial processes across all range states by 2040.
GOAL F2	Strong, efficient and functional governance institutions for pangolin conservation are reinforced by 2033.
GOAL F3	Effective collaboration and coordination between agencies, local communities, and other stakeholders for pangolin conservation is supported at local, national, and regional scales by 2030.
GOAL F4	A strengthened and harmonised legal and policy framework is implemented for pangolin conservation in West Africa by 2036.

4.3.A

Habitat Loss & Degradation

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4.3.A Habitat Loss and Degradation

The Problem

Habitat loss and degradation represent the most pressing threat to pangolins in West Africa, with the region having lost nearly all of its original forest cover primarily due to conversion to agriculture, logging, mining, and urban development (Maley, 1996; CILSS, 2016). This historic and ongoing deforestation leaves fragmented landscapes that severely constrain pangolin populations by reducing available habitat and increasing vulnerability to poaching within both natural and modified environments. Shifting agricultural practices, like slash-and-burn farming and expanding human settlements, degrade soil quality and reduce ant and termite populations, primary pangolin prey, creating indirect but significant survival challenges (Akpona et al., 2008; Pietersen and Challenger 2020). White-bellied pangolins exhibit some adaptability to agroforestry and plantation habitats, which often leaves them exposed to continued harvesting, underscoring the need for wildlife-friendly management practices (Akpona et al., 2008; Pietersen and Challenger, 2020). Conversely, giant pangolins occupy a broader range of habitat types, including savannah and bushland, and may be less directly impacted by forest loss, but they remain vulnerable to fragmentation and human encroachment. Pangolin populations in West Africa face reduced areas of suitable habitats, smaller population sizes, and increased susceptibility to hunting and trafficking.

Current Data and Actions

Current data reveal that forest loss and degradation continue at concerning rates across West Africa, compounding threats to pangolins. By some estimates, more than 90% of original forest cover has already been cleared, with an additional 25% lost between 1975 and 2013 alone with the reductions most pronounced in the Upper Guinea forests, which declined by 37% (Maley, 1996; Myers et al., 2000; Mayaux et al., 2013; CILSS, 2016; Liu et al., 2017). Liberia retains the largest proportion of forest cover (~37%), but other countries have suffered extreme declines: Côte d'Ivoire lost 60% over the study period, Nigeria 45%, and Ghana 24% (Bakarr et al., 2004; Knauer et al., 2014). Rates of annual deforestation in West Africa (0.9% in the 1990s, 0.3% in the 2000s) remain around three times higher than those in the Congo Basin (Mayaux et al., 2013). This pressure is exacerbated by some of the highest human population densities on the continent (Tatem, 2017), limited roadless areas (Ibisch et al., 2016), and intensifying land-use demands. While commercial logging is no longer the dominant regional driver due to the historic depletion of unprotected forests, smallholder and commercial agriculture now account for the bulk of forest conversion, with roughly 80% of the landscape characterized as a forest-agriculture mosaic (Norris et al., 2010). Pangolins are therefore increasingly confined to fragmented landscapes where indirect effects of habitat modification—including soil degradation and declines in their primary prey, ants and termites—place additional pressures on survival (Pietersen and Challenger, 2020). White-bellied pangolins have shown some adaptability in plantation and agroforestry settings, though this often brings them into closer contact with hunters (Akpona et al., 2008), while giant pangolins are more widespread but still vulnerable to fragmentation. Taken together, current deforestation trends and land-use pressures show that without urgent measures to stem habitat alteration, restore degraded forests, and integrate pangolin needs into regional land management policies, further declines across pangolin populations are inevitable.

Various targeted conservation actions have been implemented in West Africa to counter pangolin habitat loss, combining habitat protection, community engagement, and sustainable land management. Some notable efforts include the creation of large protected areas (e.g., [Taï National Park](#) in Côte d'Ivoire and [Sapo National Park](#) in Liberia) or transboundary reserves (e.g., [Gola Rainforest National Park](#)) which all provide crucial forest refuge for pangolins. Large-scale forest conservation and restoration initiatives, including REDD+ projects and the [Pan-African Action Agenda on Ecosystem Restoration for Increased Resilience](#), aim to enhance ecosystem resilience and reverse degradation across the region. Land-use planning initiatives and education programs across the region, including [AF100](#) (African Forest

Current Data and Actions (cont.)

Landscape Restoration Initiative) for Forest Restoration, seek to restore 100 million hectares of degraded forest landscapes in Africa by 2030. And, Community Resource Management Areas ([CREMAs](#)) are increasingly effective platforms for habitat conservation and restoration outside of existing protected areas. Specific projects, such as the West Africa Forest-Farm Interface Project ([WAFFI](#)) in Burkina Faso and Ghana and the the Central African Forest Initiative ([CAFI](#)) in the Congo Basin region of Central Africa, aim at supporting countries to reduce deforestation through policy reforms and sustainable land use.

Needed Actions

Ways to tackle this problem include conserving and restoring pangolin habitat (Goal A1.1), through improving the management of protected areas, particularly parks and reserves located in pangolin distribution areas (Output A1.1), integrating Other Effective Area Based Conservation Measures (OECMs) beyond formal protected areas into the protected areas network for pangolin habitat conservation (Output A1.2), pangolin-friendly agricultural practices and land management (Output A1.3), rehabilitating degraded landscapes in pangolin range states (Output A1.4), and encouraging and fostering effective action by governments (Output A1.5).

Goal A1

Pangolin habitat is sustainably conserved and at least 30% of degraded habitats restored in each range state by 2040.

Output A1.1

Formally protected areas with pangolin habitat in West Africa are better managed for pangolins by 2035.

Action	Indicator	Means of Verification	Timeline
A1.1.1 – Ensure that targeted conservation measures, including monitoring, for pangolins and their ecological needs (prey availability, habitat quality and connectivity, etc...) are identified in protected area management plans for PAs with pangolin habitat and populations (see outputs of Actions B1.1.1 and B1.1.2 to guide identification of target PAs).	At least 50% of protected areas with pangolin habitat and populations have targeted pangolin management actions included in their management plans or other guiding strategy documents.	1. Management plans showing targeted pangolin measures 2. M&E data showing that pangolin measures are being implemented	by 2030

Action	Indicator	Means of Verification	Timeline
A1.1.2 – Implement standardised protected area management tools, like the Integrated Management Effectiveness Tool (IMET), in key protected areas with pangolin habitat and populations.	50% of protected areas with pangolin habitat and populations have implemented standardized management effectiveness tools.	1. Implementation reports 2. Training and capacity-building records 3. Performance assessments 4. Stakeholder feedback	by 2030
A1.1.3 – Initiate and/or maintain functioning advisory committees including local community representation as part of protected area management.	50% of protected areas with pangolin habitat and populations have established functioning local advisory committees including local community representation.	1. Committee charter documents 2. Committee meeting records 3. Field visits and verification	by 2028
A1.1.4 – Improve protected area law enforcement capacity through access to advanced technology (e.g., night vision, communication channels, gps).	50% of protected areas with pangolin habitat and populations are equipped with advanced technology for law enforcement.	1. Procurement records 2. Equipment inventory 3. Technology performance assessments	by 2030
A1.1.5 – Improve protected area law enforcement capacity through establishment of community informant networks.	At least 50% of communities surrounding protected areas with pangolin habitat and populations have established informant networks for pangolin conservation.	1. Informant records 2. Informant training records 3. Informant reports and feedback	by 2028
A1.1.6 – Improve and institutionalize monitoring and evaluation systems for protected area management, including annual monitoring of pangolin populations as metrics of management intervention success (refer to Output B1.3).	At least 50% of protected areas with pangolin habitat and populations have institutionalized and are implementing monitoring and evaluation methods.	1. Monitoring and evaluation plans 2. Reporting systems 3. Evaluation reports 4. Training and capacity building records	by 2030

Action	Indicator	Means of Verification	Timeline
A1.1.7 – Implement bespoke and diverse alternative livelihoods and community development programs as part of PA management plans (e.g., as identified through Action B1.2.4, with pangolin champions Action B2.1.1 and in synergy with Actions C2.1.4 and C2.1.5).	At least one bespoke alternative livelihood and/or community development project implemented around each PA with important pangolin populations (see also Output B1.1).	1. Program documentation 2. Program monitoring and evaluation data	by 2032

Output A1.2

Other effective area-based conservation measures (OECMs) expand the pangolin conservation estate beyond protected areas to achieve conserving 30% of pangolin habitats outside of protected areas by 2035.

Action	Indicator	Means of Verification	Timeline
A1.2.1 – Identify key areas with pangolin habitats and populations located outside of formal protected areas that meet the criteria for inclusion as OECMs across all pangolin range states (see outputs of Actions B1.1.1 and B1.1.2 to guide identification of target areas as OECMs).	At least 5 key, non-protected areas with pangolin habitat and populations identified and mapped per range state.	1. Field surveys and data collection 2. GIS data and maps 3. Stakeholder consultations 4. Spatial analysis and modeling	by 2027
A1.2.2 – Establish collaboration agreements among relevant stakeholders to formalize new OECMs in areas with pangolin habitats or populations (or to prioritize pangolins as part of existing OECMs).	At least 5 agreements to formalize OECMs prioritizing pangolin habitat management have been signed in each pangolin range state, integrating OECMs into the broader protected areas network.	1. Signed collaboration agreements 2. Public announcements and statements 3. Agreed-upon work plans or action plans	by 2035
A1.2.3 – Ensure that targeted conservation measures, including monitoring, for pangolins and their ecological needs (prey availability, habitat quality and connectivity, etc...) are identified in management plans for newly established or existing OECMs.	100% of newly established or existing OECMs within pangolin ranges and that target suitable habitat areas with pangolins that have pangolin populations have targeted management actions for pangolin conservation.	1. Management plans showing targeted pangolin measures 2. M&E data showing that pangolin measures are being implemented	by 2035

Output A1.3

Pangolin-friendly agricultural practices and land management expand the pangolin conservation estate by 2031.

Action	Indicator	Means of Verification	Timeline
A1.3.1 – Identify and map key agricultural production areas surrounding target PAs and OECMs (Outputs A1.1 and A1.2), including the present subsistence, small-holder and industrial agricultural actors (see outputs of Actions B1.1.1 and B1.1.2 to guide identification of target areas).	All relevant areas and actors adjacent target protected areas and OECMs identified and mapped.	1. Field surveys and data collection 2. GIS data and maps 3. Stakeholder mapping	by 2027
A1.3.2 – Establish commitment agreements from identified actors in the agriculture sector (Action A1.3.1), ranging from small-holder to industrial-scale, including those that buy from subsistence producers and governing councils where they exist (e.g., Roundtable on Sustainable Palm Oil and Coffee-Cacao Board), to protect pangolins within their production landscapes (Synergise with Outputs C2.3, B2.1 and B2.2).	Signed commitment agreements result in agricultural businesses and corporations incorporating pangolin friendly practices within their plantations and supply chains (e.g., no offtake of pangolins in plantations, maintaining natural vegetation between/around parcels, etc.) resulting in secure pangolin populations within concessions.	1. Signed commitment agreements 2. Public announcements and statements 3. Documentation of changes in business practices, personnel and land management within businesses and across their supply chains	by 2030
A1.3.3 – Develop and deploy a pangolin-friendly certification scheme, including with commitments from businesses and corporations to incentivize certification for suppliers across their supply chains (Synergise with Outputs C2.3, B2.1 and B2.2).	At least 25% of small-holder producers and 75% of corporate producers are certified by 2035.	1. Certification scheme documentation 2. Certified producers	by 2030
A1.3.4 – Develop and deploy monitoring and evaluation systems to monitor pangolin populations and supply chain actor practices to monitor intervention success (refer to Output B1.3).	At least 50% of all producers participating in pangolin-friendly practices have institutionalized and are implementing monitoring and evaluation methods.	1. Monitoring and evaluation plans 2. Reporting systems 3. Evaluation reports 4. Training and capacity building records	by 2032

Output A1.4

Degraded landscapes are rehabilitated to expand the habitats available for pangolins across West African range States by 2035.

Action	Indicator	Means of Verification	Timeline
A1.4.1 – Use existing remote sensing resources (e.g., land cover maps and satellite imagery) to identify degraded areas that can be restored and connected to intact pangolin habitats and management areas.	At least 30% of degraded habitat patches for pangolins have been identified and mapped to guide selection of priority sites for restoration.	1. Mapping reports 2. Field Verification Reports 3. Stakeholder Validation Records	by 2028
A1.4.2 – Develop and implement bespoke, habitat-specific restoration plans for the identified degraded areas (Action A1.3.1).	At least 30% of degraded areas are being restored following site-specific plans.	1. Restoration plan documents 2. List of developed restoration plans 3. Validation by stakeholders 4. Peer review of restoration plans	by 2028
A1.4.3 – Monitor and evaluate restoration success using pangolin presence as an indicator for all sites in active restoration (see Output B1.3).	100% sites in restoration are monitored biannually for pangolin presence starting in 2035.	1. Documented research plan 2. Research plan review and validation 3. Research progress reports 4. Research publications or presentations	by 2035

Strengthening the management of formally protected areas with pangolin habitat in West Africa seeks to ensure that protected areas function to effectively safeguard pangolin populations and their ecosystems (**Output A1.1**). This output focuses on reinforcing management systems, governance structures, and law enforcement capacities so that protected areas provide real security for pangolins. This requires data-driven planning and adaptive strategies (e.g. the [Everglades Restoration Project](#)), alongside increased law enforcement capacity. Key initiatives may include investing in highly-trained and equipped rangers, utilizing technology like SMART for evidence-based patrols, fostering community involvement, strengthening anti-corruption measures, and ensuring sustainable funding for long-term conservation efforts. Protected areas that have had a boost in funding and knowledge sharing, through organisations like African Parks Network and Peace Parks, have benefited from improved management policies and protection of wildlife (Banamwana et al., 2021; Yousefpour et al., 2022). Community engagement and sustainable tourism practices can successfully improve the management of some protected areas, leading to active community participation, and habitat and community conservation.

Strengthening the importance of other effective area-based conservation measures (OECMs) can help expand the available conservation estate for pangolins and their habitat (**Output A1.2**). OECMs are geographically defined areas not in a protected area that are governed and managed to achieve positive and sustained outcomes for biodiversity conservation and associated ecosystem function and

services, including cultural, spiritual, socioeconomic, and other locally relevant values (Laffoley et al., 2017). It includes working with local communities, private landholders, and traditional authorities to secure and manage habitats critical for pangolin survival, integrating customary land-use practices and local conservation knowledge. Successful examples of this approach include the Ghanaian [CREMA](#) system and community-based protected areas in Côte d'Ivoire (the [FMTE](#) and the *Réserve Naturelle Volontaire de la Dodo*).

Extensive forest-replacement agricultural landscapes throughout West Africa (e.g., cacao, rubber, palm oil, cashew, teak, etc.) can and should be effectively employed for pangolin conservation (**Output A1.3**). White- and black-bellied pangolins are increasingly known to adapt to living in plantations ranging from subsistence to industrial-scales. Identifying production areas adjacent to more intact or restored habitats will enable the mapping of actors in the diverse agricultural supply chains. Establishing pangolin conservation commitments from these actors to manage their supply chains and businesses to be pangolin-friendly is needed to ensure the relevance of these habitats. Examples may include instituting no hunting policies for staff, maintaining natural vegetation between plots, not using pesticides known to be harmful to ants and termites, and/or only operating within certified pangolin-friendly supply chains. A successful example of a certification scheme is the [Wildlife Friendly Enterprise Network](#), who works with actors across supply chains to certify products wildlife friendly to improve benefits to participating producers and allow businesses to market a new level of product for interested consumers. Improved benefits to participating producers may include receiving higher prices for their products or similar at the individual or community level.

Restoring degraded landscapes entails rehabilitating forests, savannahs, and other critical ecosystems that have been degraded by unsustainable agriculture, logging, mining, and infrastructure development (**Output A1.4**). It includes reforestation and assisted natural regeneration, erosion control, and enrichment planting of native species that support pangolin prey and shelter. Implementation involves identifying priority areas for restoration, mobilizing local communities, and integrating habitat restoration into national land-use planning and climate adaptation strategies. A notable example from West Africa is the [Great Green Wall \(GGW\)](#) initiative, which aims to restore 100 million hectares of degraded land across the Sahel by 2030, improve biodiversity, and enhance ecosystem services. Community-led initiatives that promote sustainable farming practices and agroforestry systems can restore biodiversity while supporting local livelihoods.

4.3.B

Local Consumption & Trade

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4.3.B Local Consumption and Trade

The Problem

Local communities in West Africa remain highly dependent on biodiversity for their basic and other needs, including nutritional, economic, medical, religious and spiritual (Abdullahi, 2011). A diversity of endangered wild species, including pangolins, are widely consumed as wildmeat in both rural and urban areas (Alexander et al., 2015; Djaoun et al., 2023). As for prior regional epidemics (e.g., ebola 2015), even the purported link between pangolins and COVID-19 did not deter people from trading and consuming them (Harvey-Carroll et al., 2022; Simo et al., 2024). In addition to consumption as wildmeat throughout West and Central Africa (Booth et al., 2021), pangolins are heavily used in traditional African medicine and for spiritual purposes prominently in West Africa, where many communities practice Vodun (D'Cruze et al., 2020; Djaoun et al., 2023; Zanvo et al., 2021) and other traditional religious beliefs (Ingram et al., 2022). All three species are openly sold in wildmeat and traditional medicinal markets to highly diverse clientele ranging from local people (restaurants, traditional healers, simple consumers) to Asian diaspora communities (D'Cruze et al., 2020; Zanvo et al., 2021; Zanvo, 2022). Unfortunately, data quantifying how local consumption and trade drives wild pangolin harvest (i.e., relative to demand for international markets) is virtually nonexistent. In a regional context characterised by ineffective law enforcement, scarcity of diverse income opportunities perpetuate poverty and limit individual growth potential. Consequently, the demand and flourishing trade of pangolins for diverse forms of local consumption serve as key sources of income for local peoples, hampering pangolin population regeneration, and risking extensive local extinctions of all three pangolin species if no action is taken.

Current Data and Actions

The ethnozoology and cultural significance of pangolins in West Africa are by far the most understood local relationships with pangolins in West Africa, even globally, and the knowledge of local hunters, traditional healers, consumers, and vendors in traditional medicine markets have been significantly documented (see [Scoping Study](#) for review). Pangolin meat is the most widely consumed product and is highly prized as a wildmeat animal protein source throughout West and Central Africa (Emogor et al. 2025; Zanvo et al., 2021; Mouafo et al., 2021). There are a wealth of studies documenting local knowledge on the uses of pangolins across different ethnic groups, as well as local perceptions and attitudes towards pangolins. These studies identified the ethnopharmacological and spiritual drivers behind the use of at least 30 pangolin body parts, including meat (Akpona et al., 2008; Boakye et al., 2016, 2014; Sodeinde and Adedipe, 1994; Soewu et al., 2020; Soewu and Adekanola, 2011; Zanvo et al., 2021). Pangolin scales remain the most widely used body part in medical and spiritual interventions; while more specialized parts, like the xiphisternum, are only used in limited local contexts to treat specific conditions (Zanvo et al., 2021). There is limited evidence for species-specific uses, with only two publications from Benin and the wider Dahomey Gap illustrating specific uses of white-bellied pangolins, the only species present in this sub-region of West Africa (Zanvo et al., 2021; Zanvo, 2022).

Envisioned Actions

Ways to tackle this problem include ensuring offtake and use of pangolins in all range states is actively regulated and sustainable (Goal B1). In this goal there are plans to identify population and hunting hotspots (Output B1.1), more completely understand drivers of offtake and consumption (Output B1.2), and monitor reference populations and local commercial trade and consumption at reference markets (Output B1.3) across all range states and for all three species.

Goal B1

Offtake and use of all three West African pangolin species is actively regulated and sustainable in all range states by 2040.

Output B1.1

Pangolin population (i.e., source) and hunting hotspots are identified for all species in all range states by 2031.

