

BIODIVERCIUDADES

AL 2030

CIUDADES Y REGIONES EN
CONEXIÓN CON LA NATURALEZA

Instituto de Investigación
de Recursos Biológicos
Alexander von Humboldt



BiodiverCities by 2030

TRANSFORMATIVE CHANGE FOR BIODIVERSITY MANAGEMENT IN CITIES

María Mejía

Former Lead, BiodiverCities by 2030 Initiative

We are the **National
Institute of
Biodiversity** of
Colombia



BIODIVERCIUDADES

→ AL 2030

CIUDADES Y REGIONES EN
CONEXIÓN CON LA NATURALEZA

10 years fostering alliances for urban biodiversity.

In the last 5 years, the Institute has mobilized **15 projects** (10 national, 2 regional and 3 global), **28 direct partners** and **3.5 million USD**.

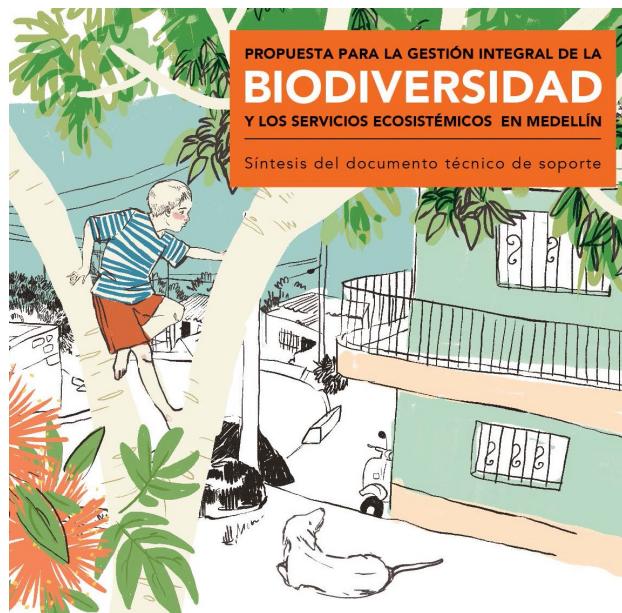
Knowledge partner of the BiodiverCities by 2030 Initiative (Colombia and beyond).



MILESTONES

10 years researching urban environments

Urban Biodiversity Public Policy of Medellin



Biodiversity Management in Bogota City

- Protocolo para el monitoreo de la biodiversidad
- HMP en el borde sur
- Restauración ecológica en los Cerros Orientales

Capacity Development



Urban Ecology International Congress and three Webinar

2013

2014

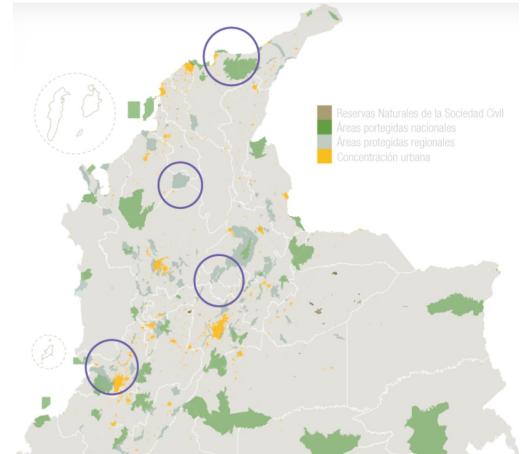
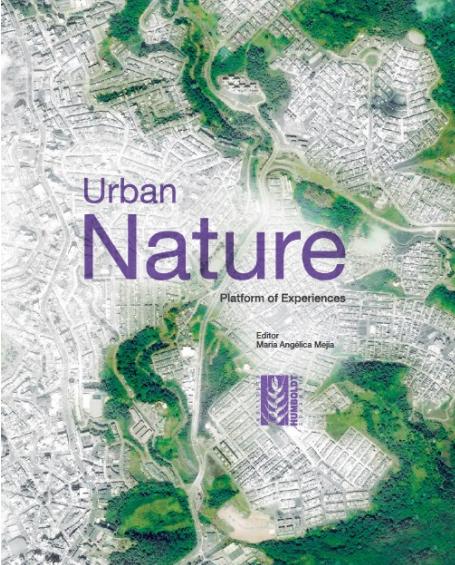
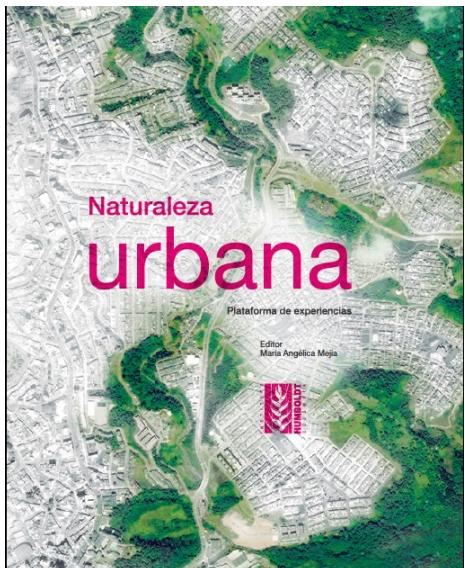
2015

