# CONSERVATION INVESTMENT STRATEGY

## FOR THE BIRDS OF THE CARIBBEAN SLOPE OF MEXICO, CENTRAL AMERICA AND COLOMBIA

### A focus on migratory and resident terrestrial birds

BirdLife INTERNATIONAL

*Mayan city of Tikal, Guatemala.*
**/ THP Creative**

*Cenote in the middle of the jungle in Tulum, Mexico.*
/ Pandora Pictures

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Developed By:

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With the support of:

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Wood Thrush (*Hylocichla mustelina*)
Golden-winged Warbler (*Vermivora chrysoptera*)
Great Green Macaw (*Ara ambiguus*)
Yellow-naped Parrot *(Amazona auropalliata)*

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*Sapphire-bellied Hummingbird (Chrysuronia lilliae).*
**/ JVC, BirdLife International**

# I. OVERVIEW

**Accessing the forests of the Caribbean slope, stretching from Mexico to Colombia, is an adventure in itself. The journey often involves hopping on local flights, traveling for hours or even days by vehicle, and completing the trip by boat or "cayuco." Along the way, you're immersed in regional cuisines, diverse cultural traditions, and a rich tapestry of Indigenous languages, including Maya-Mopán, Miskitus, Mayangnas, Bribri, Nasos, Ngäbes, Gunas, Emberá, Wounaan, Garífuna, and Creole English. For years, these remote Caribbean slopes were shielded by sociopolitical conflicts, civil wars, and their geographic isolation, marked by a lack of infrastructure. Indigenous and forest communities maintained a way of life deeply tied to nature, rooted in the rhythms of the sun and moon. The forest was their lifeline, providing food, materials for homes, and palm thatch for roofs to protect them from the elements. In these untouched landscapes, migratory birds traveling from North America found safe haven, whether passing through on their way south or settling alongside resident birds during the non-breeding season.**

Over a thousand species of resident birds made these forests their permanent home. However, this balance and reliance on nature have been disrupted. Encroachments on Indigenous territories and land-use changes have led to significant deforestation and the conversion of forests into cattle pastures and agricultural land. Mining projects, both large and small, have also started to invade biosphere reserves and protected areas. Additionally, powerful hurricanes have severely impacted several intact forests. As a result, Indigenous and forest communities are losing their livelihoods, and birds are losing critical habitats. A study published in Science in 2019 reported that the United States and Canada have lost 3 billion breeding birds since 1970, representing a loss of one in four birds (Rosenberg et al., 2019). This steep decline in bird populations could be mitigated through conservation efforts on a larger scale, benefiting not only birds but also other wildlife and local communities.

Developing a Conservation Investment Strategy for the conservation of migratory and resident birds in these areas is therefore a critical step in determining where, when, and with whom to invest. Such a plan is closely tied to the recognition of territorial rights for local communities, fostering shared learning, and strengthening their technical and financial capacities for effective conservation. Achieving this, however, presents a significant challenge that demands collective action to implement integrated solutions benefiting both people and nature. Success hinges on the active involvement of countries hosting these forests (Caribbean slope) and those whose consumption patterns, investment decisions, and lifestyles contribute to habitat loss (North America, Europe). Addressing this issue requires a coordinated global effort, combining public and private initiatives and bringing together governments, local communities, and non-governmental organizations at territorial, national, and international levels. This collaboration is essential to meet the needs of birds throughout all stages of their life cycles and daily activities.

The Conservation Investment Strategy for the Birds of the Caribbean Slope of Mexico, Central America and Colombia, with a focus on resident and migratory birds, is the result of a collaborative effort led by BirdLife International, along with its partners and allies in the Americas. The development of this Conservation Investment Strategy involved a technical committee of regional professionals and adapted the Conservation Standards methodology (CMP-2020). The process included three expert workshops to validate focal species and priority sites, followed by eight online workshops with local stakeholders to define objectives, strategies, and actions. Many of the strategies identified serve as drivers of change for the Sustainable Development Goals (SDGs) and as key entry points where their interconnections with the SDGs are particularly strong, addressing specific targets and objectives. This Conservation Investment Strategy is a tool for conserving forest ecosystems on the Caribbean slopes, intended primarily for use by local stakeholders. Its goal is to reduce deforestation, reconnect fragmented areas, and restore degraded landscapes to create more ecologically stable habitats for migratory and resident bird populations, ensure the sustainability of local livelihoods, and mitigate the effects of climate change.

# II. EXECUTIVE SUMMARY

**Migratory landbirds breed in the northern hemisphere in Canada and the United States, and migrate to Mexico, Central America, the Caribbean and some as far as South America. They are among the most endangered species on the planet. A recent study determined that the United States and Canada have lost 3 billion birds since 1970 (Rosenberg et al., 2019). The Partners in Flight bird conservation assessment database identifies 126 migratory birds that, without additional conservation action, may be species that fall into threatened species category. For resident birds that make use of these territories, the situation may be even worse. This steep decline in abundance can be reversed with new conservation actions that benefit not only birds, but also other wildlife groups and people.**

The Conservation Investment Strategy for the Birds of the Caribbean Slope of Mexico, Central America and Colombia focuses on the conservation of migratory and resident terrestrial birds. The Caribbean slope not only hosts critical habitats for birds but is also home to significant organized Indigenous and local communities whose livelihoods depend on natural ecosystems.

During the planning process, 20 workshops and working sessions were held, involving eight countries and a total of 80 participants from 41 organizations. The selection committee employed nine site selection criteria based on species distribution data from eBird, Important Bird and Biodiversity Areas (IBAs)/Key Biodiversity Areas (KBAs), Indigenous territories, and connectivity.

Participants identified five major conservation targets: (1) migratory and resident birds, (2) tropical rainforest, (3) Caribbean pine savannas, (4) tropical dry forest, and (5) mangroves. Six focal migratory bird species and 16 resident species were selected, including the Golden-winged Warbler (*Vermivora chrysoptera*), Prothonotary Warbler (*Protonotaria citrea*), Wood Thrush (*Hylocichla mustelina*), Louisiana Waterthrush (*Parkesia motacilla*), Worm-eating Warbler (*Helmitheros vermivorum*), and Gray Catbird (*Dumetella carolinensis*). Among the resident species were the Sapphire-bellied Hummingbird (*Chrysuronia lilliae*), Great Green Macaw (*Ara ambiguus*), Bare-necked Umbrellabird (*Cephalopterus glabricollis*), and others.

The workshops identified seven critical threats: agriculture and livestock, fires (modification of natural systems), tourism, commercial and residential development, energy and mining, human disturbances, pollution, and climate change. Agriculture and livestock were identified as the greatest threats to all conservation targets, , causing the reduction and fragmentation of forests. This plan has set the following goals:

1. **By 2034, the rate of deforestation and forest degradation caused by human activities has been reduced by at least 50%, while 1,230.504 hectares of habitat for migratory birds and climate resilience on the Caribbean slope have been maintained, improved, and restored.**
2. **By 2034, the population of focal migratory and resident birds that are in decline, threatened, or endangered has increased by 5% or remained stable.**
3. **By 2034, mining activity in conserved sites and protected areas has decreased by at least 20% compared to the 2025 baseline.[1]**
4. **By 2034, 24 protected areas on the Caribbean slope are effectively managed and protected, ensuring the livelihoods of indigenous peoples and adjacent forest communities.**
5. **By 2034, forest fires on the Caribbean slope have been reduced by at least 20% compared to the 2024 baseline.**
6. **By 2034, established processes have been successfully implemented to reduce liquid and solid waste pollution in at least one watershed per country, with a primary focus on the Motagua River basin.[2]**

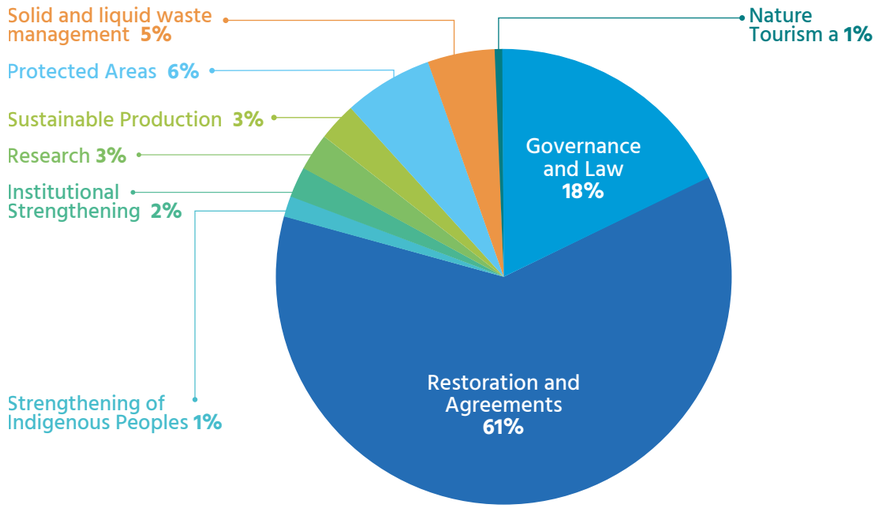
Specific strategies, actions and results to achieve the conservation goals were identified and prioritized. Political will is a prerequisite for their successful implementation. For the prioritization, an exercise was carried out in the wall application, where participants voted for highest priority strategies, leaving the order of prioritization of the identified strategies as follows:

1. **Good environmental governance and law enforcement.**
2. **Conservation agreements and incentives for ecological restoration and corridor recovery.**
3. **Strengthening of indigenous peoples, communities and other stakeholders for the co-management, control and surveillance of protected areas and priority zones.**
4. **Strengthening of technical, financial and operational capacities of the authorities at the local, national and regional levels.**
5. **Scientific research for decision making.**
6. **Sustainable and bird-friendly production.**
7. **Creation and management of protected areas.**
8. **Nature tourism.**
9. **Solid and liquid waste management.**

The first five prioritized strategies represent, according to the analyses, the strategies that are a requirement or form a chain effect and will ultimately have the greatest benefit for bird conservation. Therefore, investment in conservation must start with these five strategies. Good governance, good agreements and incentives for ecological restoration. These will bring an increase in the forest, only if the communities and grassroots actors are organized and have the knowledge and capacities to intervene in conservation actions, in a single voice with the State institutions, for which they must also have fundamental capacities, which must be constant or have minimum cycles of every four years changes of governments or new authorities at all levels. As step five, it is essential that decisions be based on science. In all countries, the prioritization is the same, although where there is good governance, established incentives and agreements, two-way work is proposed as models and accompaniment for the countries that require it most, but with a vision at the level of the slope and not as isolated processes.

For each strategy, a brief summary of the current situation was prepared and some successful examples were shared. An action plan and an estimated budget for the implementation of the activities is also included. In addition, the priority bird species, both migratory and resident, whose populations would benefit from the implementation of the strategies were identified. Similarly, areas were identified and prioritized by country, which will be the reference areas for measuring the success of the plan. Finally, efforts will be joined with existing initiatives in the territories, planning and restoring the migratory corridors, which include governmental and private protected areas, indigenous territories and local communities.

## 10-YEAR BUDGET




1 This goal may be revised once the baseline is established in 2025.
2 Achieving this goal depends on multiple stakeholders beyond those involved in this planning process.

# III. ACKNOWLEDGMENTS

**The development of this plan involved the participation of various strategic stakeholders from the public and private sectors, NGOs, academia, civil society, independent professionals, and local communities with experience in the Caribbean slope of Mexico, Central America, and Colombia.**

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Environment and Climate Change Canada

# IV. OPEN STANDARDS FOR CONSERVATION

**This plan was developed using the Conservation Standards methodology. The Open Standards methodology is designed to "outline the general process required for the successful implementation of conservation projects." (Conservation Measures Partnership, 2020). It is organized into a five-step management cycle:**

1. **Conceptualize.**
2. **Plan actions and Monitoring.**
3. **Implement actions and Monitoring.**
4. **Analyze, Use, Adapt.**
5. **Capture and share learning.**

The purpose of this methodology is to provide a roadmap for greater effectiveness and efficiency in conservation projects. The Conservation Standards are guided by five general principles: (1) they should be participatory, meaning they involve the appropriate stakeholders; (2) they should develop and maintain partnerships to sustain a project over time; (3) they should internalize learning; (4) they should document decisions; and (5) they should make adjustments when necessary. This methodology is not a rigid formula to be followed to the letter; rather, it is flexible and adaptable, enabling the most appropriate decision-making for each case. (conservationstandards.org).

This plan was specifically developed to conceptualize and contextualize the situation on the Caribbean slope and to plan actions and monitoring efforts for the next ten years. In this sense, the conceptual model for the Caribbean slope of Mexico, Central America, and Colombia illustrates the current situation and its causal relationships (e.g., conservation targets, threats, and contributing factors to those threats). Additionally, actions and strategies are planned using the results chain and the theory of change derived from it. The proposed activities for each strategy aiming to mitigate or reduce the threats facing the various habitats and ecosystems of the Caribbean slope in Mexico, Central America, and Colombia were identified through a participatory process.

The process involved inviting a broad range of stakeholders to participate in a series of workshops where the necessary information for the plan was collected. Initially, three workshops were held to identify priority species and sites. The selection of species focused on migratory and resident terrestrial birds, as they are considered biodiversity indicators and serve as "umbrella" species for the protection of others. Subsequently, participants from the public and private sectors, academia, NGOs, and local communities were invited to seven additional workshops. These sessions gathered the information required to build the conceptual model and the results chains, which form the basis for the theory of change aimed at reducing threats (Annex 1. Thematic Areas and Workshop Participation Framework).

*Pine savannah, North Caribbean Autonomous Region, Nicaragua.* **/ Salvadora Morales**



# V. CONSERVATION NEED

## 5.1 Forest habitat loss

Over the past 80 years, Latin America has experienced some of the highest deforestation rates in the world (Pacheco et al., 2021). The Caribbean slope, which once contained the three largest forest blocks in Central America, had been reduced by more than 23% by 2017 (WCS, 2017). One of the largest fronts of deforestation is the Maya Forest, shared by Mexico and Guatemala, with 546.000 hectares lost. (Pacheco et al., 2021). Figure 1 shows the remaining intact landscapes and the primary forest loss that has occurred on the Caribbean slope.

*Figure 1. Primary rain forests of the Caribbean slope as of 2010 and forest loss between 2001 and 2023.*

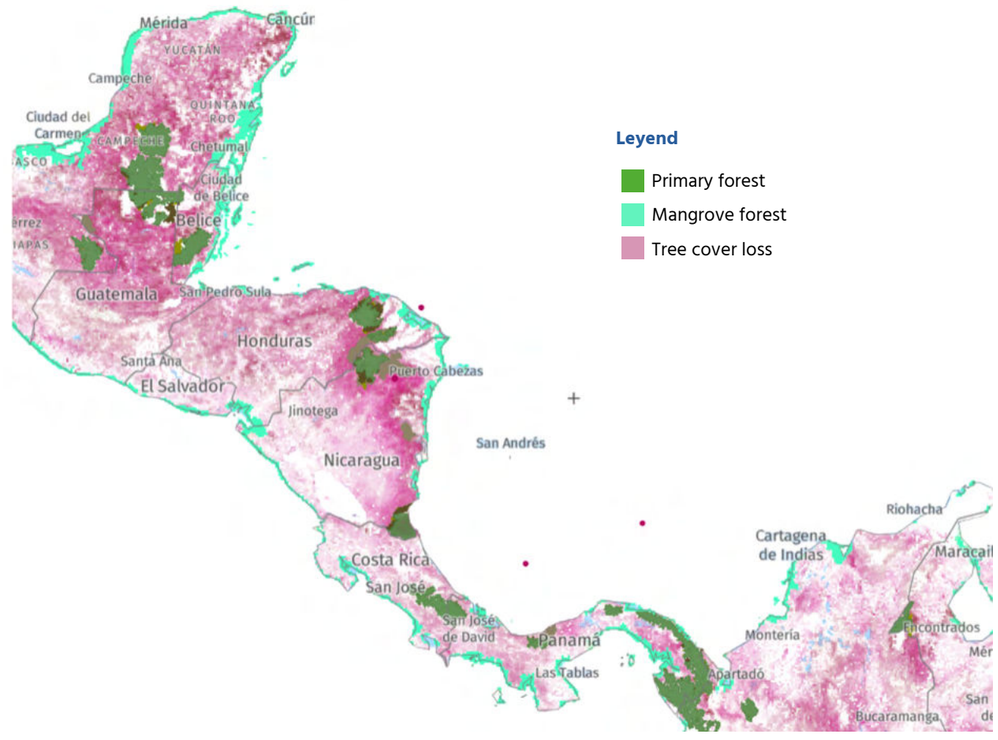



Figure 1 shows the remaining intact landscapes and the primary forest loss that the slope has experienced.

A more recent study on land use change determined that 51.70% of the Central American Caribbean rainforest has been transformed, losing 4,987.900 hectares. It went from 89,277.86 km² (8,927.700 hectares) in 2018 to 39,398.87 km² (3,939.800 hectares) in 2022 (ACCH, 2023). In addition, using data from the Globalforestwatch.org platform, we estimate a loss of 2,461.008 hectares of primary tropical rainforest between 2001 and 2023. The rate of change was undoubtedly higher in the 1990s.

Nicaragua is the country with the highest loss of primary forest, followed by Honduras and Guatemala (Figure 2) shows the specific data for the Caribbean slope of each country as reflected by the data from the Globalforestwatch.org platform). A quick review of

national forest loss and that of the Caribbean slope shows that with the exception of Colombia, Costa Rica, and Panama forest loss is primarily occurring on the Caribbean slope (Figure 3). The least developed countries, Nicaragua and Guatemala, experienced both rapid deforestation of rainforests and significant recovery of dry forests and conifers. More developed countries like Panama and Costa Rica gained forest cover and were more stable in maintaining their forests). (Redo et al., 2012).

The data also include the loss of hectares from the Yucatán dry forest, a type of tropical and subtropical forest and one of the most threatened ecosystems in both Mexico and the world. From 2001 to 2023, this forest lost a total of 522.000 hectares, with 54.000 hectares destroyed by wildfires, while the remainder was lost due to other causes.

*Figure 2. Hectares of primary forest loss.*

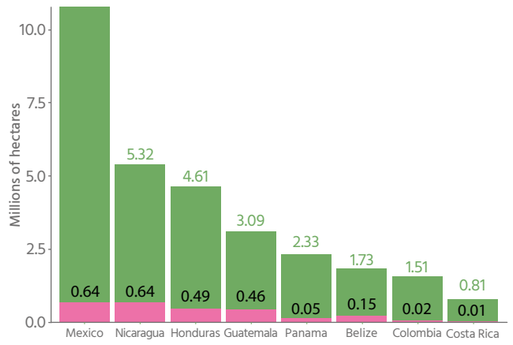
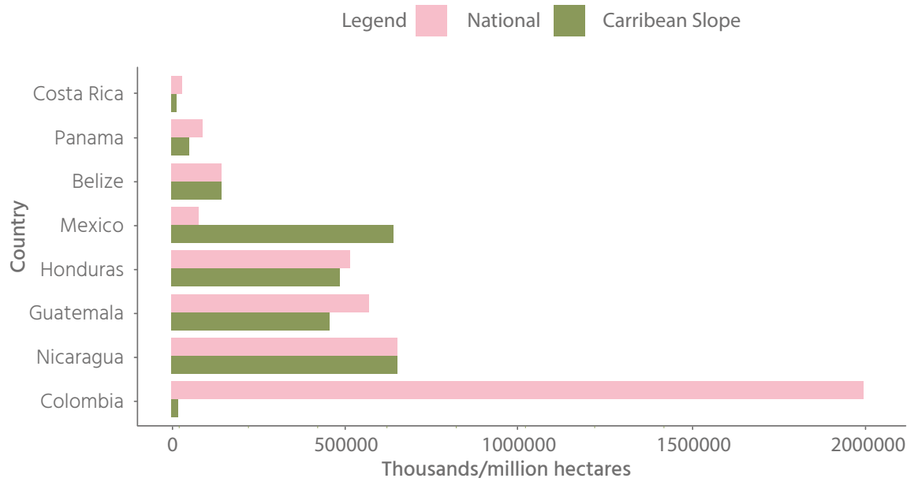



*Figure 3. Loss of primary rainforest by country and specifically on the Caribbean slope.*




Among the main drivers of deforestation are agriculture, forestry plantations, infrastructure development, and extractive activities. (Pacheco et al., 2021). Moreover, McSweeney et al. (2017) note that drug-related deforestation has become a crucial and often overlooked accelerating factor of deforestation in Central America.

Habitat loss directly leads to a decline in biodiversity. The land use change data from ACCH (2023) provides a crucial baseline for Central America, highlighting an alarming shift in land use that is especially concerning for certain countries in the region. This underscores the need to reflect on the "hundreds of species and thousands of populations that are driven to extinction each year. From a geological perspective, the planet's richest biota is already in the midst of its sixth mass extinction event" (Ceballos et al., 2017). The loss of species is as quantitatively significant as the direct effects of various global change stressors, which have spurred growing international concern and efforts for remediation (Hooper et al., 2012). To address these issues, we must conduct more thorough analyses of the complex and often interconnected root causes, as well as their geographical origins, so that this information can inform sustainable resource management practices. Forests play a critical role in removing carbon dioxide ($CO_2$), the most significant greenhouse gas driving climate change. This is why tropical forests are at the forefront of efforts to combat climate change (Nepstad et al., 2020).



## 5.2 Loss of mangroves

The Caribbean slope hosts important mangrove areas. Of the 15 countries with mangroves worldwide, six are located along the Caribbean slope, distributed in the intertidal zone, with an estimated total of 766,279.20 hectares. Central America accounts for 119,240 hectares (www.globalmangrovewatch.org), Mexico has 544,169 hectares (CONABIO, 2022), and Colombia has 74,130 hectares (Ambiente, 2020). On the Caribbean slope, mangrove loss is strongly linked to the frequency of extreme weather events. The 2020 season in the region was especially intense, with 31 storms, and the number of major hurricanes has increased since 2016 (Herrera-Silveira et al., 2022).

## 5.3 Population decline in migratory birds

Forest birds that breed in Canada and the United States—migrating thousands of kilometers to their non-breeding habitats in Central and South America—face threats and rapid habitat loss in their breeding and non-breeding areas, as well as during migration (North American Bird Conservation Initiative [NABCI], 2022, 2019). A separate study found that bird populations in the United States and Canada have decreased by 29% over the last 50 years, representing a loss of 2.9 billion birds (Rosenberg et al., 2019). The group experiencing the most significant decline are aerial insectivores, which have decreased by 59%. While migratory species in South America have declined by 31% (NABCI-Canada, 2019). In 2021, the U.S. federal government updated its list of bird species of conservation concern, identifying 269 species; of which 135 have continental importance, and 69 are terrestrial (USFWS, 2021).

There is no similar analysis for resident species in the focal study area or for Latin America. However, the impact on resident birds may be even greater. Such a significant loss of individuals in such a short geological time frame makes it urgently necessary to define strategies and prioritize taxa that can serve as umbrella species for conservation and restoration efforts. The global decline in migratory species has raised concerns that migratory patterns and the ability of ecosystems to support them are at risk of disappearing (Wilcove & Wikelski, 2008). Migratory birds along the Caribbean slope require specific ecological conditions to ensure their survival during the winter and to meet the high energy demands of **long-distance** flight. These conditions include sufficient habitat diversity to provide shelter, food, and breeding sites.

## 5.4 Conservation status of resident birds

Most bird research efforts focus on migratory species, with very little information available on resident species in the Caribbean slope, except in cases like Costa Rica. The Caribbean is one of the richest and most biodiverse regions in the hemisphere, with over 500 documented bird species. Resident species were identified by experts from the countries involved in this plan, and these species are prioritized in Table 2. These birds occupy a range of forested habitats, including humid to semi-humid forests, semi-deciduous forests, humid pine forests, and gallery forests. The primary threat to these species is habitat loss and degradation, including forest fires, compounded by hunting and illegal domestic and transborder wildlife trafficking. During the workshops, teams from each country selected 17 representative species from the forests of the Caribbean slopes; two of these are Critically Endangered, four are Endangered, and four are Vulnerable according to the IUCN Red List.