Action	Indicator	Means of Verification	Timeline
B1.1.1 – Implement desktop analysis using SDMs and other modeling approaches to preliminarily identify potential pangolin population hotspot areas across the region, including to inform identification of important protected areas (Output A1.1), OECMs (Output A1.2), and degraded or agricultural areas (Output A1.3).	Pangolin population hotspot potential map is produced identifying key areas for ground-truthing and further investigation.	1. Occurrence database 2. Model/analysis results 3. Reports and scientific publications	by 2027
B1.1.2 – Survey areas identified in Action B1.1.1 and others at national scale using ecological and TEK-based approaches to map baseline data on pangolin population strongholds and hunting hotspots.	At least 1 pangolin population monitoring survey has been completed in all West African pangolin range states using a standardized protocol.	1. Survey reports 2. Survey protocols 3. Publications	by 2029
B1.1.3 – Map the distribution of wildmeat and traditional medicine markets that trade pangolins at the national scale.	At least 1 survey has been completed in each range state on the distribution of wildmeat and traditional medicine markets.	1. Survey reports 2. Market mapping data 3. Survey implementation records	by 2029
B1.1.4 – Conduct national baseline surveys to quantify current pangolin offtake rates linked to local and national consumption, including with diverse actors across the value chain (i.e., from hunter/village to market vendors).	At least 1 national baseline survey has been completed in each range state quantifying the current offtake rates for local and national consumption.	1. Survey Reports 2. Survey Methodology 3. Survey Data	by 2029

Action	Indicator	Means of Verification	Timeline
B1.1.5 – Provide known provenance samples accessible as part of surveys in Action B1.1.2 from wild pangolin populations to support development of biomarker profile database (Action C3.1.3).	Biomarker reference database has thorough geographic representation for locality-specific reference profiles for diverse biomarkers.	1. Individual and locality-specific biomarker profiles 2. Archived specimen samples 3. Reports and publications	by 2031
B1.1.6 – Trial applicability of database (Action C3.1.3) to determine source geographies of wildmeat and traditional medicine specimens and better estimate offtake rates. If trial is successful, replicate across all range states and integrate protocol into long-term monitoring approach (linked to Output C3.1).	One trial study implemented validating, or not, the approach. If valid, approach is formally documented and integrated into annual monitoring programs.	1. Trial documentation 2. Publications 3. Monitoring protocols 4. Annual monitoring data	Continuous

Output B1.2

Drivers of local pangolin consumption and trade are more completely understood for all species across all range states by 2032.

Action	Indicator	Means of Verification	Timeline
B1.2.1 – Survey hunters, wildmeat traders, vendors in traditional medicine markets, consumers, and diaspora communities to understand the drivers and market dynamics of pangolin trade and consumption.	Relevant actors are profiled in all range states such that information can be used for targeted intervention development and implementation.	1. Survey reports 2. Recommendations for targeted interventions	by 2028
B1.2.2 – Survey local community knowledge, attitudes, and perceptions of pangolins to identify potential bespoke, strategic interventions for communities in/around pangolin population and offtake hotspots identified in Action B1.1.2 .	Key community knowledge, attitudes, and perceptions have been profiled with bespoke interventions identified and communicated to relevant stakeholders.	1. Survey reports 2. Recommendations for targeted interventions	by 2028

Action	Indicator	Means of Verification	Timeline
B1.2.3 – Evaluate diverse outreach and behaviour change approaches under defined theories of change and using information generated by Actions B1.2.1 and B1.2.2 to identify strategies likely to contribute to achieving Goal B1 .	Comprehensive report detailing the theories of change and assessing approaches and target audiences to guide future interventions.	1. Report 2. Recommendations	by 2030
B1.2.4 – Assess the needs of communities in/around pangolin population and hunting hotspots (Output B1.1) as a precursor to implementing alternative livelihood and/or community development initiatives for Output B2.2 .	Comprehensive report detailing community livelihood and development needs to guide future interventions.	1. Report 2. Recommendations	by 2029

Output B1.3

Reference populations and trade monitoring sites are monitored annually for population trajectories and trade dynamics of all 3 pangolins species following standardised protocols in all range states by 2030.

Action	Indicator	Means of Verification	Timeline
B1.3.1 – Develop and/or adopt standardised protocols for annual population (ecological and/or TEK-based methods) and trade monitoring in synergy with on-going efforts by PSG.	Globally standardised population and trade monitoring protocols developed and published.	1. Standardised protocol documents available in English and French	late 2027
B1.3.2 – Implemented annual monitoring using the protocols developed in Action B1.3.1 in at least one critical reference population and three domestic trade sites (as identified through Output B1).	Globally standardised population and trade monitoring protocols implemented for annual monitoring of at least 1 wild and 3 trade sites in each country.	1. Reference sites identified and mapped for each country 2. Annual monitoring data	starting in 2027
B1.3.3 – Develop and maintain a population monitoring database for centralized reference, and other pangolin population hotspot, annual monitoring data. The database should be housed and maintained by an appropriate organization, like the PSG.	Database is developed and populated with annual monitoring data with access available to stakeholders implementing interventions in need of monitoring and adaptive management.	1. Database 2. Agreements with contributing entities 3. Access protocols established	by 2027

Action	Indicator	Means of Verification	Timeline
B1.3.4 – Synergise with and contribute data to regional/global database(s) for wildmeat, and ensure this information is regionally accessible for relevant stakeholders for monitoring and adaptive management purposes.	The open-access WILDMEAT database (www.wildmeat.org), including a partition for pangolins, is populated with regional data and relevant stakeholders in West Africa use it for trade monitoring.	1. Database access records 2. Communications 3. Data in database	early 2027

Among the major limitations impeding the implementation of effective pangolin conservation at the site level is a lack of understanding of important pangolin population hotspot areas, especially those with important populations of more than one species and that overlap with land tenure and governance regimes capable of facilitating action. Similarly, there is virtually no information on important hunting and offtake sites and whether they overlap with population hotspots (**Output B1.1**). On ground stakeholders should focus efforts on identifying pangolin population and hunting hotspots alongside provision of baseline population and offtake data to underpin future, on-going monitoring. To the extent possible, using such efforts to provide georeferenced samples to support the development of reference biomarker databases will further enable tracing trafficked specimens to their geographic origin, facilitating law enforcement efforts, community outreach campaigns, and the reintroduction of live seized individuals following the rescue and rehabilitation process.

Though the drivers of pangolin consumption in West Africa are among the most well-studied aspects for pangolins globally, developing a more comprehensive understanding across the region and its diverse ethnic groups and diaspora communities may better facilitate monitoring offtake and identifying bespoke interventions for behavior change and trade disruption (**Output B1.2**). Such evidence, developed through coordinated and collaborative efforts across range states (local communities, wildmeat and traditional medicine markets), using standardized methods and tools developed through **Outputs B1.1** and **B1.3**, will help better decipher the trade chain and dynamics.

Regular and consistent population and trade monitoring at local, national and regional scales will provide the needed understanding of the spatial and temporal dynamics of pangolin populations and offtake and trade to both plan for and assess targeted interventions through the adaptive management framework. Coordination and standardization of protocols at the regional scale will provide the needed data to understand trends over time and drivers of heterogeneity over time and space. These data need to be centralized for appropriate analysis and feedback, we recommend working with the IUCN SSC Pangolin Specialist Group as the most appropriate stakeholder to maintain such a database. For offtake and trade specifically, a comprehensive database on the hunting, consumption, and trade of wildlife has recently been successfully developed for sub-Saharan Africa (Ingram et al., 2025; [WILDMEAT Database](http://www.wildmeat.org)), into which pangolin data can be centralized providing open access to conservation stakeholders interested in wildlife trade. The database will soon house open-access standardised protocols for monitoring hunting, consumption, and market trade. Individual and household surveys have been used by many researchers to study the interactions between people and pangolins in the region (Boakye et al., 2016, 2015, 2014; D’Cruze et al., 2020; Mambeya et al., 2018; Mouafo et al., 2021; Zanvo et al., 2021), recognizing Local Ecological Knowledge (LEK) as a valuable tool in the conservation sciences, especially when combined with ecological approaches to understanding population trajectories and offtake dynamics (Zanvo et al., 2020).

Engagement of local communities in pangolin conservation is a key way to tackle unregulated consumption and trade in this region, where wildmeat and traditional medicines derived from wildlife constitute the main source of protein and healthcare respectively. Actions within this goal (Goal B2) include plans to increase local people's awareness (Output B2.1) and perceptions of benefits (Output B2.2) related to pangolins in all range states.

Goal B2

Local communities are effectively engaged in long-term and sustainable conservation of all three pangolin species in West Africa by 2040.

Output B2.1

Awareness and behaviour change for conservation of all 3 pangolin species is increased by 50% in all range states by 2032.

Action	Indicator	Means of Verification	Timeline
B2.1.1 – Synergise with efforts to achieve Output B1.1 , including Actions B1.1.1, B1.1.2, and B1.1.3 , and Output B2.1 , including Actions B2.1.1, B2.1.3, B2.1.4, and B2.1.5 , to develop a comprehensive communications and behavior change strategy relevant to offtake for local consumption and trade. Strategy should be informed by evidence generated from Outputs C1.1 and C1.2 .	A comprehensive communication and behavior change strategy has been developed, including a monitoring and evaluation plan, to target key actors and consumers relevant to local consumption and trade, including diaspora.	1. Communication strategy documentation 2. Collaborator engagement records 3. Messaging materials	by 2030
B2.1.2 – Deploy the communication and behavior change strategy (Action B2.1.1) through outlets and venues appropriate to target audiences and in ways likely to achieve the desired behavioral changes.	Communication strategy deployed in at least 5 pangolin population and local trade hotspots in each range country.	1. Recordings and other records of deployment 2. Before and after monitoring and evaluation data from audience groups.	Continuous
B2.1.3 – Implement monitoring and evaluation of interventions deployed as part of the communications and behavior change strategy (Action B2.1.2) to evaluate their efficacy and be sustained under an adaptive management framework.	All interventions are monitored with pertinent evaluation data collected and analysed to inform on-going implementation as part of an adaptive management approach.	1. Monitoring and evaluation protocols 2. Data 3. Adaptive management report on intervention efficacy	Continuous

Output B2.2

Awareness and behaviour change for conservation of all 3 pangolin species is increased by 50% in all range states by 2032.

Action	Indicator	Means of Verification	Timeline
B2.2.1 – Identify pangolin champions/ ambassadors in communities in and around population and hunting hotspots to help develop and manage pangolin guardian programs (align with Action C2.1.3)	At least 2 champions have been identified and engaged in pangolin guardian programs in every reference population and trade hotspot identified through Output B1.1 , with at least 50% of champions youth, traders or hunters.	1. Commitment letters or agreements 2. Employment contracts 3. Champion work records	by 2030
B2.2.2 – Implement bespoke and diverse alternative livelihoods and community development programs as identified through Action B1.2.4 with pangolin champions (Action B2.2.1). Synergise with Actions C2.1.4 and C2.1.5.	At least one bespoke alternative livelihood and/or community development project implemented in every reference population and trade hotspot identified through Output B1.1 .	1. Program documentation 2. Program monitoring and evaluation data	by 2028
B2.2.3 – Implement monitoring and evaluation of alternative livelihood and community development interventions deployed as part of Action B2.2.2 to evaluate their efficacy and be sustained under an adaptive management framework.	All interventions are monitored with pertinent evaluation data collected and analysed to inform on-going implementation as part of an adaptive management approach.	1. Monitoring and evaluation protocols 2. Data 3. Adaptive management report on intervention efficacy	Continuous

Raising awareness within strategic communities in a way that promotes and facilitates behavior change is an essential step in engaging local people, reducing anthropogenic pressure on wild populations, and achieving sustainable local consumption and trade (**Output B2.1**). A comprehensive strategy grounded in a robust theory of change and that identifies actors, messages, messaging, outlets, etc... must be developed in collaboration with communications and behavior change experts, as well as underpinned by data relevant to target communities and audiences. Identification of such communications interventions must be born from engagement with relevant actors and, ideally, through a co-design process, and thus it is premature to make specific recommendations here. Though examples may include diverse media campaigns targeted through important social gathering places (e.g., schools, churches, etc...), and should target not only local/national audiences but also diaspora communities. One possible example of how to properly implement awareness interventions to achieve and demonstrate behavioral change is the “[Strength of Chi](#)” campaign conducted by TRAFFIC, which set out to reduce rhino horn trade in Vietnam (Olmedo et al., 2018). Although there are no examples of evaluated pangolin-awareness raising and sensitisation campaigns in West Africa (including post campaign monitoring), one study in southwest Nigeria identified that the general public appears to be very supportive of such campaigns (Emogor et al., 2023), suggesting their usefulness in the region.

Improving local people's access to benefits as a result of their engagement in pangolin conservation and stewardship may help promote better outcomes for pangolins, including population growth and reduced demand, as well as increase trust in pangolin conservation actors and actions (Zajac et al., 2012) (**Output B2.2**). Any proposed or planned alternative livelihood or community development initiative should be born from a participatory needs assessment with target communities and, ideally, also be codesigned to ensure the bespoke needs of target communities are met and people are incentivized to cooperate, and thus it is premature to make specific recommendations here. Though examples may include development of locally accepted income-generating livelihood alternatives and ecotourism infrastructure, promoting alternatives to wildmeat, supporting farmers to be more productive and increase revenues, and supporting the delivery of basic services and infrastructure (potable water, healthcare, etc). The success of conservation efforts for the giraffe in the tiger bush of Kourée (Niger) and the red-bellied monkey, endemic to the Dahomey gap in the Lama forest (Benin), has been achieved thanks to locally-accepted conservation interventions that boosted benefits to local people. To enhance the conservation of protected areas in South Sudan within the context of war, Fauna & Flora supports community-based initiatives to address illegal hunting by providing technical expertise and promoting income-generating activities that improve perceptions of the benefits of conservation. All interventions should be monitored and evaluated for adaptive management purposes and strive to achieve sustainability independent of external technical and financial support.

4.3.C

International Wildlife Trafficking

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4.3.3 International Wildlife Trafficking

The Problem

International wildlife trafficking presents significant obstacles to pangolin conservation in West Africa. The fundamental problem lies in the incessant demand for pangolin scales and meat in international markets, primarily in Asia (Heinrich, 2016, 2020; UNODC, 2024) and the fact that all trade in pangolins is illegal. West Africa has become the most important export region for illegally traded specimens to Asia, though the source of these specimens also includes Central Africa (Emogor et al., 2021; Ingram et al., 2019c; Tinsman et al., 2023). All three West African species are extracted and illegally traded in very large volumes (Ingram et al., 2018), though the extent to which this is driving declines has yet to be quantified. Efforts to prevent and reduce pangolin trafficking are hampered by weak law enforcement efforts, where inadequate resources and training, limited capacity and jurisdictional ambiguity, contested illegality, irregular regulations (Hubschle and Margulies, 2024; Mackenzie et al., 2024), and corruption undermine the effective enforcement of wildlife protection laws. Consequently, wildlife trafficking thrives, making it challenging to deter and apprehend criminals involved in the pangolin trade (Consalo, 2020). For a range of reasons, including lack of engagement and understanding, local and rural communities living adjacent to pangolin populations continue to participate in illegal offtake and trade (also see Section 4.3.B on Local Consumption and Trade) (Mogomotsi et al., 2020; Simo et al., 2023a), underscoring an unmet opportunity to engage communities more directly in wildlife trafficking prevention at the source (Difouo et al., 2020; Mouafo et al., 2021; Simo et al., 2023a). Underdeveloped crime prevention interventions at all stages of the illegal trade supply chain (Gore and Bennett, 2022), data sharing and interoperability challenges (Gore et al., 2022), a lack of regional cooperation and collaboration among authorities from West African countries (Liu, 2023), and overall public sentiment that wildlife trafficking is not a serious problem hamper efforts to reduce and prevent trafficking. The conservation community is often left as the primary responsible sector for all aspects of efforts to reduce illegal trade, even though pangolin trafficking is known to be linked to other serious crimes, like trade-based money laundering, drug and arms trafficking, and illegal timber trade, which harm private sector development, public health, and nature-based economies like ecotourism (Anagnostou and Doberstein, 2022). Urban stakeholders are deeply involved in trafficking activities and remain an under-engaged stakeholder group for effective conservation action (Gore et al., 2021). By strengthening law enforcement efforts (e.g., problem-based policing, crime prevention through environmental design, crisis intervention teams), crime prevention, improving efficacy of awareness raising and behavior change interventions, fostering regional cooperation and improved political will, and implementing sustainable development initiatives using gender-aware approaches (Agu and Gore, 2020; Agu et al., 2021; Gore and Bennet, 2022), conservationists can lead multi-sectoral teams, including the private sector, towards preserving pangolin populations in West Africa and safeguarding the future of these unique and vulnerable creatures.

Current Data and Actions

The majority of pangolin trafficking data comes from law enforcement authorities who are tasked with many other responsibilities besides wildlife trafficking; data is limited in scope, size, and quality; fragmented among range state actors; inconsistently interoperable; and rarely open-access. These data attributes significantly complicate efforts to reduce pangolin trafficking. Available data from seizures and law enforcement reports indicate significant illegal flows of pangolins and their parts from West Africa, often via Europe and the Middle East (refer to the [Scoping Study](#), as well as: Challender et al. 2020b; Emogor et al., 2021; Heinrich et al., 2016; Tinsman et al., 2023). The United Nations Office on Drugs and Crime (UNODC) and the World Customs Organisation (WCO) collect and analyse seizure data from national and private sector sources but do not make data publicly available, providing valuable summary statistics and general information on smuggling routes and historical trade patterns. An analysis of pangolin trafficking dynamics from 2010 – 2015 found more than 1200 seizure incidents globally, involving at least 67 countries (Heinrich, 2020). Using 1474 seizure records across a near 20-year period (August 2000–July 2019), it was estimated that around 895,000 individual pangolins were trafficked and

Current Data and Actions (cont.)

seized, with the actual number likely far exceeding this estimate (Challender et al. 2020b). The UNODC estimated that seizures made up a maximum of 1.9% of the estimated combined volume of legal and illegal trade (UNODC, 2024). These limited datasets help identify major trafficking hotspots and inform strategies for disrupting and preventing trafficking. Several organisations, such as the IUCN, TRAFFIC, PSG, and wildlife conservation NGOs, conduct studies and assessments to monitor the status of pangolins and their trade across individual West African nations and the region as a whole. These reports provide valuable but incomplete insights into the dynamics of pangolin poaching and trafficking and offer recommendations for combating pangolin trafficking. However, due in part to the combination of the covert nature of wildlife trafficking, lack of data standards and data interoperability, inferences about the scale and extent of the trade may be underreported and challenging to obtain (Gore et al., 2022, 2023; Ingram et al., 2018). Limited resources, insufficient enforcement capacity, and a lack of comprehensive monitoring systems contribute to the scarcity of data on pangolin trade specifically in West Africa (Challender et al., 2019). Additionally, the interpretation of statistics should be done carefully given the biases of (legal and illegal) wildlife trade data (Challender et al., 2021).

Measures that have been instituted to attempt to overcome the challenges associated with combating pangolin trafficking effectively include CITES Appendix I listing for pangolins and a UNODC dedicated task force to combat wildlife trafficking, resulting in the seizure of significant quantities of pangolin scales (UNODC, 2020). These efforts are crucial actions aiming to curb pangolin trafficking, though the level of success is as yet unclear. Domestic legislation has also been strengthened and penalties for poaching trafficking offenses have been increased in many West African range states. Specialized training and establishment of wildlife crime units attempt to strengthen anti-poaching and law enforcement measures in some range states. Regional initiatives, like West Africa Coastal Areas Program (WACA), EAGLE network, West African Strategy on Combating Wildlife Crime (WACWC) strategy, transboundary networks, conservation action plans, and ECOWAS strategies, have also played a crucial role in addressing pangolin trafficking.

Envisioned Actions

One way to tackle pangolin trafficking is to have stronger deterrence for poaching and trade across West Africa (Goal C1), through crime prevention efforts such as increased awareness on the gravity of the offense and penalties for noncompliance (Output C1.1), training investigative journalists on pangolin trafficking (Output C1.2), and the consistency and effectiveness of the criminal justice system (Output C1.3).

Goal C1

Strong deterrents against pangolin trafficking are effectively deployed across West Africa by 2034.

Output C1.1

Increased crime prevention focused on reducing pangolin trafficking by 2033.

Action	Indicator	Means of Verification	Timeline
C1.1.1 – Develop and implement a locally informed and sensitive behavior change strategy that promotes positive attitudes and behaviors related to pangolin exploitation, trafficking, and legislation. Synergise with Output B2.1 to ensure diverse and effective impact across market demands.	A comprehensive behavior change strategy has been developed, including a theory of change and monitoring and evaluation plan. The strategy should target specific audiences identified through evidence-based efforts.	1. Behavior change strategy documentation 2. Collaborator engagement records 3. Messaging materials	by 2028
C1.1.2 – Deploy the behavior change strategy (Action C1.1.1) about pangolin exploitation, trafficking, and legislation through diverse outlets and venues appropriate to target audiences and based on evidence. Synergise with Output B2.1 to ensure diverse and effective impacts across illegal market segments.	Behavior change strategy deployed in at least 2 pangolin trafficking hotspots in each range country.	1. Recordings and other records of deployment 2. Before and after monitoring and evaluation data from target audience groups	Continuous
C1.1.3 – Develop and implement sensitisation programs specifically on the legal and social consequences for pangolin trafficking, targeting key supply chain actors (hunters, traffickers) in key evidence-based trafficking nodes and routes.	At least two major sensitisation programs on the seriousness of offences and penalties, targeted at key trafficking actors and geographies, have been developed and implemented in each range state.	1. Sensitisation program documentation 2. Recordings and other records of deployment 3. Before and after monitoring and evaluation data from target audience groups	by 2030

Output C1.2

Investigative journalists are trained to investigate and raise awareness about pangolin trafficking by 2030.

