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SHORT SUMMARY

UNESCO designated sites



UNESCO designated sites—Biosphere Reserves, World Heritage Sites, and Global Geoparks—are global, inter-governmental site-based tools recognizing the importance of natural areas of significance for all humanity. Each of these designations has its own specific profile and focus, but they all share the overall goal of ensuring the appropriate management and conservation of these cherished natural areas. Biosphere reserves promote the harmonious co-existence of people with their environment. World Heritage sites protect the most emblematic cultural and natural areas on Earth. Global Geoparks safeguard our geological heritage in line with sustainable development.

In Latin America and the Caribbean, one of the world's richest regions in terrestrial and marine biodiversity, UNESCO designated sites represent about 10% of its land surface and coastal waters and harbour over 60% of the region's mapped species richness.

In other words, over 14,000 species of mammals, reptiles, fishes, amphibians, and birds are found in 299 sites of the region. These sites, where over 130 million people live, cover all 11 biomes of the region and over 150 ecosystems. They actively contribute to the conservation of over half of Latin America and the Caribbean's threatened species, as well as thousands of endemic and iconic species.

UNESCO designated sites contribute to protect biodiversity against threats and pressures, within and beyond strictly protected areas, and promote models of inclu-

sive, multi-level and equitable governance of nature. They also play a large role as hubs for community-based biodiversity monitoring, multi-stakeholder territorial governance, scientific research, and environmental education. Not only are they important site-based solutions, they also serve as models that are key to achieving global biodiversity goals, such as the Kunming-Montreal Biodiversity Framework (GBF), and the Sustainable Development Goals (SDGs).

Ways of leveraging UNESCO designated sites to enhance biodiversity conservation include:

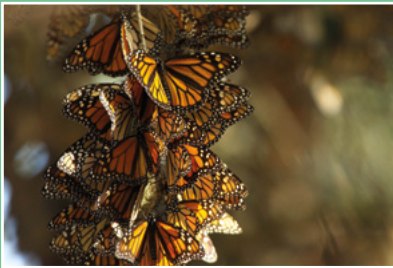
- 1 Integrate UNESCO designated sites in national action plans developed by governments for monitoring and mainstreaming biodiversity such as National Biodiversity Strategies and Action Plans (NBSAPs), the principal instruments to operationalise the GBF;
- 2 Strengthen integrated landscape-level strategies and initiatives that balance biodiversity conservation and sustainable use;
- 3 Reinforce transboundary cooperation for large-scale terrestrial and marine biodiversity conservation;
- 4 Leverage UNESCO designated sites and networks for technical, scientific research, cooperation and capacity-efforts to implement the GBF; and
- 5 Strengthen linkages between culture and nature in site management.

WHY BIODIVERSITY MATTERS

Biodiversity is the living fabric of our planet – the ecosystems, the species and the genetic diversity of all living organisms upon which life on Earth depends.¹

BIODIVERSITY IS ESSENTIAL FOR HUMAN SURVIVAL

Biodiversity is the basis of agricultural and food systems. Biodiversity provides our food and medicine, contributes resources we need for our clothing, housing and fuel, and supports our physical and mental wellbeing.



© Ryan Hagerty*

The Mazahua People in the **Monarch Butterfly Biosphere Reserve and World Heritage site (Mexico)**, rely on a diverse range of 213 plant species, including wild fruits, non-crop greens, and wild and weedy plants, which are integral to their diet, medicine, and livestock management.

BIODIVERSITY SUPPORTS VITAL ECOSYSTEM FUNCTIONS AND SERVICES

Biodiversity helps to keep our air, water, and soil clean, generate oxygen, regulate the climate, ensure seed dispersal and pollination, and cool our cities.



© C. Valenzuela*

The rivers flowing from the **Madre de las Aguas Biosphere Reserve (Dominican Republic)** provide drinking water to about 400,000 people and sustain agricultural activities.

BIODIVERSITY PROTECTION PREVENTS PANDEMICS

Measures that reduce unsustainable exploitation of high biodiversity regions help prevent disease transmission between wildlife, livestock and people.



© Photone Yip/Shutterstock*

Monitoring and awareness-raising measures taken in the **Valdés Biosphere Reserve and World Heritage site (Argentina)** after the 2023 massive death of elephant seals due to avian flu prevented disease transmission to humans.²

BIODIVERSITY UNDERPINS ECONOMIC PROSPERITY

Over half of the world's economy (GDP) is dependent on nature and its services. The collapse of key ecosystem services in Latin America and the Caribbean—such as timber from tropical forests, wild pollinators, and marine fisheries—would cause a drop of 3.3 percent in the region's GDP (- \$ 305 billion) and 16% reduction in GDP growth between 2021 and 2030.³



© Pablo Manriquez*

The **Juan Fernandez Biosphere Reserve (Chile)** has received a sustainability certification for their good lobster fishing practices.

BIODIVERSITY HELPS MITIGATING CLIMATE CHANGE

Ecosystems such as forests, grasslands and wetlands, serve as natural carbon sinks, absorbing large amounts of greenhouse gas emissions. Through nature-based solutions, biodiversity can also help reduce the negative effects of climate change, including flooding and storm surges.



© Damsea/Shutterstock*

With tropical rainforests, wetlands, mangroves and many other ecosystems, UNESCO designated sites help absorb the equivalent of approximately 15% of LAC CO₂ emissions from fossil fuels each year (300 Mt CO₂/yr).⁴

BIODIVERSITY AND CULTURAL DIVERSITY ARE INTERDEPENDENT AND MUTUALLY REINFORCING

Biodiversity has nourished knowledge systems, inspired human creativity, and influenced linguistic diversity, as well as cultural heritage and practice. In turn, diverse cultural systems, such as those of Indigenous Peoples and local communities, can nurture and enhance biodiversity.⁵



© Miranda Mars*

UNESCO recognized the Zápara Peoples language and traditions in Ecuador's **Yasuni Biosphere Reserve** as an Intangible Cultural Heritage (ICH)⁶ for their intricate oral culture, deeply shaped by their environment and reflecting profound knowledge of the Amazon rainforest.