Identifying and implementing conservation actions to protect and restore the forests of the Caribbean slopes in Central America and Colombia will contribute to local, regional, and hemispheric goals. Through the Biodiversity Convention, these countries have committed to safeguarding sites of critical importance for biodiversity. The migratory species targeted for conservation in this plan inhabit the same forests as the listed resident species, making it crucial to protect these areas, as they align with regions identified as key biodiversity hotspots.

## 5.6 Protected areas, Indigenous peoples, and local forest communities

Since the 1970s, establishing national protected area systems has been one of the most widely used strategies for biodiversity conservation. In Central America alone, more than 900 protected areas have been created (IUCN, 2016). However, this strategy has not worked equally well in all countries. Worldwide, economically developed nations allocate more resources to protect their natural heritage, while developing countries prioritize solving their poverty issues over nature conservation (Pauchard, 2000).

This scenario is even more pronounced along the Caribbean slope, where economic development policies have prioritized cattle ranching for meat export to North American markets, mass tourism, or mining. Cattle ranching is one of the main drivers of deforestation; although mining is also often considered to be a primary cause of deforestation, as well as of the social injustice suffered by many indigenous and Afro-descendant communities living in the area (Aguilar-González et al., 2017; Sauls & Rosa, 2019).

In Central America, 20% of the population is indigenous, with 63 different ethnic groups using and occupying approximately 79 territories, covering around 282,565 km$^2$; Of these, 39% of indigenous territories overlap with protected areas, totaling 96,432 km$^2$ (IUCN, 2016). In the Colombian Caribbean, which spans 142,000 km$^2$, at least 10 indigenous peoples are recognized for their unique ancestral traditions of land stewardship. The forests where these communities live are often integral to their identity, knowledge, and traditional practices for managing and protecting nature, with many of these practices having deep historical roots. Further analyses have shown that the isthmus has a forest potential area of approximately 211,793 km$^2$, 48% of which is located in territories used and occupied by indigenous peoples. Some forest communities, such as the Association of Forest Communities of Petén (ACOFOP), manage extensive forested areas in Guatemala, demonstrating a successful model of management from environmental, social, and economic perspectives.

Indigenous peoples have a deep connection to nature, as they rely on these forests for their sources of protein, creating a symbiotic relationship where the communities depend on the land, and in return, the forest sustains large populations of birds, mammals, and other wildlife. In the Caribbean slope region, most of the forests are located within territories owned by various legally recognized indigenous peoples, who have autonomy over their lands. However, they often face limited capacity to manage, protect, and oversee these areas effectivel.

*Guna Yala Region.* **/ Salvadora Morales**



# VI. SCOPE[3]

## 6.1 Geographic focus

The Caribbean slope is a narrow land corridor that connects the northern and southern parts of the Americas, playing a vital role in facilitating genetic flow between diverse ecosystems rich in species (LADB, 2002). The region spans eight countries: Mexico, Belize, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, and Colombia, with elevations ranging from sea level to 1,350 meters above sea level. The habitats in this area are among the most biodiverse on Earth (Rosenberg et al., 2019). The region encompasses several bioregions—Caribbean, Central American Moist Forests, Caribbean Dry Forest, and Mexican Dry Forest—which are defined according to the ecoregions identified by Dinerstein et al. (2017) and the global Key Biodiversity Area (KBA) standards, where bioregions refer to the collective terrestrial habitats and biogeographical realms. The Caribbean slope contains the following bioregions:

- **Caribbean:** The Caribbean slope coastline hosts marine and coastal ecosystems that are crucial for biodiversity, such as the Mesoamerican mangrove forests and the mangroves of the Colombian Caribbean wetlands and the Gulf of Urabá. These areas serve as important habitats for both endemic and migratory bird species.
- **Central American Moist Forests:** A bioregion made up of various types of moist forests, floodplain forests, and wetlands, including the moist forests of Petén-Veracruz, the moist forests of Yucatán, the pine savannas of Belize, the Atlantic forests of Central America, the pine forests of Muskitia, the Isthmus-Atlantic moist forests, and the moist forests of the Chocó-Darién.
- **Caribbean Dry Forest:** Characterized by ecosystems composed of vegetation adapted to high temperatures and desert-like climates, including shrubland and gallery forests, such as the xerophytic shrubland of Guajira-Barranquilla and the Dry Forest of the Sinú Valley in Colombia.
- **Mexican Dry Forest:** The region of this bioregion on the Caribbean slope is represented by the Yucatán Dry Forest, which is also a type of tropical and subtropical dry deciduous forest.

This area is crucial for resident as well as hundreds of long-distance neotropical migratory bird species. It contains the tropical and subtropical broadleaf moist forest biome, which includes the ecoregions of the Yucatán moist forests (Mexico, Guatemala, and Belize), the Petén-Veracruz moist forests, the Atlantic moist forests of Central America, the Chocó-Darién moist forests (spanning western Colombia and eastern Panama), and the Magdalena-Urubá moist forests, which include both moist forests and large wetlands. This biome serves as a bridge between Central America and the ecoregions of the Andes and the Amazon. (Dinerstein et al., 1995).

## 6.2 Conservation objects

Conservation objects are the components of biodiversity on which Conservation Standards-based initiatives focus their efforts, aiming to achieve a positive impact. These objects are typically selected because they embody and/or represent the biodiversity of the chosen area. "Fine-filter conservation objects" include specific species or groups of species, whereas "coarse-filter conservation targets" encompass habitats, plant associations, and ecosystems. Workshop participants identified five main conservation objects:

3 The elements described in this section were identified and validated during the workshops conducted for the development of this Plan.

*Tabla 1. Identified conservation objects.*

| Conservation object | Description |
|---|---|
| **RESIDENT AND MIGRATORY BIRDS** | The focal area hosts an estimated 1,200 bird species, both migratory and resident. |
| **TROPICAL RAINFOREST** | As the largest area on the slope, it serves as a vital feeding and resting site during migration and provides non-breeding habitats. For resident birds, the forest supports their entire life cycle by offering food, breeding grounds, and shelter. Maintaining habitat connectivity is especially critical for species that rely on altitudinal migrations. |
| **CARIBBEAN PINE SAVANNAS** | The pine savannas are dominated exclusively by the species Pinus caribaea and are completely isolated from the tropical rain forest and highland pine forests by significant distances. They cover an area of approximately 920,000 hectares and are among the wettest savannas in the world, with annual rainfall ranging from 2,600 to 3,500 mm. This region marks the southernmost limit of natural succession pines in the Western Hemisphere. Several bird species reach their southern distribution limit here, and the area hosts multiple subspecies. (Howell. 1971). |
| **TROPICAL DRY FOREST** | Located primarily in Mexico and northern Petén, Guatemala, at an average altitude of 196 meters above sea level, with its highest point reaching 1,082 meters. Annual rainfall ranges from 705 to 1,863 mm, and the average temperature is 25.7°C. These conditions result in a water deficit. The management practices in these forests bring significant socioeconomic as well as ecological value. |
| **MANGROVES** | One of the most representative ecosystems of the coastal zone and among the most productive systems in the world. Mangroves play a crucial role in protecting coastal areas and hold significant socioeconomic importance for local communities. |

## 6.3 Focal species

Focal species are key conservation objects that are typically encompassed within broader conservation objects, such as species groups, habitats, or ecosystems. Within the framework of this plan, focal species can be considered indicators of the health and quality of the four habitats on the Caribbean slope. The selection of focal species required three workshops, with regional experts validating the migratory species to be prioritized and the list of resident species to benefit. The methodology and corresponding selection criteria are detailed in Annex 1.s.

### 6.3.1 Priority migratory and resident birds

As a result of this process, six migratory and 16 resident bird species were identified as focal species (Table 2). A substantial proportion of these species depend on the habitats of the Caribbean slope. They are primarily associated with the Atlantic and Central migratory flyways and represent a range of habitat types, including rain forests, dry forests, pine forests, and wetlands.

The selected species reflect diverse ecological requirements. Some inhabit the understory, others rely on streams, and some thrive in secondary habitats. This diversity allows for more precise and efficient planning of actions and strategies. The list includes species categorized as at risk or of high conservation concern in breeding areas, as well as one globally near-threatened species with declining populations.

Table 2 also outlines the overlap between the distribution of these species and the priority sites identified in this plan. This overlap defines the areas where the strategies will benefit both the selected migratory species and others covered by complementary conservation plans, e.g. the Canada Warbler (*Cardellina canadensis*) and the Cerulean Warbler (*Setophaga cerulea*).

*Table 2. General information on the selected focal migratory and resident species.*

| Status | Species | Conservation status | Population estimate | Population trend |
|---|---|---|---|---|
| M | Louisiana Waterthrush *(Parkesia motacilla)* | LC | 500.000 | Increasing |
| M | Wood Thrush *(Hylocichla mustelina)* | CON, LC | 12,000.000 | Decreasing |
| M | Prothonotary Warbler *(Protonotaria citrea)* | CON, LC | -- | Decreasing |
| M | Golden-winged Warbler *(Vermivora chrysoptera)* | CON, NT | 400.000 | Decreasing |
| M | Worm-eating Warbler *(Helmitheros vermivorum)* | LC | 60.000 | Decreasing |
| M | Gray Catbird *(Dumetella carolinensis)* | LC | 29,000.000 | Stable |
| R | Crested Guan *(Penelope purpurascens)* | NT | 50.000-499.999 | Decreasing |
| R | Great Curassow *(Crax rubra)* | VU | 40.000-50.000 | Decreasing |
| R | Ocellated Turkey *(Meleagris ocellata)* | NT | 20.000-49.999 | Decreasing |
| R | Sapphire-bellied Hummingbird *(Chrysuronia lilliae)* | EN | 285-440 | Decreasing |
| R | Black Rail *(Laterallus jamaicensis)* | EN | 10.000-49.999 | Decreasing |
| R | Agami Heron *(Agamia agami)* | NT | -- | Decreasing |
| R | Harpy Eagle *(Harpia harpyja)* | VU | 100.000-250.000 | Decreasing |
| R | Keel-billed Motmot *(Electron carinatum)* | VU | 1500-7000 | Decreasing |
| R | Great Green Macaw *(Ara ambiguus)* | CR | 500-1000 | Decreasing |
| R | Red-fronted Parrotlet *(Touit costaricensis)* | NT | 3.000-12.000 | Decreasing |
| R | Saffron-headed Parrot *(Pyrilia pyrilia)* | NT | 10.000-19.999 | Decreasing |
| R | Yellow-headed Amazon *(Amazona oratrix)* | EN | 4.700 | Decreasing |
| R | Yellow-naped Amazon *(Amazona auropalliata)* | CR | 1.000-2.499 | Decreasing |
| R | Bare-necked Umbrellabird *(Cephalopterus glabricollis)* | EN | 1.900-7.100 | Decreasing |
| R | Three-wattled Bellbird *(Procnias tricarunculatus)* | VU | 3.600-14.000 | Decreasing |
| R | Spiny-faced Antshrike *(Xenornis setifrons)* | NT | 1.500-7.000 | Decreasing |
| R | Tacarcuna Tapaculo *(Scytalopus panamensis)* | NT | 2.500-9.999 | Stable |

**Source:** https://www.iucnredlist.org/
VU: Vulnerable
NT: Near Threatened
CON: Species of Conservation Concern
PIFWatch: PD: Prevent decline
M: Migratorio
R: Residente

## 6.3.2 Abundance analysis of priority migratory birds

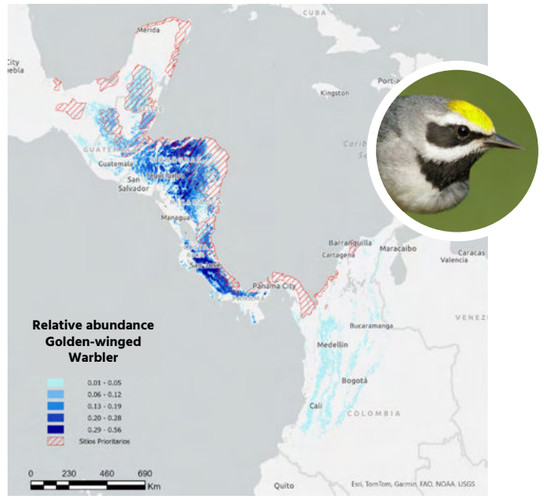
For the selected migratory species, an abundance analysis was conducted across priority sites (see next section). The results showed that 33% of the total area of priority sites host between 5 and 6 of the priority migratory species, 23% host 3 to 4 species, and 21% host only 1 or 2 species. This analysis highlights the importance of the actions outlined in this plan for the conservation of terrestrial migratory birds in non-breeding sites. The overlap between priority sites and the relative abundance of the priority species was also analyzed. The gradient indicates areas of lower abundance (light blue) and higher abundance (dark blue) within the sites (Figure 4).

### Golden-winged Warbler *(Vermivora chrysoptera)*

The Golden-winged warbler is a globally Near Threatened species according to the IUCN and faces the highest threat level among the selected migratory species (Figure 4). An abundance analysis of this species, using eBird data, revealed higher concentrations in the mountainous regions of Nicaragua and Honduras, as well as the Caribbean tropical rain forests of Costa Rica. An overlap area of 113,526.67 km$^2$ was identified with the priority sites (see next section). Recent studies suggest that the wintering range may be more restricted than previously thought, as most records come from Nicaragua, Costa Rica, Panama, and Venezuela (Cofer et al., 2020). In Nicaragua's Caribbean region, individuals have been observed foraging within mixed-species flocks, with one or two individuals commonly seen among flocks containing over 24 species (Morales, personal observation). While it is believed that lowlands are used more frequently during migration, this could explain the presence of multiple individuals in these areas.

This species is of high concern according to the Partners in Flight (PIF) list. Key research needs for this species include identifying migration and non-breeding sites to assess threats, documenting the impacts of anthropogenic activities, and understanding the factors influencing its mortality rate. (Cofer et al., 2020).

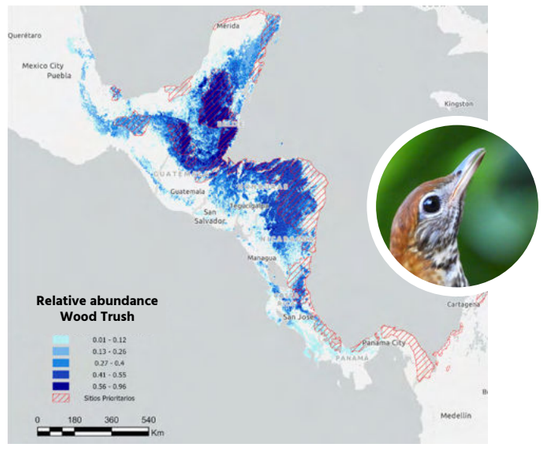
*Figure 4. Abundance map of the Golden-winged warbler.*




### Wood Thrush *(Hylocichla mustelina)*

The Wood Thrush is a species with a decreasing population that winters entirely in an area ranging from the Yucatán Peninsula to Panama. It primarily inhabits the understory, feeding on terrestrial invertebrates and shrub fruits. The species' decrease is attributed to habitat destruction and fragmentation in both its breeding and non-breeding ranges (Figure 6). The overlap area with priority sites is 168,710.59 km$^2$. Migration tracking suggests that Yucatán is a key stopover site after crossing the Gulf of Mexico. Habitat loss in the tropics may force the species to use secondary habitats, where mortality rates could be higher. This aspect of the species' biology requires further study and confirmation (Evan et al., 2020).

*Figure 5. Abundance map of the Wood Thrush.*





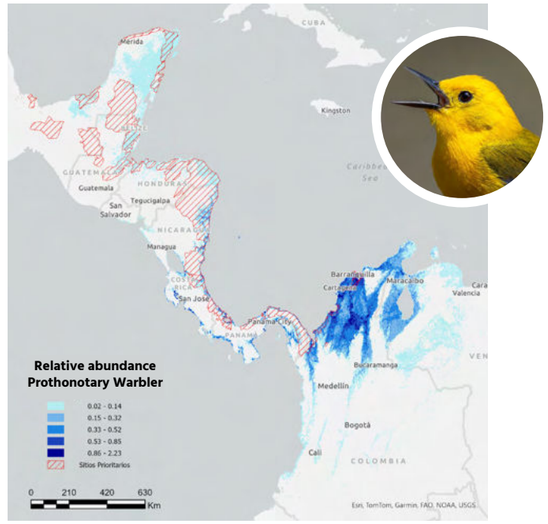

### Prothonotary Warbler *(Protonotaria citrea)*

The Prothonotary Warbler is suffering a 38% population decrease. In Canada, it is listed as an endangered species and appears on the Partners in Flight Watch List. During migration, this warbler can utilize not only the Caribbean but also the central and Pacific regions of Mexico and Central America. It inhabits humid forests and primarily relies on mangroves along the Caribbean slope (Petit, 2020).

According to occupancy maps analyzed, the highest concentration of individuals during the non-breeding season is in Colombia (Figure 7). This species shares its habitat with the critically endangered Sapphire-throated Hummingbird (Lepidopyga lilliae), which has fewer than 500 individuals. The overlap area with priority sites is 42,131.15 km$^2$, with a notable concentration in Colombia.

While this species has been relatively well-studied in its breeding areas, there is limited information on its presence in the Caribbean. Currently, data are lacking on the impacts of habitat loss, hurricanes, and their effects on mangrove ecosystems.

*Figura 6. Abundance map of the Prothonotary Warbler.*

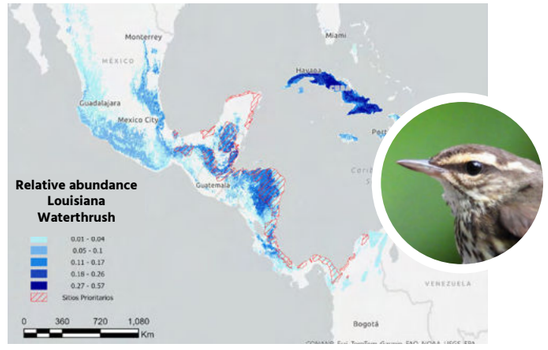



### Louisiana Waterthrush *(Parkesia motacilla)*

The Louisiana Waterthrush is a species with an increasing population (IUCN, 2020). Being associated with watercourses, streams, and flooded areas near forested regions, it is considered a potential indicator of riparian ecosystem integrity. Several studies suggest that it can serve as an indicator of the health of watersheds, rivers, and mountainous areas. In Louisiana, higher species presence was linked to greater abundance of pollution-sensitive benthic macroinvertebrates (Mattsson et al., 2020). Therefore, it was considered a species that can complement intervention strategies in the area.

The overlap area with priority sites was found to be 165,980.39 km$^2$, primarily along the Caribbean slope.

*Figure 7. Abundance map of the Louisiana Waterthrush.*

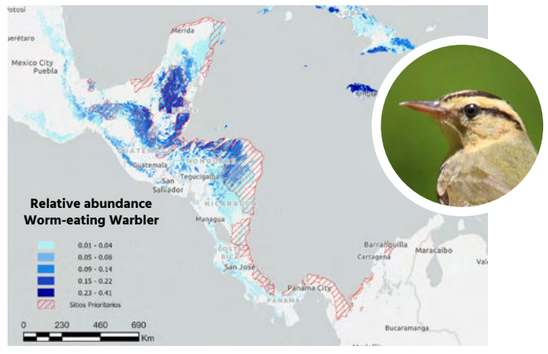



### Worm-eating Warbler *(Helmitheros vermivorum)*

The Worm-eating Warbler is decreasing in population and has a relatively restricted distribution in large, forested areas along the Caribbean slope, the highest concentrations being in northern Nicaragua, Honduras, and parts of Mexico and Guatemala (Figure 8). This range overlaps with priority sites over an area of 137,814.78 km$^2$.

Forest fragmentation and destruction in the species' breeding and non-breeding ranges are considered the primary conservation threats to this species (Vitz et al., 2020).

*Figure 8. Abundance map of the Worm-eating Warbler.*



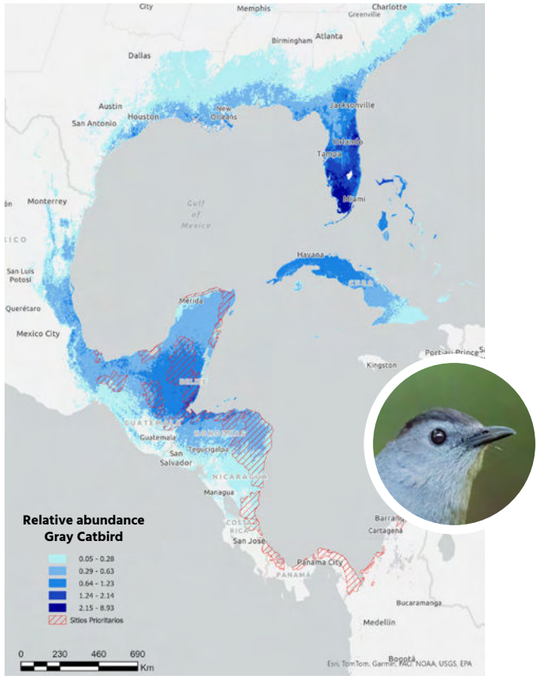
### Gray Catbird *(Dumetella carolinensis)*

The Gray Catbird was identified as a priority species. Although it is relatively common in its breeding areas, a population decline has begun to be documented (Smith, 2020). Unlike other focal species, it is found entirely along the Caribbean slope, making it unique among the selected species. It was considered a "community connector" due to its presence in indigenous community gardens and shrubland areas (Figure 9).

This species utilizes early successional habitats in the north and is often observed in rural areas and gardens, making it a popular bird that easily connects people, birds, and conservation. In Central America, it inhabits primary forests, shrubland areas, and rural gardens. During migration, many individuals have been recorded colliding with towers and vehicles in North America.

The overlap area for this species is the largest among focal species, with 183,299.85 km$^2$.