Action	Indicator	Means of Verification	Timeline
C1.2.1 – Design and deliver an evidence-based, multi-lingual specialized training program that upskills investigative journalists to effectively report on all stages of pangolin trafficking supply chains, markets, and prevention efforts.	At least 30 investigative journalists have participated in a training program and are publishing/broadcasting news on pangolin trafficking.	1. Investigative reports, articles or documentaries 2. Recognitions and awards 3. Audience and engagement response 4. Training records 5. Social media likes and views	by 2028
C1.2.2 – Launch an evidence-based, multi-lingual digital platform to facilitate multi-sector collaboration among trained investigative journalists, law enforcement agencies, conservation organisations, and others vested in combating pangolin trafficking.	Establishment of a digital collaboration platform.	1. User activity and engagement 2. Number of active users 3. Collaborative initiatives and outcomes	by 2030

Output C1.3

Strengthen the capacity of criminal justice systems to address pangolin trafficking by 2033.

Action	Indicator	Means of Verification	Timeline
C1.3.1 – Identify and support dedicated focal offices within the Ministry of Justice in each range state to actively pursue evidence-based and effective traditional and innovative law enforcement efforts and cooperation related to pangolin trafficking within existing criminal justice systems (e.g., common law, civil law, traditional law, religious law).	At least 1 focal office in the Ministry of Justice has been identified and personnel in that office are mentored in the office's pursuit of justice for pangolin trafficking in each range state.	1. Appointment documentation 2. Official announcements or press releases 3. Confirmation from Ministry of Justice	early 2028

Action	Indicator	Means of Verification	Timeline
C1.3.2 – Mentor investigators, prosecutors and magistrates/judges in each range stage on pangolin trafficking as a form of wildlife crime, such as best-practices in management of wildlife crime scenes, chain of custody, filing procedures, use of wildlife forensic evidence, and relevant national and international legislation.	At least 5 investigators, prosecutors, and magistrates at multiple career stages (e.g., early, mid, late) have been mentored in each range stage on pangolin trafficking crime issues with demonstrated application of the upskilled knowledge and skills in wildlife crime case handling.	1. Training records 2. Training evaluation forms 3. Reports and testimonies from participants 4. Statistical data on successful wildlife crime prosecutions	by 2028
C1.3.3 – Develop an online, multi-lingual operational manual on pangolin biology, laws, expert contacts, methods of information gathering, expert engagement, and legal precedents to guide prosecution of pangolin trafficking for the criminal justice systems across West Africa.	A dynamic and user-friendly operational manual designed to support West African criminal justice systems to effectively conduct criminal investigations and prosecutions of pangolin trafficking.	1. Completed operational manual available in English and French 2. User feedback and evaluation	by 2028
C1.3.4 – Identify key pairs of range states for bilateral legal mutual assistance agreements and support the development and implementation of these agreements to more effectively prosecute cross-border pangolin crimes and repatriate seized live animals and products (Synergise with Output F4.1).	At least 3 bilateral agreements of three pairs of key range states that share cross-border trade have successfully been developed and implemented.	1. Official reports and communications 2. Case studies illustrating legal mutual assistance that facilitated cross-border cooperation and led to tangible conservation outcomes	by 2032
C1.3.5 – Evaluate improvements in criminal justice responses to pangolin trafficking resulting from enhanced application of existing laws due to capacity building (Action C1.3.2) and the application of the operational manual (Action C1.3.3), including behavior change evaluation in target communities.	Increased number of pangolin trafficking cases submitted for prosecution demonstrate proper use of environmental/wildlife laws and judicial processes.	1. Case documentation 2. Judicial rulings and judgments 3. Data analysis	by 2034

Action	Indicator	Means of Verification	Timeline
C1.3.6 – Develop and deploy mentorship programs, including online courses, certifications, hands-on learning and networking, to upskill law enforcement, social services, and community personnel for positive criminology. Synergise with efforts to achieve Goal C2 to ensure such interventions are applicable to actors across the pangolin trafficking supply chain.	Diverse crime prevention approaches, including positive criminology, are deployed throughout West Africa to incentivize positive engagement to prevent pangolin trafficking.	1. Mentorship curricula in English and French 2. Mentorship training agreements 3. Mentee post-mentorship assessments 4. Active positive criminology employed	by 2030

Increased public awareness on pangolin trafficking, and more generally, transnational wildlife crime and legislation establishes a platform for subsequent, effective deterrence and behavior change (**Output C1.1**). This output entails a series of actions aimed at increasing general public and target audience awareness for the legal protections afforded pangolins and other wildlife. Examples of these campaigns are used by many NGOs, such as the notable “Buy 1 get 15 years jail” campaign on wildlife trade in Vietnam led by [WiAid and CHANGE](#).

Training investigative journalists on pangolin trafficking aims to increase media coverage and public awareness about the illegal trade and associated conservation concerns (**Output C1.2**). This output involves providing journalists with the necessary knowledge and skills to effectively investigate and report on pangolin trafficking to expose criminal networks and raise public awareness and engagement. Training workshops to educate journalists on pangolin biology, trade dynamics, and the associated legal frameworks, as well as on investigation techniques, data analysis, and risk assessment strategies specific to pangolin trafficking cases are needed. Journalists with these skills and knowledge can expose ongoing criminal activities and call for action from authorities and the public. In 2017, seventeen journalists from Asian countries participated in a [workshop](#) to learn how to cover wildlife trafficking issues. The workshop was given by the [Earth Journalism Network](#) (EJN) in collaboration with USAID Wildlife Asia and other USAID-affiliated projects combating the illegal wildlife trade.

Similarly, increasing the consistency and effectiveness with which the criminal justice system reinforces that consequences associated with pangolin crimes are real and a risk to perpetrators that will have reverberating consequences throughout their lives (**Output C1.3**). This output entails strengthening law enforcement efforts, improving investigation techniques, and ensuring effective legal procedures to hold offenders accountable. Implementation of this output includes the establishment of specialized wildlife crime units or task forces dedicated to combating pangolin trafficking. These specialized units may collaborate with international law enforcement agencies, employ advanced surveillance and intelligence-gathering techniques, and conduct targeted operations to disrupt illicit networks. The [EAGLE Network](#) and [Wildlife Justice Commission](#) are highly effective cross-sectoral partnerships (CSP) that have made significant contributions to wildlife governance and law enforcement. And, strong precedents have been set in Zimbabwe and Vietnam due to cross-sectoral partnerships between local judiciary actors and Tikki Hywood Foundation (THF) and Save Vietnam Wildlife (SVW), respectively (e.g., Shepherd et al., 2017). And the National Prosecuting Authority (NPA) in South Africa has a high rate of prosecution of pangolin crimes due to their involvement with investigations from the beginning and development of materials for prosecutors and judges. Recent successful training initiatives within West Africa include the Train the Trainer courses for customs authorities and Judiciary and Prosecutors Trainings led by USAID [WABICC](#) and WABILED and CITES ([SC74 Doc. 35.3](#)).

Tackling pangolin trafficking requires multipronged approaches, including by working to reduce the illegal supply of pangolin products to international markets (Goal C2). Developing community-based approaches to disrupt pangolin trafficking supply chains at the ground level (Output C2.1), and understanding and reducing the roles of foreign nationals, diaspora, and commercial actors in trafficking supply chains (Output C2.2 & C2.3) may prove as effective crime prevention methods at preventing trafficking from happening in the first place.

Goal C2

Supply of pangolin products available to be trafficked is reduced by 50% or more by 2035.

Output C2.1

Deploy community-based approaches to disrupt pangolin trafficking in source areas by 2035.

Action	Indicator	Means of Verification	Country
C2.1.1 – Identify and engage with strategic and diverse communities involved in sourcing pangolin products for trafficking (using evidence aligned with Output C3.2 , Action C3.2.1 and synergizing with efforts to achieve Output B2.1).	All communities with significant engagement in sourcing pangolin products for international trafficking within each of the target countries identified and leaders representing 25% of them are mentored in combating pangolin trafficking in source locations. Revisions are conducted when dynamics shift.	1. Locational profiles 2. Trade data analysis 3. Geographic and demographic information	All, with emphasis on Cameroon, Côte d'Ivoire, Ghana, Liberia, and Nigeria
			Timeline
			early 2027
C2.1.2 – Improve the evidence base available and needed to better understand the role of different actors in supplying products for pangolin trafficking, individual and community-level motivators, customary laws, and willingness to participate in efforts to combat pangolin trafficking at the source.	25% of communities identified in Action C2.1.1 assessed for community perceptions, motivations, and support for efforts to combat pangolin trafficking at the source.	1. Completed questionnaires 2. Data analysis 3. Summary reports	Country
			All, with emphasis on Cameroon, Côte d'Ivoire, Ghana, Liberia, and Nigeria
			Timeline
			early 2028
C2.1.3 – Identify pangolin champions/ambassadors in communities implicated in pangolin trafficking to help develop and manage crime prevention projects aligned with community interests and needs (targeting youth, hunters and traders). Synergise with efforts to achieve Output B2.2 .	At least 2 champions have been identified and engaged to develop projects for combating pangolin trafficking at the source in each of the previously selected communities, with at least 50% of champions youth, traders or hunters.	1. Commitment letters or agreements 2. Employment contracts 3. Champion work records	Country
			All, with emphasis on Cameroon, Côte d'Ivoire, Ghana, Liberia, and Nigeria
			Timeline
			early 2029

GOAL C2

OUTPUT C2.1

Action	Indicator	Means of Verification	Country
C2.1.4 – Implement diverse projects focused on crime prevention to combat pangolin trafficking with champions (Action C2.1.3) responding to community needs (Action C.1.2.2) that can be effective in the short, medium, and long-term. Synergise with efforts to achieve Action C1.3.6 and Output B2.2 .	All previously selected communities have at least one short-term project in place, with strategies and timelines for implementing longer term projects developed.	1. Activity progress reports 2. Community feedback and testimonials 3. Community engagement records 4. Strategic implementation plan and commitments	All, with emphasis on Cameroon, Côte d'Ivoire, Ghana, Liberia, and Nigeria
			Timeline
			by 2031
C2.1.5 – Design and implement crime prevention techniques for hunters or traders that target motivations for engaging in the international pangolin supply (increase enforcement risks and trafficking sentences, as well as awareness of heightened risk). Synergise with efforts to achieve Output B2.2 .	At least 50% of the 20 communities previously identified have implemented crime prevention techniques, resulting in a 20% reduction in local supply of pangolins to international trade.	1. Documentation of technique designs 2. Records of budgets for technique implementation 3. Local trade statistics	Country
			4 countries with high commercial trade levels: Nigeria, Cameroon, Côte d'Ivoire, Ghana
			Timeline
			by 2030
C2.1.6 – Monitor regional/international pangolin trade dynamics to assess community-based actions. Link these to Outputs C3.1 and 3.2 .	At least 30% decrease in documented trade incidents and a 20% decrease in the estimated volume of traded pangolins and their parts, measured through interviews and trade indices in the targeted communities or borders (against the baseline).	1. Trade incident records 2. Trade monitoring data 3. Interviews and surveys 4. Documentation of enforcement actions	Country
			All, with emphasis on Cameroon, Côte d'Ivoire, Ghana, Liberia, and Nigeria
			Timeline
			early 2033
C2.1.7 – Provide mentorship on intelligence gathering and incident reporting to former pangolin poachers and traffickers from local communities.	At least 2 former pangolin poachers/traffickers from 10 target communities in each country have received mentoring on intelligence gathering and pangolin trade dynamics.	1. Report on dynamics 2. Training documentation	Country
			All, with emphasis on Cameroon, Côte d'Ivoire, Ghana, Liberia, and Nigeria
			Timeline
			by 2033

Action	Indicator	Means of Verification	Country
C2.1.8 – Develop a 10-year strategic plan to extend actions to combat pangolin trafficking into remaining identified strategic communities in target countries and elsewhere across the region based on lessons learned.	A comprehensive and actionable 10-year strategic plan to extend the project across West Africa is developed (within 1 year), incorporating lessons learned from the initial project implementation and considering the specific socio-economic and cultural contexts of the targeted countries within the region.	1. Strategic plan available in all relevant languages 2. Project implementation timeline 3. Resource allocation and budgeting	All
			Timeline early 2035

Output C2.2

Understand and reduce the role of diaspora and foreign nationals in pangolin trafficking supply chains by 2030.

Action	Indicator	Means of Verification	Country
C2.2.1 – Build evidence about existing and potential diaspora communities and foreign nationals who are or could become involved in pangolin trafficking.	All relevant, overarching diaspora communities are identified and documented with empirical evidence, community engagement activities, and stakeholder assessments.	1. Research reports 2. Stakeholder assessment reports	All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2028
C2.2.2 – Develop collaborations with primary national intelligence and customs agencies with jurisdictions to combat wildlife trafficking using investigations, enforcement, or other efforts.	One collaboration established with national intelligence and/or customs agencies, including active partnerships, information sharing agreements, joint operations, and regular communication.	1. Signed agreements and MoUs 2. Joint operation reports 3. Progress reports and joint evaluations 4. Shared intelligence or operational successes	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2033
C2.2.3 – Build evidence about the role of diaspora through undercover/deep cover investigations, ideally with diaspora representatives as investigators.	Comprehensive and documented information on the roles, activities, and influence of the diaspora gathered in at least 8 communities through the successful deployment of undercover/deep-cover investigators.	1. Investigative reports 2. Profiles of diaspora representatives 3. Evidence of influence and activities	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2030

Action	Indicator	Means of Verification	Country
C2.2.4 – Raise awareness about the issues surrounding pangolin trafficking amongst diaspora communities by engaging and developing cooperative relations/ agreements with foreign consulates and embassies, and following the strategic communications plan developed in Output C1.1 and informed by the outputs of Action C2.2.2 . Synergise with efforts to achieve Output B2.1 .	At least 6 diaspora communities and their respective consulates/embassies have participated in pangolin trafficking awareness building activities and diplomatic efforts.	1. Signed agreements and MoU 2. Joint initiatives and projects 3. Regular communication channels 4. Press releases	All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2030

Output C2.3

Understand and reduce the role of industrial and corporate actors in pangolin trafficking supply chains by 2033.

Action	Indicator	Means of Verification	Country
C2.3.1 – Identify urban centers and transportation infrastructure (e.g., ports, major thoroughfares) involved in pangolin trafficking and where corporate and industrial actors (e.g., shipping, agroindustry, mining, forestry) may be susceptible to complicity.	All major urban centers and transportation infrastructures that are likely to be involved in pangolin trafficking have been identified and mapped in each country.	1. Research and analysis documentation 2. Comprehensive list of identified urban centers 3. Stakeholder testimonials	All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2027
C2.3.2 – Identify corporate and industrial actors likely to be involved, knowingly or unknowingly, in the pangolin trafficking supply chain (consider financial, transportation, mining/ logging industries), in the sites identified in Action C.2.3.1 .	All major actors involved in the international pangolin supply chain have been identified.	1. Investigative reports and intelligence 2. Stakeholder interviews 3. Information sharing agreements	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2029
C2.3.3 – Investigate modus operandi and networks exploiting the industrial and commercial structures identified in Action C.2.3.1 and C2.3.2 for pangolin trafficking using criminological, community-centered, and technology-led approaches.	At least one actor per urban center involved in the pangolin trafficking has been investigated to uncover their role, modus operandi and networks.	1. Investigation reports 2. Intelligence data and analysis 3. Collaboration with law enforcement or intelligence agencies	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2030

Action	Indicator	Means of Verification	Country
C2.3.4 – Develop and deploy a protocol to support national enforcement agency investigation and prosecution of corporate and industrial actors identified in Action C2.3.2 using information gathered in Action C2.3.3 and who willingly and continuously engage in pangolin trafficking.	The regional protocol has been developed and diverse actors support enforcement agencies, with at least two successful proof of implementation.	1. Documentation of protocol development 2. Implementation plans 3. Prosecution records	All
			Timeline early 2033
C2.3.5 – Secure commitments from corporate and industrial actors identified in Action C2.3.2 as champions in the fight against pangolin trafficking, using information from Action C2.3.3 to guide areas of intervention and control within their operations.	At least one selected industrial or commercial pangolin champion per country and industry type is committed to act against pangolin trafficking.	1. Commitment letters or agreements 2. Public announcements or endorsements	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2031
C2.3.6 – Develop education and sensitization modules related to pangolin trafficking, conservation, and legal frameworks that corporate and industrial actors can integrate into their environmental health and safety and corporate social responsibility training and practices.	All industrial or commercial pangolin champions engaged in Action C2.3.4 have adopted and use modules, which are also made publicly available to other actors in the same sectors and distributed through relevant global or regional unions.	1. Modules hosted in public platform 2. Updated training curricula from champions 3. Training certificates 4. Knowledge assessment results	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2031

Developing community-based approaches that disrupt pangolin trafficking by stemming the available supply of products at the ground level (i.e., from wild pangolin sources) is critical for mitigating the risks posed to communities by participating in illegal pangolin offtake and trafficking (**Output C2.1**). And engaging communities in crime prevention and monitoring may help to lighten the burden on law enforcement agencies and NGOs (i.e., in Uganda; Moreto et al., 2018). Interdisciplinary approaches for crime prevention may be relevant to **Goals C1** and **C2**. Crime prevention activities that focus on reducing the opportunities for crime before the crime is committed can help keep animals alive and reduce harms to people associated with criminality. Or, positive criminology, for example, may help prevent repeat and future illegal trade and promote desistance from illegal trade. It is useful to understand the factors that may help at-risk individuals or convicted offenders desist from crime or stop their behavior. Community-policing, problem solving courts, restorative justice, and strength-based programs are positive criminology ideas that could augment traditional law enforcement and criminal justice responses to illegal trade. Restorative justice aims to bring offender, victim, and community together for healing and accountability. For example, co-managed programs where local communities take a more active role in protection or offer first-time offenders opportunities to participate in prevention rather than facing prosecution may more effectively promote positive action and engagement. Care needs to be given around potential unintended consequences of identifying pangolin champions and isolation of key individuals involved in these programmes. Additionally, the international trade can be dynamic, thus requiring constant revisions around identified target communities and regions.

Our current understanding of the connections between international pangolin supply chains and local hunters/traders is still anecdotal throughout West Africa (Agu et al., 2021; Gore et al., 2021; Hornor et al., 2020; Ingram et al., 2019c; WJC, 2020), thus successful examples tackling this connection are limited. One possibly successful example of an established framework for countering wildlife trade through local community-based approaches is the IUCN and IIEDs [First Line of Defence against Illegal Wildlife Trade \(FLoD\)](#), which has been implemented in parts of eastern and southern Africa. Generally, community-based incentivization schemes must be sustainable and ultimately able to be weaned off of external funding and technical resources to be community run (self-sustainable), but must also provide rapid results (i.e., quick, easy wins) to hook initial buy-in. Benefit/reward systems implemented with the support of local champions can be useful, as shown by decreased sales of giant pangolins near the South Salonga National Park, Democratic Republic of the Congo, resulting from the conversion of hunters to pangolin trackers (employment) and from written anti-trafficking commitments signed by traditional chiefs, through the initiative of the NGO Synergie Rurale - Action Paysanne (see full example: [SyR-AP](#)). Successful examples of community-based intelligence gathering and sharing include the Community Surveillance Network in communities surrounding the Dja Biosphere Reserve ([ZSL](#)) or communities providing intelligence to authorities to protect the community conservancies in Namibia (Painter et al., 2016). Actions within this Output should consider broader wildlife consumption and trade practices, rather than being specific to pangolins.

Understanding and reducing the role of diaspora/foreign nationals (**Output C2.2**) and local commercial actors (**Output C2.3**) in international supply chains builds on successes at the ground level as actors in these stakeholder groups are often the direct links between local hunting and trafficking supply chains (Ingram et al., 2019c; Nguyen and Roberts, 2020; Zanvo et al., 2021). Achieving both outputs will require identification of specific geographies and actors and their commercial structure and logistics that are linked to pangolin trade (e.g., major ports and shipping, diaspora communities from major demand regions, synergies with agriculture and other natural resource trade like logging), investigation of the specific links to trade, commitments from actors, and awareness-raising and legal ramifications for offenders. For the latter, collaborations with environmental law enforcement and justice organisations, like EAGLE network ([Pangolin traffickers in Douala](#)) and Wildlife Justice Commission ([Operation Pluto](#)), may help strengthen capacity for intelligence gathering and undercover investigations.