1- UNESCO, IUCN. (2021). World Heritage: A unique contribution to biodiversity conservation. <https://www.unesco.org/en/biodiversity-conservation>

2- Wildlife Conservation Society Argentina. (2023). *Extrema mortalidad de crías de elefante marino del sur en Península Valdés*. Wildlife Conservation Society Argentina. <https://argentina.wcs.org/es-es/Quienes-somos/Noticias/articulo/ArticleView/articuloId/21287.aspx> (Accessed: 25 September 2024)

3- Johnson et al. (2021). The Economic Case for Nature: A Global Earth-Economy Model to Assess Development Policy Pathways. World Bank, Washington, DC. p. 29. Available at: <http://hdl.handle.net/10986/35882>

4- See p.9

5- Hammerschlag, N. and Gallagher, A.J. (2017). Extinction Risk and Conservation of the Earth's National Animal Symbols. *BioScience*, 67(8), p. 744–749. DOI: 10.1093/biosci/bix054

6- <https://ich.unesco.org/en/RL/oral-heritage-and-cultural-manifestations-of-the-zapara-people-00007>

UNESCO DESIGNATED SITES: KEY INSTRUMENTS TO BIODIVERSITY CONSERVATION

There are currently four globally active intergovernmental, site-based conservation and/or sustainable development instruments in operation, each contributing to safeguarding biodiversity. **Three of them are under the auspices of UNESCO: Biosphere Reserves, World Heritage sites and Global Geoparks.** The fourth instrument is the Ramsar Convention⁷ which aims to protect wetlands.

UNESCO designated sites work collaboratively to protect biodiversity, including cultural diversity, while promoting sustainable economic practices, integrating Indigenous and local knowledge (ILK), and preserving Intangible Cultural Heritage (ICH).

BIOSPHERE RESERVES

Harmonize management that balances the conservation of biological and cultural diversity with economic and social development based on ILK and sound science.



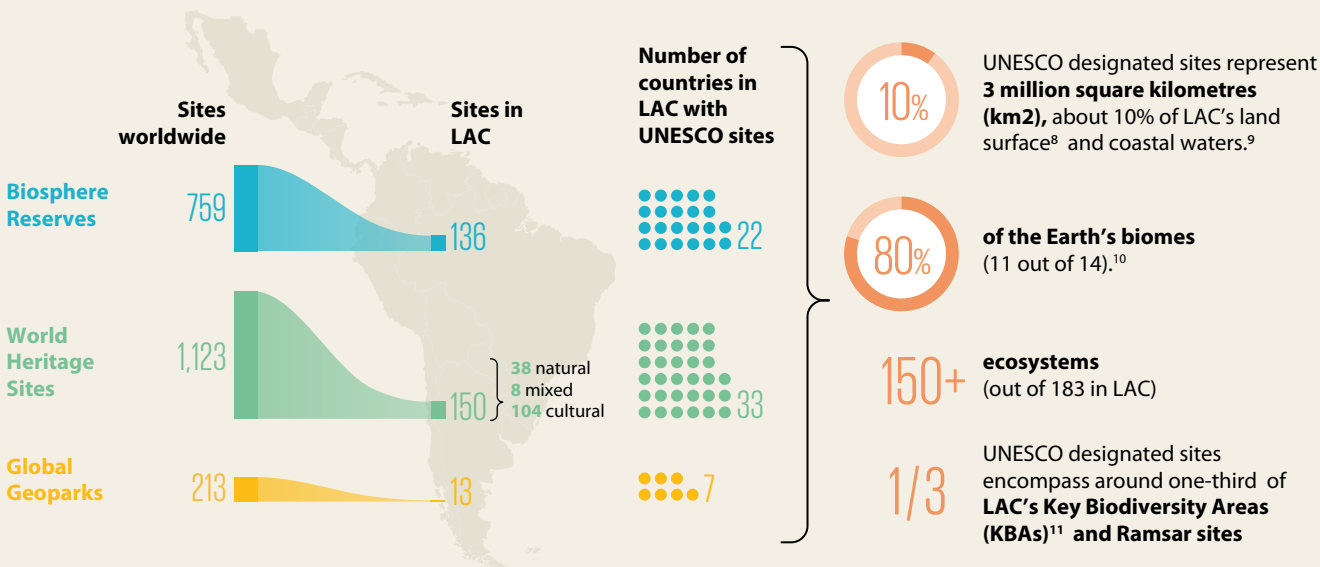
WORLD HERITAGE SITES

Identify, protect and conserve cultural and natural heritage sites of outstanding universal value.



GLOBAL GEOPARKS

Promote the importance and significance of geological heritage by actively engaging with local communities.



UNESCO DESIGNATED SITES PROMOTE PEACE AND SHARED GOVERNANCE OF BIODIVERSITY

UNESCO is at the forefront of intergovernmental cooperation for biodiversity conservation and sustainable use. Ecosystems and biomes often extend well beyond the borders of two or more countries, so international scientific and technical cooperation is essential to address pressures on biodiversity at the landscape level. UNESCO designated sites provide opportunities for capaci-

ty-building and exchange of experiences, specifically tackling the diplomatic and governance challenges of managing the conservation and sustainable use of biodiversity and geodiversity in border areas and providing transboundary frameworks for managing conflicts and promoting peace.

7- <https://www.ramsar.org/>

8- This ratio should be taken with caution. It is based on the terrestrial area of UNESCO designated sites compared to the terrestrial area of the Latin America and Caribbean region

9- This ratio should be taken with caution. It is based on the marine area of UNESCO designated sites compared to the territorial seas (12 nautical miles from the coast) of countries of the Latin America and Caribbean region

10- Analysis based on the RESOLVE dataset. See: Dinerstein, E., Olson, D., Joshi, A., Vynne, C., Burgess, N. D., Wikramanayake, E., ... & Saleem, M. (2017). An ecoregion-based approach to protecting half the terrestrial realm. *BioScience*, 67(6), 534-545. DOI: <https://doi.org/10.1093/biosci/bix014>

11- Key Biodiversity Areas represent habitats of critical importance to the maintenance of unique plants and animals, based on a multi-criteria assessment such as threatened biodiversity, genetic diversity, ecosystem integrity, irreplaceability, etc. See: <https://www.keybiodiversityareas.org/>

PATHWAYS FOR PEACE WITH NATURE

Calakmul Biosphere Reserve and World Heritage site (Mexico)

Hosts the remnants of a Maya city that lasted 12 centuries and is part of a vast tropical forest ecosystem that supports endangered species such as the **jaguar** (*Panthera onca*).

Península de Guanahacabibes Biosphere Reserve (Cuba)

Hosts part of the Caribbean coral reefs, spanning over 14,000 km² and representing 10% of the world's reefs.¹² These include the critically-endangered **Elkhorn coral** (*Acropora palmata*) and **staghorn coral** (*Acropora cervicornis*).

Trifinio-Fraternidad Transboundary Biosphere Reserve (El Salvador, Guatemala, and Honduras)

Cloud forests are vital for water provision and support local agriculture in the three countries, while hosting numerous endemic species such as the **wine-throated hummingbird** (*Selasphorus ellioti*).