*Figure 9. Abundance map of the Gray Catbird.*




## 6.4 Priority sites

A selection committee, composed of experts from various organizations with knowledge of the area and focal species, defined nine criteria to guide the identification of major intervention areas:

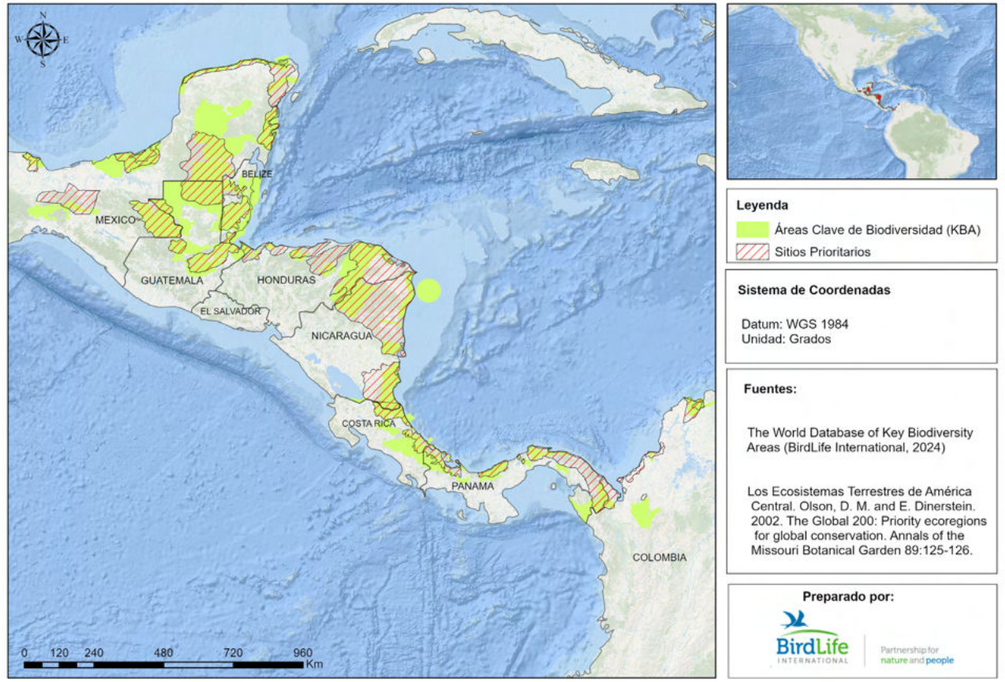
- **Distribution of priority species based on the eBird Status and Trends platform (Fink et al., 2022).**
- **IBAs and KBAs (Important Bird and Biodiversity Areas and Key Biodiversity Areas).**
- **Areas with little or no protection.**
- **Indigenous territories.**
- **Forest cover maps.**
- **Land-use maps.**
- **Connectivity (biological corridors).**
- **Priority sites identified by other initiatives, such as the Five Forests of Mesoamerica (WCS, 2022).**

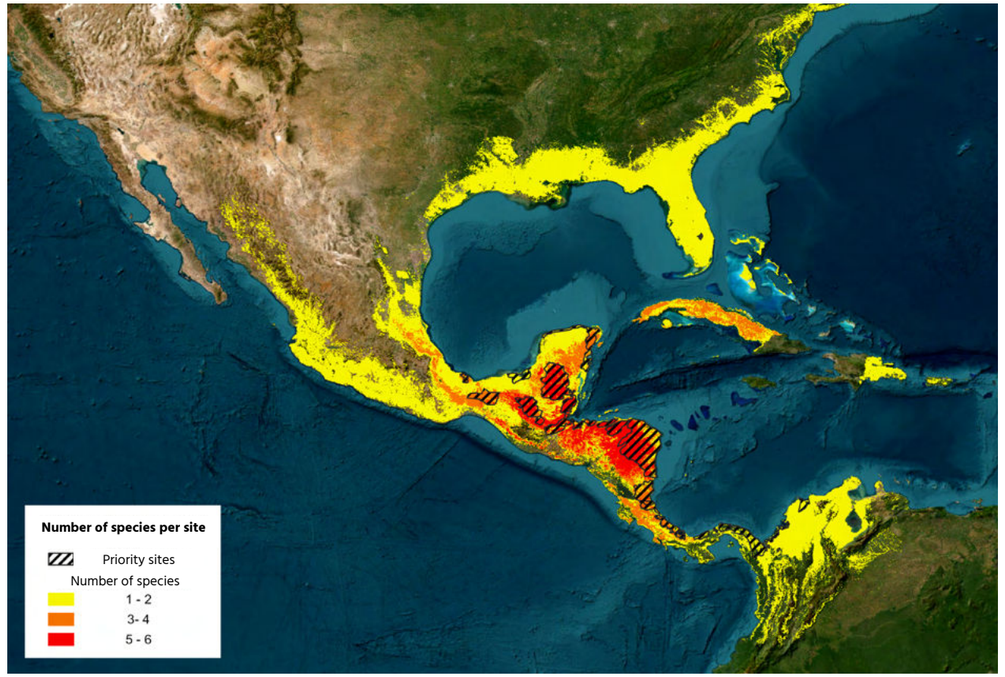
The overlay of these layers produced an initial map of the focal geographic areas. These areas were then validated by workshop participants, who refined the zones and included additional priority areas based on the presence of focal species[4]. The final map identified 294,665.72 km$^2$ of the Caribbean slope as priority areas for the next ten years (Figure 3). This area encompasses ecologically significant regional habitats, including key protected areas and KBAs. See Annex 3 for further details.

4 Although these sites have been prioritized for their potential effectiveness in conservation actions, other important areas for birds and biodiversity should not be overlooked. As an adaptable plan, it is expected that the priority sites will expand as information gaps are filled.



*Figure 10. Priority sites for the Conservation Investment Strategy for the Birds of the Caribbean Slope of Mexico, Central America and Colombia.*



These sites are crucial for conservation as they act as regulators of water and climate. They are characterized by the presence of tropical forests that support a wide range of species and habitats. Additionally, they are culturally diverse due to the presence of Indigenous and Afro-descendant communities that preserve ancestral traditions. The priority sites as identified under KBA nominations (2024) are described below:

*Table 3. Priority sites and associated species.*

| Priority Sites | Description | Species |
|---|---|---|
| **Petén-Veracruz Moist Forest** | Examples of priority sites include the Los Tuxtlas KBA on the southern Caribbean coast of Mexico, characterized by rain forests and wetlands, with altitudes ranging from 150 to 1,700 meters above sea level. | ***Vermivora chrysoptera*** (NT)<br>***Crax rubra*** (NT)<br>***Zentrygon carrikeri*** (EN)<br>***Hylocichla mustelina*** (LC)<br>***Parkesia motacilla*** (LC) |
| **Mesoamerican Caribbean mangroves and swamps** | The dominant vegetation in this secondary area consists of mangroves and swamp zones, distributed across parts of the coastal strip from eastern Yucatán, Belize, Guatemala, Honduras, and Nicaragua. Notable KBAs include Ichka' Ansijo in the Yucatán Peninsula. | ***Egretta rufescens*** (NT)<br>***Protonotaria citrea*** (LC)<br>***Amazona auropalliata*** (CR) |
| **Mayan forest** | Lowland rain forest distributed across the Yucatán Peninsula in Mexico, Belize, and Guatemala, at altitudes ranging approximately from 0 to 650 meters above sea level. Notable sites include the Maya-Lacandón KBA in the Maya Forest of Guatemala. | ***Meleagris ocellata*** (NT)<br>***Vermivora chrysoptera*** (NT)<br>***Parkesia motacilla*** (LC)<br><br>Más de 505 especies de aves. |
| **Muskitia pine forests** | Ecoregion located on the Caribbean slope of Honduras and Nicaragua, where the dominant vegetation consists of mosaics of pine forests, shrublands, savannas, and grasslands. An example is the Río Plátano KBA in Honduras, which spans a mosaic of ecoregions including Muskitia pine forests, rain forests, and pine-oak forests, supporting the presence of several migratory species. | ***Hylocichla mustelina*** (LC)<br>***Parkesia motacilla*** (LC)<br>***Setophaga canadensis*** (LC)<br>***Dumetella carolinensis*** (LC)<br><br>Más de 110 especies de aves. |
| **Mesoamerican Moist Forest Corridor** | Mid- to high-elevation rain forests, ranging approximately from 500 to 3,700 meters above sea level, including areas around Barú Volcano in Panama. Notable KBAs in this region include La Amistad Caribe in Panama. | ***Cephalopterus glabricollis*** (EN)<br>***Touit costaricensis*** (VU)<br>***Aphanotriccus capitalis*** (VU)<br>***Hylocichla mustelina*** (LC)<br>***Helmitheros vermivorum*** (LC) |
| **Darién forest** | Lowland rain forest that forms part of the Chocó-Darién Ecoregion, extending from the Chocó and Gulf of Urabá in Colombia to the Darién in Panama, at altitudes ranging from 0 to 1,875 meters above sea level. This region includes Darién National Park in Panama. | ***Ara ambiguus*** (CR)<br>***Crax alberti*** (CR)<br>***Harpia harpyja*** (NT)<br>***Penelope purpurascens*** (NT)<br>***Pyrilia pyrilia*** (VU)<br>***Morphnus guianensis*** (NT) |
| **Colombian Caribbean mangroves and marshes** | Among the largest areas of mangroves and wetlands along the entire Caribbean coast of Colombia, the RAMSAR Biosphere Reserve Ciénaga Grande KBA, Isla de Salamanca, and Sabana Grande, along with their surrounding areas, are part of the extensive wetland complex between the cities of Cartagena and Barranquilla. It is estimated that approximately 10% of the global population of the Prothonotary Warbler (Protonotaria citrea) utilizes this site during the boreal winter. | ***Protonotaria citrea*** (LC) |
| **Colombian Caribbean dry forest** | Characterized by its location within the dry forest and shrubland zones of the Upper Magdalena Basin, the Urabá region, and the Sinú Valley. The Río Frío Valley KBA in the Sinú Valley stands out as a mosaic of forests to the west of the Sierra Nevada de Santa Marta. | ***Chlorostilbon russatus*** (LC)<br>***PProthonotaria citrea*** (LC) |

*Mayan pyramid in the heart of the Guatemalan rainforest.* **/ Kamran Ali**

# VII. CRITICAL THREATS TO CONSERVATION OBJECTS

**The four conservation objects and the bird species that depend on them face numerous threats. The Open Standards methodology (CMP) was used to identify critical threats to these conservation objects, focusing on the cause-and-effect relationships driving the decline of focal bird species. The prioritization of threats considered the following factors:**

10. **Scope:** The proportion of the conservation object's area, occurrence, or populations affected by the threat.
11. **Severity:** The degree of damage caused to the conservation object.
12. **Irreversibility:** The extent to which the effects of the threat can be reversed.

The most critical threats identified during the workshop were seven (Table 4; Annex 2): agriculture and livestock, fire (alteration of natural systems), tourism, commercial and residential development, energy and mining, disturbance (human intrusions), pollution, and climate change. These direct threats are interconnected, as illustrated in the conceptual model in Annex 3. Moreover, the threats affect each conservation object, habitat, and priority site differently.

*Table 4. Critical threats identified for conservation objects.*

| Threats | Migratory and resident birds | Tropical forest | Pine savannas | Mangroves | Tropical Dry Forest | Summary |
|---|---|---|---|---|---|---|
| **1.** Agriculture and cattle raising | Very high | Very high | Very high | Very high | Very high | Very high |
| **2.** Fire | High | High | High | High | High | High |
| **3.** Tourism, commercial and residential development | -- | High | -- | High | -- | High |
| **4.** Pollution | -- | High | High | High | High | High |
| **5.** Energy and mining | -- | High | -- | -- | High | High |
| **6.** Disturbance | High | -- | Very high | -- | Very high | Medium |
| **7.** Climate change (increased frequency and intensity of hurricanes/sea level rise) | High | -- | High | High | High | High |
| **Summary** | High | Very high | Very high | Very high | Very high | Very high |



## 7.1 Cattle ranching and agriculture

**PRIORITY SITES AFFECTED BY THIS THREAT**

- Petén-Veracruz Moist Forest
- Maya Forest
- Muskitia Pine Forest
- Mesoamerican Moist Forest Corridor
- Darién Forest

**COUNTRIES MOST AFFECTED**

- Nicaragua
- Honduras
- Guatemala
- Mexico
- Belize
- Colombia

Cattle ranching and agriculture were identified as the greatest threats to all conservation objects. The expansion of commercial agriculture (both small- and large-scale) and forestry plantations are the primary drivers of deforestation (Pacheco et al., 2021; ACCH, 2023) and, consequently, the reduction and fragmentation of natural habitats, leading to species loss (Tellería, 2006).

The nature of this land-use change varies from one country to another, influenced by the recognition of territorial rights or a combination of factors. It also depends on global market dynamics and investments, national policy changes, and local political economies (Pacheco et al., 2021).

Agriculture is considered a key sector as a source of food, raw materials, and energy, integral to agro-industrial production chains, regional economies, and as a provider of employment and export income (Molina & Victorero, 2015). However, its development depends on the natural potential of the soil, which is often highly humid, nutrient-poor, and more suitable for forestry than agriculture.

In commercial agriculture, companies that obtain concessions or purchase land primarily focus on cultivating plantation crops such as oil palm, rubber, coffee, cacao, and other tropical fruits. In other cases, indigenous peoples who have secured recognition of their territories but lack technical and financial resources face invasions, displacement from their ancestral lands, and disruption of their livelihoods.

LThe threat posed by cattle ranching is subdivided into grazing and nomadic livestock practices. Small-scale ranching and grazing were identified as the most critical threats, particularly in Guatemala, Honduras, and Nicaragua. This threat stems from extensive management practices and inherent sociopolitical complexities, such as the invasion of indigenous lands, clear-cutting forests to assert land control, and subsequently converting these areas into pastures. These activities occur within a context of illegality, violations of indigenous territorial rights, and lack of enforcement of autonomy and self-determination laws for indigenous peoples.

Additional factors exacerbating this threat include narco-deforestation, which has become a significant and often overlooked accelerant of deforestation in the region (McSweeney et al., 2014), weak protection for existing protected areas, contradictory policies with conservation goals, institutional weakness, and corruption.

In Guatemala and Belize, the situation is similar, with invasions occurring in protected areas and territories where indigenous rights are unrecognized, or forest communities are unorganized. In Panama and Costa Rica, while there are diverse challenges, recent trends show gains in forest cover.

Overall, structural factors associated with agriculture and ranching were identified, such as poverty, lack of land-use planning, poor productive practices, inefficient management of solid, agricultural, and livestock waste, and limited alternatives for waste management. The absence of sustainable production projects further compounds these issues.

## 7.2 Fires

Workshop participants identified this threat as one of the most significant, seen from the perspective of human disturbances such as arson, vandalism, and theft. Anthropogenic fires have severely degraded or destroyed habitats, amplifying the impact.

This threat primarily affects tropical dry forests in Guatemala and Mexico, where fire hotspots are most concentrated, as well as in Colombia. Recurrent fires in the Muskitia pine savanna in Nicaragua and Honduras have further degraded forests, disrupting food chains and limiting the sustainable use of over 500,000 hectares of forest. Proper management of these areas could provide significant benefits for both humans and biodiversity.

**PRIORITY SITES AFFECTED**

Mayan Forest

Muskitia Pine Savanna Forest

Colombian Caribbean Dry Forest

## 7.3 Energy and mining

Open-pit mining was identified as a significant threat on the Caribbean slope, primarily due to its environmental impacts, including deforestation, habitat fragmentation, and pollution. Mining undoubtedly has multidimensional impacts. At the regional level, it often faces social resistance, with concerns raised about whether the environmental and social costs outweigh the benefits it generates for a territory or country. In countries like Nicaragua, where mining has grown exponentially, environmental safeguards have been weakened to favor at least 16 investors. Paradoxically, internationally certified companies have begun implementing programs that are shifting paradigms by addressing environmental concerns and compensating for their impacts.

Open-pit mining and illegal artisanal mining are the two techniques with the greatest environmental impact. In Costa Rica, open-pit mining has been banned as a matter of state policy, though underground mining is still permitted. Mining begins with the complete removal of vegetation cover, followed by the excavation of the subsoil using heavy machinery. Processing the extracted materials involves highly toxic substances, such as mercury and cyanide, to isolate the desired minerals (Stapper et al., 2021; Viena, 2018). Without strong regulations, mining causes significant environmental transformations, affecting wildlife (Centro Humboldt, 2020). During exploration, construction, operation, and maintenance phases, mining has been linked to deforestation, erosion, pollution, soil profile alterations, contamination of streams and wetlands, as well as increased noise, dust, and emissions (Haddaway et al., 2019).

**CONSERVATION OBJECT MOST AFFECTED**

Tropical Rainforest

**COUNTRIES MOST AFFECTED (Km² concessioned)**

Colombia

Mexico

Nicaragua

**COUNTRIES MOST AFFECTED (% territory)**

Nicaragua

Guatemala

Mexico

Colombia

Costa Rica

The mining industry is one of the largest consumers of water resources. The Caribbean slope is particularly rich in mineral deposits, which exist as primary deposits (beneath forests) or secondary deposits, such as those found in rivers and coastal areas where materials have been transported. Both metallic and non-metallic mining have numerous global applications, from manufacturing cell phones, computers, and household appliances to providing construction materials. Mining also contributes to regional economies and is a significant driver of local economic activity, adding to the gross domestic product (GDP). However, it is deeply intertwined with exploitation, violence, displacement, and land-grabbing (Azamar et al., 2021). Public policies in the region lack coherence for improving socio-environmental management, and economic development policies in most focal area countries continue to follow extractive models. This reliance on resource extraction has hindered Latin American countries from developing their own knowledge, science, and technology, instead exporting raw materials and later purchasing finished products from developed countries (Dannemann, 2021). Resource extraction is closely linked to inequality and exclusion, particularly of indigenous peoples. Consultations required before granting mining licenses often exclude legitimate representatives, resulting in systematic exclusion. This has led to significant social conflicts, with public authorities supporting mining companies and repressing communities. From Mexico to Colombia, approximately 24 million hectares had been allocated for mining concessions by 2018. Mexico, Colombia, and Nicaragua have the largest areas designated for mining, though in Mexico, mining is not focused on the Caribbean area, unlike Nicaragua. Table 5 shows the impact of mining by country.

*Table 5. Impact of mining on the economy and geological potential in Mexico, Central America, and Colombia as of 2022.*

| Countries | Concessions (Km²) / % of Territory | Main assets |
|---|---|---|
| **Mexico** ▲ ● | 16.830<br>8,59% | Silver, fluorite, sodium sulfate, wollastonite, celestite, lead, molybdenum, barite, diatomite, magnesium sulfate, zinc, salt, gypsum, cadmium, gold, feldspar, and copper. |
| **Belice** ■ | --- | --- |
| **Guatemala** ● | 5,279.83<br>4,84% | Gold, silver, lead, zinc, iron oxides, nickel, jade, magnesium, tungsten, marble, and construction materials. |
| **Honduras** ■ | 1,847.57<br>1,64% | Gold, silver, copper, and iron oxide. |
| **Nicaragua** ● | 11,949.09<br>9,16% | Gold, silver, bauxite, and zinc. |
| **Costa Rica** ■ | 3,910.58<br>7,7% | Only underground metallic mining is permitted. Mineral resources include calcium carbonate, silica, sulfur, manganese, bauxite, diatomite, iron, silver, and gold. |
| **Panama** | 2,275.56<br>2,95% | Copper. |
| **Colombia** ▲ | 52,921.65<br>4,63% | Coal, gold, copper, silver, ferronickel, emeralds. |

High: ▲ Medium: ■ Low: ●

## 7.4 Tourism, commercial and residential development

While sustainable tourism development can be a viable economic alternative to other activities, large-scale tourism development can become a high-impact threat on the Caribbean slope. This threat is linked to the lack of implementation of management plans in protected areas, overuse of trails, and the construction of tourism infrastructure, such as the train project in the Maya Biosphere Reserve. In most countries along the slope, tourism is not recognized as a strategic sector for national development, which hinders its integration with other plans, such as natural resource conservation and the revitalization of domestic tourism in the aftermath of the COVID-19 crisis.

The focal area for tourism development is concentrated in specific locations, with the greatest activity in Mexico and Guatemala, where the main attractions are archaeological sites that served as ceremonial centers of the Maya civilization. Notable reserves include Chichén Itzá and Dzibanché-Kinichná in Mexico; Tikal, Uaxactún, and Yaxhá in Guatemala; and Caracol, Xunantunich, and Lubaantun in Belize. Maya ruins are often located in remote areas within primary forests that preserve centuries of Maya history.

Along the slope, mountain conservation has been effective due to geographic isolation and the lack of supporting infrastructure (hotels, restaurants, basic services, telecommunications, potable water, and sewage systems). Today, the Caribbean slope remains inhabited by indigenous and Afro-descendant communities from Mexico to Colombia, offering unique experiences in nature, culture, and gastronomy, distinguishing it from Pacific regions where Spanish colonization was stronger, and economic development has largely transformed natural areas into productive landscapes.

In Honduras and Nicaragua, much of the geographic area remains isolated, with very few sites offering tourism services. Tourism is a fragile economic activity that heavily depends on favorable global conditions (Llugsha, 2021). The COVID-19 pandemic and its associated lockdowns caused an almost complete collapse of the tourism industry.

The Caribbean slope, particularly in Central America and Mexico, is considered an emerging region for tourism activities. However, tourism is often equated with development, a relationship that depends on preexisting conditions (social, economic, and environmental), as well as the pace, scale, and nature of growth.

**COUNTRIES MOST AFFECTED**

- Mexico
- Belice
- Guatemala
- Colombia

*Three-wattled Bellbird (Procnias tricarunculatus).*
**/ Salvadora Morales**

## 7.5 Pollution

Pollution has significant social implications, particularly regarding access to safe drinking water. Factors associated with this threat include improper pesticide use and river contamination caused by both legal and illegal mining. Regionally, specific cases underscore the severity of the issue, such as contamination from large African palm plantations, which pollute rivers in Petén and severely impact biodiversity.

One of the most notorious cases of pollution is the Motagua River, which originates in Guatemala's highlands, flows over 400 kilometers, and empties into the Caribbean in Honduras. The river basin has been classified as severely polluted due to solid waste, untreated wastewater discharge, agrochemical byproducts, deforestation, erosion, forest fires, drought, storms, hurricanes, and flooding (Yagure, 2021). Around 60% of the sewage from Guatemala City contributes to the waste that ends up in the Motagua, eventually reaching Honduras, sparking binational conflicts.

**COUNTRIES MOST AFFECTED**

- Honduras
- Panama
- Belize
- Guatemala

In 2015, a major pollution event occurred in Guatemala . The La Pasión River was contaminated by a chemical spill from African palm plantations owned by Reforestadora de Palmas del Petén (REPSA), which manages 30,000 hectares of plantations. The spill involved malathion, a pesticide used to control fruit flies on palm fruit. Heavy rains caused oxidation ponds to overflow, polluting 150 kilometers of the river. Before the disaster, local communities depended on fishing as their primary livelihood. The pollution caused massive fish die-offs, forcing many former fishers to cut dyewood along riverbanks and reserves to survive, while others were compelled to migrate.

## 7.6 Human disturbances

The threat of human disturbances is linked to factors such as the illegal extraction of species and the irresponsible ownership of domestic animals, such as dogs and cats. Human disturbances can significantly impact animal behavior, distribution, and density (Arroyo, 2012).

Identifying the disturbance factors that most affect ecological richness and diversity is a critical first step in planning effective management strategies. However, limited information on this issue was found.

## 7.7 Climate change

Climate change is a complex factor that interacts with other threats, including agriculture, cattle ranching, wildfires, and mining. These activities release significant amounts of $CO^2$ into the atmosphere, increasing greenhouse gas concentrations and driving global temperature rise.

One of the most evident climate change-related impacts in the region is the increasing frequency and intensity of major storms and hurricanes over the past decade, which have caused extensive damage to tropical rainforests and mangroves in critical protected areas. The most recent IPCC report confirms that, over the past four decades, the global proportion of category 3 to 5 hurricanes has risen, along with their intensity (Seneviratne et al., 2021)

**COUNTRIES MOST AFFECTED**

- Mexico
- Nicaragua
- Honduras

Projections also indicate that several coastal zones, including wetland habitats and mangroves, may disappear by 2050. Locally, the primary climate change impacts (direct threats) include:

- **Increased frequency and intensity of storms.**
- **Rising sea levels.**

These impacts have severe social consequences, including the loss of homes, forced displacement within or outside communities, destruction of agricultural areas, salinization of groundwater for human consumption (with similar effects on biodiversity), rising costs of coastal products such as coconut (a dietary staple), and significant economic losses. The loss of biodiversity would critically affect ecological resources, tourism, and ecosystem services (Martín, 2018).

In Latin America, an estimated 6,700 kilometers of roads, human settlements, coastal infrastructure, and wetlands are at risk, with projected economic losses totaling $255 million in net damages (Martín, 2018).

Mining poses additional challenges to ecosystem health, particularly due to its exorbitant water requirements (Saade, 2013). Documented cases show rivers and communal wells drying up as a result of mining operations (McKinley, 2014). A significant source of pollution is acid mine drainage, which occurs when sulfide-containing rocks are exposed to oxygen and rain, forming sulfate and eventually sulfuric acid. This acid dissolves heavy metals such as lead, magnesium, cadmium, mercury, and arsenic, contaminating rivers and aquifers (McKinley, 2014). Another major pollutant from mining is cyanide, a highly toxic chemical used in large quantities. Rivers like El Bambana on Nicaragua's Caribbean coast have been found to contain cyanide levels exceeding international safety standards (McKinley, 2014).

*Islands at risk of disappearing due to sea level rise threat in the Guna Yala Region, Panama.* **/ Salvadora Morales**

# VIII. IMPLEMENTATION PLAN

**To determine the strategies and actions needed to support the conservation of the focal species in this Conservation Investment Plan, nine workshops were conducted via Zoom, followed by additional reviews. These sessions fostered interaction between participants and facilitators using the MURAL application.**

Strategies, objectives, and activities were developed collaboratively with participants from six countries[5] and underwent further review to enhance their technical robustness. A combination of methodologies was applied, particularly the Conservation Standards. Participants prioritized the strategies through voting exercises.