#LaBiodiversidadImporta

MILESTONES

10 years researching urban environments

Biodiversity Management Toolkit



Urban Protected Areas

Mainstreaming Biodiversity into Urban Planning



9th Transition: The creation of urban centers and their integration into regional systems

2016

2017

2018



City Nature Challenge and BioBlitz

- Bogotá (2018, 2019, 2021)
- Cali (2017)
- Bucaramanga (2019)
- Barranquilla (2020)



Identificación Estructura Ecológica Urbana en Envigado y Bucaramanga



Guía para integrar SBN en la planificación de ciudades Colombia

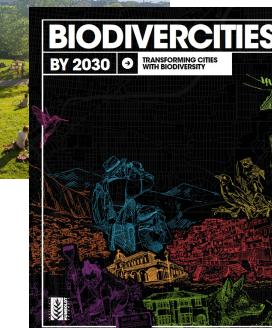
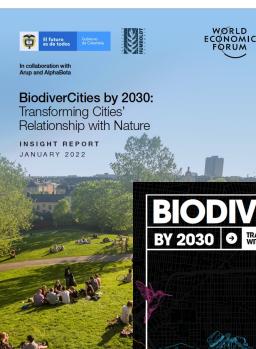
2018

2020

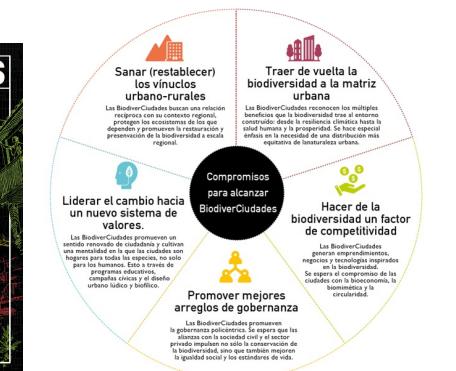
2021/22



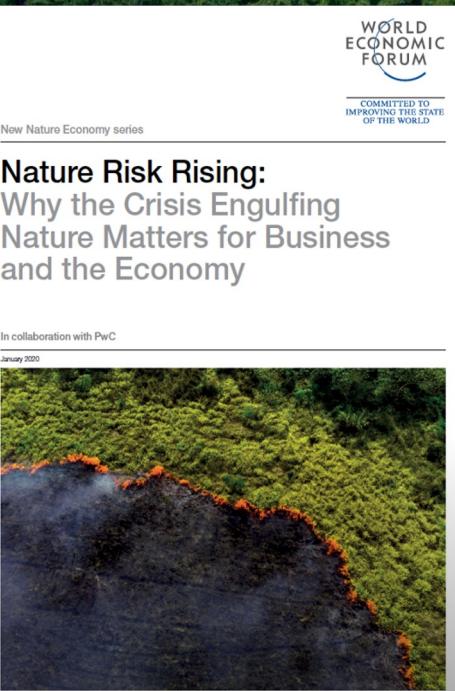
Bioeconomía para la reactivación económica



Instrumento metodológico BiodiverCiudades



Why biodiversity? Why now?