Sierra Nevada de Santa Marta Biosphere Reserve (Colombia)

Stretching from the coral reefs of the Caribbean coast up to snowy mountains (5,775 m.a.s.l), this region is home to the critically-endangered **harlequin toad** (*Atelopus arsyecue*).

La Amistad Biosphere Reserves and World Heritage site (Costa Rica and Panama)

The forests surrounding the Talamanca Mountain Range are home to the **Baird's tapir** (*Tapirus bairdii*) and the **white-lipped peccary** (*Tayassu pecari*).

Eastern Tropical Pacific Marine Corridor (Colombia, Costa Rica, Ecuador, Panama)

Aiming to become the world's largest marine biosphere reserve, this Corridor encompasses four World Heritage sites interconnected by swimways of key marine species, like the critically-endangered **scalloped hammerhead sharks** (*Sphyrna lewini*).

Noroeste Amotapes-Manglares Biosphere Reserve (Peru)

One of the last mangroves of Peru, this site is home to threatened biodiversity, like the **American crocodile** (*Crocodylus acutus*), while being a major sink of blue carbon contributing to mitigating climate change.

Kütralkura UNESCO Global Geopark and Araucarias Biosphere Reserve (Chile)

The vast **monkey-puzzle tree** (*Araucaria araucana*) forests, which fossils date back 125 million years, play a crucial ecological role in supporting biodiversity and holds deep cultural significance for local Indigenous Peoples.

Valdés Biosphere Reserve and World Heritage site (Argentina)

A coastal area critical to the reproduction of **southern right whale** (*Eubalaena australis*) populations and supporting the terrestrial and marine livelihoods of local communities.

Central Amazon Biosphere Reserve and World Heritage site (Brazil)

This highly diverse tropical rainforest is home to the endangered **rosewood** (*Aniba rosaeodora*), vital to local biodiversity, produces essential oils used in industries such as perfumery, and generates income for local communities.

Beni Biosphere Reserve (Bolivia)

The **yellow-spotted Amazon River turtle** (*Podocnemis unifilis*) can be found in the rivers of Beni, at the convergence of Andean forests, floodplain humid forests, and the Moxos flooded pampas (one of the biggest wetlands in the world).

AN OUTSTANDING DIVERSITY OF SPECIES



UNESCO designated sites are home to 60% of mapped species richness in Latin America and the Caribbean¹³

With over a third of the world's mapped global species richness,¹⁴ Latin America and the Caribbean has an outstanding biodiversity. The region possesses six megadiverse countries which concentrate some of the world's highest diversity of birds, mammals, amphibians, reptiles, fishes and plants:

Brazil, Colombia, Ecuador, Mexico, Peru, and Venezuela. Despite being smaller in size, Central America and the Caribbean also holds a high proportion of biodiversity and endemic species that do not exist anywhere else in the world.

PERCENTAGE OF LAC SPECIES IN UNESCO DESIGNATED SITES

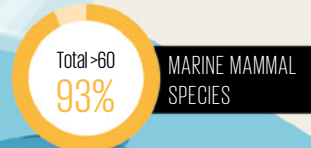
The **Manu Biosphere Reserve and World Heritage site** in southwestern Peru where the Andes and the Amazon meet, making it one of the most diverse ecosystems in the world. The site is home to almost 10% of the world's bird species.



Total >4,300
96%
BIRD SPECIES



Total >1,400
85%
TERRESTRIAL MAMMAL SPECIES

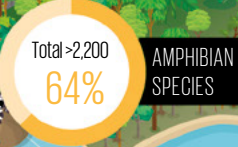


Total >60
93%
MARINE MAMMAL SPECIES

The **Mata Atlântica Biosphere Reserve** covers about 10% of Brazil's surface and includes two natural World Heritage sites and two Global Geoparks. It harbours more species than any other UNESCO designated site in the region, with over 5,000 species of mammals, birds, reptiles, amphibians and fish.

Approximately 40% of UNESCO designated sites in LAC encompass **Indigenous Peoples' Lands and Territories**.¹⁵ The high biodiversity in these areas is often the result of the active management and protection by Indigenous Peoples over millennia, making them key actors in the stewardship of these sites.

In Central America, the **La Amistad Biosphere Reserves¹⁶ and World Heritage site (Costa Rica and Panama)** is known as an "archipelago of mountain islands" due to its altitude gradient from tropical lowland forest to high altitude grasslands. It is home to more than 3,000 species of mammals, birds, reptiles, amphibians and fishes, a high rate of endemism, and has one of the highest concentrations of plant life on the planet with more than 5,000 different species.



Total >2,200
64%
AMPHIBIAN SPECIES

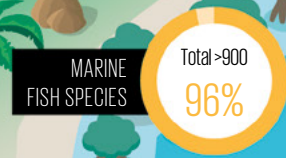


Total >2,700
33%
FRESHWATER FISH SPECIES

More than one-third of the world's marine mammal species and over 300 species of marine fishes can be found in the **Islands and Protected Areas of the Gulf of California World Heritage site** in Mexico.



Total >2,200
70%
REPTILE SPECIES



Total >900
96%
MARINE FISH SPECIES

Coral reefs can be found in 30+ UNESCO designated sites in LAC.

13- Species richness represents the number of different species that occur in a given area, which is a measure of the variability of living organisms. The present analysis was done based on data made available by the IUCN Red List for mammals, birds, reptiles, amphibians, and fishes. **Note:** Analysis done by overlapping boundaries of UNESCO Biosphere Reserves, World Heritage sites, and Global Geoparks with species distribution and/or occurrence maps from IUCN; Red List of Threatened Species for mammals, amphibians, reptiles, freshwater fishes; and BirdLife International for birds. Estimates should be taken with caution given uncertainties in species distribution maps and insufficient coverage of some major groups of organisms that have not been comprehensively assessed globally such as fishes. For similar reasons, invertebrates, plants and fungi were not analysed.
14- According to the IUCN Red List website, there are currently 55,204 assessed species in the "Caribbean Islands," "Mesoamerica," and "South America" regions, as compared to 163,040 assessed species for the world. Hence, the region would harbor approximately 33% of the world's total species richness. **Source:** IUCN. (2024). *The IUCN Red List of Threatened Species. Version 2024-1*. <https://www.iucnredlist.org>. [Accessed 9 September 2024]
15- Analysis based on data from the Global Platform of Indigenous and Community Lands. Accessible at: www.landmarkmap.org [Accessed 25 September 2024]
16- There is one La Amistad Biosphere Reserve in Costa Rica, and a separate (but contiguous) one with the same name in Panama.