This plan outlines goals, strategies, and actions to be implemented over a 10-year period (2024–2034) to address the threats identified during the plan's conceptualization. It also incorporates a strong social component, emphasizing equity and social justice for forest communities as well as indigenous and Afro-descendant peoples living in the area.

## 8.1 Purpose of the Plan

Reduce forest habitat loss and increase the availability of habitat in degraded areas to halt the population decline of migratory and resident birds in the plan's focal areas, while improving the well-being and livelihoods of the communities that depend on these habitats.

## 8.2 Goals, strategy, and Theory of Change

Five goals, nine strategies, and a Theory of Change for each strategy were defined. These were developed using the Theory of Change approach, incorporating results chain diagrams to outline intermediate objectives, activities, and indicators. These elements are included in a monitoring plan to track the effectiveness of the strategies and apply adaptive management.

The unique characteristics of the geographic area and the identified conservation objects require an approach that is both international and community-based, as well as intercultural. This approach must address the drivers of threats; which often originate in developed countries and are linked to consumption patterns. Additionally, the political will of local, regional, and national governments across the Caribbean slope countries is indispensable for the success of any conservation strategy. Therefore, an essential component of this plan involves outreach, distribution, and empowerment of decision-makers and policymakers at both international and national levels.

The identified strategies, prioritized in the following order, are:

1. **Good environmental governance and law enforcement.**
2. **Conservation agreements and incentives for ecological restoration and corridor recovery.**
3. **Strengthening indigenous peoples, communities, and other stakeholders for co-management, control, and monitoring of protected areas and priority zones.**
4. **Enhancing the technical, financial, and operational capacities of authorities at local, national, and regional levels.**
5. **Scientific research to inform decision-making.**
6. **Bird-friendly sustainable production.**
7. **Creation and/or strengthening of indigenous, private, and national protected areas.**
8. **Nature-based tourism.**
9. **Solid and liquid waste management.**

Table 6 outlines the defined goals, the critical strategies necessary to achieve these objectives, and additional strategies that contribute to the success of these goals.

*Table 6. Goals and critical and important strategies to achieve the purpose of the Plan.*

| Goals / Strategies | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| By 2034, the rate of deforestation and forest degradation caused by human activities has been reduced by at least 50%, while 1,230.504 hectares of habitat for migratory birds and climate resilience on the Caribbean slope have been maintained, improved, and restored.[6] | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| By 2034, the population of focal migratory and resident birds that are in decline, threatened, or endangered has increased by 5% or remained stable. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| By 2034, mining activity in conserved sites and protected areas has decreased by at least 20% compared to the 2025 baseline.[7] | ✓ | ✓ | ✓ | ✓ | - | - | - | - | ✓ |
| By 2034, 24 protected areas on the Caribbean slope are effectively managed and protected, ensuring the livelihoods of indigenous peoples and adjacent forest communities. | ✓ | ✓ | ✓ | ✓ | ✓ | - | - | ✓ | - |
| By 2034, forest fires on the Caribbean slope have been reduced by at least 20% compared to the 2024 baseline. | ✓ | ✓ | ✓ | ✓ | - | ✓ | - | - | - |
| By 2034, established processes have been successfully implemented to reduce liquid and solid waste pollution in at least one watershed per country, with a primary focus on the Motagua River basin.[8] | ✓ | ✓ | - | ✓ | - | - | - | - | ✓ |

Workshops were conducted for each strategy to collaboratively build a situational model that identified entry points for strategy development. This graphical model illustrates the current situation affecting the conservation objects, detailing cause-effect relationships between causal factors and threats in the form of a flowchart (Annex 3). Each strategy was developed through the creation of results chains. These diagrams outline the conditions necessary to achieve a positive impact on the conservation objects and define the theory of change for each strategy. Based on these diagrams, the action plan for this Conservation Investment Strategy was generated. Each strategy includes indicators, detailed in Annex 4.

**6** This goal should first define the baseline using the Global Forest Watch tool.
**7** This goal can be reviewed once the baseline is established in 2025.
**8** This goal relies on multiple stakeholders beyond those involved in this planning process.



# STRATEGY 1

## 8.2.1 Good environmental governance and law enforcement

The strategy to strengthen governance for improved law enforcement was identified as the most important for addressing the challenge of conserving migratory and resident birds and the ecosystems that sustain them. Threats such as cattle ranching, mining, and drug trafficking—key drivers of deforestation—are closely linked to weak governance and inadequate law enforcement.

Cattle ranching and mining are often prioritized by national economic policies, frequently overriding conservation objectives and disregarding environmental and social impacts. This underscores the need to address natural resource and territorial governance at local, national, and regional levels.

This strategy focuses on mitigating critical threats by strengthening social processes and relationships that ensure better land management, fostering improved interaction between social actors and decision-makers, and integrating values and principles of respect for human rights, the environment, and sustainable development goals.

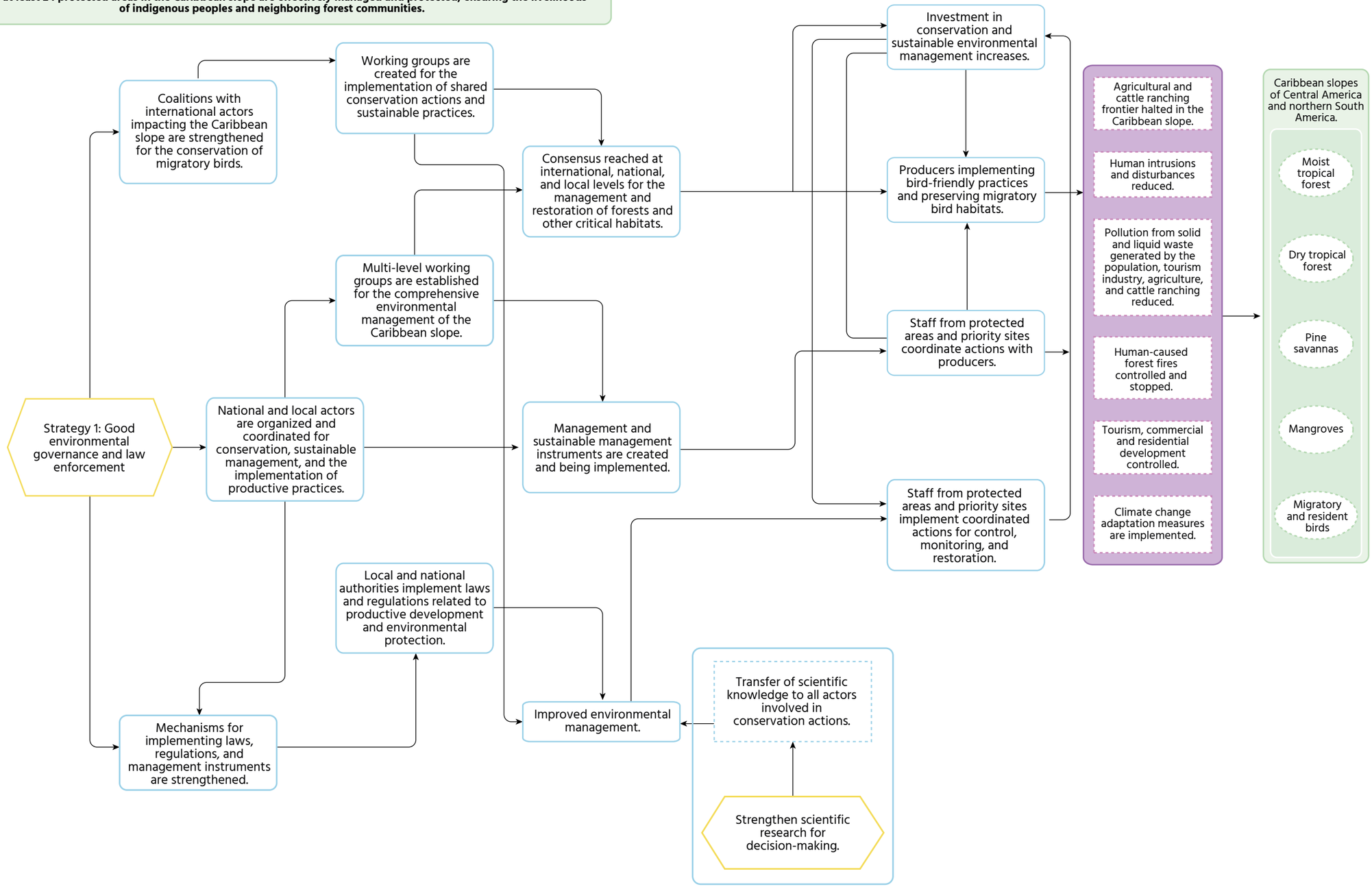
The governance and law enforcement strategy is interconnected with nearly all the identified strategies and complements various conservation actions.

*North Caribbean Autonomous Region, Nicaragua.*
**/ Salvadora Morales**

*Results chain 1. Good environmental governance and law enforcement.*

**By 2034, the rate of deforestation and forest degradation caused by human activities has been reduced by at least 50%, while maintaining and enhancing the habitat of migratory birds and climate resilience in the Caribbean slope.**

**By 2034, at least 24 protected areas in the Caribbean slope are effectively managed and protected, ensuring the livelihoods of indigenous peoples and neighboring forest communities.**



## THEORY OF CHANGE

**If** coalitions with international actors influencing the Caribbean slope are strengthened;

**If** national and local actors are organized and aligned for conservation, sustainable management, and the implementation of good production practices;

And **if** consensus is reached at international, national, and local levels for the management and restoration of forests and other critical habitats;

**Then,** environmental governance at the local level will improve, and investment in conservation and sustainable management will increase.

**Consequently,** producers will adopt bird-friendly practices, protected area staff and priority site managers will coordinate actions with producers, and they will also implement coordinated actions for control, monitoring, and restoration.

*Table 7. Objectives and recommended activities for the governance and law enforcement strategy.*

| Strategic SMART objectives | Activities |
|---|---|
| **O1.1** By 2029, stakeholders involved in the conservation of birds in priority sites plan and work in coordination across different inter-institutional levels, incorporating resident and migratory birds into their agendas. | **A1.1.1** Validate priority sites for protection, corridor establishment, and habitat restoration using updated GIS data and tools (e.g., Global Forest Watch). |
| | **A1.1.2** Develop a stakeholder map and participatory work plans for priority sites. |
| | **A1.1.3** Organize international meetings of working groups. |
| | **A1.1.4** Facilitate cooperation, technical support, and financial assistance among members of regional and international working groups. |
| | **A1.1.5** Create dialogue platforms and operationalize work sessions through national and local plans. |
| | **A1.1.6** Conduct work sessions with bilateral, multilateral, and international financial organizations for the conservation of birds and their habitats. |
| **O1.2** By 2028, the budget allocated for conservation and investment in projects for the preservation of resident and migratory birds on the Caribbean slope increases. | **A1.2.1** Coordinate inter-institutional planning and cost estimation for the management of pilot sites. |
| | **A1.2.2** Identify and access funding sources at private, bilateral, multilateral, and international levels to cover costs. |
| | **A1.2.3** Implement awareness campaigns and lobbying efforts targeting public sector decision-makers to emphasize the importance of increasing budgets allocated to conservation portfolios on the Caribbean slope. |
| **O1.3** By 2028, at least **20%** of producers in priority sites implement good productive practices focused on the integral conservation of birds and their habitats. (Same objective as O6.1) | **A1.3.1** Identify and organize producers and areas impacted by agriculture and livestock activities in priority areas. |
| | **A1.3.2** Build and strengthen local capacities for implementing regenerative agriculture, agroforestry, and silvopastoral practices. |
| | **A1.3.3** Create and strengthen networks of producers applying regenerative agriculture, agroforestry, and silvopastoral systems. |
| | **A1.3.4** Implement silvopastoral practices in corridors and pilot plots. |
| | **A1.3.5** Develop and validate mechanisms for regional and international inter-institutional coordination to apply incentives. |
| | **A1.3.6** Design an online platform for the community of practitioners/working groups. |
| | **A1.3.7** Establish and operationalize territorial agreements and working groups among mining companies, communities, municipalities, and other stakeholders. |
| | **A1.3.8** Coordinate monitoring and follow-up actions for producers, restoration areas, and priority protected areas. |
| **O1.4** By 2028, local actors coordinate and plan actions for forest restoration and the recovery of migratory and resident birds. | **A1.4.1** Conduct joint planning processes at the local landscape level under a shared vision. |
| | **A1.4.2** Establish mechanisms for coordinating and monitoring shared actions. |
| **O1.5** By the end of 2032, governance mechanisms for monitoring and enforcing environmental laws are established in at least five priority areas identified in the plan. | All of the above. |

# STRATEGY 2

## 8.2.2 Conservation agreements and incentives for ecological restoration and corridor recovery

The Caribbean slope has experienced the highest rates of forest loss and fragmentation on the continent in the last 30 years. Stopping the advance of the agricultural and cattle ranching frontier requires not only local, national, and regional efforts, but also agreements between various parties leading to successful conservation experiences. Based on successful experiences in countries such as Colombia and Guatemala, this strategy seeks to achieve consensus and agreements for the involvement of key actors in indigenous territories, forest and rural communities along the Caribbean slopes of Mexico, Central America, and Colombia, with the goal of establishing ecological corridors and developing actions for the restoration and recovery of ecosystems. This will require the commitment of governments through the development of incentives, as well as the commitment of communities to implement good environmental practices, payment for ecosystem services, and effective protection of the areas.

*Results chain 2. Strategy for conservation agreements and incentives for ecological restoration and corridor recovery.*

**By 2034, the rate of deforestation and forest degradation caused by human activities has been reduced by at least 50%, while maintaining, enhancing, and restoring migratory bird habitat and climate resilience in the Caribbean slope.**

Land tenure situation in priority sites improved and clarified in favor of legitimate actors, not third parties (indigenous land invaders).

Consensus reached in processes of Free, Prior, and Informed Consent (FPIC) to prevent deforestation and restore deforested areas.

Participatory design of agroforestry and silvopastoral programs.

Conservation agreements established among Indigenous peoples' organizations, local communities, non-governmental organizations, and state institutions.

The necessary conditions for implementing reforestation, management, and best practices are in place.

Local actors and leaders from indigenous and local communities identified, organized, and involved in actions supporting birds.

Habilitates

Priority areas for restoration and ecological recovery benefiting migratory birds are identified.

Shifts in political will to support local restoration processes with a focus on birds.

Strengthening of technical and operational capacities of authorities.

8 Acts

Environmental awareness among decision-makers increases regarding the situation of birds and the social and environmental issues caused by forest conversion due to cattle ranching + and mining.

Strategy 2: Conservation agreements and incentives (ecological restoration and corridor recovery).

Knowledge about the current state of the landscape in priority sites affected by cattle ranching and agriculture is improved.

Regional and multilateral financing mechanisms established to support ecological restoration and the recovery of ecological corridors to benefit migratory and resident birds.

The actions of avoided deforestation have been implemented in protected areas and are contributing to the National Adaptation Plans (NAP).

Sustainable and bird-friendly production.

5 Acts

Shared result

Key corridors and connectivity areas have increased through agroforestry and silvopastoral practices that are respectful of birds and biodiversity.

The conservation and protection of forests and the ecological connectivity of the migratory corridor on the Caribbean slope have been improved.

A regional payment for environmental services program has been established in pilot areas of critical sites for migratory birds.

Areas that provide financial benefits to individuals and communities participating in the incentive program have been restored and conserved.

The impacts of habitat destruction and climate change-related events on birds, and biodiversity are identified.

National climate change adaptation plans integrate actions for the conservation of birds and their habitats.

Regional policies for economic incentives supporting forest conservation and restoration in the Caribbean slope are approved and promoted.

Sub-strategy 1.1: Conservation incentives to support habitat restoration and reduce fires.

5 Acts

Economic incentive policies to reduce forest fires in pine forests and dry forests have been approved and disseminated.

A program of economic incentives to prevent forest fires has been established.

Early actions to reduce forest fires have been increased, decreasing fire-induced degradation.

Agricultural and cattle ranching frontier halted in the Caribbean slope.

Human intrusions and disturbances reduced.

Pollution from solid and liquid waste generated by the population, tourism industry, agriculture, and cattle ranching reduced.

Human-caused forest fires controlled and stopped.

Tourism, commercial and residential development controlled.

Climate change adaptation measures are implemented.

Caribbean slopes of Central America and northern South America.

Moist tropical forest

Dry tropical forest

Pine savannas

Mangroves

Migratory and resident birds

Financial prosperity in local communities as a result of agroforestry and silvopastoral practices.

## THEORY OF CHANGE

**If** areas are prioritized for conservation, restoration, and ecological recovery that benefit migratory and resident birds, and knowledge about the impact of cattle ranching and agriculture in these sites is improved;

**If** knowledge about migratory and resident birds, their habitats, and the threats affecting them is enhanced and used to raise environmental awareness among key actors, including decision-makers;

And **if** financing mechanisms and incentives, including payment for environmental services programs, are established and implemented to support ecological restoration and the recovery of ecological corridors;

**If** agreements for engagement and collaboration among key stakeholders are reached;

**Then,** consensus will be achieved to prevent deforestation and recover deforested areas, creating the necessary conditions for implementing effective actions in reforestation, management, and the application of best practices.

**Therefore,** the conservation of forests and the ecological connectivity of the migratory corridor on the Caribbean slope will improve, benefiting birds, people, and communities.

*Table 8. Proposed objectives and activities for the conservation agreements strategy.*

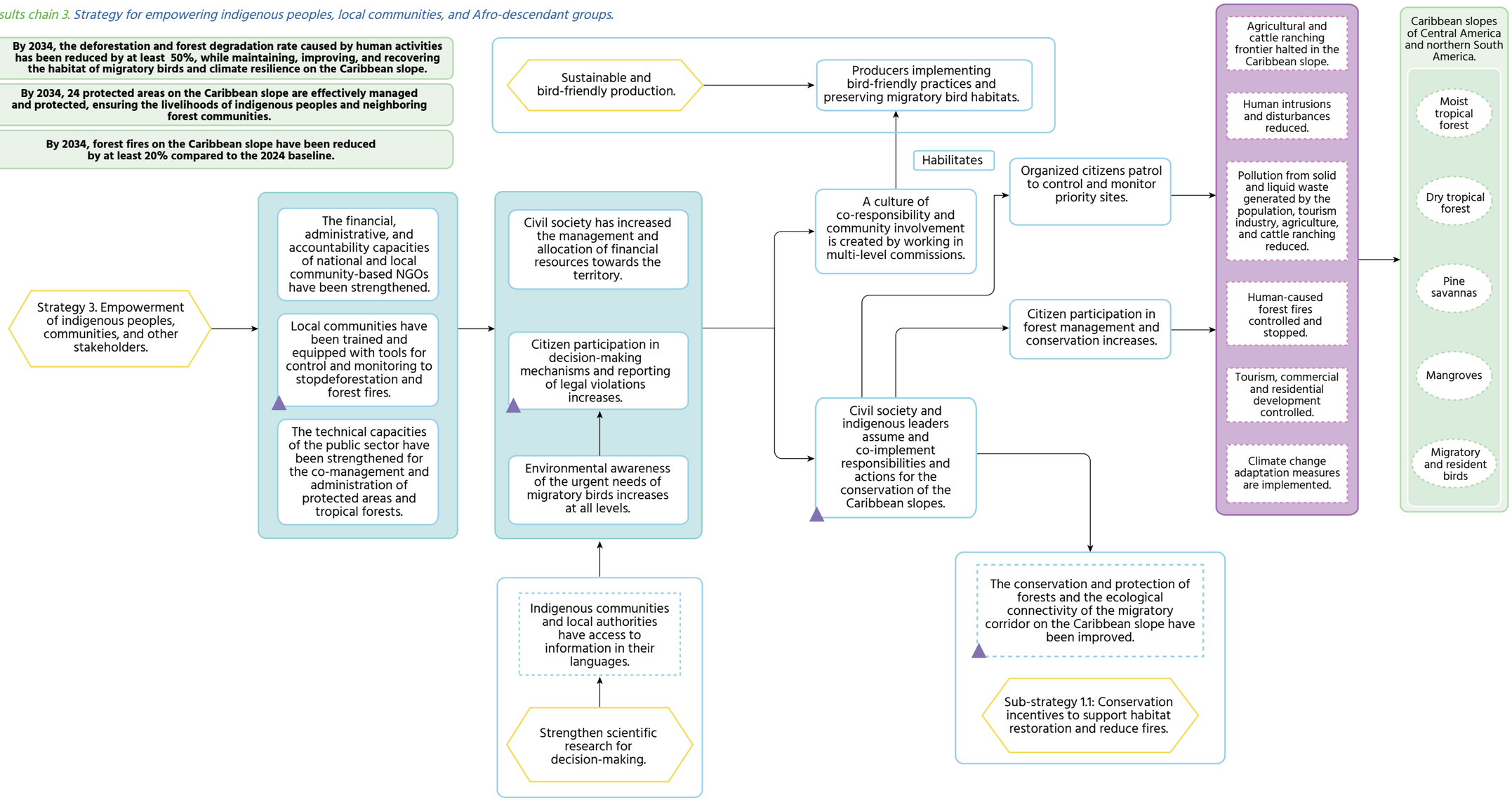
| SMART Objective | Activities |
|---|---|
| **O2.1** By the end of 2026, priority areas (focal sites), local stakeholders, and the legal status of land tenure on the Caribbean slope have been identified. | **A2.1.1** Identify and map areas within prioritized sites for creating corridors, connecting corridors, and recovering, restoring, and protecting habitats at regional and local levels. |
| | **A2.1.2** Conduct a stakeholder mapping exercise (same activity as 3.1.1). |
| | **A2.1.3** Organize visits, assemblies, and meetings with stakeholders and groups interested in conservation. |
| | **A2.1.4** Conduct legal studies on land tenure in pilot restoration sites. |
| **O2.2** By the end of 2027, agreements and the involvement of key stakeholders are achieved in 12 pilot sites across six countries on the Caribbean slope. | **A2.2.1** establish relationships with key partners and communities. |
| | **A2.2.2** sign conservation and outreach agreements among key stakeholders in pilot sites, including indigenous and forestry communities, as well as productive sector associations impacting the area. |
| | **A2.2.3** identify and design good environmental practices for forest restoration and recovery. |
| | **A2.2.4** establish mechanisms for transferring scientific information and data, and their use in local management decisions. |
| **O2.3** By the end of 2026, at least 12 new regional research projects will have been developed, focusing on improving the knowledge of the current state of conservation targets in an equal number of priority areas (a goal shared with Strategy 5). | **A2.3.1** Establish collaboration agreements with NGOs, local and international academia, and community leaders. |
| | **A2.3.2** Identify methods and standards for generating, processing, storing, and disseminating required scientific information. |
| | **A2.3.3** Conduct studies on the status of various habitats and conservation objects. |
| | **A2.3.4** Prepare and disseminate results reports tailored to target audiences, particularly conservation area managers and decision-makers at local and national levels. |
| **O2.4** By the end of 2028, legal and technical capacities within environmental institutions, local authorities, and implementers have been enhanced to execute reforestation and restoration actions. | **A2.4.1** Coordinate actions between authorities and local communities. |
| | **A2.4.2** Support authorities in executing land regularization processes. |
| | **A2.4.3** Assist in the implementation of judicial processes and promote their dissemination. |
| | **A2.4.4** Implement monitoring and control measures in protected areas and pilot sites. |
| **O2.5** By the end of 2028, between 50 and 100 decision-makers at local and national levels across six countries support conservation, reforestation, and restoration initiatives for the Caribbean slope. | **A2.5.1** Design and publish communication materials targeting decision-makers and other key audiences. |
| | **A2.5.2** Conduct communication campaigns aimed at decision-makers to highlight conservation challenges on the Caribbean slope. |
| | **A2.5.3** Organize events, presentations, and social media campaigns to raise awareness about the situation of the Caribbean slope. |
| **O2.6** By the end of 2029, financing mechanisms for restoring and recovering corridors in focal sites on the Caribbean slope have been established and become operational. | **A2.6.1** Organize consensus-building meetings between community leaders and regional institutional leaders to address incentive and financing mechanisms. |
| | **A2.6.2** Engage community leaders in Climate COPs to inform, influence, and share information. |
| | **A2.6.3** Secure financial resources at international, regional, and national levels through coalitions established on the Caribbean slope and allied organizations. |
| | **A2.6.4** Review policies and develop proposals for changes in regulations, laws, and policies to support the creation of incentives and other financing mechanisms (including payment for environmental services). |
| | **A2.6.5** Conduct prefeasibility studies for proposed financial mechanisms, focusing on incentives, payment for environmental services, and others. |
| | **A2.6.6** Provide technical support for project development utilizing financial mechanisms. |
| **O2.7** By the end of 2034, key corridors and connectivity areas on the Atlantic slope have expanded through the implementation of agroforestry and silvopastoral practices. | **A2.7.1** Establish a baseline and monitor changes.<br>All of the above. |
| **O2.8** By the end of 2034, priority protected areas on the Caribbean slope have effective staffing and protection measures in place. | **A2.8.1** Establish a baseline and monitor changes.<br>All of the above. |
| **O2.9** By the end of 2034, at least **10%** of hectares of degraded areas in key and priority corridors have been restored. | **A2.9.1** Establish a baseline and monitor changes.<br>All of the above. |

# STRATEGY 3

## 8.2.3 Empowerment of indigenous peoples, local communities, and Afro-descendant groups

The third strategy focuses on building the capacities of civil society and recognizing traditional knowledge, particularly that of indigenous and Afro-descendant peoples. Effective conservation requires that those who inhabit these territories strengthen their technical, administrative, and financial capacities to better participate in the conservation of natural resources. It is equally important to acknowledge ancestral knowledge and practices that can contribute to conservation efforts and integrate them effectively into decision-making processes. This strategy is closely linked to Strategy 4 on scientific research and Strategy 6 on sustainable, bird-friendly production.