More than half of the world's total GDP* depends moderately or highly on nature and its services.

**\$44 trillion economic value generation

The importance of biodiversity for cities and regions

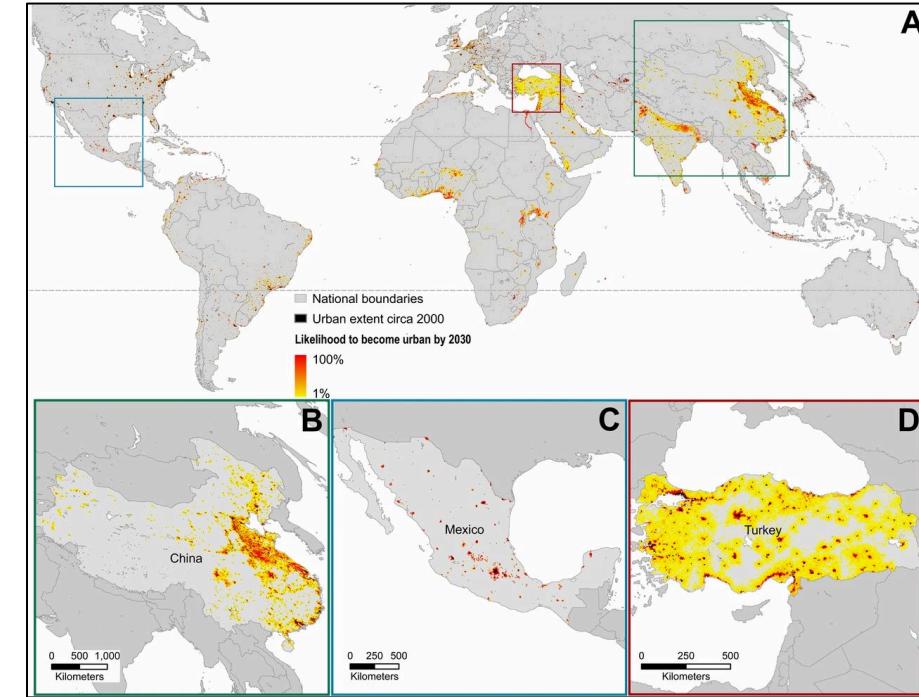
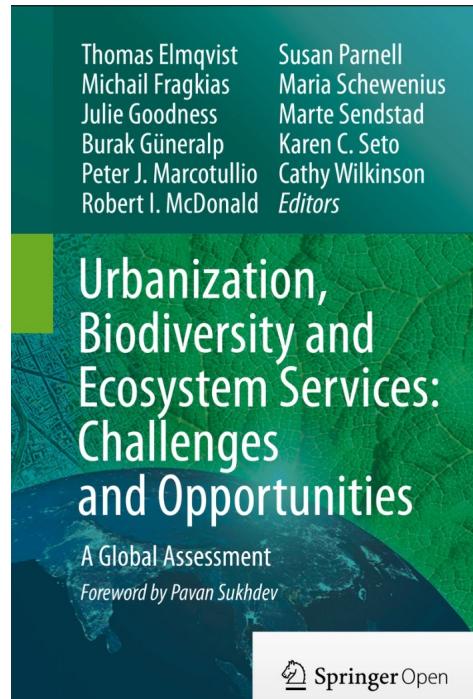


- ➔ Climate Change
- ➔ Water supply and air quality
- ➔ Habitat
- ➔ Human health, human well-being
- ➔ Economic benefits

URBANIZATION AND BIODIVERSITY

90 % of cities located in the world's biological hotspots are projected to grow and expand into tropical moist forest biomes, predominantly in low- and middle-income countries.