Tackling pangolin trafficking should be evidence-based and informed by a trade dynamics monitoring system that provides the data needed to evaluate interventions aiming to increase detection, confiscation, apprehension and prosecution of illicit actors (Goal C3). Such a system should include tools for tracking pangolin trade incidents and prosecuting offenders (Output C3.1), mechanisms for data centralization and sharing for both human-reported and technology-derived pangolin scale trafficking data (Output 3.2), and improved capacity and infrastructure for combating wildlife trafficking actors (Output C3.3).

Goal C3

Improved systems and infrastructure for investigating and monitoring pangolin trade spatio-temporal dynamics leads to increased detection, interdiction and criminal justice by 2035.

Output C3.1

Research methods and tools for monitoring pangolin trade and providing evidence needed to appropriately penalize pangolin crime offenders are developed and in use by 2033.

Action	Indicator	Means of Verification	Country
C3.1.1 – Establish a network of experts to develop, validate and support implementation of forensics and trade monitoring tools to track pangolin trade in support of appropriate judicial processes for pangolin crime offenders.	10 experts have joined a network specializing in forensics and trade monitoring tools for tracking pangolin trade and supporting judicial decision-making for pangolin crime offenders.	1. Network Terms of Reference 2. Expert network roster 3. Documentation of tools and methods	All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2027
C3.1.2 – Develop and implement forensics and trade monitoring toolkits and methods to sufficiently monitor trade dynamics and provide legally-substantive evidence in pangolin crime cases.	An evolving forensics and trade monitoring toolkit capable of providing support for judicial followthrough of pangolin crime offense cases is developed and in use. Tools for diverse scales, objectives/scenarios, and budgets should be available.	1. Comprehensive inventory 2. Feedback from law enforcement agencies 3. User surveys or feedback 4. Publication of research findings	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2030
C3.1.3 – Synergise with existing, or create bespoke, open access and confidential trafficking and criminal databases to centralize seizure records and biomarker (e.g., DNA, stable isotope, trace element, and X-ray fluorescence) reference libraries. Align with Action C1.1.5.	A centralised database holding different open access and confidential registries has been created.	1. Database documentation 2. User access protocols 3. Data contributions 4. Access control and authorization records	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline by 2031

Action	Indicator	Means of Verification	Country
C3.1.4 – Deploy working detection animal (e.g., dogs, rats) and/or environmental (e)DNA programs in major ports to detect illegal pangolin consignments.	Each of the major ports listed in the Country column have established and are successfully using sniffer animals and/or (e)DNA approaches to detect illegal pangolin and other wildlife trade.	1. Illegal trade detection protocols 2. Signed MoUs between Port Authorities and technical support actors 3. Interdiction records	Côte d'Ivoire (Abidjan, San Pedro), Ghana (Tema), Nigeria (Lagos), Togo (Lome)
			Timeline by 2029
C3.1.5 – Build a framework for targeted intelligence and investigations that would lead to arrest and appropriate judicial outcomes for offenders involved in pangolin trafficking (evidence available as a result of Actions C3.1.1-3.1.4).	Framework for pangolin trade intelligence and criminal investigations has been developed and implemented across the region.	1. Investigation protocol documentation 2. Arrest records 3. Prosecution outcomes	Country All
			Timeline early 2029
C3.1.6 – Conduct independent, blind validation tests of tools, databases, and methods (Actions C3.1.1, C3.1.2, C3.1.3, C3.1.4) to assess their reliability, accuracy, and suitability within the framework (Action C3.1.5) for use in pangolin trafficking investigations.	At least five different tools, databases, and methods for tracing pangolin trade and prosecuting criminals have been validated through blind tests to guide selection of the most effective approaches.	1. Quantitative analysis 2. Comparative evaluations 3. Implementation plans	Country Any
			Timeline early 2035
C3.1.7 – Adopt standardised protocols for sourcing pangolin trade related arrest information and for utilising criminal investigation tools or databases, ensuring the framework (Action C3.1.5) is consistently applied.	Standardised protocols for sourcing information on pangolin trade-related arrests and for effectively utilising tools or databases have been created, resulting in improved and consistent data accessibility and streamlined collaboration among enforcement agencies.	1. Standardised protocol edited and printed	Country All
			Timeline by 2037

Output C3.2

Human-reported and technology-derived data on pangolin trafficking is integrated into fully interoperable database(s) and shared among government agencies, NGOs, and other combating wildlife trafficking actors by 2028.

Action	Indicator	Means of Verification	Country
C3.2.1 – Evaluate existing trade and traffic databases (e.g., regional TWIX , World WISE , TRAFFIC's Wildlife Trade Information System , etc.) for suitability as a platform for centralizing regional data on pangolin trafficking, including accessibility by range states actors, and if not suitable develop and implement bespoke pangolin trafficking database in partnership with appropriate stakeholder(s).	A functional regional database has been designed and implemented, capturing relevant information from all range states, for effective monitoring and analysis of wildlife trafficking activities.	1. Report on suitability of existing database, including recommendations 2. New database and its documentation (if relevant) 3. Data sharing agreements 4. Database access protocols 5. Data in database	All
			Timeline early 2027
C3.2.2 – Develop training materials, make them accessible to and/or train law enforcement agents in selected range countries to use and maintain the confidential and open-access parts of the database.	At least 2 agents from all relevant wildlife and illicit goods trafficking control and enforcement agencies trained in database use and maintenance with demonstrated proficiency in using, managing and maintaining contributions.	1. Training materials in English and French 2. Training attendance records 3. Database contributions 4. Database maintenance records	Country All, with emphasis on Benin, Côte d'Ivoire, Ghana, Liberia and Nigeria
			Timeline early 2028
C3.2.3 – Provide access to training materials and a mechanism for other relevant stakeholders (NGOs, public & private sectors) to contribute data to the database.	Non-governmental actors are contributing data to the database to bolster volume and quality of evidence on pangolin trafficking.	1. Training materials in English and French 2. Published contribution protocol with system in place 3. Database contributions	Country All
			Timeline Continuous
C3.2.4 – Evaluate existing wildlife trafficking reporting mobile applications (e.g., Wildlife Witness , WildScan , etc.) for utility in data/information sharing to combat pangolin trafficking, and if not useful create bespoke app with broad regional utility.	The most relevant mobile app is adopted and used by enforcement agencies, NGOs, and CWT actors for information sharing and reporting of pangolin trafficking data.	1. Evaluation report with recommendations 2. Communications on app to relevant stakeholders 3. Data contributions to app	Country All
			Timeline by 2028

Action	Indicator	Means of Verification	Country
C3.2.5 – Formalize an information sharing system that connects WA CWT actors to each other and global CWT actors and initiatives, and builds on data being made available through Actions C3.2.1 and C3.2.4.	Information sharing system established that provides WA actors direct lines of communication to each other and global CWT actors.	1. Law enforcement reports 2. Seizure data 3. Collaboration and cooperation records	All
			Timeline
			by 2028

Output C3.3

West African actors engaged in combating wildlife trafficking have strengthened capacity and infrastructure by 2035.

Action	Indicator	Means of Verification	Timeline
C3.3.1 – Provide training to pangolin trafficking data providers, database and information sharing users, enforcement authorities and other relevant stakeholders to facilitate the identification, detection, and reporting of pangolin trafficking incidents using the tools created by achieving Outputs C3.1 and C3.2.	15 individuals from each country demonstrate improved skills in pangolin identification, detection, control, and technology/tool usage.	1. Pre- and post-training assessments 2. Skill demonstrations 3. Training attendance records	by 2029
C3.3.2 – Execute collaboration and/or support services agreements with existing research labs (e.g. WACCBIP , COMAHS , Institut Pasteur de Côte d'Ivoire), forensic labs (Lagos State DNA & Forensic Centre , Ghana Police Service Forensic Science Laboratory), data analytical organisations (Digital Footprints Nig. Ltd), and other infrastructures (SGS) to support pangolin trafficking research and investigations using the tools developed by Action C3.1.2 and C3.1.4.	At least one collaborative and/or support services agreement in place between relevant law enforcement, research, and existing infrastructure/service providing entities in each country to support pangolin trafficking research and investigations.	1. National reports evaluating existing infrastructure and organisations 2. Executed agreements 3. Data	by 2030

GOAL C3

OUTPUT C3.3

Action	Indicator	Means of Verification	Timeline
C3.3.3 – Where needed infrastructure does not yet exist, build facilities at/in collaboration with relevant institutions (government, academic, NGO, private) and train personnel to support pangolin trafficking research and investigations using the tools developed by Action C3.1.2 and C3.1.4 .	At least 5 regional forensic labs, processing units and data hubs are established in the region.	1. Infrastructure implementation report 2. Infrastructure functionality assessment 3. Personnel training and capacity assessments 4. Data	by 2035

Tools for tracing the trade and prosecuting offenders come in a variety of forms (seizure mapping, DNA, stable isotopes, X-ray fluorescence) and often seek to identify the origin of traded items, the actors involved, and other relevant spatio-temporal information about trafficking incidents (**Output C3.1**). Biomarker tools require matching biomarker profiles of seized specimens (e.g., genotype or SIA composition) with a georeferenced reference database of known specimens (i.e., population-specific genotypes or site-specific SIA composition). Such tools have provided accurate tracing of trafficking routes of elephant ivory for management (Wasser et al., 2022; Ziegler et al., 2016) and can even be used as evidence in the prosecution of criminal cases, such as with the example of rhinos in southern Africa (i.e. [RhODIS](#)). For pangolins, research is starting to uncover poaching hotspots in West Africa mainly using DNA approaches (Zanvo et al., 2022; Zhang et al., 2020; Tinsman et al., 2023). These tools are of course only applicable to seizure incidents and products, thus it is essential to increase rates of detection and interdiction of illegally traded pangolin products.

Centralizing and sharing human-reported and technology-derived data generated through investigations, scientific research, and law enforcement operations underpin successful arrest and criminal justice decision-making for offenders (**Output C3.2**). Where possible, existing databases and mobile apps should be taken advantage of to store and share relevant pangolin trafficking data, but where these do not exist pangolin actors are encouraged to pioneer such systems and ensure they are broadly relevant at the regional and global scales. To ensure their maximum utility, databases and information sharing platforms should accurately provide information in near-realtime. The Elephant Trade Information System ([ETIS](#)) is managed by CITES and TRAFFIC and may serve as one type of model to follow. One of the most successful examples of information sharing for CWT is [TWIX](#) (Trade in Wildlife Information eXchanges), which has been vital in aiding the capture and prosecution of criminal syndicates, and there is now a [West Africa regional TWIX](#).

Improving access to infrastructure and trained personnel capable of implementing protocols and tools in support of trafficking research, investigations, and law enforcement proceedings is a critical need to upskill regional actors to more effectively combat wildlife crime (**Output C3.3**). While, at the time of this report, there is no infrastructure specifically dedicated to wildlife crime in the region and most countries are woefully underresourced, some infrastructure linked to medical research, disease prevention, and human forensics exists. Developing working agreements, building capacity for wildlife crime cases, and employing wildlife crime units within these already established structures may be an essential first step as new wildlife crime-related infrastructure is developed. Key research labs (West African Centre for Cell Biology of Infectious Pathogens in Ghana - [WACCBIP](#), College of Medicine and Allied Health Sciences - [COMAHS](#), and [Institut Pasteur de Côte d'Ivoire](#)), forensic labs ([Lagos State DNA & Forensic Centre](#), [Ghana Police Service Forensic Science Laboratory](#)), data analytical organisations ([Digital Footprints Nig. Ltd](#)), and other infrastructures ([Société Générale de Surveillance - SGS](#)) can be leant on to bridge this gap. Where facilities do not exist, such infrastructure and capacity must be developed either as regional hubs (sequencing, trace element, stable isotope, and computing facilities) or within each country.

4.3.D: Rescue, Rehabilitation & Reintroduction

West Africa Regional Pangolin Conservation
Action Plan 2026-2056

4.3.4 Rescue, Rehabilitation and Reintroduction

The Problem

Rescue, rehabilitation, release and post-release monitoring is one of the priority areas of intervention for wildlife conservation in West Africa, where live pangolins are regularly rescued from trade for local and regional consumption, as well as to fuel the extensive scale trafficking market (Emogor et al., 2021; Ingram et al., 2019a). Although pangolins are generally considered priority species for conservation at the international level and protected by national legislation in all regional range states, trade in African pangolins as wildmeat and for traditional medicine markets continues to threaten all three West African species (Zanvo et al., 2021). As with other threatened species, welfare-based rescue and rehabilitation is a long-standing and widely applied intervention (Guy et al., 2013). Live pangolins seized from illegal trade are often good candidates for rescue, rehabilitation, release, reintroduction, translocation and post-release monitoring (Gray et al., 2023). While the need for this intervention is evident, there remain significant barriers across the region in the form of uncertain legal frameworks and a lack of infrastructure, guiding strategies and well-trained professionals across range states (Wright and Jimerson, 2020). Additionally, current actors across the globe are not yet adequately documenting case studies or developing standard operating procedures that can serve as guidance for interested stakeholders.

Current Data and Actions

While a number of organisations are engaged in welfare-based rescue, rehabilitation and reintroduction, very few have formal training and virtually none are engaged in post-release monitoring. The highly trained organisations currently capable of leading such efforts are Tikki Hywood Foundation (Cameroon) and St. Mark's Animal Rescue Foundation (Nigeria). Akatia (Cote d'Ivoire) and [Libassa Wildlife Sanctuary](#) (Liberia, in partnership with Tikki Hywood Foundation) also have extensive experience and are the go-to organisations in these countries. Scientific data on the post-release monitoring success to inform rehab and reintroduction strategies based on the ecology and survival of released individuals of the three native pangolin species are non-existent. The IUCN SSC Pangolin Specialist Group has developed protocols for first responders in pangolin rescue scenarios to follow (available in [English](#), French, and Chinese), as well as guidance for transporting live pangolins (see PSG webpage). There is an urgent need for additional guidelines for evidence-based: 1) care of pangolins in short-term captive scenarios, which should be developed in recognition of species-specific needs; 2) reintroduction methods; and 3) post-release monitoring. While little regional expertise exists specifically for pangolins in need of rescue, rehabilitation and reintroduction, the region has a long history with this intervention focused mostly on primates and, where possible, synergies with existing facilities and programs should be maximized.

Envisioned Actions

Establish fully operational rescue and rehabilitation centers with adequate expertise in all range states (Goal D1). To achieve this goal, actors will need to map existing wildlife rescue centers willing to collaborate and possible opportunities for new rehabilitation centers (Output D1.1) and develop sustainable business plans and robust fundraising capabilities (Output D1.2).

Goal D1

At least one fully functional pangolin rescue and rehabilitation center is operating in each range state in West Africa by 2035.

Output D1.1

Existing wildlife rescue and rehabilitation centers willing to include pangolins as focal species are identified and engaged, and suitable actors, locations and enabling conditions for new pangolin rehab centers are identified and mapped by 2029.

Action	Indicator	Means of Verification	Timeline
D1.1.1 – Identify and map out existing wildlife rescue and rehabilitation centers and assess their willingness to engage in pangolin rescue, rehabilitation and release in collaboration with national authorities.	List and analysis of existing wildlife rescue and rehabilitation centers in each country.	1. Collaboration records 2. Center identification and mapping 3. Assessment of willingness 4. Written documents of commitment	by 2027
D1.1.2 – Implement a workshop or other formal process to evaluate the existing capacity and needs of interested existing centers to fully engage in pangolin rehabilitation.	Final report evaluating the capacity and needs of existing centers for each country is produced.	1. Process organisation records 2. Participation and representation lists 3. Capacity and needs assessment report	by 2028
D1.1.3 – In collaboration with national authorities, identify opportunities, including organisations, individuals, sites and sponsors for new pangolin rehabilitation centers in countries where none exist.	Final report presenting findings relevant to new opportunities for pangolin rehabilitation centers for each relevant country.	1. Opportunities assessment report 2. Commitment letters from national authorities supporting the eventual creation of new rescue centers where relevant	by 2029

Output D1.2

Pangolin rehabilitation centers have robust business and management plans that ensure their long-term sustainability, including diverse funding streams leveraging private sector, corporate sponsors, grants and community support, by 2035.

Action	Indicator	Means of Verification	Timeline
D1.2.1 – Pangolin rescue centers are legally registered, accredited, and operating in compliance with national regulations.	All pangolin rehabilitation centers accredited and operating within national legal frameworks and in collaboration with national authorities.	1. Documentation of accreditation and legal registration. 2. Assessments or audits validating compliance status.	by 2032 and henceforth annually

Action	Indicator	Means of Verification	Timeline
D1.2.2 – Establish and train fundraising units in each pangolin rescue facility.	Fundraising units have been established and adequately trained in each facility, resulting in a minimum of 20% increase in annual fundraising revenue compared to the previous year.	1. Documentation of established fundraising units. 2. Training attendance records for unit members. 3. Reports on fundraising activities conducted.	by 2037
D1.2.3 – Update existing rescue centers as may be needed following Action D1.1.2 and build new training centers based on opportunities identified in Action D1.1.3 .	One fully operational pangolin rescue and rehab center operating in every West African pangolin range state.	1. Training centers. 2. Business and management plans. 3. Funding records.	by 2035
D1.2.4 – Assess the feasibility of and, where feasible, implement revenue-generating activities (e.g., ecotourism) at pangolin rescue centers and release sites and rescue centers.	A feasibility assessment of revenue-generating activities at rescue centers and release sites is completed and, where relevant, actors are implementing relevant activities.	1. Completed feasibility assessment report. 2. Implementation plans for revenue-generating activities. 3. Documentation of two viable initiatives at rescue centers and/or release sites.	by 2032

Better understanding the existing regional capabilities and needs to ensure adequate rescue and rehabilitation of pangolins in West Africa is a critical precursor to successful, region-wide deployment of this intervention (**Output D1.1**). Such an exemplary process was followed by the Tikki Hywood Foundation, resulting in the creation of a fully operational pangolin rescue and rehabilitation center in Cameroon, which coordinates with the Cameroonian Ministry of Forestry and Wildlife (MINFOF) to rescue, rehabilitate and reintroduce individuals of all three pangolin species found in West Africa, including the very first successful intervention for a giant pangolin in 2025.

Developing robust business and management plans, including fundraising capabilities, are essential for the efficacy and sustainability of pangolin rehabilitation centers (**Output D1.2**). This Output is meant to strengthen the capacity of rehabilitation center staff to conduct robust program planning, assess their financial needs, and to engage in resource mobilization.

Another way to tackle this problem includes establishing a West African rescue and rehabilitation network to better coordinate among centers, promote information sharing and collaborative opportunities, data and lessons learned not only between rehabilitation centers, but also with relevant public institutions, research organisations, and other stakeholders (Goal D2). This goal includes plans to establish the multistakeholder network with appropriate governance (Output D2.1), centralize and further develop evidence and case studies upon which SOPs can be produced as living documents available to all stakeholders (Output D2.2), and build/reinforce regional capacity through better access to training materials and training programs (Output D2.3).

Goal D2

Information and data sharing are promoted through an inclusive West African Network for the rescue, rehabilitation and release of all three West African pangolin species by 2030.

Output D2.1

A network of West African pangolin rehabilitation professionals is established, including with connections to the IUCN SSC PSG, national working groups and research stakeholders, to improve evidence development, information sharing, and capacity-building by 2032.

Action	Indicator	Means of Verification	Timeline
D2.1.1 – Formalize a network of pangolin rescue and rehabilitation centers and professionals in West Africa.	The network exists with a formal coordination strategy in place.	1. Network website 2. Directory of members 3. Communications and capacity-building plan written and guiding network function	by 2028
D2.1.2 – Map and engage with existing national working groups, research stakeholders, and the IUCN SSC PSG to expand the expert information available to the network and opportunities for post-release impact.	At least 2 relevant stakeholders per country, in addition to the IUCN SSC PSG, identified and engaged into the network.	1. Completed map of national working groups and research stakeholders 2. Directory of network members 3. Promotion of network via IUCN SSC PSG	by 2028
D2.1.3 – Co-develop the governing and other strategic documents of the network through a participatory process.	Governing and other strategic documents for the network are developed.	1. Completed governing documents 2. Completed strategic documents 3. Stakeholder feedback or approval	by 2028

Action	Indicator	Means of Verification	Timeline
D2.1.4 – Develop MoUs or other relevant collaborative frameworks for data sharing, research, and training between rescue/rehabilitation centers, government agencies and relevant research institutions.	Signed MoUs or other relevant collaborative frameworks exist between rehab centers, governments, and relevant research institutions in each country.	1. Copies of signed MoUs or other collaborative framework documents 2. Documented evidence of engagement and collaboration between the parties 3. Reports showcasing successful implementation of collaborative projects or initiatives mentioned in the MoUs	by 2029
D2.1.5 – Create a database documenting available information, data sharing, research and training initiatives.	The database is in place.	1. Documentation of database structure and accessibility 2. User feedback on ease of access and usability 3. Monitoring reports on the number of organisations using the database 4. Improved efficiency and effectiveness in information/data sharing	by 2032

Output D2.2

Standard Operating Procedures for the rescue, rehabilitation and release specific to the three West African pangolin species are available by 2030.