*Results chain 3. Strategy for empowering indigenous peoples, local communities, and Afro-descendant groups.*



## THEORY OF CHANGE

**If** indigenous peoples and local communities share their ancestral knowledge and engage in co-learning about the use and management of resources;

**If** indigenous peoples, local communities, and civil society organizations enhance their administrative, financial, and accountability capacities;

**If** local communities and government organizations strengthen their technical capacities and equipment for improved monitoring and protection of critical habitats;

**And if** respect for ancestral knowledge and practices increases, alongside greater environmental awareness of the importance of conserving migratory and resident birds and their habitats;

**Then,** communities will have the capacity for sustainable management and will better assume their responsibilities.

**Therefore,** communities will actively participate in co-implementing ancestral knowledge and conservation actions for critical bird habitats, reducing deforestation, and controlling wildfires by applying traditional knowledge.

*Table 9. Objectives and activities for empowering and co-creating capacities with indigenous peoples and local communities.*

| Strategic SMART objectives | Activities |
|---|---|
| **O3.1** By 2028, **15%** of local stakeholders per country in priority sites along the Caribbean slope have improved their administrative and reporting capacities. | **A3.1.1** Conduct a stakeholder mapping exercise (same as 2.1.2). |
| | **A3.1.2** Develop joint work plans with identified key stakeholders. |
| | **A3.1.3** Co-document ancestral knowledge on the importance, use, and management of forests from the perspective of indigenous peoples and local communities. |
| | **A3.1.4** Conduct intensive training sessions on fund management and reporting. |
| | **A3.1.5** Implement capacity-building schools for indigenous leaders, women leaders, farmers, and public officials (list of identified training topics). |
| | **A3.1.6** Create dialogue platforms and establish work sessions. |
| | **A3.1.7** Equip monitoring and control brigades (drones, vehicles, motorcycles, uniforms, signage) with technical training programs focused on forest fire control. |
| | **A3.1.8** Create and/or strengthen monitoring and control brigades (personnel, mobilization expenses, and food supplies). |
| **O3.2** By early 2029, public awareness and commitment to protecting forests and birds on the Caribbean slope has significantly increased. | **A3.2.1** Conduct multi-level outreach, communication, and awareness campaigns tailored to audience profiles and capabilities. |
| | **A3.2.2** Co-create, develop, and distribute campaign materials in indigenous languages. |
| **O3.3** By the end of 2034, 7,000 stakeholders are actively engaged in the management, stewardship, and conservation of forests on the Caribbean slope. | **A3.3.1** Systematize ancestral knowledge from indigenous territories, including organizational practices. |
| | **A3.3.2** Implement monitoring campaigns and promote citizen participation for reporting violations and enforcing laws. |
| | **A3.3.3** Conduct campaigns focused on protecting and monitoring protected areas, preventing forest fires, and implementing best practices. |
| | **A3.3.4** Create and strengthen local committees for environmental management and stewardship. |

# STRATEGY 4

## 8.2.4 Institutional strengthening

On the Caribbean slope, Costa Rica stands out with high governmental capacity, while Honduras, Colombia, and Mexico exhibit intermediate levels. In contrast, Nicaragua, Guatemala, and Panama are ranked at lower levels (Scartascini, 2014). Achieving significant conservation outcomes requires capacity building at all levels, including community, municipal, and institutional.

Countries with strong technical capacities have successfully developed consistent and robust policies, established transparent regulatory systems, and improved economic, social, and environmental well-being. A public administration system that is integrated and coherent across social, environmental, economic, and political dimensions is critically needed in most countries to meet the demands of natural resource conservation and sustainable development.

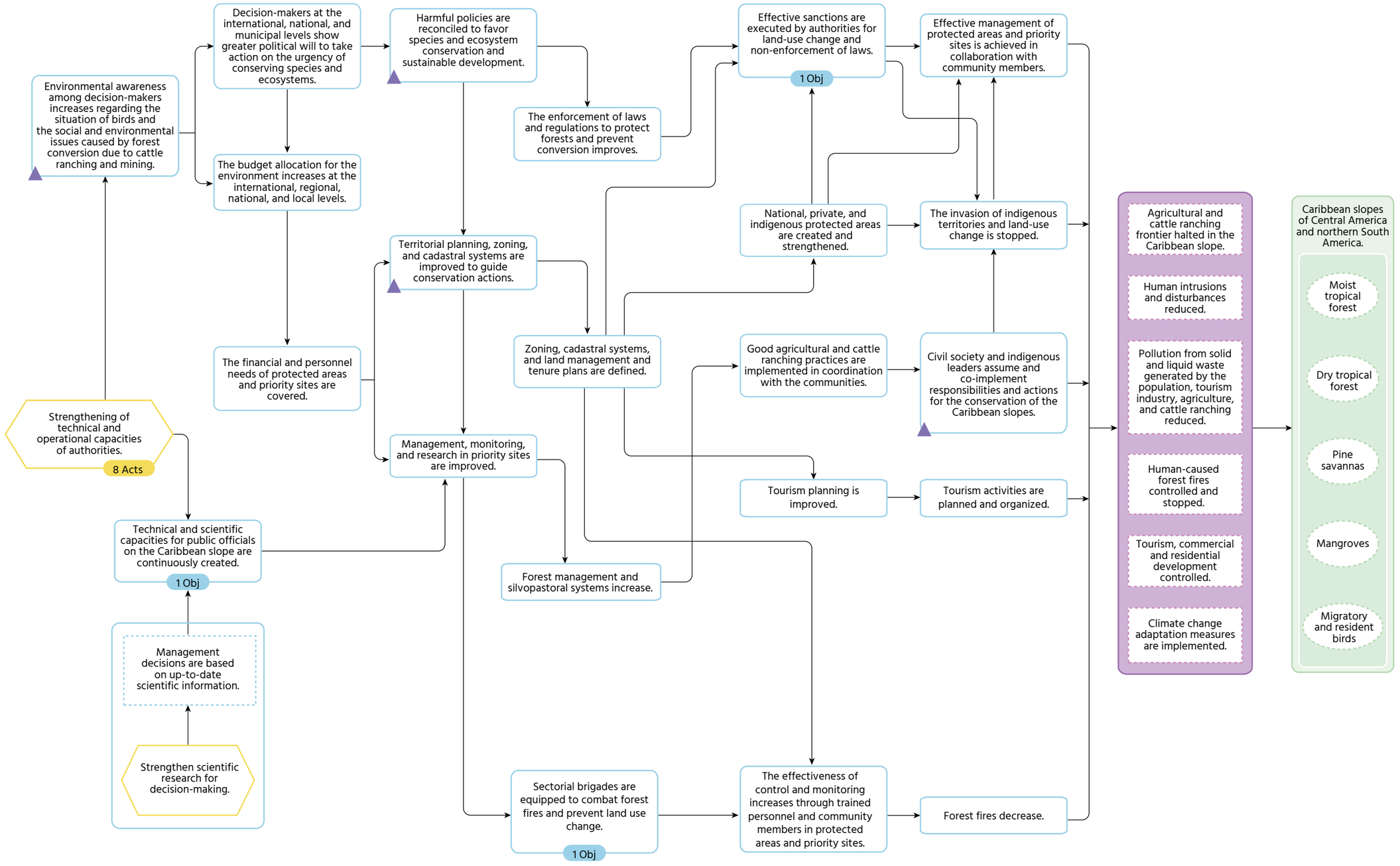
This strategy focuses on increasing environmental awareness and enhancing the technical and scientific knowledge of public officials and decision-makers. It also aims to build their technical capacities to implement more effective processes for planning, land-use management, law enforcement, and sustainable natural resource management.

*Golden-winged Warbler (Vermivora chrysoptera).* **/ Sandaru-KGL**

*Results chain 4. Institutional strengthening strategy.*

**By 2034, the deforestation and forest degradation rate caused by human activities is reduced by at least 50%, while maintaining and improving the habitat of migratory birds and climate resilience on the Caribbean slope.**

**By 2034, 24 protected areas on the Caribbean slope are effectively managed and protected, ensuring the livelihoods of indigenous peoples and neighboring forest communities.**



## THEORY OF CHANGE

**If** awareness and knowledge among decision-makers at all levels about the situation of resident and migratory birds, and the associated social challenges, are increased;

**If** technical and scientific capacities of public officials on the Caribbean slope are continuously and sustainably strengthened;

**If** budget allocations for environmental and conservation portfolios are increased;

**Then,** public institutions will participate more actively and consistently in conservation actions for migratory and resident birds, and their habitats.

**Therefore,** planning, land-use management, cadastral mapping, law enforcement, and the management of protected areas and priority sites will be improved.

*Table 10. Strategic objectives and suggested activities for the institutional strengthening strategy.*

| Strategic SMART objectives | Activities |
|---|---|
| **O4.1** By 2027, at least **10%** of public officials and decision-makers have deepened their understanding of the environmental challenges and the status of migratory and resident birds on the Caribbean slope. | **A4.1.1** Distill technical and scientific information into accessible documents for public officials. |
| | **A4.1.2** Organize information and discussion forums on specific issues requiring government participation. |
| | **A4.1.3** Facilitate spaces for creating and discussing initiatives addressing conservation needs, particularly with regard to technical, logistical, and financial support. |
| | **A4.1.4** Establish continuous technical and scientific capacity-building programs for public officials on the Caribbean slope. |
| **O4.2** By 2028, budget allocations for conservation actions and protected areas on the Caribbean slope have increased by at least **50%**. | **A4.2.1** Improve the availability of accurate financial data on the needs of protected areas and the management of priority sites on the Caribbean slope. |
| | **A4.2.2** Conduct high-level communication and information campaigns and distribute materials addressing financial needs. |
| | **A4.2.3** Organize events and meetings to present data and information on the financial situation of protected areas and priority sites to authorities at all levels. |
| | **A4.2.4** Collaborate on proposals with members of national assemblies or congresses to increase allocations for protected areas, conservation initiatives, and sustainable development actions (including capacity-building efforts), with a focus on the Caribbean slope. |
| **O4.3** By the end of 2028, government officials and institutions have strengthened their capacities for managing and protecting protected areas, implementing restoration actions, and have been equipped to achieve these goals. | **A4.3.1** Implement comprehensive capacity-building programs for indigenous leaders, women leaders, farming communities, and public officials (based on an identified list of training needs). |
| | **A4.3.2** Equip monitoring and control brigades with necessary tools, including drones, vehicles, motorcycles, uniforms, and signage. |
| | **A4.3.3** Select and prioritize protected areas and priority sites that most urgently require improved management, restoration, and conservation capacities. |
| | **A4.3.4** Develop and validate regulations defining indigenous territories and their land-use practices. |
| **O4.4** By the end of 2032, the governments of Caribbean slope countries are more actively engaged in actions to conserve migratory and resident birds and their habitats on the Caribbean slope. | **A4.4.1** Collaborate with authorities at various levels on zoning, cadastral mapping, land tenure regularization, and management plans. |
| | **A4.4.2** Plan and implement restoration actions in coordination with companies operating on the Caribbean slope. |
| | **A4.4.3** Create and/or strengthen monitoring and control brigades, including personnel, mobilization expenses, and food provisions. |

# STRATEGY 5

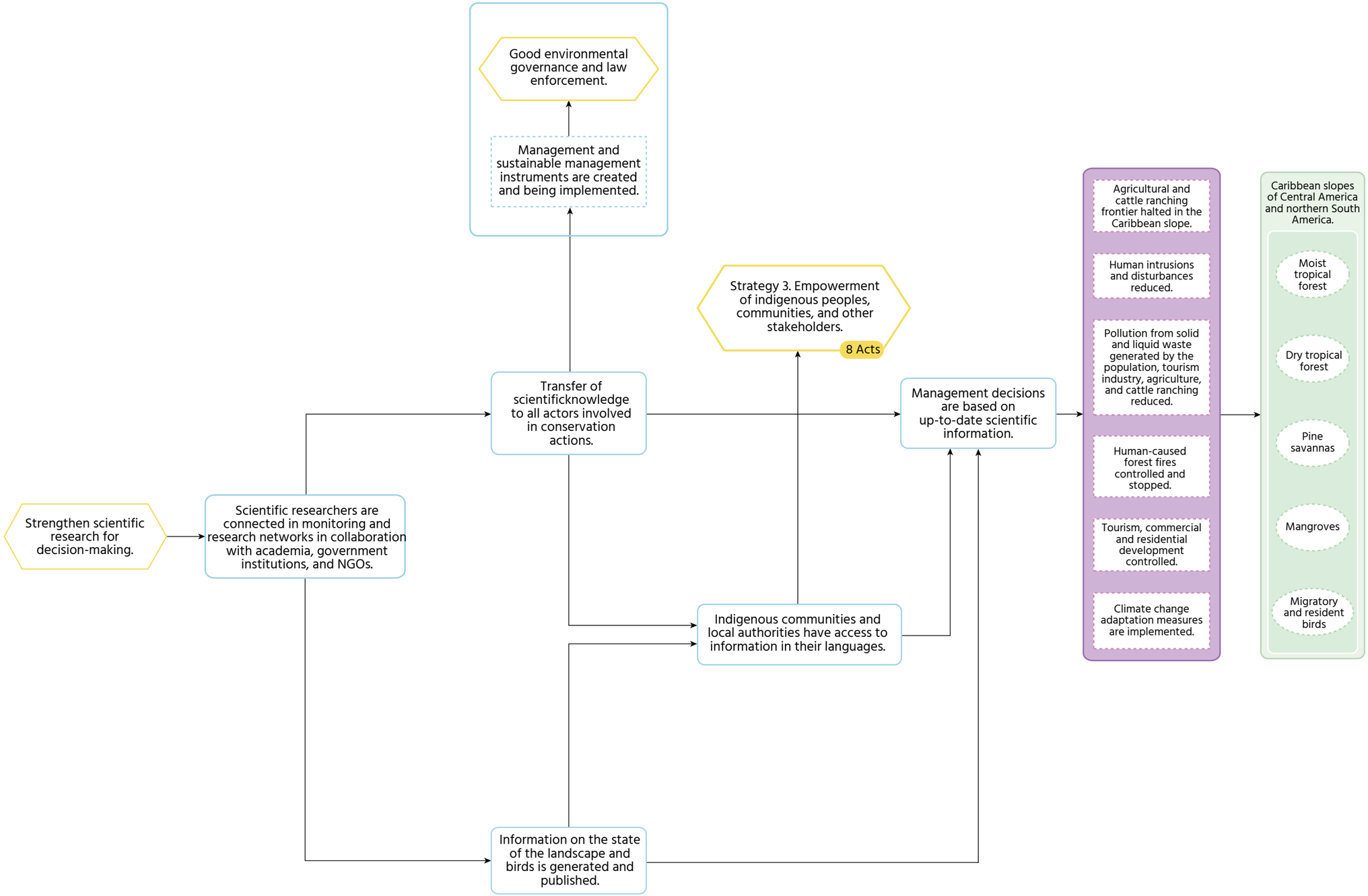
### 8.2.5 Scientific research

Scientific research is essential for making decisions based on the best available information about territories and conservation objects. It is crucial to develop the appropriate knowledge to ensure that science informs both the status of conservation objects and biodiversity in general, as well as to assess the outcomes of our on-the-ground actions.

This strategy aims to implement effective, evidence-based conservation. A scientific approach is necessary to measure the effectiveness of actions using appropriate indicators and to demonstrate the results of conservation processes, ensuring their continuity through dissemination to potential donors and decision-makers.

While conservation decisions should be based on scientific knowledge, this should not be separated from traditional knowledge, which remains an important source of understanding. Similarly, it is crucial to update and improve baseline data for monitoring processes.

*Results Chain 5. Scientific research.*



## THEORY OF CHANGE

**If** scientific researchers are integrated into monitoring and research networks in collaboration with academia, independent researchers, state institutions, and NGOs;

**If** traditional knowledge from indigenous communities and authorities is incorporated as a source of information, and if the knowledge generated by academic research is transferred to these communities;

**And if** this scientific knowledge is shared with all actors involved in conservation actions, and the status of landscapes and birds is generated and published;

**Then,** better management decisions will be made.

*Table 11. Objectives and activities for the scientific research strategy.*

| Strategic SMART objectives | Activities |
|---|---|
| **O5.1** By the end of 2027, scientific researchers will have been integrated into monitoring and research networks in collaboration with academia, state institutions, local communities, and NGOs. | **A5.1.1** Create commissions of expert scientific researchers in various fields for each country. |
| | **A5.1.2** Generate working groups between research commissions and other actors (government, communities, and NGOs). |
| **O5.2** By the beginning of 2026, maps and baseline data will have been created to determine the abundance of conservation objects and the areas designated for restoration. | **A5.2.1** Conduct monitoring of conservation objects and map their abundance, overlapping with priority sites for decision-making and adaptive management of the plan. |
| | **A5.2.2** Conduct annual monitoring of tree cover loss or gain in priority sites using tools such as those provided by Global Forest Watch. |
| **O5.3** By the end of 2028, the contribution of information through citizen science actions and the use of tools such as eBird will have been implemented and expanded. | **O5.3.1** Develop citizen science events that contribute to collective participation and data generation for decision-making. |
| **O5.4** (Shared objective with strategy 2). | **A5.4.1** Establish collaboration agreements with NGOs, local and international academia, and community leaders. |
| | **A5.4.2** Identify methods and standards for generating, processing, storing, and disseminating required scientific information. |
| | **A5.4.3** Conduct studies on conservation objects. |
| | **A5.4.4** Prepare and disseminate results reports targeting key audiences, particularly conservation area managers and decision-makers at local and national levels. |
| **O5.5** By the end of 2027, scientific knowledge will have been transferred to all actors involved in conservation actions. | **A5.5.1** Organize workshops on various topics with up-to-date scientific knowledge for actors involved in conservation actions, including local communities. |
| | **A5.5.2** Provide easy access to scientific research and publications (specific reports for target audiences, including communities). |
| | **A5.5.3** Create dialogue tables for scientific and traditional knowledge exchange in local communities. |
| **O5.6** By the end of 2028, knowledge on the status of landscapes and migratory and resident birds on the Caribbean slope will have been generated and published. | **A5.6.1** Identify methods and standards for the required scientific information. |
| | **A5.6.2** Identify methods and standards for the required scientific information. |
| | **A5.6.3** **C**onduct research and establish baselines, where necessary, on the ecology and conservation status of landscapes, migratory and resident birds, and their habitats**.** |
| | **A5.6.4** Facilitate the dissemination of scientific research, primarily for target audiences. |
| **O5.7** By the end of 2028, citizen science programs will have been established and strengthened, generating data in the focal areas. | **A5.7.1** Conduct training on bird identification, tools (eBird), and citizen science protocols for youth, students, and community members. |
| | **A5.7.2** Organize annual citizen science events (e.g., monthly counts, Big Days, focal species reporting) that allow citizens to contribute to data generation. |
| | **A5.7.3** Promote regional bird counting events during migration, winter residency, and breeding periods. |
| **O5.8** By the end of 2030, management decisions will be based on new knowledge. | **A5.8.1** Follow up on working groups between academia and actors involved in conservation actions. |
| | **A5.8.2** Update management plans and conservation and sustainable development initiatives based on the best available information and generated data. |

# STRATEGY 6

### 8.2.6 Sustainable production

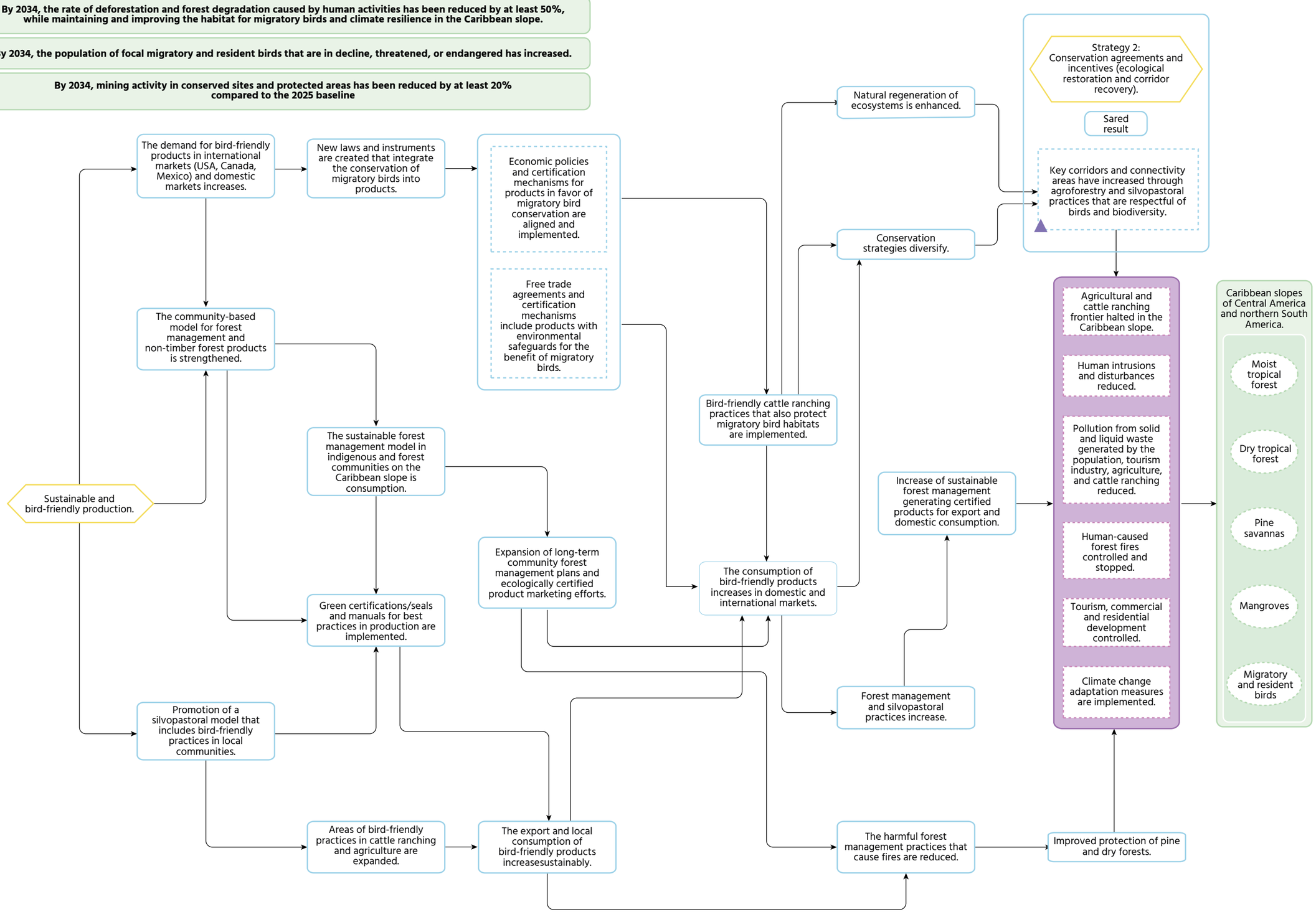
Sustainable production is a relevant strategy for the region. Unsustainable practices in livestock farming, agriculture, and agroforestry, such as logging, burning, monoculture, and excessive pesticide use, exacerbate conventional threats linked to deforestation. Soil degradation, water contamination, and the resulting loss of biodiversity threaten both the long-term viability of conservation objects and local agriculture and food security. In this context, sustainable agricultural production becomes a key component for the conservation of biodiversity, natural resources, and birdlife in particular. The region has successful examples of shaded cacao cultivation, forest management, and forest plantations that align with sustainable production frameworks based on their management practices. The sustainable production strategy focuses on implementing good livestock and agricultural practices, driven and promoted through training in best practices, the generation of incentives, and a demand for products that are more environmentally friendly and supportive of both resident and migratory birds.