"Hotspot Cities: Identifying Peri-Urban Conflict Zones in the World's Biodiversity Hotspots", *Journal of Landscape Architecture*, 14(1), 2019, pp. 36-47



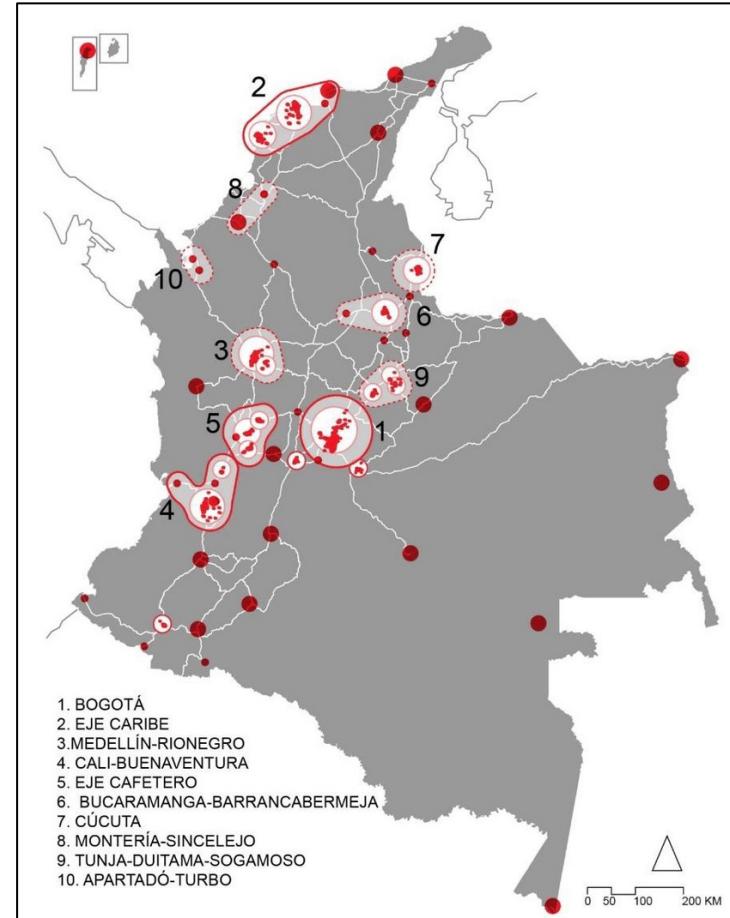
Global forecasts of urban expansion to 2030 and direct impacts on biodiversity and carbon pools. Karen C. Seto et al (2012)

URBAN CHALLENGES IN A MEGADIVERSE COUNTRY

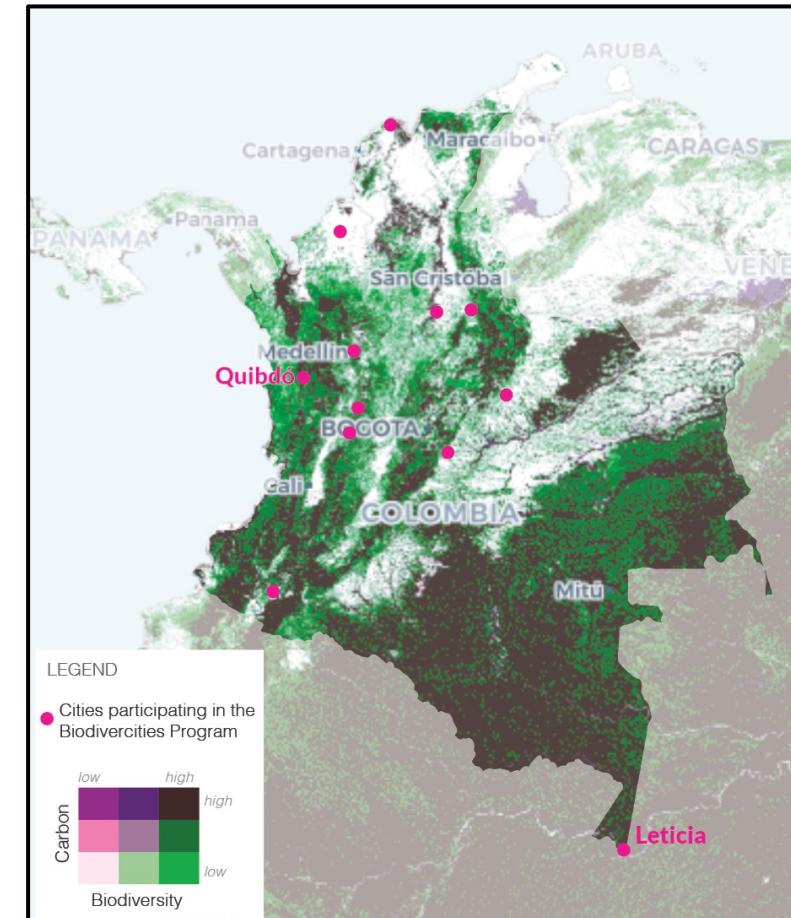
“Colombian cities are also prone to extreme weather events and man-made disasters but the current National Urban Policy **lacks a strong climate change component and does not link urban and environmental outcomes.**”.