HUMAN-NATURE RELATIONSHIPS IN UNESCO DESIGNATED SITES

Monkey-puzzle tree's (*araucaria*) central role in nature and culture

"Tall on earth they placed you, sturdy, beautiful monkey-puzzle tree of the southern mountains, tower of Chile, tip of the green territory, pavilion of winter, vessel of fragrance."

"Long ago, long ago it was when for the Indigenous People you unfurled like a wooden rose, the colossal offering of your fist, scattering on the wet earth the pine nuts: flour, wild bread of the indomitable Arauco..."

PABLO NERUDA -
ODE TO THE ARAUCANIA ARAUCANA

Araucarias are important to **Chile's national identity**.

Pehuenches have an **ancestral and intricate relationship** with *araucarias*.

Araucarias are **centre to *Pehuenches'* culture**, rituals and ceremonies.



Guanacos rely on *piñón*. They eat and disperse the seeds.

Distribution of *araucaria* trees historically follows the limits of ***Pehuenche* territory**.



The *piñón* (*araucaria* seed) is part of the *Pehuenches'* **diet** and was used for **trade**.

Their thick bark gives *araucarias* **fire-resistant properties**, insulating them from heat.



More frequent droughts due to climate change may increase fire risks and **hinder *araucarias'* capacity to resist fire**.

Araucaria fossils **date back 125 million years** and are testimonies of biological evolution.



Los Alerces National Park World Heritage site (Argentina) is home to "Abuelo", one of the oldest trees on Earth approximately 2,600 years old.



The Tehuacán-Cuicatlán Biosphere Reserve and World Heritage site (Mexico) is the semi-arid zone with the richest biodiversity in North America, hosting the world's densest forests of columnar cacti which is highly threatened worldwide

Huascarán Biosphere Reserve and World Heritage site (Peru) protects the heart of the world's highest tropical mountain range in the central Peruvian Andes. Rising from 1,020 m to Mount Huascarán at 6,768 m above sea-level (5,748 m of gradient), the site has a variety of landscapes including glaciers, lakes and plateaus that are home to the famous Queen of the Andes (*Puya raimondii*), the largest species of bromeliad, its inflorescences reaching up to 15 m in height, as well as charismatic mammals and birds, such as vicuña, spectacled bear, puma, the Andean condor (*Vultur gryphus*) and the Giant Hummingbird (*Patagona gigas*).



Vicuñas (*Vicugna vicugna*) and the greatest number of Chile's bird species can be found in the desert and highland areas of **Lauca Biosphere Reserve**. Likewise, this area is culturally rich and home of the Aymara People who developed complex agricultural systems that involved innovative food conservation techniques (like the potato dehydration technique called "chuño").

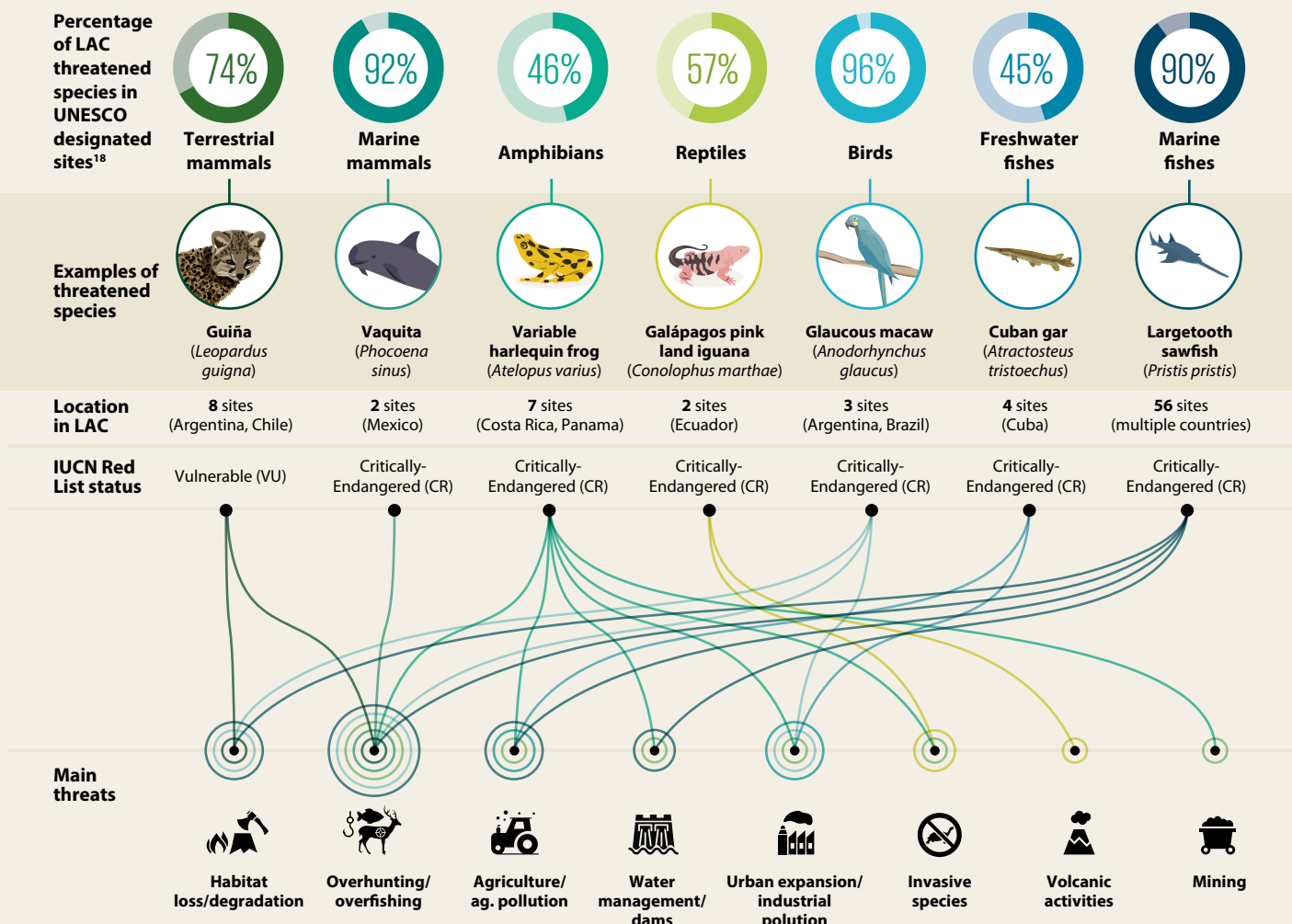


The largest dry forest in the world can be found in the **Caatinga Biosphere Reserve (Brazil)** is home to a unique ecosystem on the planet and many endemic and threatened species such as the Lear's Macaw (*Anodorhynchus leari*) and the Brazilian three-banded armadillo (*Tolypeutes tricinctus*).