*Results Chain 6. Sustainable Production.*

**By 2034, the rate of deforestation and forest degradation caused by human activities has been reduced by at least 50%, while maintaining and improving the habitat for migratory birds and climate resilience in the Caribbean slope.**

**By 2034, the population of focal migratory and resident birds that are in decline, threatened, or endangered has increased.**

**By 2034, mining activity in conserved sites and protected areas has been reduced by at least 20% compared to the 2025 baseline**



## THEORY OF CHANGE

**If** the demand for bird-friendly products from the Caribbean slope increases in both international and national markets;

**If** economic policies are harmonized and certification mechanisms, free trade agreements, and incentives that include environmental components are strengthened;

**If** agricultural and livestock practices are improved with a more sustainable approach focused on soil conservation, increased vegetation cover, and reduced use of agrochemicals;

**And if** the consumption of bird-friendly products increases;

**Then,** the adoption of good agricultural, agroforestry, silvopastoral, and forestry practices will increase.

**As a result,** agricultural and livestock production will be aligned with the conservation of resident and migratory birds, their habitats, and the rest of the biodiversity.

*Table 12. Strategic objectives and proposed activities for the Sustainable Production strategy.*

| Strategic SMART objectives | Activities |
|---|---|
| **O6.1** By 2028, at least 20% of producers in prioritized sites will implement good production practices focused on the conservation of conservation objects. (Same objective O1.3) | **A6.1.1** Build and strengthen local capacities for implementing regenerative agriculture practices, agroforestry, and silvopastoral systems. |
| | **A6.1.2** Create and strengthen networks of producers applying regenerative agriculture, agroforestry, and silvopastoral systems. |
| | **A6.1.3** Implement silvopastoral practices in corridors and pilot plots. |
| | **A6.1.4** Build and validate regional/international interinstitutional coordination mechanisms for applying incentives. |
| | **A6.1.5** Design an online platform for the practitioner community/ working group. |
| | **A6.1.6** Carry out territorial agreements and working groups between mining companies, communities, municipalities, and established and functioning stakeholder groups. |
| | **A6.1.7** Coordinate monitoring and follow-up actions for producers, restoration areas, and prioritized protected areas. |
| **O6.2** By the end of 2030, agreements will have been reached with producers and buyers to increase the demand for bird-friendly products in the Caribbean slope. | **A6.2.1** Develop consumer communication campaigns (US markets, millennials) and target decision-makers. |
| | **A6.2.2** Form alliances with market experts, certification companies, and bird conservation/observation organizations to identify buyers of green products. |
| | **A6.2.3** Negotiate and sign purchase agreements for green (bird-friendly) products with national and international buyers. |
| **O6.3** By 2030, each country on the Caribbean slope will have or be developing incentive policies for production compatible with the conservation of birds and biodiversity (cacao, forestry, cattle ranching, tourism). | **A6.3.1** Review policies and develop proposals for changes in regulations, laws, and policies for conservation objects. |
| | **A6.3.2** Organize visits, assemblies, and meetings with stakeholders and interest groups in conservation. |
| | **A6.3.3** Form intersectoral coalitions to conduct awareness and communication campaigns targeted at decision-makers. |
| **O6.4** By 2030, producers from at least two non-agricultural productive sectors will have transformed their practices to make them compatible with the conservation of birds and their habitats in at least 500,000 hectares of the Caribbean slope. | **A6.4.1** Strengthen established relationships with institutional partners, businesses, and key community leaders. |
| | **A6.4.2** Implement public-private forestry programs with forestry and mining companies on the Caribbean slope. |
| | **A6.4.3** Develop effective intersectoral dialogues and working sessions to make agreements for the implementation of the bird conservation strategy. |
| | **A6.4.4** Conduct exchanges for learning and sharing lessons (Model of the Petén forest concessions). |
| | **A6.4.5** Develop 20-year forest management plans in 12 pilot areas in key forested regions. |
| **O6.5** By the end of 2032, at least five bird-friendly products will be commercially available at both national and international levels, originating from the Caribbean slope. | **A6.5.1** Form alliances with certifiers/markets in Europe, Canada, and the United States to establish a program on the Caribbean slope (Timber, Floriculture, Cacao, Mining). |
| | **A6.5.2** Establish agreements with green and bird-friendly markets to first implement pilot programs. |

## STRATEGY 7

### 8.2.7 Creation and/or strengthening of indigenous, private, and national protected areas

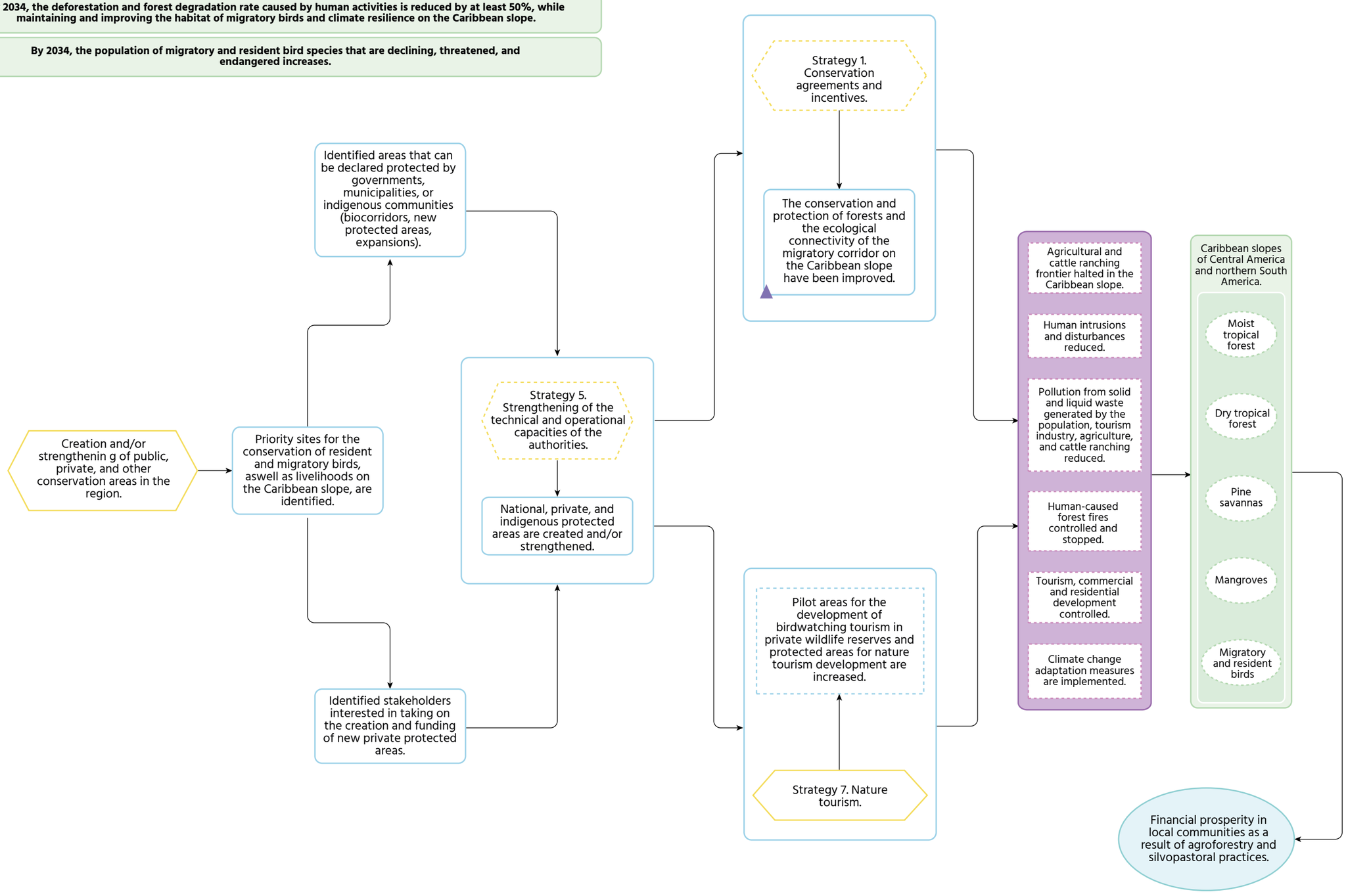
One of the most relevant strategies is the strengthening of existing protected areas on the Caribbean slope and voluntary conservation through private or indigenous protected areas. This strategy aims to create new protected areas while also strengthening existing ones. In this sense, it is linked to strategies 1, 3, 4, and 9, which focus on governance, strengthening local communities and institutions, and nature tourism. Furthermore, this strategy aligns with several other strategies.

*Results Chain 7. Creation and/or strengthening of indigenous, private, and national Protected Areas.*

**By 2034, 24 protected areas on the Caribbean slope are effectively managed and protected, ensuring the livelihoods of indigenous peoples and neighboring forest communities.**

**By 2034, the deforestation and forest degradation rate caused by human activities is reduced by at least 50%, while maintaining and improving the habitat of migratory birds and climate resilience on the Caribbean slope.**

**By 2034, the population of migratory and resident bird species that are declining, threatened, and endangered increases.**



## THEORY OF CHANGE

**If** awareness is raised among municipal actors, communities, and private landowners about their role in the network of private, municipal, and national reserves;

**If** existing protected areas are strengthened with trained staff and funding;

**And if** new priority sites important for birds are added to current protected areas and managed through various conservation mechanisms;

**Then,** the number of effectively protected sites on the Caribbean slope will increase with the creation and strengthening of new protected areas (public, private, or community-managed).

**As a result,** the conservation and protection of forests and ecological connectivity on the Caribbean slope will improve.

*Table 13. Strategic objectives and activities for the protected areas.*

| Strategic SMART objectives | Activities |
|---|---|
| **O7.1** By the end of 2028, the participation of municipalities, local communities, and private landowners in the management of protected areas and OECMs will have increased. | **A7.1.1** Integrate municipalities and local communities into the management councils of protected areas. |
| | **A7.1.2** Establish dialogue tables with private landowners to increase their involvement in protected areas through financial contributions or sustainable management of areas adjacent to protected areas. |
| | **A7.1.3** Promote the creation of municipal, community, and private protected areas or OECMs (shared action with objective O7.3). |
| **O7.2** By the end of 2028, 14 protected areas on the Caribbean slope will have been strengthened with enhanced capacities. | **A7.2.1** Develop or update management plans, including annual management plans for 14 priority protected areas. |
| | **A7.2.2** Conduct a diagnostic of technical, financial, and operational needs for priority areas, based on the management effectiveness index. |
| | **A7.2.3** Involve governments, municipalities, and non-conventional actors in financing uncovered needs to improve the management of protected areas. |
| | **A7.2.4** Implement a program to strengthen priority protected areas on the Caribbean slope in technical, financial, and operational areas, including management effectiveness assessments. |
| | **A7.2.5** Hire staff in priority sites for monitoring, surveillance, and enforcement of laws. |
| | **A7.2.6** Implement laws and regulations by judges and civil protection forces. |
| **O7.3** By the end of 2028, the corridor formed by protected areas on the Caribbean slope will have been strengthened with 500,000 hectares of protected areas or areas in the process of being established. | **A7.3.1** Establish the network of protected areas on the Caribbean slope and a regional work program with a focus on connectivity (in conjunction with O7.2). |
| | **A7.3.2** Promote the creation of new municipal, community, and private protected areas or OECMs (shared action with objective O7.1). |
| | **A7.3.3** Replicate activities 7.1.1 and 7.1.3 in new protected areas and potential OECMs. |
| | **A7.3.4** Map priority conservation sites on the Caribbean slope (see map of priority sites). |
| | **A7.3.5** Establish working groups with ministries, municipalities, and communities to review the status of protected and unprotected areas. |
| | **A7.3.6** Map areas to be expanded or created with the support of local communities through OECMs. |
| | **A7.3.7** Identify actors and/or organizations interested in taking on the creation and funding of new private protected areas. |
| | **A7.3.8** Create interinstitutional support for writing proposals for land acquisition for conservation purposes. |

# STRATEGY 8

## 8.2.8 Nature-based tourism

Nature tourism has proven to be a sustainable economic alternative that helps improve the living conditions of local communities. When managed properly, it can have a low impact on biodiversity and natural resources. Before the coronavirus pandemic in 2020, tourism was one of the pillars of economic development in many countries on the Caribbean slope. The region experienced an exponential increase in tourism, which accompanied growing prosperity in the population. However, tourism has been more developed on the Pacific coast than in the Caribbean.

This strategy aims to leverage local potential to promote development, reduce poverty, and generate positive distributive impacts. It also seeks to reduce the negative impacts of other activities on ecosystems and biodiversity in general.

*Results Chain 8. Nature-based Tourism.*

**By 2034, 24 protected areas on the Caribbean slope are effectively managed and protected, securing the livelihoods of indigenous peoples and surrounding forest communities.**

**By 2034, the rate of deforestation and forest degradation by human activities is reduced by at least 50%, maintaining and enhancing migratory bird habitat and climate resilience in the Caribbean slope.**

Nature tourism.

Government participation in nature tourism management processes is increased.

Ecotourism potential in indigenous and local communities of priority sites is identified.

Intersectoral tourism management committees are created and functioning, promoting nature tourism.

Links between intersectoral actors at the international, national, and local levels are strengthened.

Nature tourism plans (birdwatching and agrotourism) are incorporated into national and municipal agendas.

Financial investment is increased to improve services in key sites on the Caribbean slope.

Pilot areas for the development of birdwatching tourism in private wildlife reserves and protected areas for nature tourism development are increased.

National and local regulations that contribute to the development of nature tourism are established and promoted.

Indigenous and local communities are incentivized and empowered by nature tourism activities to protect bird habitats.

The birdwatching tourism value chain is developed in key destinations for the conservation of migratory and resident birds.

2 Obj

Strategy 2: Conservation agreements and incentives (ecological restoration and corridor recovery).

The conservation and protection of forests and the ecological connectivity of the migratory corridor on the Caribbean slope have been improved.

The economic and social benefits for indigenous and local communities in key sites for migratory bird conservation are increased.

Government institutions are protecting nature tourism destinations on the Caribbean slope.

Civil society and indigenous leaders assume and co-implement responsibilities and actions for the conservation of the Caribbean slopes.

Strategy 3. Empowerment of indigenous peoples, communities, and other stakeholders.

Threats are reduced through the promotion of nature tourism.

The expansion of the agricultural and cattle ranching frontier in priority areas decreases.

Uncontrolled tourism, commercial and residential development decreases.

Forest fires are controlled and reduced in the pine and dry forests of the Caribbean slope.

Human intrusions and disturbances decrease.

Caribbean slopes of Central America and northern South America.

- Moist tropical forest
- Dry tropical forest
- Pine savannas
- Mangroves
- Migratory and resident birds

## THEORY OF CHANGE

**If** tourism management committees are created with the participation of governments, municipalities, local communities, and the private sector;

**If** nature-based tourism plans are incorporated into national and municipal agendas, and national and local regulations are established for tourism development;

**And if** pilot areas for nature-based tourism development are created;

**Then,** the nature-based tourism value chain will be developed in key bird conservation destinations for resident and migratory birds.

**As a result,** social and economic benefits will increase in indigenous and local communities in key conservation sites for resident and migratory birds, improving the conservation and protection of forests and ecological connectivity on the Caribbean slope.

*Table 14. Objectives and suggested activities for the Nature-based Tourism strategy.*

| Strategic SMART objectives | Activities |
|---|---|
| **O8.1** By the end of 2028, nature-based tourism management on the Caribbean slope will have been incorporated into governments, municipalities, local communities, and the private sector. | **A8.1.1** Map areas with potential for tourism in each country. |
| | **A8.1.2** Strengthen nature-based tourism management capacities in local authorities, local communities, and the private sector in high-potential areas. |
| | **A8.1.3** Promote nature-based tourism management meetings with the participation of all involved sectors (national and local governments, private sector, and communities). |
| **O8.2** By 2028, nature-based tourism plans will have been developed in national and municipal agendas. | **A8.2.1** Create local and national nature-based tourism plans that include regulations and implementation mechanisms. |
| | **A8.2.2** Create mechanisms for enforcing national and local regulations included in tourism plans. |
| **O8.3** By 2030, implement nature-based tourism projects in pilot areas. | **A8.3.1** Sign cooperation agreements between various stakeholders in the nature-based tourism sector to support projects in pilot areas. |
| | **A8.3.2** Involve the private sector in meetings and activities related to ecotourism development in each country and regionally. |
| | **A8.3.3** Design the tourism product and implement its promotion. |
| | **A8.3.4** Promote capacity-building programs in the nature-based tourism sector aimed at local and indigenous communities, the private sector, and local governments (visitor reception and services, accommodation, food, guiding). |
| | **A8.3.5** Promote and encourage the certification market for green tourism products. |
| | **A8.3.6** Develop marketing plans for identified sites. |
| | **A8.3.7** Facilitate access to tourism services provided by local communities to national and international markets. |



# STRATEGY 9

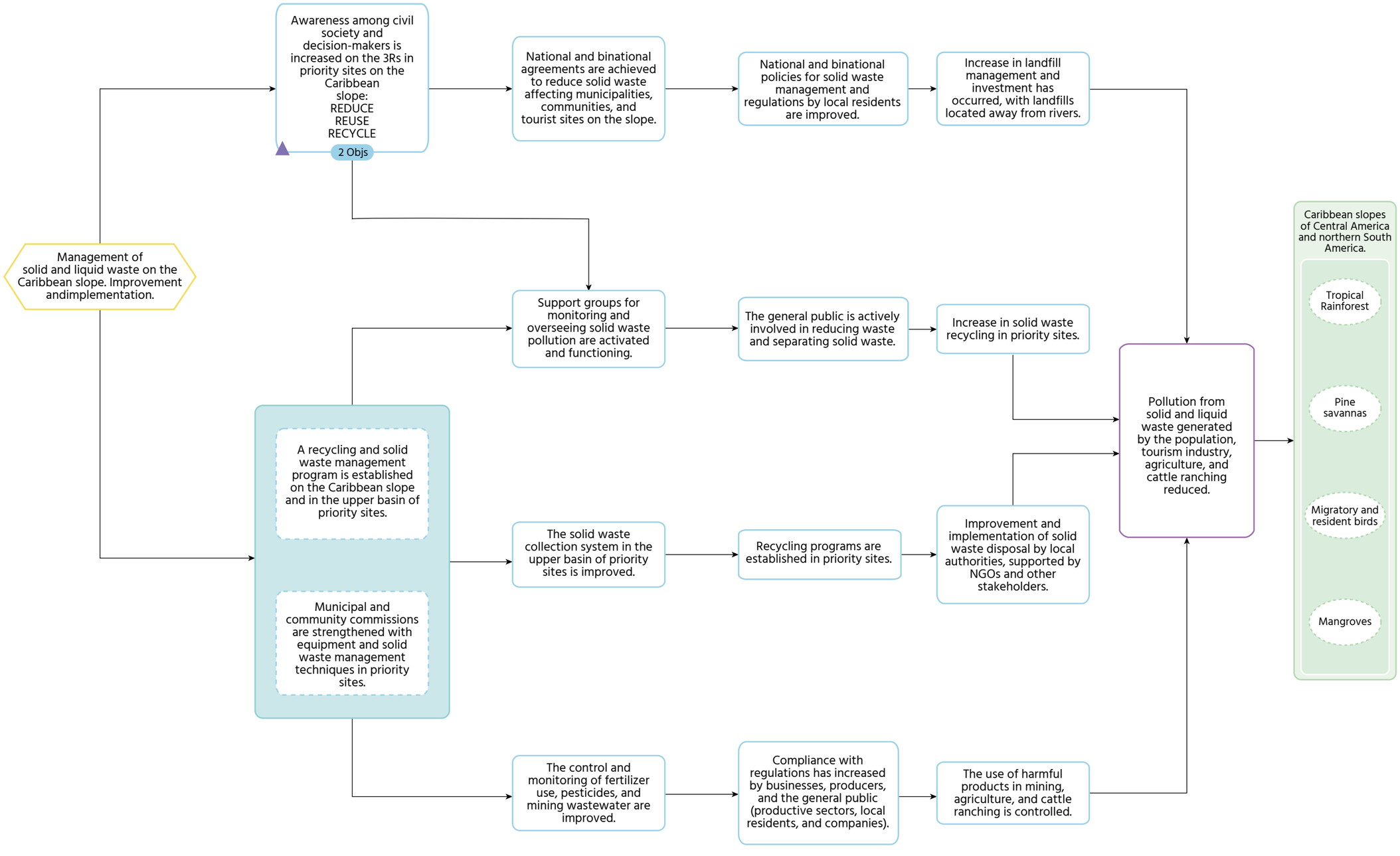
### 8.2.9 Solid and liquid waste management

Solid waste is a global issue. In the case of the Caribbean slope, waste originating from the highlands impacts the slope as it flows down to the coastal areas. During the development of this plan, it was identified that pollution in priority sites affects conservation objects such as mangroves and their associated biodiversity. The most notable case mentioned during the situational analysis was the Motagua River, whose impact originates 400 kilometers from its mouth in Honduras. This river flows through 80 municipalities, home to over five million people. Although the Motagua River was the most significant case of pollution on the slope, the problem of insufficient resources for solid and liquid waste collection and management is widespread across the region. This situation impacts water systems and the habitat of several species, including the priority migratory species, the Louisiana Waterthrush (*Parkesia motacilla*).