National Urban Policy Review of Colombia, OECD (mayo 2022)

System of cities according to DNP
(10 urban-regional corridors are identified).

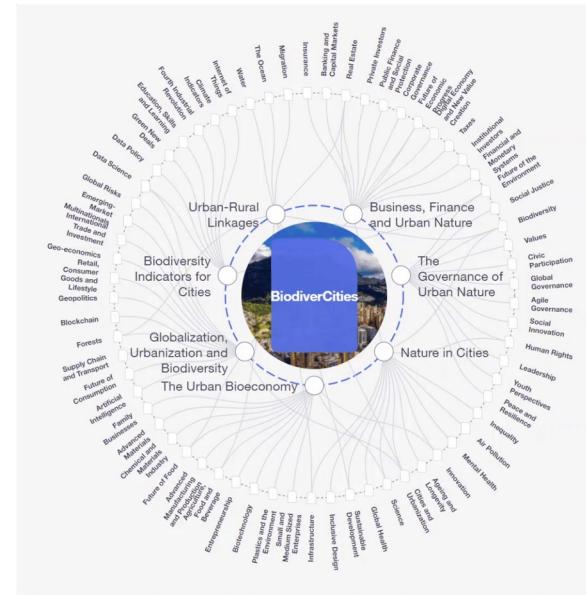
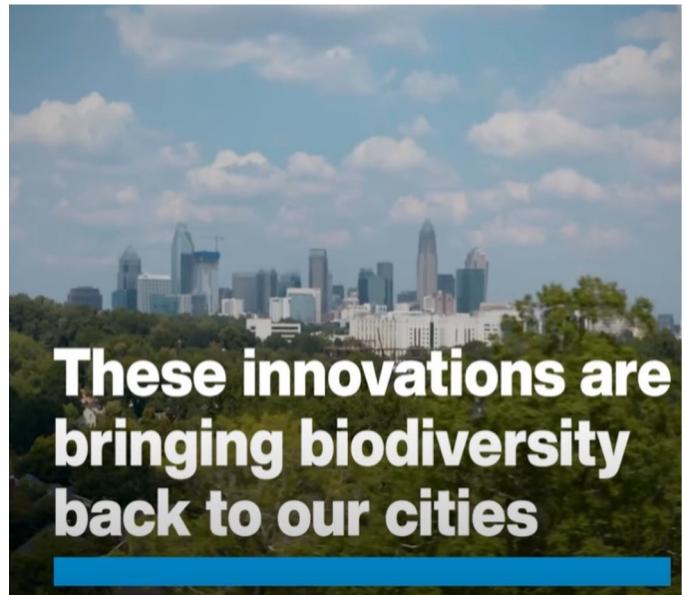


Biodiversity and carbon sinks in 14 BiodiverCities.
Source: ESI, MIT.