Scientists have found as much as 126 species of epiphyte growing on a single tree in the Alberto Manuel Brenes Biological Reserve, part of the **Cordillera Volcánica Central Biosphere Reserve (Costa Rica)**.¹⁷



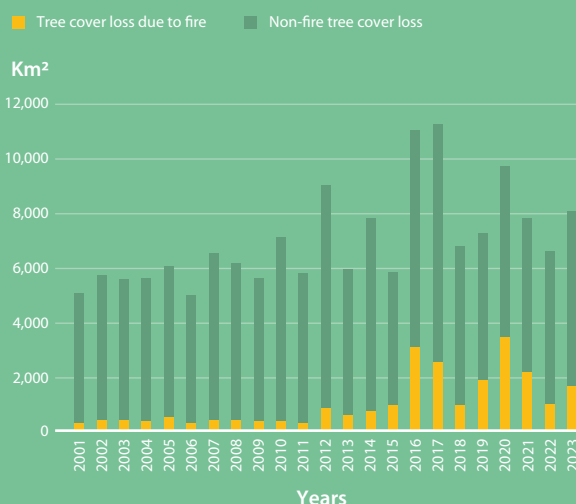
UNESCO DESIGNATED SITES CONTRIBUTE TO THE PROTECTION OF OVER HALF OF THE REGION'S THREATENED SPECIES



BIODIVERSITY AND CARBON SINKS UNDER INCREASING PRESSURE FROM LAND-USE AND CLIMATE CHANGE

Forests ecosystems represent the main reservoir of biological diversity and have the largest carbon absorption capacity compared to other ecosystems. Forests in UNESCO designated sites in LAC cover around 1.5 million square kilometres (km²), an area larger than Colombia, and store 24 billion tonnes of carbon (Gt C) in their biomass and soils (this is half the carbon contained in Venezuela's 303 billion barrels of proven oil reserves¹⁹). They play a crucial role in regulating the climate by absorbing around 300 million tonnes of CO₂ every year, equivalent to approximately 15% of LAC's CO₂ emissions from fossil fuels.²⁰ However, biodiversity and forests in UNESCO designated sites in the region are under increasing pressure from land-use change (expansion of agriculture and cattle-ranching, infrastructure development and urban expansion) and climate-related hazards, in particular wildfires. Since 2001, these sites have lost over 160,000 km² of forest, an area equivalent to Uruguay, and experienced more frequent extreme fire events due to climate change. The average area burned every year in these sites by forest fires has more than doubled over the past two decades and now account for about 20% of all tree cover loss.²¹

Tree cover loss in UNESCO designated sites in LAC (km²)



18- A third of the world's threatened species are located in the Latin America and Caribbean region. The IUCN Red List classifies as threatened species under either one of the three following statuses: Vulnerable (VU), Endangered (EN), Critically-Endangered (CR)
 19- https://www.opec.org/opec_web/en/data_graphs/330.htm. At 0.118 tonnes C/barrel
 20- Analysis for UNESCO designated sites in LAC following the methodology of UNESCO, WRI, IUCN. 2021: World Heritage forests: Carbon sinks under pressure, Paris, UNESCO; Washington, DC, WRI; Gland, IUCN. <https://unesdoc.unesco.org/ark:/48223/pf0000379527>. Emissions from fossil fuels in LAC are estimated at 1.7 billion tonnes of CO₂ according to the Global Carbon Project (<https://globalcarbonatlas.org/emissions/carbon-emissions/>). Carbon absorption is considered net.
 21- Analysis for UNESCO designated sites in LAC based on Global Forest Watch data. <https://www.wri.org/insights/global-trends-forest-fires>

UNESCO DESIGNATED SITES' CONTRIBUTION TO THE KUNMING-MONTREAL GLOBAL BIODIVERSITY FRAMEWORK (GBF)

THE 23 TARGETS OF THE GBF

Adopted in December 2022 at the Convention on Biological Diversity's (CBD) COP15, the GBF is the global strategy to safeguard and sustainably use biodiversity on Earth.

Halting and reversing biodiversity loss, according to the GBF, requires that by 2050 the world values and conserve biodiversity, restore and ensure sustainable use of nature to ensure the maintenance of Nature's Contributions to People (NCPs).

This ambition is supported by four main goals to be reached by 2050 and 23 targets, organized in three blocks, to attain as early as 2030. Two important targets are to protect 30% of land and sea areas by 2030, known as the "30x30" target (Target 3), and restore 30% of degraded ecosystems (Target 2).



- Defending biodiversity against threats, beyond strictly protected areas:** UNESCO designated sites often represent critical refuges against the extinction for iconic and threatened species. They also raise awareness about the diversity of the planet's biomes and invite governments to take prompt action to safeguard not only ecosystems in a critical state protected by the 30x30 target, but also the other 70% of the Earth to which all these areas are connected to.
- Promoting inclusive, multi-level and equitable governance of nature:** UNESCO designated sites encourage inclusive governance structures that actively engage Indigenous Peoples and local communities (IPLCs) and can help coordinate stakeholders across sectors to overcome socio-economic challenges to biodiversity conservation and sustainable use.²²
- International cooperation to connect ecosystem beyond borders:** as intergovernmental cooperation frameworks, UNESCO designated sites encourage science diplomacy, and evidence-based decision at all levels among national governments to connect ecosystems beyond borders and across terrestrial and marine spaces and jurisdictions, unlocking much-needed large-scale conservation and sustainable use²³ by current and future generations.
- Promote linkages between culture and nature through the exchange of knowledge and practices:** UNESCO designated sites represent global, peer-to-peer networks of research and practice where IPLCs, scientists and governments regularly exchange biodiversity conservation good practices, engage in the co-production of knowledge and share capacity focusing on the role of culture and cultural heritage in nature.
- Biodiversity monitoring, research and education:** UNESCO designated sites are hubs for data-collection, community-based and citizen science, biodiversity and natural resources monitoring, research, and environmental education from primary to higher levels, providing a wealth of evidence-based approaches to decision-making about biodiversity conservation of critical relevance to countries implementing and reporting under the GBF.
- Contributing to landscape connectivity:** Biosphere reserves, especially their buffer and transition zones, are increasingly being recognized as Other effective area-based conservation measures (OECMs) criteria by supporting long-term biodiversity conservation alongside sustainable development. Managed through collaborative frameworks with IPLCs, these areas contribute to biodiversity conservation, maintain ecosystem services, and enhance landscape connectivity. Recognising them as OECMs highlights their role in achieving the 30x30 target and promoting sustainable use beyond protected areas.