Action	Indicator	Means of Verification	Timeline
D2.2.1 – Rescue centers, veterinarians, researchers and other stakeholders involved in the rescue, rehabilitation and reintroduction of pangolins, both in West Africa and globally, document case studies and best practices related to each step of this overarching intervention to guide the development of SOPs.	A database of case studies is created and updated regularly.	1. Case studies from diverse stakeholders, representing all steps of the process 2. Database/repository established and maintained by the network	by 2027

Action	Indicator	Means of Verification	Timeline
D2.2.2 – Compile existing SOPs from Africa, Asia and elsewhere related to pangolin rescue, rehabilitation and post-release monitoring.	A database containing relevant Standard Operating Procedures (SOPs) is available and accessible.	1. Inventory of existing SOPs on pangolin rehabilitation 2. Centralized repository/database is populated and easily accessible	by 2027
D2.2.3 – Develop species-specific SOPs guiding the rescue, handling, and transport of live pangolins; veterinary procedures; accreditation of rehabilitation facilities; release protocols; and the collection and sharing of case study and research data.	100% of rescue centers involved in pangolin rescue, rehab, and release in West Africa have adopted and implemented the SOPs, leading to >30% improvement in pangolin rehabilitation success.	1. SOPs for each phase of the rescue, rehabilitation, and reintroduction process 2. SOPs for center formation and accreditation 3. Monitoring and evaluation data on rescue, rehabilitation and reintroduction success rates	by 2030

Output D2.3

Capacity to rescue, rehabilitate and reintroduce the three West African pangolin species is improved through improved access to resources and training by 2032.

Action	Indicator	Means of Verification	Timeline
D2.3.1 – Use existing and future evidence and guidance related to pangolin rescue, rehabilitation and release to develop and centralize training materials into an accessible repository.	A repository of information, guiding documents, and training materials related to pangolin rescue, rehabilitation and release is operational and accessible to network members and other stakeholders.	1. Inventory of gathered evidence and guiding documents 2. Training materials, including documents, videos, modules, etc. 3. Centralized, accessible repository of materials available to network members and other stakeholders	by 2028
D2.3.2 – Conduct a comprehensive training needs assessment, including identification of the roles and numbers of stakeholders to be trained and a proposed plan to deliver training.	Final report presenting the results of the training needs assessment.	1. Training needs assessment report 2. Plan for training implementation	by 2029

Action	Indicator	Means of Verification	Timeline
D2.3.3 – Deliver at least one specialised training on pangolin rescue, rehabilitation, and reintroduction to rescue/rehab centers and their personnel, national law enforcement, wildlife and protected areas authorities, and other relevant stakeholders in each country every three to five years, with subsequent trainings incorporating new evidence.	At least 50 individual stakeholders have been trained.	1. Training programs and curricula 2. Training attendance records 3. Evaluation results on training effectiveness 4. Participant feedback or testimonials	by 2032

The establishment of a diverse, multi-stakeholder West African information network to support evidence-based rescue, rehabilitation and reintroduction of pangolins brings together a diversity of relevant stakeholders in a structured and synergistic platform (**Output D2.1**). Partnerships between rehabilitation centers, governments and research stakeholders are a valuable opportunity for effective collaboration, communication, coordinated interventions and promotion of the rehabilitation centers. Connecting pangolin rescue centers and professionals through a network will facilitate improved welfare standards, capacity-building and, ultimately, rescue success via increased survival of rescued pangolins in West Africa. At the Accra workshop, [Tikki Hywood Foundation](#) highlighted how effective collaboration between its center and law enforcement has resulted in coordinated pangolin seizures in Cameroon. On the research side, the partnership between [Save Vietnam Wildlife](#), the Vietnamese government and academia led to a publication on the post-release ecology of Sunda pangolins rescued from the illegal trade in Vietnam (Gray et al. 2023). In this partnership, Vietnamese authorities confiscated the live pangolins from the illegal trade and transferred them to Save Vietnam's Wildlife rehabilitation center, after which an international research team was brought on board to study their post-release ecology using telemetry.

Standard Operating Procedures are a key tool for successful *ex situ* interventions to standardize practices across sites and involved personnel (**Output D2.2**). SOPs also facilitate appropriate, respectful, efficient and effective communication between employees and their line managers, ensuring consistent and comparable data collection, and facilitating training and skills enhancement procedures. When absent, new SOPs should be created, whereas existing ones should be regularly updated with new evidence, data, and legislation. SOPs should also be able to adapt and respond to new challenges, including for example the emergence of new diseases affecting pangolins. For example, the [International Wildlife Rehabilitation Council \(IWRC\)](#) and its partners created an SOP to more effectively respond to a new [Rabbit Hemorrhagic Disease](#). For pangolins, the South African Department of Forestry, Fisheries and Environment in collaboration with the African Pangolin Working Group, the Johannesburg Wildlife Veterinary Hospital and other key stakeholders, developed a Standard Operating Procedure for pangolins removed from trade in South Africa. Such models can be adapted for West African regional purposes, but must represent the species and socio-political realities of the region.

Pangolins are challenging species to successfully rehabilitate and reintroduce back to the wild and improving access to knowledge, educational materials, and training opportunities are sorely needed throughout West Africa (**Output D2.3**).

Globally, guidance and tools in support of release and post-release monitoring are woefully underdeveloped for pangolins, including all three West African species (Goal D3). This goal includes plans to develop standardized protocols for post-release monitoring and tracking technology for each pangolin species (Output D3.1), identify suitable release sites across all range states (Output D3.2), and generate data and evidence in support of rescue, rehabilitation and reintroduction interventions for all three species (Output D3.3).

Goal D3

Effective release site selection protocols and post-release monitoring approaches and tools are developed for the three West African pangolin species by 2030.

Output D3.1

Release site selection protocols developed and an inventory of release sites are identified and in use across West Africa by 2030.

Action	Indicator	Means of Verification	Timeline
D3.1.1 – Develop an SOP to guide releases of rehabilitated pangolins, including consideration of pangolin welfare and release site selection (including criteria related to site access, safety/insecurity, source of the pangolin, suitable habitat, local community use of the area including hunting and land conversion, protected area status, etc..).	SOPs related to considerations for pangolin welfare during the release/reintroduction and release site selection are produced.	1. Pangolin welfare and handling during release/reintroduction SOP 2. Release site selection SOP	by 2028
D3.1.2 – Identify and map suitable release sites for pangolins in every West Africa range state that could satisfy the criteria developed in Action 3.1.1.	At least 5 potential release sites identified and mapped in every pangolin range state of West Africa.	1. Documented list of approved release sites meeting predetermined criteria 2. Map of release sites 3. Assessment reports evaluating site feasibility for pangolin releases 4. Records of successful releases in identified sites	by 2028
D3.1.3 – Obtain permission from land owners, governments or communities to release pangolins in identified release sites, including terms for individual releases and with assurances regarding the safety of released pangolins.	Permits and other cooperative agreements to release pangolins are obtained.	1. Official documentation granting permission for pangolin release 2. Correspondence confirming approval for release 3. Signed agreements or permits for the release	by 2030

Output D3.2

Post-release monitoring protocols and tracking technology are developed for each West African pangolin species by 2032.

Action	Indicator	Means of Verification	Timeline
D3.2.1 – Develop evidence-based, post-release monitoring protocol considering indicators of success and the resources and capabilities of a diversity of stakeholders. Synergise with Outputs B1.1 and B1.3 .	Post-release monitoring protocol published, made available online, and distributed to known actors.	1. Published post release monitoring protocol 2. Hosted on publicly available website 3. Distributed to known actors	by 2028
D3.2.2 – Implement trainings on pangolin post-release monitoring and data needed to evaluate reintroduction success.	Every rescue center has at least one staff member knowledgeable on pangolin post-release monitoring skills and each center implements post-release monitoring in collaboration with trained, relevant national authorities and research stakeholders.	1. Pre- and post-training assessments 2. Surveys or interviews with trained individuals 3. Data and reports on post release behavior and survival	by 2029
D3.2.3 – Develop bespoke technology adapted to the morphology of the three West African pangolins to track wild and reintroduced individuals post-release. Liaise with ecologists implicated in Goal B and/or Action D3.3.3 .	Species-specific tracking technologies available.	1. Successful field tests or pilot studies 2. Records indicating improved pangolin tracking accuracy and efficiency 3. Device blueprints and product available	by 2032

Output D3.3

Rescue, rehabilitation and release activities are linked with structured research to accumulate data and evidence in support of rescue, rehabilitation and reintroduction interventions by 2029.

Action	Indicator	Means of Verification	Timeline
D3.3.1 – Identify knowledge gaps on pangolin biology, ecology and husbandry limiting rescue, rehabilitation and reintroduction success.	Knowledge gaps have been mapped, with appropriate research identified to fill gaps.	1. Compiled list of specific knowledge gaps 2. Research proposals or plans to address the gaps	by 2029

Action	Indicator	Means of Verification	Timeline
D3.3.2 – Develop a standardised record keeping system and protocol for rescue/ rehabilitation centers and researchers working on pangolin rescue, rehabilitation and release.	All pangolin rescue centers and collaborating researchers adopted and contributing data through a standardized record-keeping system and protocol.	1.Documentation of the developed system and protocol. 2.Adoption and implementation of the standardized system. 3.Monitoring reports on compliance with the record-keeping protocol.	by 2028
D3.3.3 – In partnership with research institution collaborations established in Action D2.1.4 , implement research needed to fill knowledge gaps. Liaise with ecologists implicated in Goal B and/or Action D3.3.3	At least 10 rescue/ rehabilitation centers and researchers have contributed data for publication.	1.Completed datasets and data collection forms 2.Documentation of data sources and collection methods 3.Published reports or articles on the identified knowledge gaps	by 2029

Development of reintroduction SOPs, including approaches that consider pangolin animal welfare and suitable reintroduction site selection, are precursors to reintroduction success (**Output D3.1**). Release sites should be those where the threats to pangolins have been largely mitigated, ideally under some form of management regime (e.g., protected area or other form of managed site), and in agreement and collaboration with relevant authorities and local communities. For example, successful release and post-release monitoring of pangolins in South Africa is implemented at sites that are free from poaching, have monitoring and anti-poaching units, are typically in close proximity to or inside national parks or conservancies, and that do not have electric fences (Pietersen et al., 2016).

Standardized post-release monitoring protocols supported by bespoke tracking technology are critical to informing reintroduction success via a monitoring and evaluation scheme founded on clear indicators (e.g., survival, reproduction, and movement behavior) (**Output D3.2**). These protocols and technologies should be adapted to the specific morphological and behavioural particularities of each species. Standardization across methods and technologies will not only ensure successful replication by other pangolin rescuers in similar contexts, but ensure comparable data is being collected for overall evaluation of intervention success. Significant efforts have been made to develop monitoring protocols for pangolins in the wild, including the IUCN SSC PSG's [methods for monitoring populations of pangolins](#), and [other scientific publications](#) (e.g., Amin et al., 2023; Difouo et al., 2023; Matthews et al., 2023; Moore et al., 2024; Morin et al., 2020; Simo et al., 2020, 2023b).

Generating novel data on the biology, ecology and husbandry of all three West Africa pangolin species is critical to establishing the evidence-base upon which successful rescue, rehabilitation and reintroduction interventions can be guided (**Output D3.3**). Such data should be generated in a way that tests the validity or efficacy of diverse interventions, ranging from treatment approaches and drug dosing to types of release (soft vs. hard), and effect of release site characteristics on reintroduction success. Valuable data on the Sunda pangolin post-release ecology (home range and activity patterns) has already been developed in Vietnam (Gray et al., 2023), possibly serving as an example for West Africa. Similarly, the spatial and behavioural ecology of two white-bellied pangolins rescued from wildmeat markets was recently studied in the Lama forest reserve, Benin (Azihou, 2022). In addition, several post-release studies on the Temminck's ground pangolin in [Zimbabwe](#) and in South Africa (from the [Pangolin Release Project](#)) are forthcoming.

Rescue and rehabilitation centers aim to not only ensure the survival of rescued, live trafficked pangolins, but successfully reintroduce these individuals to the wild to restore in situ pangolin populations. This latter goal can only be achieved in synergy with approaches beyond center walls, that consider the needs of local communities and engage in diverse community-based interventions that reflect the cultural values of communities local to pangolin release sites (Goal D4). This goal includes plans to set up community liaison programs (Output D4.1) and to establish partnerships between rehabilitation centers, organisations and government agencies to support alternative livelihood initiatives in those communities (Output D4.2).

Goal D4

Rescue and rehabilitation centers are all actively engaged in participatory, co-designed community-based conservation interventions with communities adjacent to the center and release sites by 2033.

Output D4.1

Rescue and rehabilitation centers have followed a participatory process to identify pertinent community-based conservation and development interventions to be co-designed and co-implemented with communities, appropriate authorities, implementation partners and funders by 2035.

Action	Indicator	Means of Verification	Timeline
D4.1.1 – Rescue centers engage communities adjacent the center and reintroduction sites in a consultative, participatory process that leads to identification of community-based interventions of interest that can be co-designed and co-implemented. Synergise with Outputs B1.1, B1.2, B2.2, C1.1, C2.1, C2.3.	Communities are engaged in conservation and development interventions that mitigate pressure on wild and reintroduced pangolin populations.	1. Documentation of the participatory, consultative process 2. Participant rosters 3. Documentation of relevant intervention ideas 4. Community commitment agreements signed	by 2030
D4.1.2 – Identify key partner organisations and funders for the delivery of community-based conservation interventions identified in Action D4.1.1.	Each rescue center is partnered with appropriate organisations and funders to implement community-based conservation and development interventions in support of pangolin conservation.	1. Documentation of partner organisations identified for collaboration 2. Signed agreements or MoUs with partner organisations 3. Ongoing collaboration and joint activities between the project and partners	by 2031
D4.1.3 – Secure and mobilize resources for the delivery of community-based conservation and development interventions identified in Action D4.1.1 and in collaboration with partners identified in Action D4.1.2.	Community-based conservation and development initiatives are sustainably resourced with transition plans enabling communities to eventually take full ownership.	1. Documentation of secured funding sources and amounts 2. Budget allocation for implementation 3. Financial reports on resource utilization 4. Intervention management plans that eventually wean initiatives off of external funding in place	by 2033

Action	Indicator	Means of Verification	Timeline
D4.1.4 – Rescue centers develop and implement educational programs targeting children, authorities, hunters and traders, including outreach via radio, TV, handouts, as well as information sessions at faith-based organisations and markets. Synergise with Outputs B1.1, B1.2, B2.2, C1.1, C2.1, C2.3.	At least one comprehensive educational program is implemented by each rescue/rehabilitation center in at least one community relevant to their area of intervention.	1. Educational program materials 2. Schedule of information sessions 3. Attendance records or sign-in sheets 4. Monitoring of program reach 5. Evaluation of target audience behavior change	by 2030
D4.1.5 – Implement monitoring and evaluation of all community-based conservation and development initiatives so that they can be adaptively managed for sustainable success.	Interventions are successful and sustainable.	1. Monitoring and evaluation data 2. Monitoring and evaluation reports 3. Indicators of adaptive management of interventions based on monitoring and evaluation outcomes	Start by 2035, thereafter continuous

Community-based conservation and development initiatives are critical for the future of wild and reintroduced pangolin populations. Both the conservation and development communities increasingly recognise the importance of identifying, developing, and implementing such interventions through participatory, co-design processes to better ensure engagement into and ownership of the initiatives by the communities they are meant to serve (**Output D4.1**). Communities are the frontline guardians and stewards of most of the world's natural resources, including pangolins which range widely in habitats found in community and unprotected state lands. Integrating them as stakeholders of critical importance to intervention success is recognised across [UN Sustainable Development Goals](#), the [Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services \(IPBES\)](#), and even through CITES [livelihoods](#) and [indigenous peoples and local communities guidance](#). Rescue centers and their partner communities, co-implementors, and funders are encouraged to think about a diversity of interventions, including alternative livelihoods, co-governance mechanisms, land tenure and other resource security to meet both basic and other levels of need for their prosperity and to eventually reduce dependence on unsustainable use of natural resources. Education and outreach programs are one form of community-based conservation intervention that are critical to behavior change and awareness raising. Such interventions help promote public knowledge, positive attitudes, and an improved understanding of biodiversity and the importance of its conservation across all strata of society, especially among younger generations, the decision-makers of the future. Many education programs centered on cultural values have been developed around the world, especially in biodiversity-rich developing countries, in an effort to promote the conservation of endangered species, sustainable land use and agriculture, climate change mitigation, and other environmental priorities. A notable example is the integration of [curricula](#) promoting positive values and attitudes towards wildlife in Kenyan schools.

4.3.E: Zoonotic Disease and One Health

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4.3.E Zoonotic Disease and One Health

The Problem

As the interaction between wildlife and humans or their domestic animals continues to increase due to the expansion of human activities into natural habitats, so does the potential for multidirectional disease transmission through direct or indirect contact with the environment and vectors. Considering that several significant emerging and infectious diseases have originated from these human-animal interfaces (e.g., ebola, SARS-CoV coronaviruses, African swine fever, Rinderpest, etc...), a comprehensive approach to mitigating disease risks has been recognised as urgent.

A wealth of past and ongoing research on pangolins has uncovered pathogens of potential human health concern, yet pangolins continue to be traded and consumed at high rates (Harvey-Carroll et al., 2022). In West Africa, the white-bellied, black-bellied and giant pangolins are consumed as meat and used in traditional medicine, practices that are deeply embedded in the culture of local communities (e.g., Difouo et al., 2020; Mouafo et al., 2022, 2021; Zarvo et al., 2021). Pangolins are openly sold in wildmeat and traditional medicine markets, leading to a constant and direct contact between humans and these species. This region is also the largest exporter of illegally traded pangolin scales to Asia. In addition to the potential contact with humans, traded pangolins are often transported or held alongside other species with inadequate health evaluation and veterinary care, posing a risk of cross-species transmission and zoonotic spillover. Reducing the trade and consumption of pangolins and other wildlife may contribute to mitigating the risk of disease transmission and emergence, while monitoring wild pangolins and the potential for zoonotic disease risks will benefit both conservation and public health. Beyond trade, deforestation and habitat degradation in Africa are also decreasing the distance between people and pangolins, which are now increasingly relying on agricultural landscapes, leading to more human-pangolin encounters and disease transmission risks.

One Health offers an integrated and cohesive strategy to achieve sustainable harmony and optimal health outcomes for people, animals, and ecosystems. This approach acknowledges the close linkages and interdependence of the health of humans, domestic and wild animals, plants, and the broader environment, including ecosystems. Mitigating the risk of disease transmission within and at the humans, domestic animal and wildlife interface is at the centre of One Health, which it aims to accomplish by promoting interdisciplinary research through cross-sectoral collaboration and a globalised perspective on health hazard management. By systematically altering our approach to managing the risks associated with infectious and emerging diseases, this framework considers the cultural and socioeconomic drivers of pathogen transmission in our increasingly interconnected world (www.onehealthglobal.net).

Current Data and Actions

Pangolins have gained considerable conservation and public attention over the past two decades, partly owing to their drastic decline due to intercontinental trade in their body parts, and partly due to their potential role in the COVID-19 pandemic (Heighton and Gaubert, 2021). Pangolins were initially hypothesized to act as a potential intermediate host of SARS-CoV-2 – the causative pathogen of COVID-19. However, despite similarities in the genomes of SARS-CoV-2 and the coronaviruses isolated from Asian pangolins (e.g., do Vale et al., 2021; Liu et al., 2020), there is no evidence of the involvement of wild or trafficked pangolins as intermediate hosts to the SARS-COV-2 that caused the COVID-19 pandemic (Frutos et al., 2020; Lee et al., 2020). The IUCN SSC Pangolin Specialist Group maintains an up to [date information sheet on public health risks from pangolins](#), particularly related to COVID-19.

Current Data and Actions (cont.)