Knowledge Mobilization

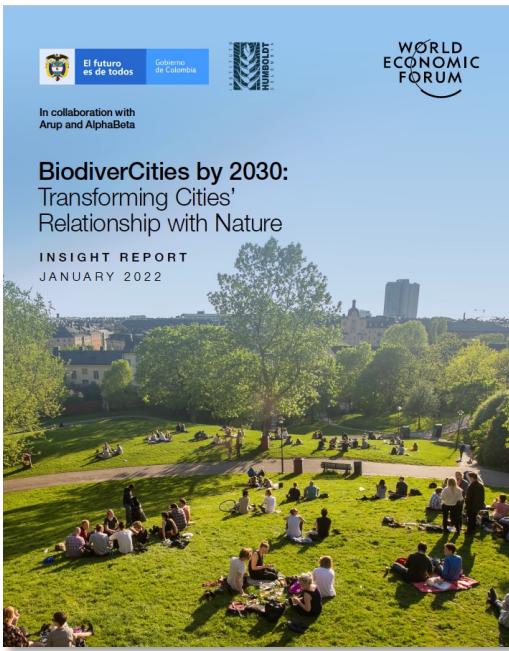
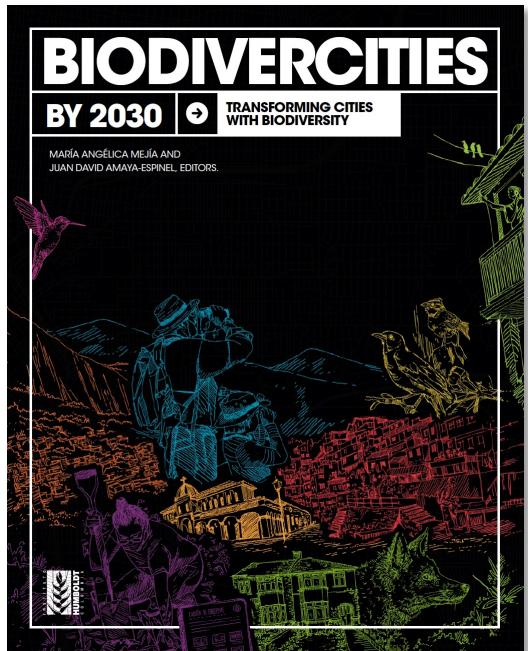
Knowledge, entrepreneurship and search for financing



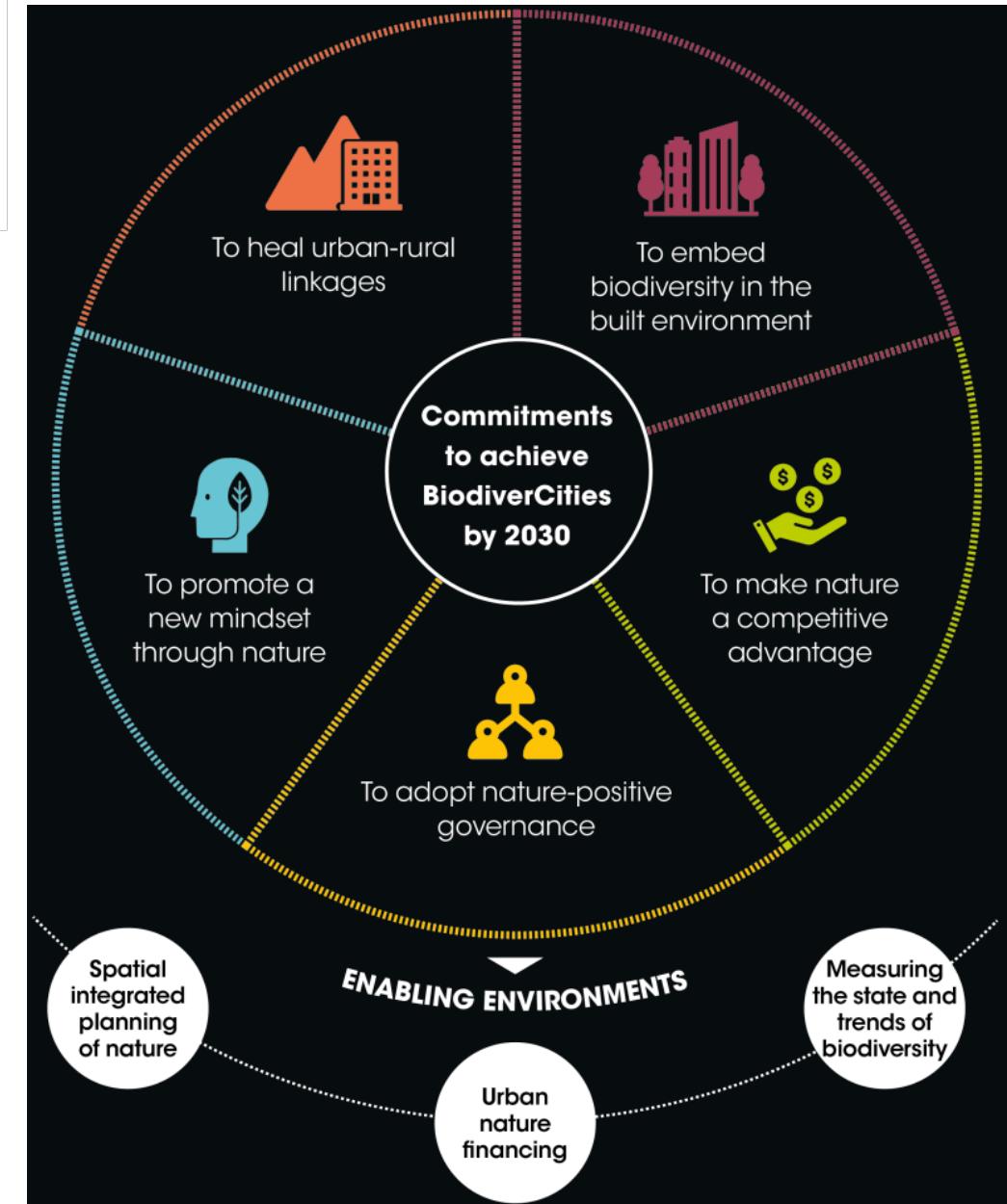
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Framing BiodiverCities