22- Kremen, C., Merenlender, A. M. (2018). Landscapes that work for biodiversity and people. *Science* 362(6412), eaau6020. DOI:10.1126/science.aau6020

23- Ellis, E. C. (2019). To conserve nature in the Anthropocene, half earth is not nearly enough. *One Earth*, 1(2), 163-167. DOI: <https://doi.org/10.1016/j.oneear.2019.10.009>

GOOD PRACTICES IN BIODIVERSITY CONSERVATION IN UNESCO DESIGNATED SITES



Community-based restoration of rosewood with highly diverse agroforestry systems in the Central Amazon Biosphere Reserve (Brazil)

This biosphere reserve, that also hosts a World Heritage site, is representative of the Amazon's social, cultural, and ecological diversity. The overharvesting of rosewood's (*Aniba rosaedora*) essential oil to produce perfume has pushed the species to near extinction. In 2010, an initiative led by IDESAM²⁴ and community members started replanting rosewood in a 1.47-ha agroforestry system with 35 tree species. Since then, this initiative supported by the UNESCO Amazon project financed by LVMH, has expanded to 30 families restoring degraded areas and promoting genetic diversity, while producing valuable essential oil worth 2,100–2,600 US dollars per litre that creates new income opportunities and enhances the livelihoods of the families.



© Carolina Arantes*



Community-based monitoring and safeguarding of biodiversity in the Calakmul Biosphere Reserve and World Heritage site (Mexico)

Once a Maya civilization hub (between -500 B.C. and A.D. 1,000), this exceptional site is home to 14 Indigenous groups and hosts a rich biocultural diversity. Facing an unprecedented reduction in precipitation and drying up of water sources or *aguadas*, the site started monitoring 17 of them in an area under the management of ECOSUR-Campeche and, in 2015, installed artificial watering troughs to support local species' access to water during droughts. After nearly 10 years, water troughs have helped wildlife populations like Baird's tapir (*Tapirus bairdii*) to overcome and recover from frequent droughts. Data collected by local community and park guards to monitor wildlife with camera traps led to the observation that species tend to rely on water troughs as alternate water sources especially during drought episodes. This successful model has been replicated in other UNESCO designated sites across Mexico and Central America.

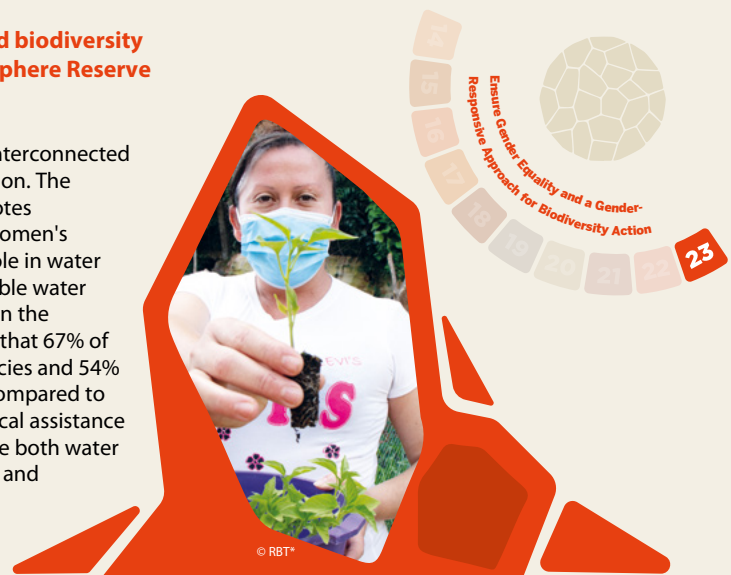


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The role of women in water management and biodiversity conservation in the Trifinio-Fraternidad Biosphere Reserve (El Salvador, Guatemala, Honduras)

In this area, water resources and biodiversity are interconnected and under pressure from droughts and deforestation. The Tri-national Commission of the Trifinio Plan promotes integrated water management and strengthens women's participation in governance. Women play a vital role in water user associations, leading efforts that link sustainable water management with forest conservation. A study²⁵ on the Salvadorian side of the biosphere reserve showed that 67% of women have a good knowledge of local plant species and 54% of them get involved in conservation actions (as compared to 18% of men). Policies that support training, technical assistance and funding for women empower them to manage both water resources and biodiversity, ensuring the resilience and well-being of their communities.



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Recovery of river turtle population with Tsimane' Indigenous People in Beni Biosphere Reserve (Bolivia)

The yellow-spotted Amazon River Turtle (*Podocnemis unifilis*) suffers from the frequent flooding of nesting river beaches and overhunting by local communities for food or illegal egg trade. Since the 1990s, the *Quelonio* project has actively engaged with the Tsimane' Indigenous People relying on the turtle for their diet and livelihoods. The Tsimane' directly participated to the conservation and reproduction protocol of the turtle, helping to collect between 3,000–10,000 eggs annually and moving them to artificial beaches safe from flooding hazard. A scientific assessment demonstrated that survival rate of turtle eggs was 1.8 times higher than it would be without the project and recommended to now work on the survival rates of juvenile, young, and adults to increase turtles' recovery.



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Co-management of mangroves in the Noroeste Amotapes-Manglares Biosphere Reserve (Peru)

Home to Peru's last mangrove forests, the site faces threats like aquaculture, sedimentation, water pollution and illegal logging. Since 2017, the National Service of Natural Protected Areas of Peru (SERNANP) has entrusted six local fisher associations with the environmental management of the Tumbes Mangroves National Sanctuary, following their request and in recognition of their participatory management and contribution to the conservation of this important ecosystem. This co-management model has helped fishers to focus on sustainable livelihoods to repopulate economically important species like the black conch (*Anadara tuberculosa*), mangrove crabs (*Ucides occidentalis*), and fishes (e.g. *Diapterus peruvianus*) and they have so far reintroduced nearly 37 million larvae, seeds and fry of these species. Fishers guarantee local livelihoods and participate in local patrols thereby helping to maintain the mangrove's ecological integrity. The UNESCO MangRes project financed by the Government of Flanders (Belgium) supports biosphere reserve management by conducting a baseline biophysical assessment of mangrove restoration, engaging stakeholders, and providing environmental education for youth.