Prior to the emergence of SARS-CoV-2, studies carried out on pangolins revealed that they harbour a wide diversity of pathogens (viruses, bacteria and parasites), some of which may be transmissible to humans (Barton et al., 2022; Baylis, 1933; Gardiner and Werner, 1984; Mohapatra et al., 2016; Myers and Kuntz, 1969; Shi et al., 2022; Tuli et al., 2022; Yodsheewan et al., 2021; Zhai et al., 2021). For example, Mohapatra et al. (2016) identified 34 bacteria and parasites in pangolins, including 4 genera of protozoan, 7 genera of bacteria, 13 genera of helminths, 8 genera of ticks, and 2 genera of mites. Twenty-eight vertebrate-associated viruses, including 16 species of Hunnivirus, Pestivirus and Copiparvovirus pangolin-associated viruses have also been identified in the Sunda pangolin (Shi et al., 2022). In addition, a variety of nematode and Acanthocephalan parasites have been identified in Sunda pangolin (Baylis, 1933; Gardiner and Werner, 1984; Myers and Kuntz, 1969; Tuli et al., 2022; Yodsheewan et al., 2021; Zhai et al., 2021).

For African pangolin species, less research into potentially significant pathogens has been undertaken (for example, none for viruses and one for a single bacteria group). However, indications of Trypanosoma and Rickettsia in West and Central African species suggest the importance of further determining baseline estimates of pathogen diversity and load in these species (George and Aeschlimann, 1985; Njiokou et al., 2004). It is concerning that scientific knowledge regarding emerging and infectious endemic zoonotic diseases associated with African pangolins is severely lacking compared to their Asian counterparts. Addressing this knowledge gap is essential in order to design a data-driven and practical communication strategy for West Africa.

In West Africa, numerous actors have already integrated the One Health approach, including the West African Health Organisation (WAHO; part of ECOWAS, collaborates with member countries to develop policies and strategies for disease surveillance, prevention, and control), the Africa Centres for Disease Control and Prevention (CDC Africa; autonomous health agency of the African Union that was established to strengthen the capacity of public health institutions for the surveillance, control and eradication of disease), and the Global Health Security Agenda (GHSA; follows the One Health approach and dictates that disease risk mitigation in wildlife populations should utilise this approach). Various research institutions in the region have also conducted research on this topic, including the Institut Pasteur in Senegal and Cameroon, the West African Centre for Cell Biology of Infectious Pathogens (WACCBIP) in Ghana, and the Centre International de Recherches Médicales de Franceville (CIRMF) in Gabon. These institutions are contributing to understanding the epidemiology, transmission dynamics, and prevention of these diseases.

Envisioned Actions

Disease risk analysis (DRA) systems rooted in One Health principles assess zoonotic disease transmission risk and may facilitate prevention of the health risks associated with pangolin trafficking and consumption (Goal E1). To achieve this, pangolin conservation stakeholders should develop a risk communication matrix of designated point people for pangolin health risks in West Africa (Output E1.1), as well as undertake a risk analysis of the current status of West African pangolin diseases and implement a programme of disease risk mitigation (Output E1.2).

Goal E1

A disease risk analysis (DRA) system based on One Health principles is established to assess and prevent the health risks associated with pangolin harvest, consumption and trade by 2030.

Output E1.1

A risk communication matrix of designated point people for pangolin health risks in West Africa is consolidated by 2027.

Action	Indicator	Means of Verification	Timeline
E1.1.1 – Create a risk communication matrix of point people with a phased work plan to respond to disease outbreaks.	Risk communication matrix is created and complete with at least 1 point person per range state. Work Plan to respond to disease outbreaks drafted.	1.Communication matrix sheet 2.Signatures of point people 3.Work Plan draft	by 2026
E1.1.2 – Train point people and other stakeholders on how to react to disease outbreaks, from detection to press management, including by running test scenarios, taking into account changing capacity by range country.	At least one training initiative has been undertaken with a minimum of 30% of the point people in the communication matrix annually, including test scenarios.	1.System testing results 2.Report on issues during the test 3.Pre- and post-training assessments 4.Surveys or interviews with trained individuals	by 2027
E1.1.3 – Set up rapid response teams capable of delivering a coordinated and effective response to disease outbreaks.	At least one rapid response team is set up and ready to act in each country.	1.Measurement of speed of response 2.Number of people mobilized in the communication matrix	Continuous

Output E1.2

A risk analysis of the current status of West African pangolin diseases is completed by 2027, and a programme for disease risk mitigation is implemented by 2029.

Action	Indicator	Means of Verification	Timeline
E1.2.1 – Create a disease risk strategy that is agreed by the pre-identified point people (see Output E1.1).	At least 80% of point people agree with the newly created disease risk strategy.	1.Strategy report 2.Signed agreements of implementation by point people	by 2028
E1.2.2 – Develop disease surveillance and risk management capacities through investments in disease diagnostic hubs.	At least 5 local disease diagnostic hubs have been developed or improved, and at least 80% of the point people in the communication matrix have undergone training in surveillance and management.	1.Pre- and post-training assessments 2.Surveys or interviews with trained individuals 3.Investment reports 4.Receipts of equipment bought and construction undertaken	by 2028

Action	Indicator	Means of Verification	Timeline
E1.2.3 – Create an easily-searchable database with historical and ongoing research on pangolin diseases and their epidemiology (i.e., a Pangolin Disease Database), to be hosted and updated by an established organisation.	Database created and hosted by an established organisation.	1. MoU with organisation housing the database 2. Database web-page	by 2028
E1.2.4 – Establish a disease risk measurement tool that considers differing risks depending on the species, type of use (food, ornaments, scales for medicine, etc.), and geographic scale or trade (local, national, regional, international)..	A disease risk measurement tool is developed and implemented.	1. Tool report 2. Comments on utilization by experts	by 2029
E1.2.5 – Test the disease risk analysis system with accurate disease surveillance and update the disease risk model accordingly (updated with Output E2.1).	Test conducted and system updated.	1. Speed and accuracy of system is compared with others 2. Test reports	by 2029

Developing a risk communication matrix of identified point people for pangolin health risks in West Africa (**Output E1.1**) and undertaking a risk analysis of the current status of West African pangolin diseases to implement a disease risk mitigation programme (**Output E1.2**) are key steps for the preparedness of West Africa to disease epidemics that may arise not only from pangolins, but from the trade and trade conditions. A manual for developing and implementing Disease Risk Analyses (DRAs) for wildlife diseases has been produced by the World Organisation for Animal Health (WOAH) in collaboration with the IUCN (see Jakob-Hoff et al., 2014). The first step is development of a risk communication matrix, which allows for the exchange of information and risk perceptions among risk assessors, risk managers and other interested parties during an outbreak (i.e., from field technicians that identify the index case/patient zero, to policy makers that introduce protocols to reduce the spread). Organisations that have developed methods to best determine these stakeholders and communication channels are the EU's [TELL ME project \(Communication matrix report\)](#) and the WHO's [Stakeholder Mapping Guide](#). Second to this is to undertake a risk analysis and implement a mitigation program that can allow decision makers to consider an evidence-based range of options for the prevention and mitigation of disease risks. Examples of tools used to identify risks include [WWF Asia-Pacific Counter-IWT Hub](#) based on knowledge of wildlife traded, known viruses, and risks associated with categories of market types and trade chains (Wikramanayake et al., 2021), or those used to identify risks of importing live animals which may be the case for post-seizure released pangolins (WOAH, 2010). A major challenge linked to this would be securing engagement of stakeholders in communicating and addressing pangolin-specific cases, possibly requiring for this framework to fall within the general trade in wildlife for the region.

Another way to tackle this problem is to understand pangolin health and the disease risks associated with their trade (Goal E2). This can be achieved through baseline screening of wildmeat/traditional medicine markets and wild pangolin populations (Output E2.1) and by understanding pangolin immunity and their potential to act as pathogen reservoirs or transmitters (Output E2.2).

Goal E2

Pangolin health and disease risks associated with pangolin trade are better understood through targeted research and monitoring by 2035.

Output E2.1

Screening of diseases found in pangolin specimens both in wildmeat/ traditional medicine markets and the wild is regularly implemented by 2035.

Action	Indicator	Means of Verification	Timeline
E2.1.1 – Conduct a literature review on known pangolin pathogens in West Africa.	Published literature review available as a living document, regularly updated with new research results.	1.Publication of report or article 2.Living document hosted publicly and regularly updated	by 2028
E2.1.2 – Develop screening/surveillance tools to detect pathogens, including those found in the literature review and emerging/novel pathogens.	At least 3 screening/surveillance tools are developed and tested.	1.Tool efficiency reports 2.Published tool designs	by 2030
E2.1.3 – Undertake annual routine disease screening of pangolin specimens found in trade and in the wild.	At least 3 sites per range state undergo annual screening.	1.Pathogen-accumulation curves per site 2.Range state pathogen checklists 3.Sampling records and screening data	Continuous
E2.1.4 – Update the pangolin disease database, risk tool and risk model on an annual basis, incorporating routine screening results (Actions E1.2.3-E1.2.5).	Database, risk tools, and risk models are updated annually.	1.Update and version logs 2.Signatures of point people responsible for updates	Continuous

Output E2.2

Pangolin immunity and their potential as pathogen reservoirs and/or transmitters of zoonotic are understood by 2035.

Action	Indicator	Means of Verification	Timeline
E2.2.1 – Send questionnaires to all rescue centers, veterinary clinics, zoological gardens, and laboratories working on pangolins to collect and centralize data on pangolin disease dynamics and immunity.	70% of potential respondents have responded to the questionnaire.	1. Report of results from surveys	early 2026
E2.2.2 – Conduct a literature review on the state of knowledge on reduced first line immunity in pangolins through skin/scale evolution, building on Weber et al. 2020, Choo et al 2016.	Report or scientific paper from the literature review is published.	1. Published article or report	by 2027
E2.2.3 – Secure funding resources and implement targeted research on pangolin immunity and potential as pathogen reservoirs or transmitters of zoonotic disease.	At least one major regional initiative researching West African pangolin immunity and zoonotic disease transmission risk is underway.	1. Funding secured 2. Research protocols developed and implemented	by 2035

Pathogen screening of pangolin specimens found in the wildmeat/traditional medicine markets and the wild are key to enabling more informed disease risk analyses related to the pangolin trade (**Output E2.1**). A diversity of screening and surveillance methods, such as culture-based (i.e. gram stains or rainbow agar), immunoassays (i.e. ELISA or antibodies), molecular-biology based (i.e. q-PCR, metabarcoding or genomics), and biosensors (i.e. electrochemiluminescent assays) are available as tools. Africa's \$100-million [Pathogen Genomics Initiative](#) (CDC funded) is an example of a project that strengthened Next Generation Sequencing (NGS) capacity in 33 African Union member states in 2022, expanding from a baseline of only 7 countries with such skills in 2019 (Makoni, 2020). The [WAHIS system](#) (OIE) is another example of an information sharing database on outbreaks and diseases surrounding animal health globally.

Understanding pangolin immunity, and their potential to act as reservoirs and/or transmitters of zoonotic disease is a critical research need in West Africa (**Output E2.2**). Studies delving into these aspects may better determine relative risks to humans trading and consuming pangolins, and to pangolin populations themselves (disease outbreaks in pangolins). Research on Asian pangolins has started to determine the links between scale evolution and first line defense immunity of pangolins (Choo et al., 2016); however, more is needed to understand if the same applies to African species. Data on immunity and transmissibility is also lacking in rehabilitation centers in West Africa.

4.3.F: Administrative & Policy Challenges

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4.3.F Administrative and Policy Challenges

The Problem

West Africa is often cited as one of the poorest regions in the world, as evidenced by the number of its countries classified as the United Nations (UN) 46 least developed countries (LDC) ([LDCs Report, 2023](#)). High levels of national debt and over-reliance on economically volatile commodities, such as raw materials (e.g. oil, copper, gold) and agriculture (e.g. cotton, timber, palm oil), place many West African countries in a state of economic insecurity (LDCs Report, 2023). Economic insecurity and poverty, compounded by relatively high rates of population growth, can result in high rural community reliance on wildlife hunting for subsistence as well as overwhelming temptation to risk engagement in illegal wildlife trade simply to survive (UNODC, 2019). Increasing trade connections with Asian markets (UNODC, 2019), underscored by wildlife declines throughout Asia has led to increased demand for West African wildlife products, particularly pangolins (Emogor et al., 2021; Heinrich, 2020).

Appropriate policies and laws that provide an administrative framework for controlling illegal and unsustainable wildlife consumption combined with effective and adequately resourced law enforcement structures are important pieces of a holistic approach to mitigating threats to biodiversity that are underpinned by poverty and corruption. Unfortunately, many national legal frameworks in West Africa are incomplete and outdated. Law enforcement is weakened by inadequate funding leading to poor implementation, as well as non-compliance due to insufficient understanding of laws by both enforcement authorities and governed communities and an overall lack of trust in the legal system (Mallon et al., 2015). To add to this, many countries in West Africa are missing the minimum national legislation required to comply with CITES ([National Legislation Project](#)). Additionally, CITES Management and Scientific Authorities lack the resources needed to effectively monitor trade, collate trade data, and comply with reporting obligations. Every country in the region's ability to effectively manage existing and expand new protected areas is compromised by outdated legislation, lack of resources and corruption (Mallon et al., 2015), further limiting their capacity to protect West African biodiversity (e.g. Fuashi et al., 2019; Jacob et al., 2015).

All of these issues are likely to be exacerbated in the future by the impacts of climate change and the estimated exponential population growth in the region (LDCs Report, 2023). Further complications can arise from national and regional instability and a breakdown in international collaboration resulting from extremist groups, insecurity, and dynamic regime changes (Douglas and Alie, 2014; Mallon et al., 2015; McGowan, 2003).

Current Data and Actions

An estimated 41% of the population in the Economic Community of West African States (ECOWAS) region are living in extreme poverty (those living on less than US\$1.90/day) ([West African Development Outlook, 2021](#)). Since 2020, six of the 15 ECOWAS countries have had non-peaceful transitions of power ([Global Instances of Coups](#)). However, the region is experiencing sustained growth in GDP (4.3% predicted for 2024) with the majority (9 of 15) of countries showing growth throughout the COVID-19 pandemic (West African Development Outlook, 2021; African Development Bank, 2023). Currently, Cape Verde, Côte d'Ivoire, Ghana, and Nigeria are the only ECOWAS members that are not classified as LDCs by the UN (LDCs Report, 2023). Of those classified as LDCs, Guinea-Bissau, Gambia and Benin are most reliant on agricultural exports, while Guinea, Mali and Burkina-Faso depend primarily on mining exports (LDCs Report, 2023). Four of these LDC countries suffer from high levels of national debt (Chad, Gambia, Guinea-Bissau, and Sierra Leone; LDCs Report, 2023). A country is considered commodity dependent when commodities account for at least 60% of its merchandise export earnings.

Current Data and Actions (cont.)

A study measuring estimated levels of corruption through interviews with the general public in 13 of the 15 ECOWAS states (all but Cape Verde and Guinea-Bissau) suggested relatively high levels of corruption and perceived increased corruption, especially among the police, government officials and members of parliament (Pring and Vrushu, 2019). The percentage of public service users who paid a bribe in the 12 months prior to the surveys (2018-2020) was highest in Liberia (53%), Sierra Leone (52%), Nigeria (44%) and Guinea (42%). Surveys conducted by the ECOWAS Inter-Governmental Action Group against Money Laundering in West Africa (GIABA) show that only 58% of countries include environmental crime in their national money laundering and terrorist financing risk assessments, and only three countries have actually undertaken a financial investigation related to illegal wildlife trade cases (Reid and Williams, 2021). Instances of corruption in wildlife trade include links between arrested ivory traffickers and government officials and falsification of CITES permits for rosewood (Reid and Williams, 2021; UNODC, 2019). And recently, extremist groups are directly influencing protected areas management, as exemplified by attacks on staff and tourists in the national parks within the [W-Arly-Pendjari Complex](#).

Efforts to reduce corruption and increase the efficiency and application of wildlife trade and protection legislation are being undertaken at both regional and national levels. ECOWAS has set up the West African Strategy on Combating Wildlife Crime (WASCWC), which was validated by all regional environment Ministries as of October 2020 (CITES, 2022 - [SC74 Doc. 35.3](#)). This strategy was adopted by the ECOWAS Council of Ministers and Heads of State Summit in December 2023. The West Africa Network to Combat Wildlife Crime (WAN), charged with implementing the WASCWC with the support of ECOWAS, was created. ECOWAS member states are supposed to be developing their respective National Wildlife Crime Strategies (NWCS) and Wildlife Law Enforcement Task Forces (WLETFs), with Nigeria (aided by UNODC) and Niger having already produced their [NWCS](#). A milestone report produced by the Royal United Services Institute and GIABA ([Illegal Wildlife Trade and Financial Investigations in West Africa](#)) provides insights into how financial monitoring can be utilized to rectify corruption and illegal wildlife trade in the region (Reid and Williams, 2021).

Envisioned Actions

Fostering conditions for the development and implementation of plans and regulations for pangolin conservation, which will result in improved law enforcement, prosecution of offenders, and stronger protection of pangolin habitat (Goal F1). To achieve this, the following outputs will be pursued: establishing mechanisms for monitoring and addressing corruption within the wildlife law enforcement sector (Output F1.1), building the capacity of national CITES authorities for effective implementation of the Convention (Output F1.2), and recruiting underrepresented communities into wildlife and forestry faculties and wildlife enforcement agencies (Output F1.3).

Goal F1

Effective application of laws, including for CITES implementation, critical habitat protections, and judicial processes across all range states by 2040.

Output F1.1

Cross-sectoral anti-corruption efforts and monitoring reduce corruption within relevant pangolin conservation sectors and stakeholders is achieved by 2038.

Action	Indicator	Means of Verification	Timeline
F1.1.1 – Learn from anti-corruption programs in the region and globally to develop an anti-corruption program suited to pangolin needs in West Africa.	A plan for anti-corruption capacity-building, policies, and practices is developed, resulting in measurable improvements in anti-corruption efforts and outcomes.	1. Documentation of lessons learned 2. Capacity-building initiatives 3. Policy and practice changes	by 2030
F1.1.2 – Identify and train CSOs in anti-corruption activities with enforcement agencies in pangolin range states and transit countries.	At least two CSOs per range state are trained in anti-corruption practices and methods.	1. Reports and case studies 2. Stakeholder interviews and surveys 3. Compliance with anti-corruption standards	by 2031
F1.1.3 – Establish a framework and SOPs for CSOs to work with governments to address and report cases of corruption and fraud related to pangolin conservation.	A framework and SOPs for CSOs are adopted and implemented to address and report cases of corruption and fraud.	1. Documentation review 2. Stakeholder interviews 3. Case studies and examples 4. Number of CSOs collaborating within the framework	by 2033

Output F1.2

Strengthened capacity of national CITES authorities to implement CITES by 2030.

Action	Indicator	Means of Verification	Timeline
F1.2.1 – Facilitate access to in-person and/or online CITES-relevant training opportunities for wildlife enforcement stakeholders, including CITES, customs, and wildlife law enforcement authorities.	National wildlife enforcement authorities are better trained to carry out national obligations as CITES signatories.	1. Participant records 2. Training evaluations	by 2028
F1.2.2 – Integrate CITES and wildlife law training modules into the curricula of national police, customs, wildlife and forestry professional training centers.	CITES and wildlife law enforcement modules are successfully integrated into the curricula of at least one training center for each relevant sector (i.e., police, customs, wildlife and forestry) in each country.	1. Documentation of module integration 2. Review of course materials 3. Practical application of knowledge	by 2030

Output F1.3

Minority and other underrepresented groups have better representation in wildlife/forestry faculties and enforcement agencies by 2031.

Action	Indicator	Means of Verification	Timeline
F1.3.1 – Identify minority and other under-represented groups within pangolin range states and evaluate their current engagement and opportunities in pangolin conservation.	One comprehensive evaluation implemented in each regional pangolin range state.	1. Evaluation reports	early 2028
F1.3.2 – Provide training to minority and other underrepresented groups identified in Action F1.3.1 on pangolin conservation.	At least 50 representative minority and other underrepresented group representatives trained on pangolin conservation, resulting in their meaningful participation in pangolin conservation initiatives.	1. Training records 2. Documented participation in pangolin conservation networks	by 2030
F1.3.3 – Identify and valorise local and indigenous knowledge and practices for pangolin conservation.	One comprehensive evaluation implemented in each regional pangolin range state, leading to eventual integration of this knowledge into pangolin conservation policies, programs, or management strategies.	1. Evaluation report 2. Validation by community members and experts 3. Integration into conservation policies or management plans	by 2030

Combating corruption within relevant sectors is a prerequisite for achieving effective policies, regulations, management plans and legislation for pangolin conservation in West Africa (**Output F1.1**). This approach involves collaboration among diverse stakeholders, including government agencies, law enforcement bodies, non-governmental organisations (NGOs), and local communities. The idea is to promote transparency, accountability, and integrity in wildlife law enforcement, ensuring better application of laws and regulations, full prosecution of offenders, and stronger conservation of priority pangolin habitats. [A joint operation in Cameroon](#) involving the police, the Forestry and Wildlife Ministry, and the EAGLE Network led to the interception of 12 bags of pangolin scales and leopard skins trafficked from 3 Central African states by members of a transnational organised group. Authorities in Benin, Cameroon, and Nigeria are now collaborating to track down other members of the group.