*Worm-eating Warbler (Helmitheros vermivorum).* **/ Jay Ondreicka**

*Result Chain 9. Solid and liquid waste management.*

**By 2034, interventions are made in established processes to reduce liquid and solid waste pollution in at least one watershed per country, primarily in the Motagua River basin.**



## THEORY OF CHANGE

**If** awareness is raised among civil society and decision-makers about the impact of improper solid and liquid waste management on human health, environmental quality, and biodiversity;

**If** pilot solid waste management plans are designed, established, and implemented in priority municipalities;

**And if** the intersectoral working group on the slope is supported;

**Then,** solid and liquid waste pollution on the Caribbean slope will decrease.

*Table 15. Objectives and suggested activities for the waste management strategy.*

| Strategic SMART objectives | Activities |
|---|---|
| **O9.1** By the end of 2028, civil society and decision-makers will have increased their knowledge about the solid waste issue and established recycling and solid waste programs on the Caribbean slope. | **A9.1.1** Establish baseline data on solid and liquid waste pollution, and the current management of solid and liquid waste in priority sites on the Caribbean slope and the upper watersheds of those sites. |
| | **A9.1.2** Conduct workshops on the impact of improper solid and liquid waste management on human health, environmental quality, and biodiversity in at least 5 priority municipalities on the Caribbean slope for decision-makers, authorities, and civil society. |
| | **A9.1.3** Establish multisectoral and participatory working groups for addressing solid waste management at the municipal level, to determine clear indicators and goals. |
| | **A9.1.4** Promote the technical improvement of policies and regulations on solid waste management at the municipal and national levels. |
| **O9.2** By the end of 2030, municipalities and civil society will be organized and actively participating in specific waste management plans. | **A9.2.1** Support municipalities in designing and implementing waste management plans tailored to their specific conditions. |
| | **A9.2.2** Follow up on support groups for monitoring and surveillance of pollution. |
| | **A9.2.3** Establish support groups for monitoring and controlling pollution. |
| **O9.3** Incorporate the topic of birds into the working groups on the Motagua River. | **A9.3.1** Join the existing working groups on the Motagua River. |
| | **A9.3.2** Advocate for the inclusion of migratory and resident birds of the Caribbean slope in the working groups. |
| | **A9.3.3** Support binational meetings between Guatemala and Honduras to assess the management of solid waste and its impact on priority sites. |



# IX. RISK ASSESSMENT

**For the implementation of this plan, potential risks have been identified. These risks are described in general terms, though their impact may vary by country.**

The main risks include political-administrative, technical, financial, and social factors. The most significant risks involve public policies that promote activities harmful to conservation, lack of political will from local authorities, insufficient funding, and the presence of illegal activities in key areas. Identified risks and their mitigation strategies are outlined below:

| Category | Risk | Risk Category | Mitigation |
|---|---|---|---|
| POLITICAL-ADMINISTRATIVE | Public policies favoring extractive activities (activities vary by country and include mining, agriculture, logging, among others). | HIGH | The approach depends on each country and the specific extractive activity being addressed. However, in general, mechanisms for engagement and support should be established through dialogues with governments to influence compliance with the law and support environmental regulation and control of these activities. Creating protected areas and developing appropriate management plans for existing ones is crucial, as is involving local communities and authorities in decision-making processes. |
| | Lack of political will from local authorities to implement the strategies outlined in the plan. | HIGH | It is important to ensure proper communication of the plan to authorities at all levels, from national to municipal. Additionally, involving these institutions in concrete strategies to empower them in the plan's activities directly (including recognizing their contributions to successful conservation outcomes) is essential. |
| | Government changes at both national and local levels, leading to shifts in interest regarding conservation-related issues. | MODERATE | Signed agreements should be established, and compliance with these agreements should be monitored. Moreover, empowering local leaders and community members is critical to ensuring the enforcement of these agreements.<br>Contact should be made with newly elected authorities to reaffirm their commitment to the plan's implementation. |
| | Lack of coordination between institutions from different countries involved in the implementation of strategies. | MODERATE | Permanent working groups should be established to monitor the strategies of this plan. Interinstitutional agreements and regional projects should also be established, involving institutions from the different countries. |

| Category | Risk | Risk Category | Mitigation |
|---|---|---|---|
| FINANCIAL | Lack of funding for the implementation of strategies, as well as for monitoring and evaluation phases. | HIGH | Involve all actors with the capacity to raise funding or redistribute income and profits to establish strategic alliances in order to generate the maximum number of resources. |
| | Challenges in ensuring the long-term sustainability of alternative economic activities, such as ecotourism. | MODERATE | This risk varies by country. The appropriate mitigation strategy would be the creation of public policies that incentivize these activities. In this regard, ongoing collaboration with local authorities is key. |
| SOCIAL - LEGAL | Land tenure complications that may cause conflicts between communities and/ or difficulties when implementing strategies. | MODERATE | Strategies to evaluate land tenure status (private or communal) in order to start appropriate legal actions in the project's area of influence. |
| | Lack of willingness from indigenous and non-indigenous communities, as well as other local actors, to implement the strategies of the plan. | MODERATE | Involve both indigenous and non-indigenous communities from the early stages in all decision-making processes. |
| | Presence of illegal activities in areas of interest, creating conflicts in the territory and land use change. | HIGH | This is a complex issue, similar to migration, human trafficking, and arms trafficking. These issues are deeply interconnected and are difficult to mitigate with this instrument. |



# X. BUDGET

**The Conservation Investment Strategy for the Birds of the Caribbean Slope of Mexico, Central America and Colombia follows the regional landscape vision, focusing on effective, data-driven planning to conserve migratory species and all related conservation objects.**

The estimated costs for implementing the strategies outlined in this plan are detailed in Table 16. These costs are estimated for two stages: from 1 to 5 years and from 5 to 10 years. They are approximate and should be reviewed annually, along with the indicators. If necessary, they should be adapted to the plan's evolving needs. Additionally, a Financial Sustainability Plan has been developed, outlining potential short- and medium-term funding sources (Annex 5).

The analysis reveals that restoration is more expensive than conservation, without factoring in the value of the species being lost in the process.

*Table 16. Estimated budget in USD for 1-5 years and 5-10 years for the implementation of the Conservation Investment Plan.*

| Budget by strategy | Years 1-5 | Years 5-10 | Total |
|---|---|---|---|
| Good environmental governance and law enforcement | 33,916.000 | 20,415.600 | 54,331.600 |
| Conservation agreements for ecological restoration and the recovery of corridors and connectivity in fragmented areas | 117,157.000 | 70,294.200 | 187,451.200 |
| Empowering indigenous peoples, communities, and others for co-management, control, and monitoring of protected areas and priority zones | 2,740.000 | 2,740.000 | 5,480.000 |
| Strengthening the technical, financial, and operational capacities of authorities at the local, national, and regional levels | 4,191.000 | 4,191.000 | 8,382.000 |
| Scientific research for decision-making | 5,042.000 | 5,042.000 | 10,084.000 |
| Sustainable production | 5,247.800 | 5,247.800 | 3,766.160 |
| Creation and/or strengthening of indigenous, private, and national protected areas | 12,036.000 | 7,221.600 | 19,257.600 |
| Nature-based Tourism | 9,223.000 | 9,223.000 | 18,446.000 |
| Solid and liquid waste management | 953.000 | 500.000 | 1,453.000 |
| **Total estimate at Year 5** | **190,505.800** | **123,511.200** | **314,017.000** |

La The estimated cost of implementing this conservation plan over 10 years across eight countries is $308 million. The first five years of the plan require an approximate budget of $190 million, which includes the costs of restoring at least 700,000 hectares with direct intervention. This cost may be lower and cover more territory if alternative strategies, such as natural restoration and protection, are utilized.

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*Canada Warbler (Cardellina canadiensis).*
**/ Salvadora Morales**



# ANNEXES

## Annex 1. Thematic areas and workshop participation framework

For the development of this plan, eight workshops were conducted in two phases: the first three to define priority sites and species, and the remaining five for the development of the conceptual model, result chain, implementation plan, and risk evaluation using the Open Standards for Conservation methodology (CMP, 2020).

The names of the members of the technical committee consulted and the workshop participants have been previously mentioned in the acknowledgments section of this plan.

The following table shows the list of workshops, their objectives, dates, and the number of participants:

| Phase | Workshop | Objective | Date | Number of participants |
|---|---|---|---|---|
| **Selection of priority species and sites** | **1.** Selection of priority species | Review pre-selected species and evaluate them using established prioritization criteria | January 20, 2022 | 24 members of the technical committee |
| | **2.** Selection of priority sites (Part 1) | Define priority species for the plan and establish criteria for selecting priority sites | January 25, 2022 | 24 members of the technical committee |
| | **3.** Selection of priority sites (Part 2) | Validate maps using the criteria established in the previous workshop | February 22, 2022 | 20 members of the technical committee |
| **Development of the plan using the Open Standards for Conservation methodology** | **1.** Project launch and identification of direct threats on the Caribbean slope | Present the process to local actors and stakeholders and identify the main threats | April 7, 2022 | 28 participants |
| | **2.** Development of conceptual model (Part 1) | Validate direct threats and identify contributing factors to build the conceptual model for the Caribbean slope | April 27, 2022 | 24 participants |
| | **3.** Development of conceptual model (Part 2) | Validate direct threats and identify contributing factors to build the conceptual model for the Caribbean slope | May 4, 2022 | 14 participants |
| | **4.** Creation of result chain (Part 1) | Build main strategies and activities based on the developed conceptual model | May 11, 2022 | 17 participants |
| | **5.** Creation of result chain (Part 2) | Build main strategies and activities based on the developed conceptual model. Risk assessment | July 13, 2022 | 18 participants |

| Phase | Workshop | Objective | Date | Number of participants |
|---|---|---|---|---|
| **Final validation workshop** | **1.** Presentation of the Plan and Technical Team | Validate the strategies, strategic objectives, and proposed activities as the final product of the strategy | July 9, 2024 | 33 participants |
| | **2.** Introduction and overview of the process | | | |
| | **3.** Presentation of strategies | | | |
| | **4.** Reflections on the projected implementation of the strategy | | | |



## Annex 2. Methodology for selecting priority species

The names of the experts consulted and selected as part of the technical committee for the development of this plan have been previously mentioned in the acknowledgments section.

Fourteen long-distance migratory bird species, distributed along the Caribbean slope, were proposed (Table 17). Three working subgroups were formed, and they applied the criteria to each species (Table 18). Then, the groups' results were aggregated, resulting in six prioritized species.

The proposed species were as follows:

*Table 17. Proposed species for the weighting exercise. (The selected species are highlighted in yellow).*

| Species | Scientific name | Weighting |
|---|---|---|
| Wood Thrush | *Hylocichla mustelina* | 28,9 |
| Prothonotary Warbler | *Protonaria citrea* | 28,3 |
| Louisiana Waterthrush | *Parkesia motacilla* | 28 |
| Worm-eating Warbler | *Helmitheros vermivorum* | 27,16666667 |
| Golden-winged Warbler | *Vermivora chrysoptera* | 27 |
| Chestnut-sided Warbler | *Setophaga pensylvanica* | 26,98571429 |
| Blue-winged Warbler | *Vermivora cyanoptera* | 26,66190476 |
| Gray Catbird | *Dumetella carolinensis* | 25,96666667 |
| Kentucky Warbler | *Geothlypis formosa* | 25,33333333 |
| Indigo Bunting | *Passerina cyanea* | 25,24285714 |
| Least Flycatcher | *Empidonax minimus* | 24,91666667 |
| Swainson's Warbler | *Limnothlypis swainsonii* | 22,36666667 |
| Ruby-throated Hummingbird | *Archilochus colubris* | 21,5 |
| Eastern Whip-poor-will | *Antrostomus vociferus* | 15,58333333 |

*Table 18. Criteria for prioritizing species.*

| CRITERIA | SUB-CRITERIA | VALUE | | | |
|---|---|---|---|---|---|
| | | **Value 1** | **Value 2** | **Value 3** | **Value 4** |
| **Criterion 3:** The management strategies necessary for the species' conservation can be successfully implemented within a 10-year timeframe, at the investment level projected in this exercise. | **3.1** General knowledge of the species. | There is sufficient knowledge of the species' general attributes (e.g., abundance, distribution, food/shelter needs, life stages, etc.) to inform management actions. | Limited knowledge of the species' general attributes. | There is little knowledge of the species' general attributes. | There is no knowledge of the species' general attributes. |
| | **3.2** Knowledge of the threats. | There is sufficient knowledge of the threats faced by the species for its conservation to inform management actions. | Limited knowledge of the threats faced by the species for its conservation to inform management actions. | There is little knowledge of the threats faced by the species for its conservation, making it difficult to inform management actions. | There is no knowledge of the threats faced by the species for its conservation, making it impossible to inform management actions. |
| | **3.3** Knowledge of the management actions that need to be taken. | There is sufficient knowledge of the management actions needed to make a meaningful impact on the species' conservation. | Limited knowledge of the management actions needed to make a meaningful impact on the species' conservation. | There is little knowledge of the management actions needed to significantly impact the species' conservation. | There is no knowledge of the management actions needed to significantly impact the species' conservation. |
| | **3.4** Capacity to reduce threats through the implementation of strategies. | The threats to the species can be minimized or addressed through the implementation of management actions at the anticipated level. | The threats to the species can be partially minimized or addressed through the implementation of management actions at the anticipated level. | The threats to the species can only be very partially minimized or addressed through the implementation of management actions at the anticipated level. | The threats to the species cannot be minimized or addressed through the implementation of management actions at the anticipated level. |
| **Criterion 4:** A measurable change in the conservation status of the species is likely to occur within ten years. | **4.1** Probability that the species' population status will respond favorably to conservation actions implemented within ten years. | Science shows that the species is likely to respond to improved habitat condition and function as a result of specific interventions within ten years. | Science shows that the species has a moderate probability of responding to improved habitat condition and function as a result of specific interventions within ten years. | Science shows that the species has a low probability of responding to improved habitat condition and function as a result of specific interventions within ten years. | Science shows that the species will not respond to improved habitat condition and function as a result of specific interventions within ten years. |
| | **4.2** Monitoring capacity to measure changes in the species. | There are sufficient monitoring activities to measure changes in the species within the timeframe of the Conservation Investment Strategy, or a monitoring framework can be designed to collect enough information. | Monitoring activities exist, although they may not be sufficient, to measure changes in the species within the timeframe of the Conservation Investment Strategy, or it seems unlikely that a framework can be designed to collect enough information. | There are very few monitoring activities to measure changes in the species within the timeframe of the Conservation Investment Strategy, making it unlikely to design a framework that would allow for the collection of sufficient information. | There are insufficient monitoring activities to measure changes in the species within the timeframe of the Conservation Investment Strategy, nor is it possible to design one that would allow for the collection of sufficient information. |
| **Criterion 5:** Likelihood of sustainable improvements in the species' conservation status over time. | No sub-criteria | It is likely that improvements in the species' conservation status will be sustainable in the near future, considering (a) the level of future threats and (b) the level of anticipated management activity. | There is some probability that improvements in the species' conservation status will be sustainable in the near future, considering (a) the level of future threats and (b) the level of anticipated management activity. | There is little probability that improvements in the species' conservation status will be sustainable in the near future, considering (a) the level of future threats and (b) the level of anticipated management activity. | There is no likelihood that improvements in the species' conservation status will be sustainable in the near future, considering (a) the level of future threats and (b) the level of anticipated management activity. |
| **Criterion 6:** Conservation benefits for other associated species or resident species. | No sub-criteria | Other species of interest are likely to benefit from actions aimed at this species. There is geographic overlap with other species of interest. | It is moderately likely that other species of interest will benefit from actions directed at this species. There is geographic overlap with other species of interest. | It is unlikely that other species of interest will benefit from actions directed at this species. There is geographic overlap with other species of interest. | There is no likelihood that other species of interest will benefit from actions directed at this species. There is geographic overlap with other species of interest. |
| **Criterion 7:** Interest of different stakeholders in working with the species. | No sub-criteria | Stakeholders have a high level of interest working for the conservation of the species. | Stakeholders have a moderate level of interest working for the conservation of the species | Stakeholders have a low level of interest working for the conservation of the species. | Stakeholders have no interest working for the conservation of the species. |

A similar exercise was carried out for resident species, where committee members proposed focal species based mainly on their global threat category according to the IUCN (Table 19). Three species are critically endangered, four species are endangered, and five species are vulnerable.

*Table 19. Resident species that would benefit from this plan. (1 indicates presence in the specified countries).*

*Great Curassow (Crax rubra).* **/ Petr Simon**

| Scientific name | UICN Status | Mexico | Belize | Guatemala | Honduras | Nicaragua | Costa Rica | Panama | Colombia |
|---|---|---|---|---|---|---|---|---|---|
| ***Ara ambiguus*** | **CR** | | | | 1 | 1 | 1 | 1 | 1 |
| ***Amazona auropalliata*** | **CR** | 1 | -- | -- | 1 | 1 | -- | -- | -- |
| ***Crax alberti*** | **CR** | -- | -- | -- | -- | -- | -- | -- | 1 |
| ***Laterallus jamaicencis*** | **EN** | 1 | 1 | 1 | 1 | -- | -- | -- | -- |
| ***Amazona oratrix*** | **EN** | 1 | 1 | 1 | 1 | -- | -- | -- | -- |
| ***Cephalopterus glabricollis*** | **EN** | -- | -- | -- | -- | -- | 1 | 1 | -- |
| ***Chrysuronia lilliae*** | **EN** | -- | -- | -- | -- | -- | -- | -- | 1 |
| ***Procnias tricarunculatus*** | **VU** | -- | -- | -- | 1 | 1 | 1 | 1 | -- |
| ***Crax rubra*** | **VU** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| ***Electron carinatum*** | **VU** | 1 | 1 | 1 | 1 | 1 | -- | -- | -- |
| ***Harpia harpyja*** | **VU** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| ***Agamia agami*** | **VU** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| ***Meleagris ocellata*** | **NT** | 1 | 1 | 1 | -- | -- | -- | -- | -- |
| ***Penelope purpurascens*** | **NT** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| ***Touit costaricencis*** | **NT** | -- | -- | -- | -- | -- | 1 | 1 | -- |
| ***Pyrilia pyrilia*** | **NT** | -- | -- | -- | -- | -- | -- | 1 | 1 |
| ***Scytalopus panamensis*** | **NT** | -- | -- | -- | -- | -- | -- | 1 | 1 |
| ***Xenornis setifrons*** | **NT** | -- | -- | -- | -- | -- | -- | 1 | -- |
| ***Ara macao*** | **LC** | -- | 1 | -- | -- | -- | -- | -- | -- |
| ***Falco deiroleucus*** | **NT** | 1 | 1 | -- | -- | -- | -- | 1 | -- |
| ***Morphnus guianensis*** | **NT** | -- | 1 | -- | -- | -- | -- | 1 | -- |
| ***Buteogallus solitarius*** | **NT** | 1 | 1 | -- | -- | -- | -- | 1 | -- |
| ***Egretta rufescens*** | **NT** | 1 | 1 | -- | -- | 1 | -- | -- | -- |
| | | **12** | **13** | **8** | **10** | **9** | **8** | **14** | **9** |

## Annex 3. Monitoring plan (with indicators)

This monitoring plan with indicators needs to include medium- and short-term indicators, as most of the current ones are high-level.

| SMART Objective | Indicators | Existing data | Means of verification | Frequency |
|---|---|---|---|---|
| **Strategy 1:** Good environmental governance and law enforcement. | | | | |
| **O1.1** By 2029, 40% of stakeholders in priority sites will coordinate their planning and actions across various inter-institutional levels, ensuring that migratory and resident birds are included in their agendas | # of stakeholders collaborating on migratory and resident bird conservation<br><br>% of stakeholders engaged compared to the aseline | Not available to date. It is necessary to map stakeholders and establish a baseline | Stakeholder mapping | At the start of the project and in 2027 |
| **O1.2** By 2029 the budget allocated for conservation and investment in projects for the preservation of resident and migratory birds on the Caribbean slope increases by 30% | % increase in budget and investment allocated to conservation projects for migratory and resident birds on the Caribbean slope | Not collected or systematized. Baselines need to be developed | Review of budget allocations for conservation actions on the Caribbean slope | At the start of the project and in 2028 |
| **O1.3** By 2028, at least 30% of producers in priority sites implement good productive practices focused on the integral conservation of birds and their habitats (same objective as O6.1) | % of producers in priority sites adopting sustainable production practices | Not available to date. It is necessary to map stakeholders and establish a baseline | Field surveys and implementation reports | At the start of the project and in 2028 |
| **O1.4.** By 2028, local actors coordinate and plan actions for forest restoration and the recovery of migratory and resident birds | # of coordinated planning efforts implemented in priority sites | Not available to date. A baseline needs to be established | Field surveys and implementation reports | At the start of the project and in 2028 |
| **O1.5.** By the end of 2032, governance mechanisms for monitoring and enforcing environmental laws are established in at least six priority areas identified in the plan | # of established and functional governance mechanisms in at least five priority areas | Partially. Systematization is required for all countries | Field surveys and implementation reports | t the start of the project and in 2032 |
| **Strategy 2:** Conservation agreements and incentives for ecological restoration and corridor recovery. | | | | |
| **O2.1** By the end of 2026, priority areas (focal sites), local stakeholders, and the legal status of land tenure on the Caribbean slope have been identified | # of priority areas (focal sites) identified (at least two per country) | None to date | Implementation report (area selection) | At the start of 2026 |
| | 1 stakeholder mapping per priority site | No, but data probably already exists for each specific area | Review of stakeholder mappings per priority site | In mid-2026 |
| | 1 land tenure analysis per priority site | No, but data probably already exists for each specific area | Review of land tenure analyses per priority site | At the end of 2026 |
| **O2.2** By the end of 2028, agreements and the involvement of key stakeholders are achieved in 24 pilot sites across six countries on the Caribbean slope | # of agreements established per pilot site | No, until agreements are developed | Inventory of agreements | At the end of 2027 |
| **O2.3** By the end of 2028 at least 12 new regional research projects have been developed to improve knowledge of the current status of conservation objects in an equal number of priority areas (shared objective with Strategy 5) | # of research projects focused on the status of conservation targets | No, until agreements are developed | Project inventory | At the end of 2026 |
| | 1 species occupancy analysis conducted in sampled sites. | No data available | Bird counts | Biannual |

| SMART Objective | Indicators | Existing data | Means of verification | Frequency |
|---|---|---|---|---|
| **O2.4** By the end of 2027, legal and technical capacities within environmental institutions, local authorities, and implementers have been enhanced to execute reforestation and restoration actions | # of institutions scoring at least 80% on the capacity "scorecard" (at least 2 per priority area) | Design of the capacity "scorecard" | Capacity scorecard | Annually |
| **O2.5** By the end of 2028, between 50 and 1000 decision-makers at local and national levels across six countries support conservation, reforestation, and restoration initiatives for the Caribbean slope | # of decision-makers integrating conservation, reforestation, and restoration initiatives into their plans | No | Survey | Annually |
| **O2.6** By the end of 2029, financing mechanisms for restoring and recovering corridors in focal sites on the Caribbean slope have been established and become operational | # of financing mechanisms created and focused on migratory and resident birds on the Caribbean slope (at least 1 per country and 1 regional) | No | Inventory of mechanisms by country and at the regional level | In 2027 and at the end of 2029 |
| **O2.7** By the end of 2034, key corridors and connectivity areas on the Atlantic slope have expanded through the implementation of agroforestry and silvopastoral practices | # of corridors established through the implementation of agroforestry and silvopastoral practices | No | Implementation reports | Annually |
| | # of hectares covered by corridors | No | Implementation reports and geographic information | Annually |
| **O2.8** By the end of 2034, priority protected areas on the Caribbean slope have effective staffing and protection measures in place | # of priority protected areas scoring at least 80% on the management effectiveness index | Develop a baseline | Management effectiveness tool | Annually |
| **O2.9.** By the end of 2034, at least 10% of hectares of degraded areas in key and priority corridors have been restored | # hectares restored | No | Implementation reports and geodata | Annually |
| **Strategy 3:** Empowerment of indigenous peoples, local communities, and Afro-descendant groups. | | | | |
| **O3.1** By 2028, 25% of local stakeholders per country in priority sites along the Caribbean slope have improved their administrative and reporting capacities | # of institutions scoring at least 80% on the capacity scorecard (at least 2 per priority area) | No.<br>Develop baseline. Design the capacity scorecard | Capacity scorecard designed. | Annually |
| | # of individuals from key institutions improving their management and accountability capacities | Develop baseline | Pre-/Post-test | Annually |
| **O3.2** By early 2029, public awareness and commitment to protecting forests and birds on the Caribbean slope has significantly increased | # of people reporting increased knowledge about birds on the Caribbean slope and their habitats | Develop baseline | Survey | In 2027 and at the end of 2029 |
| **O3.3** By the end of 2034, 100 000 stakeholders are actively engaged in the management, stewardship, and conservation of forests on the Caribbean slope | # of individuals and communities involved in bird conservation initiatives on the Caribbean slope and their habitats | No.<br>Develop baseline | Surveys and systematization of participating organizations and individuals | Annually |