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Fostering transboundary cooperation to conserve endangered species of the Tropical Eastern Pacific (Colombia, Costa Rica, Ecuador and Panama)

Since 2021, Colombia, Costa Rica, Ecuador, and Panama have been working on an ambitious project to consolidate and expand the Eastern Tropical Pacific Marine Corridor (CMAR) to cover around 5,000 km². This initiative aims to create the world's largest marine biosphere reserve, interconnecting various marine protected areas, including four UNESCO natural World Heritage sites and a biosphere reserve. These areas are linked by underwater "swimways", migratory routes used by species like sea turtles, sharks, whales, and manta rays. Regularly threatened by overfishing, monitoring the conservation of these species as they go in and out of different countries' jurisdictions over vast distances, such as the 240,000 km² Coco-Galapagos Swimway, has proven challenging. Over 20 years, the CMAR helped the Environment Ministries of these four countries to discuss joint policies and coordinate management and conservation actions for shared resources in the area, safeguarding these species' vital migratory routes.



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Indigenous Peoples' participation and binational monitoring of biodiversity in the Talamanca Range (Costa Rica and Panama)

The La Amistad Biosphere Reserves and transboundary World Heritage site span over the binational Sixaola river basin in Costa Rica and Panama and contain about 30% of endemic species. Agriculture and livestock expansion over forests threatens these unique ecosystems. In response, a binational management plan involving eight Indigenous territories on local management boards helped organized joint patrols (sometimes binational) and biodiversity monitoring, including camera traps. These actions help to control deforestation and reduce human-wildlife conflicts, while promoting international cooperation.



Pehuenches, guardians of million-year-old araucarias trees in the Kütralkura UNESCO Global Geopark and Araucarias Biosphere Reserve (Chile)

Characterized by intense volcanic activity, these UNESCO designated sites are home to more than 120,000 people and to vast forests of monkey-puzzle trees, or araucaria (*Araucaria araucana*), and southern beech (*Nothofagus sp.*). There are fossils of araucarias dating back 125-million years and this tree is central to the culture and ecology of the Pehuenches people. Pehuenches have an intricate story with the araucaria tree: they traditionally relied on seeds (*piñon*) for their diet and crafts, consider the tree as an extended family member, and their territory's limits closely followed the forest distribution over time. Today, with changing climate conditions, there are concerns that this fire-resistant tree may not be able to withstand increasing wildfires, in part caused by lightning. After a major fire in 2015, local brigades were trained for fire prevention and early-response. Building upon the fire-management knowledge of Indigenous communities, these brigades help to act on fires before the arrival of official firefighters, avoiding the destruction of both houses and forests. This initiative recently received support from UNESCO through the Rapid Response Facility (RFF),²⁶ the world's fastest emergency funding mechanism for conservation.



Sustainable whale watching and landscape governance at the Valdés World Heritage site and Biosphere Reserve (Argentina)

Located in Argentina's Chubut province, this area is a crucial breeding ground for the southern right whale (*Eubaleana australis*). A participatory, inter-institutional and multi-jurisdictional management committee within the biosphere reserve coordinates conservation efforts on land and at sea. Through pioneering whale-watching techniques and a monitoring system that integrates citizen science, more than 5,000 individual whales have been identified and tracked over up to five generations. This approach ensures that whale-watching tourism is sustainable, contributes to conservation science, and generates sustainable employment in the region.



26- <https://whc.unesco.org/en/rapidresponse/>



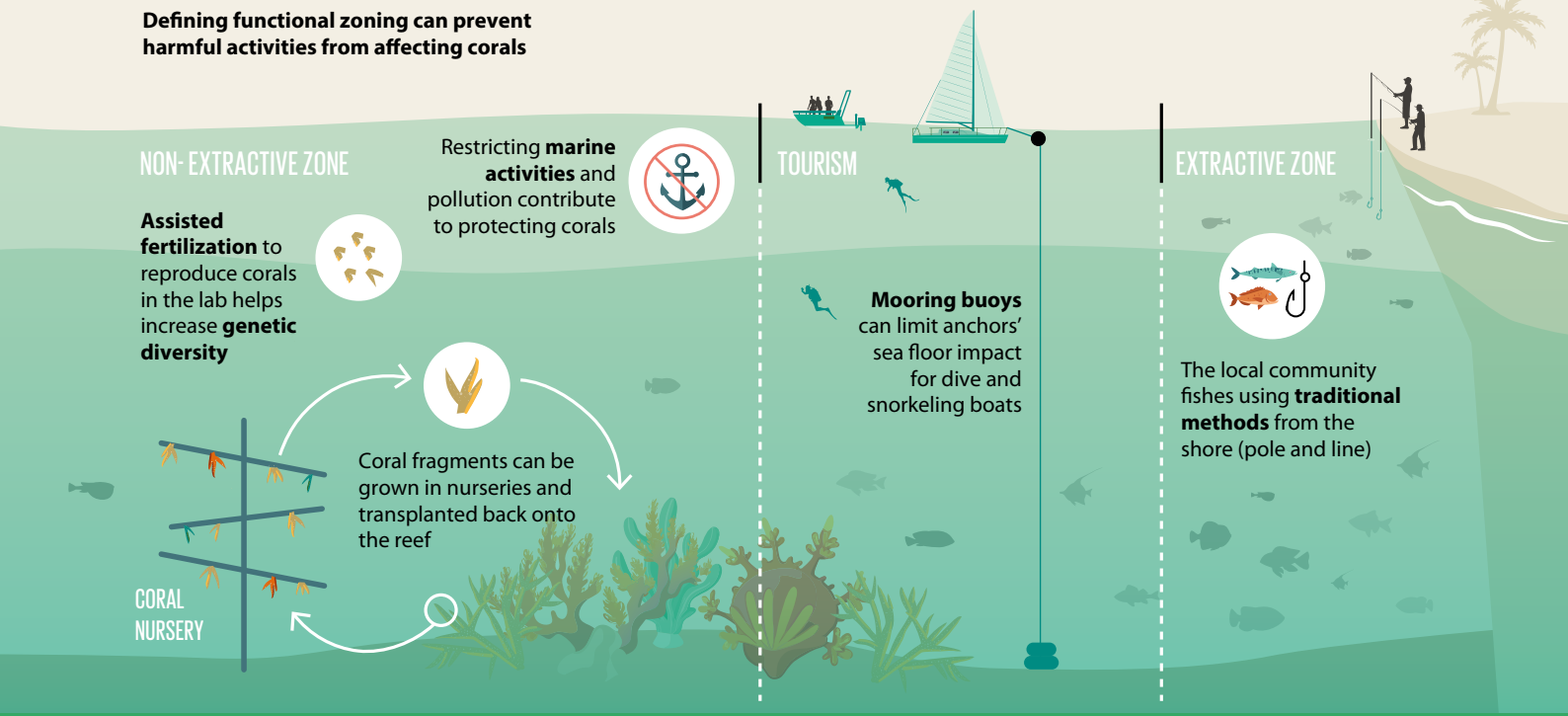
Community-based coral reef restoration in the Península de Guanahacabibes Biosphere Reserve (Cuba)