Building the capacity of national CITES authorities to implement CITES aims to enhance the knowledge, skills and resources of range state CITES authorities (**Output F1.2**). Implementation of this output can be achieved through training programs and workshops targeting CITES Management, Scientific and responsible enforcement authorities, comprising modules on CITES obligations and procedures, species identification, trade monitoring, and enforcement techniques. Capacity building initiatives may also include the provision of technical support, equipment, and resources to enhance data management, monitoring systems, and enforcement capabilities. By strengthening the capacity of national CITES authorities, countries can more effectively fulfill their obligations under the convention and promote the sustainable management and protection of pangolins. NGOs together with governments of Liberia and Côte d'Ivoire, among others, implemented training workshops on CITES and wildlife law in 2020 and 2024. TRAFFIC recently created a module on [Wildlife Criminality and CITES for the Garoua Wildlife School](#).

Recruitment of minority and other underrepresented groups into wildlife/forestry faculties and wildlife enforcement agencies aims to promote diversity and inclusivity within the conservation sector while providing opportunities for underrepresented communities to contribute novel perspectives to pangolin conservation (**Output F1.3**). Recruitment of individuals from these communities is intended to enhance community engagement and foster trust, increasing the likelihood of improved enforcement outcomes and adherence to conservation regulations. Implementation involves developing targeted recruitment programs and initiatives that actively encourage and support such groups to pursue a career in wildlife, forestry, and enforcement. These programs may include scholarships, mentorship opportunities, and outreach campaigns designed to engage with these communities. There is a growing number of scholarships and grant opportunities that specifically target and encourage women and minority groups to pursue careers in wildlife and forestry faculties.

Ensure the existence of strong, efficient, and functional governance institutions for pangolin conservation (Goal F2). This will be achieved by clarifying mandates for wildlife enforcement institutions and reinforcing the operational capacity of governance institutions for pangolin conservation (Output F2.1), as well as establishing sustainable funding mechanisms dedicated to pangolin conservation (Output F2.2).

Goal F2

Strong, efficient and functional governance institutions for pangolin conservation are reinforced by 2033.

Output F2.1

Diverse institutions involved in pangolin conservation have strengthened governance and operational capacity by 2030.

Action	Indicator	Means of Verification	Timeline
F2.1.1 – Analyse the different roles, mandates and jurisdictions of the diverse enforcement institutions involved in pangolin (and all wildlife) crime.	One report per country containing the results of the institutional analysis.	1. Final reports with results of the analysis and recommendations	by 2028
F2.1.2 – Organise networking workshops to share mandates, experiences, challenges and best practices between wildlife enforcement agencies (discussions guided by Action F2.1.1), including a thorough SWOT conducted through a participatory process with relevant stakeholders guided by a trained facilitator.	At least 80% of wildlife enforcement agencies in 8 countries have participated in networking workshops.	1. Workshop report 2. Workshop numbers	by 2029
F2.1.3 – Create a process map and decision tree based on the workshops (Action F2.1.2) and reports (Action F2.1.1) to guide wildlife enforcement institutions on chain of collaboration and implication in pangolin conservation actions, including law enforcement.	At least 80% of participating wildlife enforcement institutions state that they have increased clarity on their mandate around pangolin conservation.	1. Published process map in English and French 2. Published decision tree in English and French	early 2028

Action	Indicator	Means of Verification	Timeline
F2.1.4 – Develop and adopt bespoke mentorship opportunities for diverse institutions based on the results of the SWOT (governmental and non-governmental) involved in pangolin conservation.	At least 6 pangolin range states have officially adopted and implemented a mentorship plan targeting diverse institutions that engage in pangolin conservation.	1.Capacity building plan documentation 2.Training materials and resources 3.Training assessments via stakeholder interviews and surveys	early 2028
F2.1.5 – Provide operational and logistical support for pangolin conservation, including anti-trafficking, to national wildlife management and enforcement agencies (following the capacity building plan Action F2.1.4).	Material (e.g., computers, monitoring technology) and equipment (e.g., vehicles) have been delivered to national wildlife enforcement agencies.	1.Documentation of equipment and logistics provision 2.Enforcement reports and statistics	early 2030
F2.1.6 – Deliver training on pangolin ecology, threats, laws and conservation to national wildlife law enforcement agencies.	At least one annual training per country delivered to national wildlife law enforcement agencies in 50% of range states.	1.Attendee lists 2.Pre and post-training assessments 3.Fundraising applications submitted and awarded	early 2028
F2.1.7 – Ensure that these institutions have access to and are using the tools and databases on pangolin trade and trafficking (existing and those developed through Goals B1 and C3) for improved intervention efficacy and adaptive management.	At least 80% of participating wildlife enforcement institutions state that they have increased clarity on their mandate around pangolin conservation.	1. Published process map in English and French 2.Published decision tree in English and French	early 2030

Output F2.2

Sustainable funding mechanism(s) in place for pangolin conservation by 2033.

Action	Indicator	Means of Verification	Timeline
F2.2.1 – Analyse and identify diverse, appropriate, and sustainable funding and financing mechanisms for pangolin conservation (e.g., endowments, trust funds, species bonds, novel methods, etc.)	Consultant reports analyzing and recommending sustainable funding/financing mechanisms that guide the establishment of a sustainable funding mechanism(s) are available.	1.Comprehensive analysis report 2.Stakeholder consultations and engagement	by 2027

Action	Indicator	Means of Verification	Timeline
F2.2.2 – Create a Pangolin Conservation Trust Fund (or other mechanism as identified in Action F2.2.1) run by an external organisation (e.g., PSG or other) with dedicated fundraising and technical support staff.	A dedicated Trust Fund for pangolin conservation is established, audited by an external organisation, and staffed with dedicated individuals for fundraising and technical support to stakeholders.	1. Governing documents of the Trust Fund 2. External audit reports 3. Regular reports on fundraising activities and pangolin conservation support provided	by 2030
F2.2.3 – Capitalise the Fund (Action F2.2.2) with investments secured from diverse public and private sector actors, including individuals, leveraging Corporate Environmental and Social Responsibility (CESR) obligations where possible.	Sustainable levels of funding have been secured and/or guaranteed with annual growth and distribution to regional pangolin conservation actors.	1. Financial and tax statements 2. Agreements with fund recipients 3. Financial transaction records	by 2029

Reinforcing the operational capacity and governance of diverse institutions (from governmental to non-governmental and private) involved in pangolin conservation is essential to enhancing their effectiveness and impact (**Output F2.1**). Clarifying the mandate of wildlife enforcement institutions involves clearly defining the scope of their responsibilities and tasks, empowering them to effectively combat wildlife crime and more effectively implement a diversity of conservation interventions. Many countries in West and Central Africa have overlapping mandates among forestry, customs, police, and judicial bodies, often leading to duplication of effort, weak enforcement, and confusion over jurisdiction. An example of clarified mandates and integrated procedures improving wildlife crime prosecution is the [Operation SAMA](#) series in Central and West Africa, where regional cooperation, information sharing, and legal support have increased coordinated customs enforcement and led to successful prosecutions. Another instance is Namibia's [Operation Blue Rhino](#), which transformed wildlife crime intelligence, investigations, arrests, and prosecution through sustained, integrated efforts over several years. Additional steps may include providing institutions with necessary resources, such as funding, personnel, and equipment, to strengthen their operational capacity. This may include mentorship programs for staff, technological advancements to improve monitoring and enforcement capabilities, and improved coordination and collaboration amongst stakeholders involved in pangolin conservation. Reinforced operational capacity can result in improved data collection and analysis, more effective enforcement measures, and stronger coordination between agencies, ultimately leading to better protection and conservation outcomes for pangolins. WA BiCC held two workshops in 2017 to train judges and lawyers on how to prosecute wildlife crime (Balinga, 2017). The establishment of the [Uganda Wildlife Crime Unit](#) (UWCU) in 2018 by Focused Conservation in collaboration with the Uganda Wildlife Authority (UWA) serves as a positive example of addressing wildlife trafficking issues.

Establishing sustainable funding mechanisms for pangolin conservation (**Output F2.2**) is essential for securing the long-term conservation of these endangered species. The actions leading to this output guide appropriate stakeholders through the process of establishing and capitalizing a trust, endowment, or other relevant sustainable funding mechanism for pangolin conservation in West Africa, and globally. Stakeholders interested in establishing such a mechanism should work with financial professionals and seek diverse and creative capitalising strategies. The Fund should be used to support the outputs and goals elaborated in this, and other relevant global, plans. The [Pangolin Crisis Fund](#) is one example of an initiative that contributes to securing a future for pangolins globally by financing distinct projects. A Fund established in response to this action plan should seek to Synergise with existing efforts and organisations, including a strong, supportive link to the IUCN SSC Pangolin Specialist Group, and elaborate an adaptive disbursement strategy guided by the latest evidence.

The third way to tackle this problem emphasizes the importance of effective collaboration and coordination between agencies at the regional, national/local level, as well as with local communities, for the conservation of pangolins and other endangered species (Goal F3). This will be achieved by establishing inter-agency and stakeholder coordination platforms (Output F3.1), integrating conservation education into education platforms for diverse general and professional audiences (Output F3.2), and developing transboundary management systems to facilitate cooperation across borders (Output F3.3).

Goal F3

Effective collaboration and coordination between agencies, local communities, and other stakeholders for pangolin conservation is supported at local, national, and regional scales by 2030.

Output F3.1

National and regional inter-agency and stakeholder coordination platforms for pangolin conservation are in place by 2035.

Action	Indicator	Means of Verification	Timeline
F3.1.1 – Establish national, multi-agency wildlife enforcement taskforces in pangolin range countries (Liberia's Wildlife Crime Taskforce may provide a compelling model) informed by the outputs of Output F2.1 .	At least 5 countries have established multi-agency wildlife enforcement task forces composed of > 70% of national environment and enforcement agencies, represented by a minimum of 1 person per agency.	1. Operational reports and case records 2. Memoranda of Understanding (MoUs) or agreements 3. Stakeholder testimonials	by 2029
F3.1.2 – Formalize a regional network of Wildlife Crime Taskforces (from national taskforces Action F3.1.1) to coordinate transboundary law enforcement, data sharing, and conservation planning for coordinated pangolin and wildlife crime interventions.	At least 6 range states have established functional national and cross-border networks including a focus on pangolins.	1. Network MoUs and SOPs 2. Network membership records 3. Joint activities and initiatives 4. Communication and information sharing	by 2030
F3.1.3 – Facilitate the creation of transboundary MoUs to operate within CITES and national regulations and that allow for effective implementation of CITES Res. Conf. 17.8 (Rev. CoP19) , including the repatriation of seized live pangolins and products.	Seized live pangolins and trafficked products can be repatriated to their country of origin for appropriate reintroduction to the wild and/or stock management or otherwise appropriately managed in accordance with CITES Res. Conf. 17.8.	1. Signed MoUs 2. Records documenting repatriation or other relevant actions	by 2028

Action	Indicator	Means of Verification	Timeline
F3.1.4 – Establish national Species Working Groups (Liberia's Species Working Group may provide a compelling model), with a pangolin sub-group where relevant, that brings together enforcement agencies, community leaders, NGOs, and researchers to guide and coordinate pangolin conservation.	At least 5 range states (in addition to Liberia) have operational Species Working Groups with at least 70% of envisioned stakeholders represented.	1. Species Working Group Terms of Reference 2. Meeting minutes and work plans 3. Membership records	by 2029
F3.1.5 – Formalize a regional network of Pangolin Working Sub-Groups (Action F3.2.2) to enhance collaboration, share intelligence, coordinate joint enforcement operations (Action C3.2.5), and ensure standardized SOPs (e.g., Output C1.3 , Goal B1 , and Outputs D2.1 and D2.2).	At least 6 range states are participating in a functional cross-border network including a focus on pangolins.	1. Network MoUs and SOPs 2. Network membership records 3. Joint activities and initiatives 4. Communication and information sharing	by 2030

Output F3.2

Pangolin conservation education integrated into broader environmental education curricula by 2035.

Action	Indicator	Means of Verification	Timeline
F3.2.1 – Develop pangolin biology and conservation education content suitable for audiences ranging from primary school to professional (i.e., forestry, wildlife, legal, law enforcement, etc.) schooling levels.	Ready made pangolin-related educational materials are available for integration into diverse education level curricula.	1. Pangolin biology and conservation content in English and French	by 2027
F3.2.2 – Introduce pangolin content/curricula (Action F3.2.1) into the academic curriculum of national public and private primary, secondary, and tertiary schools with a focus on rural communities, but including urban public and private education centers.	At least 5 countries have incorporated pangolin content into national school education curricula.	1. Curriculum implementation reports 2. Assessment tasks and examinations 3. Teacher and student feedback and education assessments	by 2030

Action	Indicator	Means of Verification	Timeline
F3.2.3 – Integrate environment- and wildlife-related basic biology and legal curricula into professional (e.g., legal, enforcement, judicial, and wildlife/protected areas) training programs (Synergise with Outputs C1.1 and B2.1 and Goal F1).	At least 5 countries have incorporated environment- and wildlife-related legal provisions into professional education programs for legal, enforcement, judicial, and wildlife/protected areas training by 2030.	1. Curriculum implementation reports 2. Assessment tasks and examinations 3. Teacher and student feedback and education assessments	by 2030

Inter-agency and stakeholder coordination platforms serve as mechanisms for fostering collaboration and cooperation among diverse organisations and individuals involved in pangolin conservation efforts (**Output F3.1**). The intent behind this output is to create platforms where different agencies, stakeholders, and community representatives can come together, exchange ideas, share knowledge, and jointly plan and implement conservation strategies at the national, regional and global scales. Through these platforms, participants can achieve common conservation goals, pool resources, and leverage their collective expertise to address complex conservation challenges, a clear necessity for wildlife products involved in transboundary trade. One notable example of regional success is the [Africa Trade, Information, and eXchange \(TWIX\) system](#), which has been implemented within the Central African Forest Commission (COMIFAC) zone and is burgeoning in [West Africa](#). TWIX systems consist of secure mailing lists that facilitate effective communication among agencies engaged in the fight against wildlife trafficking and a secure database designed to centralize seizure data to support strategic analysis and serve as a tool for field investigations. Another example of a successful application of transboundary management systems is the [Maloti-Drakensberg Transfrontier Conservation and Development Project](#). This initiative involves Lesotho, South Africa, and parts of the kingdom of Eswatini, working together to protect the unique biodiversity, ecosystems, and cultural heritage of the Maloti-Drakensberg Mountain Range. One national platform example that facilitates the success of regional coordination networks, including [TWIX](#), is Liberia's Species Working Group including its inter-agency [Wildlife Crime Taskforce](#), instituted with the support of USAID WABiCC, which should serve as a model for national platforms regionally.

Integrating conservation education into diverse national education curricula may necessitate incorporating information and activities about endangered species, such as pangolins, into formal education systems at the primary, secondary, and tertiary, including professional, levels (**Output F3.2**). This approach ensures that students at all levels, from primary to tertiary, gain awareness, knowledge, and understanding about the importance of conserving these species and the threats they face, as well as the legal and institutional frameworks in place for their protection. By integrating conservation education, educators will be empowered to provide lessons about pangolin habitats, their roles in ecosystems, the challenges they face (like habitat loss and poaching), and conservation efforts in place for their benefit. This can be accomplished through textbooks, lesson plans, field trips, and interactive activities, among others - taking advantage of the latest pedagogical methods adapted to local contexts. One successful example of this integration is the Canadian Wildlife Federation's "[National Wildlife Week](#)" program, which engages students in learning about different endangered species each year and raises awareness of conservation.

Finally, the fourth way to tackle this problem aims to have a harmonised legal & policy framework in West Africa (**Goal F4**), by striving for common legal frameworks, aligning national frameworks with international regulations (**Output F4.1 & F4.2**), and appropriately support efforts directed towards the ECOWAS Commission and member states to recognise wildlife trafficking as a serious crime (**Output F4.3**).

Goal F4

A strengthened and harmonised legal and policy framework is implemented for pangolin conservation in West Africa by 2036.

Output F4.1

National legal and policy frameworks are diversified and strengthened to better support pangolin conservation and law enforcement outcomes by 2033.

Action	Indicator	Means of Verification	Timeline
F4.1.1 – Review existing national laws and policies relevant to pangolins, and wildlife more generally, to identify gaps, legal loopholes facilitating threats, and opportunities to diversify and strengthen legislation (e.g., for animal welfare, captive wildlife, compounding penalties for multiple, repeat or concurrent infractions, etc.).	All WA pangolin range states have completed a comprehensive review of their existing laws and policies relevant to pangolins and other wildlife.	1. Legal and policy review reports	by 2028
F4.1.2 – Support governmental agencies to propose and ratify updated legislation, including the penal code, and policies identified in Actions C1.3.4, F4.1.1 and Output F4.2 , as well as those needed to meet CITES implementation obligations (Output F1.2) and that align with national socioeconomic realities and international legal and policy frameworks.	West Africa pangolin range states following parliamentary procedure to update national legislation and policy.	1. Redrafted policy and legislation documents 2. Draft parliamentary process documents 3. Official announcements and press releases of updated legislation	by 2033

Output F4.2

Common legal and policy frameworks are developed across the region by 2036.

Action	Indicator	Means of Verification	Timeline
F4.2.1 – Convene multi-stakeholder workshops to promote political and institutional alignment with the West African Strategy on Combating Wildlife Crime (WASCWC) and to review and endorse draft policy frameworks supporting WAEMU/ ECOWAS directives on wildlife law harmonisation, with an emphasis on pangolin elements.	At least 70% of key stakeholders participating in advocacy and validation workshops support and validate the implementation of regional tools for wildlife policy harmonization in West Africa.	1. Workshop reports 2. Engagement with regional entities	by 2028
F4.2.2 – Facilitate the appointment of governmental and non-governmental pangolin champions (e.g., Actions B2.2.1, C2.3.5, C2.1.3), technical (e.g., IUCN or CITES), and political (e.g., Ministerial staff or other endorsed by the President) personnel/ organisations to lead development and harmonization of common legal frameworks for effective pangolin conservation and regulating national and international pangolin trade.	At least one technical and one political champion have been identified and appointed in each country in the region.	1. Government announcements and official appointments 2. Public records or official documents 3. Progress reports and performance indicators	by 2029
F4.2.3 – Work with and support pangolin champions (Action F4.1.2), as part of a joint collaboration between PSG's Legal Atlas Project and the ECOWAS program, to review existing and pending laws relevant to wildlife trade and pangolin conservation as the basis for a harmonised regional legal framework.	A comprehensive review of existing laws provides the basis for providing recommendations for regional legal harmonization.	1. Review report	by 2029

Action	Indicator	Means of Verification	Timeline
F4.2.4 – Support governmental agencies to propose and ratify updated legislation as may be required (Action F4.2.3) and to adopt a harmonised regional legal framework, in partnership between WAEMU, WASCWC, IUCN & ECOWAS programme.	A harmonized regional legal framework has been adopted within the region.	1. Official policy documents	by 2036
F4.2.5 – Support governmental agencies to establish mechanisms for regular review and revision of national and regional legal and policy instruments to ensure their effectiveness and adaptability to emerging challenges.	At least 50% of regional wildlife policies and regulations are reviewed and revised at least once within every five-year period, with at least 70% of proposed adjustments incorporated.	1. Review reports 2. Revised regional instrument documents 3. Meeting minutes and records	by 2036

Output F4.3

ECOWAS Commission and member states recognise wildlife trafficking as a serious crime by 2030.

Action	Indicator	Means of Verification	Timeline
F4.3.1 – Engage with relevant ECOWAS decision-makers to engender their support for criminalising wildlife trafficking.	80% of top ECOWAS decision-makers, representing at least 70% of ECOWAS member states, agree to support efforts to criminalise wildlife trafficking.	1. Correspondence and communication 2. Official endorsements or statements 3. Policy changes or legislative actions	by 2028
F4.3.2 – Organise stakeholder meetings, workshops and seminars with NGOs, government agencies, local communities and experts to engender support for the recognition of pangolins as regionally priority species.	At least 3 regional stakeholder meetings, workshops, or seminars involving relevant national and regional institutions have been completed.	1. Event reports 2. Attendance records 3. Media coverage	by 2030

The development of common legal and policy frameworks for the region (**Output F4.1**) and the alignment of national frameworks with regional or international regulations (**Output F4.2**) are essential tasks to ensure improved prosecution and protection of pangolins (and wildlife in general) at national and regional scales. Such alignment would prevent syndicates from exploiting pangolins in West African states where they are less protected, facilitate enforcement of regulations that are widely accepted by the international community, and allow for better coordination between states for transnational cases. An example of this is the European Union's "[EU Wildlife Trade Regulations](#)," whereby the EU defines directives that align with CITES regulations, and member states are required to transpose these directives into their national legal systems to reach these directives. The ECOWAS Court of Justice can offer a step toward this harmonised approach in West Africa (Böckenförde et al., 2016).