| SMART Objective | Indicators | Existing data | Means of verification | Frequency |
|---|---|---|---|---|
| **Strategy 4:** Enhancing the technical, financial, and operational capacities of authorities at local, national, and regional levels. | | | | |
| **O4.1** By 2027, at least 10% of public officials and decision-makers have deepened their understanding of the environmental challenges and the status of migratory and resident birds on the Caribbean slope | # of officials and decision-makers who have improved their knowledge about migratory and resident birds on the Caribbean slope | No | Pre-Post-test | Annually |
| **O4.2** By 2028, budget allocations for conservation actions and protected areas on the Caribbean slope have increased by at least 80% | % increase in budget allocation | Yes, to be collected | Management effectiveness tool | At the start of the project and in 2028 |
| | % of financial needs covered | Yes, to be collected | Management effectiveness tool | Annually |
| | % increase in staff | Yes, to be collected | Management effectiveness tool | Annually |
| **O4.3** By the end of 2028, government officials and institutions have strengthened their capacities for managing and protecting protected areas, implementing restoration actions, and have been equipped to achieve these goals | # of officials who have strengthened their capacities | No | Pre-Post-test | Annually |
| | # of institutions that have enhanced their implementation capacities | No.<br>Develop baseline. Design of the capacity scorecard | Capacity Scorecard | Biannually |
| **O4.4** By the end of 2032, the governments of Caribbean slope countries are more actively engaged in actions to conserve migratory and resident birds and their habitats on the Caribbean slope | # of countries that have increased specific actions for the conservation of migratory and resident birds on the Caribbean slope | Yes, collect | Number of state-led initiatives for bird conservation on the Caribbean slope | Biannually |
| **Estrategia 5:** Scientific research to inform decision-making. | | | | |
| **O5.1** By the end of 2027, scientific researchers have articulated monitoring and research networks in conjunction with academia, state institutions, local communities and NGOs | # of research networks (at least one per country) | Partially in local stakeholders | Consultation with local stakeholders | At the end of 2026 |
| **O5.2** By early 2026, baselines are mapped and created to determine the abundance of conservation targets and areas subject to restoration | # of priority areas identified (two per country)<br># of stakeholder maps for priority sites<br># of situational analysis studies in priority sites | No | Implementation report<br>Review of stakeholder mapping and analysis documents | At the end of 2026 |
| **O5.3** By the end of 2028, have implemented and increased the contribution of information through citizen science actions and the use of tools such as eBird | # of people receiving training<br># of people participating in events<br># of bird lists in eBird | Existing, but starting from a baseline of 0<br>(knowledge generated as a result of this strategy) | Report | Annually |
| **O5.4**<br>(Objective shared with strategy 2) | See strategy 2 | | | |

| SMART Objective | Indicators | Existing data | Means of verification | Frequency |
|---|---|---|---|---|
| **O5.5** By the end of 2028, knowledge of the status of the landscape and migratory and resident birds in the Caribbean slope has been generated and published | # of publications on the state of the landscape and migratory and resident birds in the Caribbean slope | Existing, but starting from a baseline of 0 (knowledge generated as a result of this strategy) | Count of research reports and publications | At the end of 2028 |
| **O5.6** By the end of 2030, management decisions are based on scientific information | # of initiatives (PA management plans, POAs) that have used newly generated information in their management decisions | Existing, but starting from a baseline of 0 (result of this strategy) | Review of new management plans and POAs | Biannually |
| **Strategy 6:** Bird-friendly sustainable production. | | | | |
| **O6.1** By 2028, at least 20% of producers in prioritized sites will implement good production practices focused on the conservation of conservation objects (same as objective O1.3) | % of producers in priority sites implementing sustainable productive practices | % of producers in priority sites implementing sustainable productive practices | No. Map stakeholders and develop baseline | Annually |
| **O6.2** By the end of 2027, agreements will have been reached with producers and buyers to increase the demand for bird-friendly products in the Caribbean slope | # of agreements | No | # of agreements with producers and buyers | At the end of 2027 |
| **O6.3** By 2030, each country on the Caribbean slope will have or be developing incentive policies for production compatible with the conservation of birds and biodiversity (cacao, forestry, cattle ranching, tourism) | # of countries that have developed or are developing an incentive policy | Yes, partially (for countries that have them) | Progress report | Biannual |
| **O6.4** By 2030, producers from at least two non-agricultural productive sectors will have transformed their practices to make them compatible with the conservation of birds and their habitats in at least 500,000 hectares of the Caribbean slope | # of producers who have transformed their practices | No | Progress report from implementers | Biannual |
| | # of hectares under compatible practices | No | Progress report from implementers | Biannual |
| **O6.5** By the end of 2027, at least five bird-friendly products will be commercially available at both national and international levels, originating from the Caribbean slope | # of eco-friendly products from the Caribbean slope successfully marketed | No | Progress report from implementers | End 2027 |
| **Strategy 7:** Creation and management of protected areas. | | | | |
| **O7.1.** By the end of 2028, the participation of municipalities, local communities, and private landowners in the management of protected areas and OECMs will have increased | # of municipalities participating in Protected Area or OECM management councils | Yes, partially (missing for all countries) | Review of governance mechanisms of protected areas or OECMs | At the start of the project and in 2028 |
| | # of community associations participating in Protected Area or OECM councils | Yes, partially (missing for all countries) | Review of governance mechanisms of protected areas or OECMs | At the start of the project and in 2028 |
| | # of private landowners participating in PA or OECM management councils | Yes, partially (still needed for all countries) | Review of governance mechanisms for protected areas or OECMs | At the start of the project and in 2028 |
| | # of PA and OECM management councils with participation from municipalities, community associations, and private landowners | Yes, partially (still needed for all countries) | Review of governance mechanisms for protected areas or OECMs | Biannually |

| SMART Objective | Indicators | Existing data | Means of verification | Frequency |
|---|---|---|---|---|
| **O7.2** By the end of 2028, 12 protected areas on the Caribbean slope will have been strengthened with enhanced capacities | # of Protected Areas whose staff meet at least 80% of management needs | Yes, partially (for some protected areas) | Management effectiveness tool | Biannually |
| | # of Protected Areas whose facilities cover at least 80% of management needs | Yes, partially (for some protected areas) | Report / memories | Biannually |
| | # of Protected Areas whose equipment meets at least 80% of management needs | Yes, partially (for some protected areas) | Report | Biannually |
| **O7.3** By the end of 2028, the corridor formed by protected areas on the Caribbean slope will have been strengthened with 500,000 hectares of protected areas or areas in the process of being established | # of corridors established through the implementation of agroforestry and silvopastoral practices | Number of corridors established through the implementation of agroforestry and silvopastoral practices | No | Annually |
| | # of hectares covered by corridors | Area covered by corridors (# ha) | No | Annually |
| **Strategy 8:** Nature-based tourism. | | | | |
| **08.1** By the end of 2028, nature-based tourism management on the Caribbean slope will have been incorporated into governments, municipalities, local communities, and the private sector | # of municipalities that have developed a tourism development plan with the participation of the central government, local communities, and the private sector | No, baseline development | Review of initiatives by municipality | At the end of 2028 |
| | Same as O9.1 | No, baseline development | Review of initiatives by municipality | Biannually |
| **08.2** By 2028, nature-based tourism plans will have been developed in national and municipal agendas | # of pilot projects related to nature tourism | No, until pilot projects are developed as a result of this initiative | # of pilot projects | Biannually |
| **08.3** By 2030, implement nature-based tourism projects in pilot areas | # of pilot projects related to nature tourism | No, until pilot projects are developed as a result of this initiative | # of pilot projects | Biannually |
| **Strategy 9:** Solid and liquid waste management. | | | | |
| **09.1** By the end of 2028, civil society and decision-makers will have increased their knowledge about the solid waste issue and established recycling and solid waste programs on the Caribbean slope | # of decision-makers participating in solid and liquid waste management initiatives<br># of individuals (general public) aware of the impact of solid and liquid waste on ecosystems, human health, and biodiversity | No.<br>Develop baseline | Survey of a representative sample | At the start of the project and in 2028 |
| **O9.2** By the end of 2030, municipalities and civil society will be organized and actively participating in specific waste management plans | # of waste management plans developed and implemented by municipalities with civil society participation | No | Review of initiatives by municipality | Biannually |
| **O9.3** Incorporate the topic of birds into the working groups on the Motagua River | Specific working group on the conservation of coastal-marine ecosystems and associated biodiversity at the mouth of the Motagua River | No, until involvement in the working group(s) | Participation reports/minutes | Annually |

# Annex 4. Financial Sustainability Plan

## General framework of the strategy for financial sustainability

The objective of the Financial Sustainability Plan is to provide potential options for supporting fundraising efforts that sustain the implementation of identified strategies and actions. Conservation financing is defined as mechanisms and strategies that generate, manage, and deploy financial resources while aligning incentives to achieve nature conservation outcomes (Mayer et al., 2020). It can also be understood as the ability to maintain a sufficient cash flow for core capacities, implement strategic plans in a reasonably timely manner, and invest adequately in opening new revenue streams to withstand the loss of one or more existing income sources (Parker J., 2018).

The investment plan for the conservation of terrestrial migratory birds on the Caribbean slopes identified key threats and strategies requiring action over the next ten years. Reducing threats and increasing habitat for migratory birds and biodiversity in general will require multiple and complementary strategies. The primary threats identified include: 1) agriculture and cattle ranching, 2) forest fires, 3) climate change, 4) energy and mining, 5) tourism development, 6) pollution, and 7) human disturbances. To mitigate these threats, eight strategies have been identified and prioritized. Many of these strategies are interconnected and mutually reinforcing. The identified strategies are as follows:

1. **Good environmental governance and law enforcement.**
2. **Conservation agreements and incentives for ecological restoration and corridor recovery.**
3. **Empowerment of indigenous peoples, local communities, and Afro-descendant groups.**
4. **Institutional strengthening.**
5. **Scientific research.**
6. **Sustainable production.**
7. **Creation and/or strengthening of indigenous, private, and national protected areas.**
8. **Nature-based Tourism.**
9. **Solid and liquid waste management.**

A budget of $308,650,000 (three hundred eight million six hundred fifty thousand dollars) was estimated for investment across the various strategies, with specific actions identified for each strategy.

According to León (2001), achieving financial sustainability relies on four key pillars: 1) Financial and strategic planning, which must be a dynamic and adaptable document subject to mid-term evaluation; 2) Income diversification, where the plan should include several revenue streams, with best practices suggesting that at least 60% of the budget should come from five different sources; 3) Sound financial management, producing clear financial statements that reflect the financial situation and investment in the area; and 4) Generation of self-sustained income through various sources.

In the specific context of the Caribbean slope, where multiple stakeholders are involved at the territorial level, the scenario is more complex and demands amplified efforts through international, national, and local partnerships. It also requires integrating private and public sector initiatives not only nationally but regionally, while actively involving civil society.

A necessary step toward ensuring the financial sustainability of the plan would be the creation of a coalition of organizations or a donor roundtable with influence in the region. This platform would facilitate the organization, alignment, and pooling of technical and financial resources, as well as collaborative efforts to address the multiple threats identified in the region and implement the proposed strategies over a 10-year period. Key elements identified include:

- **Involvement of the executive and legislative branches of government to harmonize economic plans and policies while implementing strategies that work with nature rather than against it. Achieving this requires a communication campaign, including informational materials aimed at authorities and policymakers about the investment plan and financial strategies.**
- **Participation of local stakeholders, Indigenous peoples, and forest communities embracing initiatives and projects by channeling actions within their territories.**
- **National and local organizations equipped with an administrative-accounting system and a transparent accountability process. Accountability fosters citizen participation and ongoing social oversight in matters of public interest, such as conserving natural resources and environmental services.**
- **Harmonization of efforts across Central America, Mexico, and Colombia. Existing initiatives like the Central American Integration System (SICA) and the Central American Commission for Environment and Development (CCAD) can serve as vital platforms for channeling financial resources.**
- **Coherence between international policies and economic incentives from developed countries directed toward investors and producers (mining, cattle ranching), whose activities indirectly drive deforestation and pollution on the Caribbean slope through consumer demand.**

One of the unique characteristics of the Caribbean slope is that it generally consists of remote areas where governments struggle to maintain an active presence. Achieving sustainability in these regions requires stable, long-term financing and an integrated development policy—elements currently lacking in the countries involved, which face high levels of poverty, inequality, and social inequity.

Projects rooted in the reality of the territory and aligned with the strategies should be promoted, including:

- **Payment for Environmental Services (PES):** Establish, promote, and strengthen a state-sponsored PES program in countries that do not yet have an operational system, such as Honduras, Nicaragua, Belize, Panama, and Colombia. This PES program can be funded from various sources, including the mining sector, which should contribute to restoring exploration and extraction sites. The mining industry's water consumption is significant, as are its pollution impacts. Another potential contributor is the industrial-scale forestry secto.
- **Mitigation Initiatives:** Each country has made commitments to reduce greenhouse gas emissions. This presents an opportunity to align climate change adaptation and mitigation strategies with the conservation of long-distance migratory birds. An outstanding issue is the collection and analysis of the Caribbean slope's potential for carbon sequestration and climate mitigation. Developing related actions could open new opportunities through climate financing. For example, in Colombia, the estimated cost is approximately $1.46 per ton of $CO^2$.
- **Conservation Projects:** Many donors include conservation and development projects in their funding priorities. Proposal development remains one of the most commonly used strategies by non-governmental organizations (NGOs).
- **Crowdfunding:** This involves raising small amounts of capital from a large number of people to fund a project or business. It can be a valuable option when combined with environmental education campaigns and related activities.

The main potential funding sources identified include the following:

*Table 20. Potential funding sources.*

| Funding sources | Examples | Who has access | Advantages | Disadvantages | Strategies |
|---|---|---|---|---|---|
| Public funds<br>National government budget | National Budget (Forestry Funds, Payments for Environmental Services, FONAFIFO) | Central government, Indigenous territorial authorities, local or community associations, NGOs, universities | Budgets are institutionalized<br><br>National economic and environmental policies are harmonized<br><br>Inter-institutional coordination is enabled | Political instability<br><br>Resource allocation is subject to political influence<br><br>Plans may be designed without alignment to real needs and local contexts | 1, 2, 3, 4, 5, 6, 7 |
| | Debt swaps | | | | |
| | International cooperation agreements | | | | |
| | REDD+ | | | | |
| | Public trusts | | | | |
| Direct-access international cooperation funds | **Neotropical Migratory Bird Conservation Act** https://www.fws.gov/law/neotropical-migratory-bird-conservation-act<br><br>**The International Climate Initiative** (IKI) https://www.international-climate-initiative.com/en/<br><br>**Department for Environment Food and Rural Affairs (DEFRA)** https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs<br><br>**GEF** https://www.environmentalgrants.org/donor-profile-global-environment-facility-gef/<br><br>**Canada Nature Fund** https://www.canada.ca/en/environment-climate-change/services/nature-legacy/fund.html<br><br>**Environment and Climate Change Canada** https://www.canada.ca/en/environment-climate-change.html | Local NGOs, grassroots organizations | Do not require state-level approval or application | Require 2:1 matching funds, which are challenging to secure | 1, 2, 3, 4, 5, 6, 7, 8 |
| Greend fund | **Green Climate Fund** https://www.greenclimate.fund/ | Accredited agencies (GIZ, Banks, UNEP) | Opportunities for restoration projects, carbon credit sales, and avoided deforestation | Strong administrative capacities are required<br><br>Small organizations are ineligible to apply | 3, 5, 6 |
| Private donors | There are several options in this category, such as:<br>**Betty and Gordon Moore Foundation** https://www.moore.org/<br><br>**Cargill** (by invitation) https://www.cargill.com/<br><br>**Climate and Land Use Alliance** (con invitación) https://www.climateandlandusealliance.org/ | Local NGOs, grassroots organizations | They can contribute to innovative strategies and even support baseline development | Generally, these are small funds | 1, 2, 3, 4, 5, 6, 7, 8 |
| Partnerships with large corporations | Potential restoration projects<br><br>Compensation funds for water use and pollution<br><br>First Quantum Minerals, Bluestone Resources, Solway Investment Group, Condor Gold, Goldcorp. Coca-Cola, Domtar, Megabank HSBC, Chevron, ExxonMobil, Goldman Sachs, Monsanto, Nestle, Shell, United Airlines, BP, Cargill, Delta Air Lines, Dow Chemical, General Mills, Goldman Sachs, Newmont Mining, PepsiCo, Bank of America, Wal-Mart, Amazon, Netflix | International and local NGOs | Redirect restoration projects toward the conservation of migratory birds | They can generate controversies related to greenwashing | 1, 2, 3, 4, 5, 6, 7, 8 |

## Annex 5. Protected Areas in Priority Sites on the Caribbean Slope

| | |
|---|---|
| **Mexico** | • Anillo de Cenotes Geohydrological State Reserve<br>• Sian Kaán Biosphere Reserve<br>• Biocultura Puuc State Reserve<br>• Calakmul Biosphere Reserve |
| **Guatemala** | • El Mirador National Park<br>• Naachtún- Dos Lagunas Protected Biotope<br>• Maya Biosphere Reserve<br>• Cerro San Gil<br>• Punta de Manrique<br>• Bocas de Polochic |
| **Belize** | • Río Bravo Conservation Area<br>• Crookea Tree Wildlife Sanctuary<br>• Cockscomb Basin Forest Reserve<br>• Deep River Forest Reserve<br>• Columbia Forest Reserve<br>• Sierra de las Minas National Park<br>• Rio Cerro Azul |
| **Honduras** | • Capiro y Calentura National Park<br>• Pico Bonito National Park<br>• Patuca National Park<br>• Río Plátano Biosphere Reserve |
| **Nicaragua** | • Bosawas Nature Reserve<br>• Pinares de Bilwi - Waspam<br>• Río San Juan Biosphere Reserve<br>• Cayos Miskitos Biological Reserve |
| **Costa Rica** | • Barra del Colorado Wildlife Refuge Center<br>• Tortuguero National Park<br>• Pacuare Nature Reserve<br>• Cahuita National Park<br>• Gandoca-Manzanillo National Refuge |
| **Panama** | • La Amistad International Park<br>• Damani Guariviara Ramsar site<br>• Santa Fe National Park<br>• División Omar Torrijos Herrera National Park<br>• Chagres National Park<br>• Portobelo National Park<br>• Narganá Wildlife Protected Area<br>• Darién National Park |
| **Colombia** | • Sanguaré National Park<br>• El Corchal Wildlife Sanctuary |



## Annex 6. Cover and deforestation data for humid forests, pine forests, and mangroves on the Caribbean slope.

*Table 21. Loss of primary humid forest habitat on the Caribbean slope.*

| Department / country | Total forest lost by 2010 | Loss 2001-2023 | Lost (%) | Diminished (%) |
|---|---|---|---|---|
| **Mexico** | 10,740.000 | 868.000 | -- | -- |
| Yucatán | 2,610.000 | 522.000 | 69 | 18 |
| Campeche | 4,410.000 | 261.000 | 77 | 29 |
| Quintana Roo | 3,720.000 | 111.000 | 85 | 19 |
| **MX Caribbean Slope** | **10,740.000** | **894.00** | **231** | **66** |
| **Belize** | 1,730.000 | 148.000 | -- | -- |
| **Guatemala** | 6,910.000 | 572.000 | -- | -- |
| Izabal | 610.000 | 68.300 | 38 | -- |
| Peten | 2,480.000 | 390.000 | 39 | 24 |
| **GT Caribbean Slope** | **3,090.000** | **458.300** | **77** | **24** |
| **Honduras** | 7,180.000 | 514.000 | -- | -- |
| Gracias a Dios | 1,170.000 | 88.700 | 26 | 8 |
| Colón | 625.000 | 108.000 | 56 | 28 |
| Atlántida | 303.000 | 17.500 | 55 | 28 |
| Cortes | 248.000 | 3660 | 16 | 21 |
| Olancho | 1,760.000 | 255.000 | 55 | 36 |
| Yoro | 507.000 | 15.700 | 30 | 11 |
| **HN Caribbean Slope** | **4,613.000** | **488.560** | **238** | **132** |
| **Nicaragua** | 7,600.000 | 650.000 | -- | -- |
| Atlántico Norte | 2,420.000 | 349.000 | 47 | 36 |
| Atlántico Sur | 1,750.000 | 104.000 | 18 | 32 |
| Rio San Juan | 512.000 | 102.000 | 57 | 48 |
| El Cuá, Jinotega | 431.000 | 66.100 | 67 | 22 |
| Wiwilí Jinotega | 207.000 | 23.100 | 51 | 26 |
| **NI Caribbean Slope** | **5,320.000** | **644.200** | **240** | **164** |
| **Costa Rica** | 3,730.000 | 29.800 | -- | -- |
| Limón | 806.000 | 12.700 | 23 | 2,4 |
| **CR Caribbean Slope** | **806,000.00** | **12,700.00** | **23** | **2,4** |
| **Panama** | 5.460,000 | 92.700 | -- | -- |

| Department / country | Total forest lost by 2010 | Loss 2001-2023 | Lost (%) | Diminished (%) |
|---|---|---|---|---|
| Bocas del Toro | 440.000 | 9.600 | -- | -- |
| Kankitú | 228.000 | 7.060 | 40 | 5,4 |
| Kusapín | 151.000 | 5.550 | 44 | 5,6 |
| Santa Fe (Veraguas) | 179.000 | 4.075 | 49 | 2,9 |
| Colón | 162.000 | 9.670 | 38 | 10 |
| Chagres | 36.900 | 1.210 | 1,7 | 12 |
| Colón, Colón | 98.100 | 4.160 | 5 | 1,3 |
| Santa Isabel | 60.400 | 7.450 | 20 | 2,1 |
| Guna Yala | 246.000 | 951 | 16 | 0,5 |
| Cémaco | 287.000 | 2.970 | -- | -- |
| Pinogana | 446.000 | 7.800 | -- | -- |
| **PN Caribbean Slope** | **2,334.400** | **60.496** | **213,7** | **39.8** |
| **Colombia** | 5,460.000 | 92.700 | -- | -- |
| Acandí | 71.700 | 1.560 | 21 | 3,6 |
| Unguía, Chocó | 94.200 | 2.750 | 18 | 11 |
| Turbo | 265.000 | 1.750 | 7 | 7,2 |
| Antioquia | 82.600 | 62 | 0,5 | 1,9 |
| San Juan de Urubá | 22.600 | 2.480 | -- | -- |
| Magdalena | 804.000 | 6.200 | 4,3 | 3,4 |
| Atlántico | 96.800 | 706 | 5,3 | 11 |
| Cartagena | 22.600 | 113 | 3,2 | 5,3 |
| San Onofre | 4.900 | 326 | 2,7 | 6,9 |
| San Bernardo del Viento | 14.800 | 64 | 17 | 1,4 |
| Moñitos | 12.900 | 1 | 1 | 2,4 |
| Puerto Escondido | 18.800 | 2.770 | 19 | -- |
| **CO Caribbean Slope** | **1,510.900** | **18.782** | **99** | **54,1** |
| **Hectares of mangroves on the Caribbean slope** | | | | |
| Mexico | 567.009 | -- | -- | -- |
| Belize | 50.479 | -- | -- | -- |
| Guatemala | 846 | -- | -- | -- |
| Honduras | 23.999 | -- | -- | -- |
| Nicaragua | 36.525 | -- | -- | -- |
| Costa Rica | 79,20 | -- | -- | -- |
| Panama | 7.312 | -- | -- | -- |
| Colombia | 80.030 | -- | -- | -- |
| **Total** | **766,279.20** | -- | -- | -- |



| Department / country | Total forest lost by 2010 | Loss 2001-2023 | Lost (%) | Diminished (%) |
|---|---|---|---|---|
| **Nicaragua Pine Forests** | **443.134** | -- | -- | -- |
| RAAS | 24.215 | -- | -- | -- |
| RAAN | 418.919 | -- | -- | -- |
| **Honduras Pine Forests** | **390.071** | -- | | |
| Gracias a Dios | 211.421 | -- | -- | -- |
| Olancho (20%) | 178.650 | -- | -- | -- |
| **Total** | **833.205** | -- | -- | -- |

**Source:** Global Forest Watch Platform.

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