Providing food and shelter to marine life, the highly diverse corals of the area increasingly suffer from frequent hurricanes and cyclones, as well as bleaching events caused by climate change. In September 2023, for instance, 80% of colonies were partially or totally affected by bleaching. Even if corals may recover, the repetition of such episodes may cause widespread mortality down the line. To face these challenges, the biosphere reserve's technical team, together with scientists and community members, initiated coral restoration activities in 2015 to support population recovery, in addition of designating strict conservation areas and placing mooring buoys for boats.²⁷ Community members traditionally relying on fishing and marine tourism participate in the collection, growth and transplantation of coral fragments. A success: as of 2021, 60% of the 100 colonies of *Acropora cervicornis* that were transplanted in 2018 were healthy. Thanks to a South-South cooperation with FUNDEMAR,²⁸ they also receive training in assisted fertilization reproduction techniques for eight different species of corals.²⁹



CORAL CONSERVATION AND RESTORATION IN THE PENÍNSULA DE GUANAHACABIBES BIOSPHERE RESERVE

Defining functional zoning can prevent harmful activities from affecting corals



Governance by four Indigenous Peoples of the Sierra Nevada de Santa Marta Biosphere Reserve (Colombia)

Located in northern Colombia, this area—also on the World Heritage Tentative List—stretches from coral reefs to snow-capped mountains reaching 5,775 meters above sea level. It encompasses the territory of four Indigenous Peoples—the Arhuaco, Kankuamo, Kogui, and Wiwa—who live in harmony with this forested and highly-biodiverse landscape. Record-high temperatures due to climate change have however caused significant stress leading glaciers to melt, in addition to other threats such as mining, agriculture expansion, forest fires and conflicts with armed groups. In response to these challenges, the leaders of the Indigenous Peoples formed the "Government of the Four Peoples" to promote their knowledge and practices about biodiversity conservation inscribed by UNESCO as Intangible Cultural Heritage.³⁰ For example, the Arhuaco territory is one of the few places where healthy populations of the rare harlequin toad (*Atelopus arsyecue*) can still be found, even as the species is nearly extinct elsewhere.



© William Diaz*

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 30- <https://ich.unesco.org/en/RL/ancestral-system-of-knowledge-of-the-four-indigenous-peoples-arhuaco-kankuamo-kogui-and-wiwa-of-the-sierra-nevada-de-santa-marta-01886>

RECOMMENDATIONS TO STRENGTHEN THE ROLE OF UNESCO DESIGNATED SITES IN THE IMPLEMENTATION OF THE GBF

1 Integrate UNESCO designated sites in national action plans developed by governments for monitoring and mainstreaming biodiversity such as National Biodiversity Strategies and Action Plans (NBSAPs), the principal instruments to operationalize the GBF

(a) Review and update NBSAPs with local, regional and national targets, monitoring frameworks and locally relevant indicators, including those developed by IPLCs. Integrate UNESCO sites by involving country focal points of the WHC for World Heritage sites, MAB Programme for biosphere reserves and IGGP for geoparks.

(b) Align priorities, policies and targets with other agreements and designations for both biological and cultural diversity, such as for wetlands (Ramsar), migratory species (CMS), trade in endangered species (CITES), Intangible Cultural Heritage (UNESCO) and Nationally Determined Contributions under the Paris Agreement on climate change.

2 Strengthen integrated landscape-level strategies that balance biodiversity conservation and sustainable use

(a) Assess the effective conservation status of UNESCO designated sites through periodic assessments (e.g. periodic review for biosphere reserves; State of Conservation reports for World Heritage sites) and additional investigation when necessary, using both scientific and ILK.

(b) Evaluate the biodiversity conservation value of these sites and the effectiveness of site-specific management plans in supporting national biodiversity goals and policies.

(c) Identify opportunities to expand UNESCO sites coverage by reviewing tentative lists, candidate sites and recommendations from UNESCO and other relevant entities, while promoting connections between terrestrial and marine ecosystems.

(d) Explore recognizing buffer zones and transition areas of UNESCO Biosphere Reserves as Other Effective Area-Based Conservation Measures (OECMs). Assess how these areas contribute to connectivity, biodiversity conservation and sustainable use in areas that may not meet all protected area criteria but still play a crucial role in achieving national and GBF targets.

3 Reinforce transboundary cooperation for large-scale terrestrial and marine biodiversity conservation

(a) Promote existing transboundary UNESCO designated sites and networks leveraging these long-lasting collaborations and learning experiences to achieve large-scale conservation across interests, sectors and jurisdictions.

(b) Assess opportunities for new transboundary sites to improve landscape connectivity, resilience, and cross-border cooperation, including international seas.

4 Leverage UNESCO designated sites and networks for technical, scientific research, cooperation and capacity-efforts to implement the GBF

(a) Foster collaboration to develop biodiversity targets and monitoring indicators connecting diverse knowledge systems, mobilizing ILK and leveraging ICH, providing evidence-based approaches to policy decision-making.

(b) Use both quantitative and qualitative assessments that reflect local, national and regional contexts.

(c) Complete biodiversity inventories with scientific networks following high scientific standards such as the IUCN Red List.

(d) Share and communicate about NBSAPs at the sub-national, regional and global level to find complementarities with other countries.

5 Strengthen the linkages between nature and culture in site management

(a) Strengthen co-management and co-governance with Indigenous Peoples and local communities in management plans, involving traditional governance systems and institutions.

(b) Collaborate with IPLCs to set management goals balancing biodiversity conservation, sustainable use, economic development and cultural continuity.

(c) Support human rights, cultural diversity, and the transmission of ILK and practices.

(d) Co-design initiatives with Indigenous Peoples that strengthen language transmission, governance and livelihoods linking the GBF with the International Decade of Indigenous Languages.





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Pathways For Peace With Nature

Achieving Global Biodiversity Goals in UNESCO Designated Sites

Latin America and the Caribbean

UNESCO designated sites in Latin America and the Caribbean harbour over 60% of the region's mapped species richness, i.e. over 14,000 species of mammals, reptiles, amphibians, birds, and fishes. They are also important for strengthening culture and nature linkages. However, biodiversity in these sites is threatened by human pressures and climate change and countries should take urgent action to halt and reverse biodiversity loss.

This publication provides a regional overview of the status and trends of species in UNESCO designated sites, as well as key information to facilitate dialogue among all stakeholders. Additionally, it promotes the development of effective actions aimed at achieving global biodiversity goals.



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