Lobbying and advocacy efforts directed towards the ECOWAS Commission and member states aiming to enhance their consideration of wildlife trafficking as serious crime (**Output F4.3**) is essential. Various strategies can be used to achieve this, such as raising awareness, presenting compelling evidence, and influencing decision-makers to recognise the gravity of wildlife trafficking and to take concrete actions to combat it. Successful lobbying and advocacy efforts have the potential to yield significant results. One successful lobbying campaign that illustrates the impact of such efforts is the [African Wildlife Foundation's \(AWF\) collaboration with VidMob](#). A video produced by VidMob as part of a larger campaign, garnered nearly 60,000 views on social media, leading over 48,000 wildlife supporters to sign a pledge to boycott the trade in big cats. Moreover, the campaign raised more than \$20,000 in funds. This successful example of lobbying and advocacy efforts also contributed to the passing of the [Big Cat Public Safety Act](#) by the United States House of Representatives in December 2020, which aims to prohibit the private ownership of these animals and limit the mistreatment and public safety risks associated with them.

Although this campaign yielded positive results, concerns remain regarding the implementation of such advocacy initiatives. It is crucial to ensure that the passing of legislation is followed by effective enforcement measures and sufficient resources dedicated to combating wildlife trafficking. Additionally, efforts should be made to enhance intergovernmental cooperation and coordination among ECOWAS member states to address wildlife trafficking comprehensively and tackle this transnational crime effectively. Ongoing monitoring and evaluation mechanisms must be established to assess the impact of implemented measures and identify areas that require further attention or adjustment to ensure long-term success in addressing wildlife trafficking.

4.4 Action Plan Implementation and Monitoring

4.4.1 Action Plan Risk Analysis

A risk analysis was conducted to understand and address some of the obstacles that may impede implementation of this action plan (Figure 4.1). This risk analysis covers the entire planning and implementation process, focusing on risks to completing individual actions and how these risks can influence the outcomes of these actions, but it does not consider risks associated with the final completion of the ensemble of the plan. Risk categories include: (i) the planning process undertaken, (ii) the implementation of proposed actions, (iii) geographically related constraints associated with West African countries, (iv) securing funding for action plan implementation, and (v) risks that are external to the control of the plan's implementing stakeholders (Figure 4.1).

Using risk likelihood (improbable to probable) and severity (acceptable to intolerable) scales, these risks have been ranked as low, medium, high, or extreme. Low risks include those that have little-to-no effect on the action outcome, are not probable, and are perceived as acceptable. This may include the absence of some stakeholders from stakeholder mapping exercises, or differences in the habitats selected for the implementation of actions. Medium risks include those that are likely to influence the action and sometimes have an important impact on its outcome, which are generally still low probability, but may require mitigation measures if they occur. Examples of medium risks include language barriers slowing down the implementation of certain actions, or a disease epidemic/pandemic preventing implementation due to national safety measures. High risks include those that are very likely to influence the action and to have a major impact on its outcome, are quite probable of occurring, and require mitigation planning. Examples include corruption and bribery preventing proper implementation and success of the action, and changes in range state governance that influence the direction or policies around certain actions midway through their implementation. Finally, extreme risks include those that can result in the complete abandonment of an action, are highly probable, and likely require certain aspects of the action, if not the whole action, to be delayed or abandoned. These include misappropriation of funds dedicated to certain actions or limited communication between implementing parties, for example.



Figure 4.1: Risk analysis of the action plan from planning to implementation. Identified risks were divided into categories and then ranked by likelihood and severity (top-half of figure). These risks have been given a score (in brackets) and colour coded based on the likelihood-severity ratio from the scale (bottom-half of figure).

	SEVERITY			
	ACCEPTABLE LITTLE TO NO EFFECT ON ACTION	TOLERABLE EFFECTS ARE FELT, BUT NOT CRITICAL TO OUTCOME OF ACTION	UNDESIRABLE SERIOUS IMPACT TO THE COURSE OF ACTION AND ITS OUTCOME	INTOLERABLE COULD RESULT IN ABANDONEMENT OF ACTION
LIKELIHOOD				
IMPROBABLE RISK IS UNLIKELY TO OCCUR	LOW - 1 -	MEDIUM - 4 -	MEDIUM - 6 -	HIGH - 10 -
POSSIBLE RISK CAN OCCUR	LOW - 2 -	MEDIUM - 5 -	HIGH - 8 -	EXTREME - 11 -
PROBABLE RISK WILL OCCUR	MEDIUM - 3 -	HIGH - 7 -	HIGH - 9 -	EXTREME - 12 -

4.4.2 Regional Network

Participating stakeholders agreed that a regional network is a crucial enabling condition to the achievement of the Actions, Outputs, and Goals captured within this West African Regional Pangolin Action Plan. This network aims to amalgamate the extensive knowledge, capacity, and resources of stakeholders committed to effectively conserving West African pangolins. And, its central purpose is to serve as a platform for monitoring the implementation of the action plan across the region. By facilitating open communication channels, the network will foster the exchange of information, experiences, and best practices among a diverse range of actors, including experts, researchers, organisations, local communities, wildlife authorities, governmental agencies, and international partners, with inclusivity as a core principle. The network will mobilize resources, promote interagency coordination, and seek funding opportunities for conservation initiatives. Collaboration will extend from action implementation to joint research projects, data sharing protocols, and standardized monitoring methodologies to generate robust scientific evidence. With the regional network in place, stakeholders will work collectively towards safeguarding the long-term survival of West African pangolins, their habitats, and the ecosystems they inhabit.

This network can comprise any stakeholder implicated in pangolin conservation in West Africa. We here provide examples of organisations that participated in the action planning workshop and/or are otherwise known from the region as of the time that this plan was drafted (see Acronyms list). It is not exhaustive or meant to be exclusive, all organisations with a relevant mandate are welcome to join the network and support with the implementation of this Action Plan.

GOAL A1: African Parks Network, APWG, BirdLife International, CBOs, CITES, CI, ECOWAS, Environmental ministries, Fauna & Flora, Government Agencies, IUCN PSG, IUCN Regional Office, IUCN WCPA, Indigenous Communities and Local Stakeholders (participatory mapping, identification of culturally significant areas and OECMs), IIASA, IFAW, Local NGOs, Local Universities, Rainforest Foundation, Range State Protected Area Authorities, Tikki Hywood Foundation Cameroon, TRAFFIC, TNC, UNEP, USFWS, WABiLED (USAID), WCPA IUCN SSC Species Monitoring Specialist Group, WCS, West African Science Service Center on Climate Change and Adapted Land Use (WASCAL), WWF, World Bank, Universities, ZSL

GOAL B1: APWG, Arise TV, BBC media, CBOs, CITES focal point, Chicago Zoo–Pangolin Consortium, Community leaders, EAGLE Network, Fauna & Flora, Governments, IUCN PSG, IUCN PSG WA, Journalist networks (ICJ), Local NGOs, TRAFFIC, TRACE Network, Universities, WABiLED (USAID), WILDMEAT Team, Wild Africa Fund, WildAid, WCS, ZSL

GOAL B2: APWG, Banks, Chicago Zoo–Pangolin Consortium, CPSG, ECOWAS, Fauna & Flora, Governments, IUCN PSG, IUCN PSG WA, Journalist networks, Local economists, Local NGOs, Teaching forums & associations, Universities, WCS, Wild Africa Fund, WWF, ZSL, Media outlets (Arise TV, BBC media), Pangolin guardian group

GOAL C1: APWG, CITES, EAGLE Network, EIA, Fauna & Flora, GITOC, GIZ, Government, Greenpeace, INTERPOL, IUCN, IUCN PSG, IUCN PSG West Africa, Judicial Experts & Wildlife officers, Judicial experts, Law enforcement agencies, Local media (Arise TV, BBC media), Local NGOs, Media outlets (Arise TV, BBC media), Ministries of Justice, Ministry of Justice, TRAFFIC, WABiLED (USAID), WCS, WJC, WWF, ZSL, Wild Africa Fund, Journalist networks (ICIJ)

GOAL C2: APWG, CITES, Community leaders, Commercial champions, Customs agencies, ECOWAS, Education ministries, EAGLE Network, EIA, Fauna & Flora, Foreign embassies, INTERPOL, IUCN PSG West Africa, IUCN Regional Office, Law enforcement agencies, Local NGOs, Local Universities, Relevant country ministries, TRAFFIC, UfW, Universities, WABiLED (USAID), WCS, WJC, Wild Africa Fund

GOAL C3: Agents from 4 government agencies, APOPO, AWF, CITES, Conservation Canines, Customs agencies, EAGLE Network, EIA, Environmental ministries, Fauna & Flora, Governments, GITOC, IFAW (Benin dogs), INTERPOL, International NGOs, IUCN PSG, Judiciary officials, Law enforcement & forensics agencies, Legal-Atlas, Nigerian Customs Service, NWCB, Regional TWIX project managers, TRACE, TRAFFIC, Universities, WABiLED (USAID), WCS, WJC, Wild Africa Fund, ZSI, ZSL

GOAL D1: APWG, Akatia, AWPG, Chicago Zoo–Pangolin Consortium, Fauna & Flora, Governments, IUCN PSG, IUCN PSG WA, Local NGOs, Local rehab centers, Pangolin Crisis Fund (WCN), St. Mark's Animal Rescue Foundation (Nigeria), Tikki Hywood Foundation (including Cameroon), Universities, WABiLED (USAID), ZSL

GOAL D2: APWG, Akatia, Arise TV, AWPG, BBC media, Chicago Zoo–Pangolin Consortium, Fauna & Flora, Governments, IUCN PSG WA, Journalist networks (ICJ), Local NGOs, Local rehab centers, St. Mark's Animal Rescue Foundation (Nigeria), Tikki Hywood Foundation (including Cameroon), WABiLED (USAID), WCS, Wild Africa Fund, ZSL

GOAL D3: APWG, Akatia, Chicago Zoo–Pangolin Consortium, Environmental ministries, Fauna & Flora, Governments, IUCN PSG, IUCN PSG WA, Local NGOs, Local rehab centers, St. Mark's Animal Rescue Foundation (Nigeria), Tikki Hywood Foundation (including Cameroon), Universities, WABiLED (USAID), ZSL

GOAL D4: All rescue and rehabilitation centers, APWG, Akatia, Chicago Zoo–Pangolin Consortium, CPSG, Environmental ministries, Fauna & Flora, Governments, IUCN PSG, IUCN PSG WA, Local NGOs, Rehabilitation centers network, St. Mark's Animal Rescue Foundation (Nigeria), Tikki Hywood Foundation (including Cameroon), Universities, ZSL, NGOs

GOAL E1: ASPIRE grants, CDC Africa, EcoHealth Alliance, Epidemiologists (IUCN PSG & WABiLED (USAID)), Health Ministries, Institut Pasteur, IUCN PSG, Local Universities, WABiLED (USAID), WAHO, WHO, ZSL, ZSL One Health team

GOAL E2: ASPIRE grants, CDC Africa, EcoHealth Alliance, Epidemiologists (IUCN PSG & WABiLED (USAID)), Geneticists (IUCN PSG & WABiLED (USAID)), Health Ministries, Institut Pasteur, IUCN PSG, Laboratories, Local NGOs, Local Universities, Rehabilitation centers, Researchers undertaking fieldwork in the region, Veterinary Focal Point (IUCN PSG), WABiLED (USAID), ZSL One Health team

GOAL F1: APWG, CPSG, CITES, EAGLE Network, EIA, Fauna & Flora, Government, IUCN, IUCN PSG, IUCN regional office, Ministry of Justice, Ministry of Wildlife, NAPC, PSG, Tikki Hywood Foundation, TRAFFIC, WCS, WABiLED (USAID), ZSL

GOAL F2: APWG, CBOs, CITES, ECOWAS, EAGLE Network, EIA, Fauna & Flora, GITOC, Government, Government agencies involved in wildlife enforcement, Governments, INTERPOL, Local NGOs, Ministry of Wildlife, NAPC, Oxpeckers, Pangolin Crisis Fund, Rehabilitation centers, TRAFFIC, Universities, WABiLED (USAID), WCS, WCN, Wildlife Enforcement Networks, Wild Africa Fund, WWF, ZSL, Transparency

GOAL F3: APWG, CBOs, CITES, CITES Focal points, CI, EAGLE Network, EIA, Education ministries, Endangered Wildlife Trust, Environmental ministries, Fauna & Flora, GEF, Governments, INTERPOL, IUCN CITES, IUCN PSG, Judicial actors, Judicial experts, Local NGOs, Local Universities, NWCB, Pangolin Conservation, Pangolin Crisis Fund, Policy makers, Private Sector, Tikki Hywood Trust, Teaching forums & associations, TRAFFIC, UNEP, USFWS, WCS, WildAid, WWF

GOAL F4: APWG, CITES, CITES representatives, ECOWAS, ECOWAS member states, Environmental Ministries, Fauna & Flora, Governments, IUCN & ECOWAS programme, IUCN PSG, IUCN regional office, Legal-Atlas, Ministries of Justice, Technical and political champions, TRAFFIC, UNODC, WABiLED (USAID), WASCWC, WCS, WWF, ZSL, WAEMU

SECTION 5. CONCLUSION

West Africa is home to three out of the eight currently recognised pangolin species (white-bellied, black-bellied, and giant). Despite their generally wide distribution within the region and their importance as a natural resource to local peoples in every regional range state, there are major knowledge gaps related to their biology, ecology, and population trends. West African pangolins continue to be threatened by international illegal wildlife trade, local consumption and commercial trade, habitat loss and destruction (including climate change), and challenges in administration and policy. They also have significant importance to local communities, with implications for community socio-economic wellbeing and traditional beliefs, which must be taken into consideration when implementing conservation interventions. Despite the depth of cultural connection, existing laws concerning pangolins and their natural habitats are not yet enforced in a way that effectively ensures pangolin protection or the sustainability of their populations across West Africa.

To tackle the current threats facing pangolins in West Africa, the IUCN SSC Pangolin Specialist Group, USAID (WA-BICC & WABILED), and Fauna & Flora, together with many stakeholders from across the region representing key governmental, non-governmental, regional and local, frontline organisations, undertook a regional conservation planning process. The participatory process enabled the consolidation of the first summary of all current knowledge on pangolins in the region, the mapping of conservation initiatives and stakeholders involved in pangolin conservation in West Africa, and the production of this 30-year regional conservation action plan. This document provides the necessary tools to upscale current conservation efforts for pangolins in West Africa, with the aim of both improving their current dire status and ensuring their future. Wide adoption and implementation of this plan, including with communication across the network and monitoring and evaluation of the suggested actions, will ultimately ensure that the West African community's 30-year vision for pangolin conservation becomes a reality.

The implementation and eventual success of this plan is likely to face many internal and external risks. Complexities are likely to arise due to the limited knowledge on pangolins and the differing life-history and biological characteristics of the three species under this action plan, as well as the limited economic prospects for conservation in West Africa and the potential impacts from regional conflicts, changes in government, global market forces, and so on. However, the network of pangolin specialists and conservationists in the region that stems from this action planning process will emerge as the necessary force to overcome many of the complexities and challenges ahead.

SECTION 6. LITERATURE CITED

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SECTION 7. LIST OF ACRONYMS

APOPO – Anti-Persoonsmijnen Ontmijnende Product Ontwikkeling (Anti-Personnel Detection Product Development)

APWG – African Pangolin Working Group

AWF – African Wildlife Foundation

BBC – British Broadcasting Corporation

CAFI – Central African Forest Initiative

CBD – Convention on Biological Diversity

CBOs – Community-Based Organisations

CDC – Centers for Disease Control and Prevention

CESR – Corporate Environmental and Social Responsibility

CI – Conservation International

CILSS – Comité permanent Inter-États de Lutte contre la Sécheresse dans le Sahel

CIRMF – Centre International de Recherches Médicales de Franceville (Gabon)

CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora

COMAHS – College of Medicine and Allied Health Sciences

COMIFAC – Central African Forests Commission

COVID – Coronavirus Disease

CPSG – Conservation Planning Specialist Group (IUCN SSC)

CREMA – Community Resource Management Area (Ghana)

CSP – Cross-Sectoral Partnership

CWT – Counter Wildlife Trafficking

DNA – Deoxyribonucleic Acid

DRA – Disease Risk Analysis

EAGLE – Eco Activists for Governance and Law Enforcement (EAGLE Network)

ECOWAS – Economic Community of West African States

EIA – Environmental Investigation Agency

EJN – Earth Journalism Network

ELISA – Enzyme-Linked Immunosorbent Assay

ETIS – Elephant Trade Information System (CITES)

EU – European Union

FMTE – Forêt des Marais Tanoé-Ehy

GDP – Gross Domestic Product

GEF – Global Environment Facility

GGW – Great Green Wall initiative

GHSA – Global Health Security Agenda

GIABA – Inter-Governmental Action Group Against Money Laundering in West Africa

GIS – Geographic Information System

GITOC – Global Initiative Against Transnational organised Crime

GIZ – Deutsche Gesellschaft für Internationale Zusammenarbeit (German development agency)

ICIJ – International Consortium of Investigative Journalists

ICJ – International Court of Justice

IFAW – International Fund for Animal Welfare

IIASA – International Institute for Applied Systems Analysis

IMET – Integrated Management Effectiveness Tool (for protected areas)

INTERPOL – International Criminal Police Organization

IPBES – Intergovernmental Science-Policy Platform on Biodiversity & Ecosystem Services

SECTION 7. LIST OF ACRONYMS (CONT.)

IUCN – International Union for Conservation of Nature
IWRC – International Wildlife Rehabilitation Council
IWT – Illegal Wildlife Trade
KNUST – Kwame Nkrumah University of Science and Technology (Ghana)
LEK – Local Ecological Knowledge
ME – Ministry of Environment (generic)
MINFOF – Ministry of Forestry and Wildlife (Cameroon)
MoU – Memorandum of Understanding
NAPC – North American Pangolin Consortium
NGO – Non-Governmental Organization
NGS – National Geographic Society
NPA – National Protected Area
NWCB – Not sure (in the list of potential role players)
NWCS – National Wildlife Crime Strategies
OECS – Other Effective Area Based Conservation Measures
OIE – World Organisation for Animal Health (now WOAH)
PCR – Polymerase Chain Reaction
PSG – IUCN SSC Pangolin Specialist Group
REDD – Reducing Emissions from Deforestation and forest Degradation
SAMA – Saving African Wildlife through Multilateral Assistance (UNODC Operation)
SARS-COV – Severe Acute Respiratory Syndrome - Coronavirus
SMART – Specific, Measurable, Attainable, Relevant, and Time-based (action planning term)
SOP – Standard Operating Procedure
SSC – Species Survival Commission (IUCN)
SVW – Save Vietnam’s Wildlife
SyR-AP – Synergie Rurale - Action Paysanne
TEK – Traditional Ecological Knowledge
THF – Tikki Hywood Foundation
TNC – The Nature Conservancy
TRAFFIC – The wildlife trade monitoring network
TWIX – Trade in Wildlife Information eXchange
UfW – United for Wildlife
UK – United Kingdom
UN – United Nations
UNEP – United Nations Environment Programme
UNODC – United Nations Office on Drugs and Crime
US – United States
USAID – United States Agency for International Development
USFWS – United States Fish and Wildlife Service
UWA – Uganda Wildlife Authority
UWCU – Uganda Wildlife Crime Unit
WA – West Africa
WA BiCC – USAID West Africa Biodiversity and Climate Change Program
WABiLED – USAID West Africa Biodiversity and Low Emissions Development Program
WACA – West Africa Coastal Areas Program
WACCBIP – West African Centre for Cell Biology of Infectious Pathogens (Ghana)

SECTION 7. LIST OF ACRONYMS (CONT.)

WAFFI – West Africa Forest-Farm Interface Project
WAHIS – World Animal Health Information System (WOAH/OIE based)
WAHO – West African Health Organisation
WAN – West Africa Network to Combat Wildlife Crime
WASCAL – West African Science Service Centre on Climate Change and Adapted Land Use
WASCWC – West African Strategy on Combating Wildlife Crime
WCN – Wildlife Conservation Network
WCO – World Customs Organization
WCPA – World Commission on Protected Areas (IUCN)
WCS – Wildlife Conservation Society
WHO – World Health Organization
WJC – Wildlife Justice Commission
WLETF – Wildlife Law Enforcement Task Forces
WWF – World Wide Fund for Nature
ZSI – Zoological Society of India
ZSL – Zoological Society of London



INTERNATIONAL UNION FOR
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