A collective effort



Source: Alexander von Humboldt Biological Resources Research Institute and the World Economic Forum, 2021.



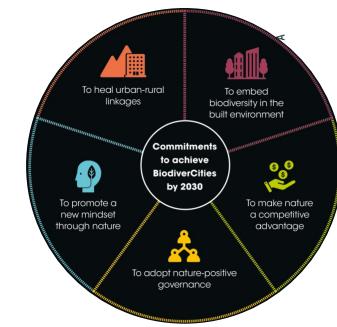


BiodiverCITIES in Action

3 Examples from Colombia

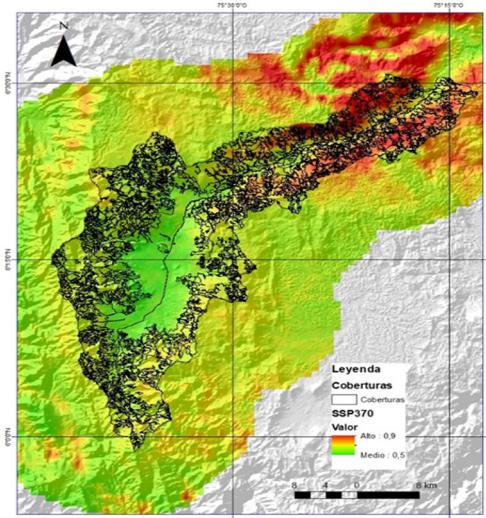
From species and wetlands to urban-regional planning

Where? Valle de Aburrá Metropolitan Area

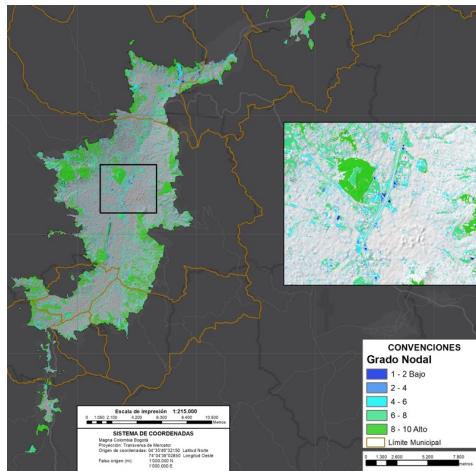


COMMITMENTS

1 2 6 8

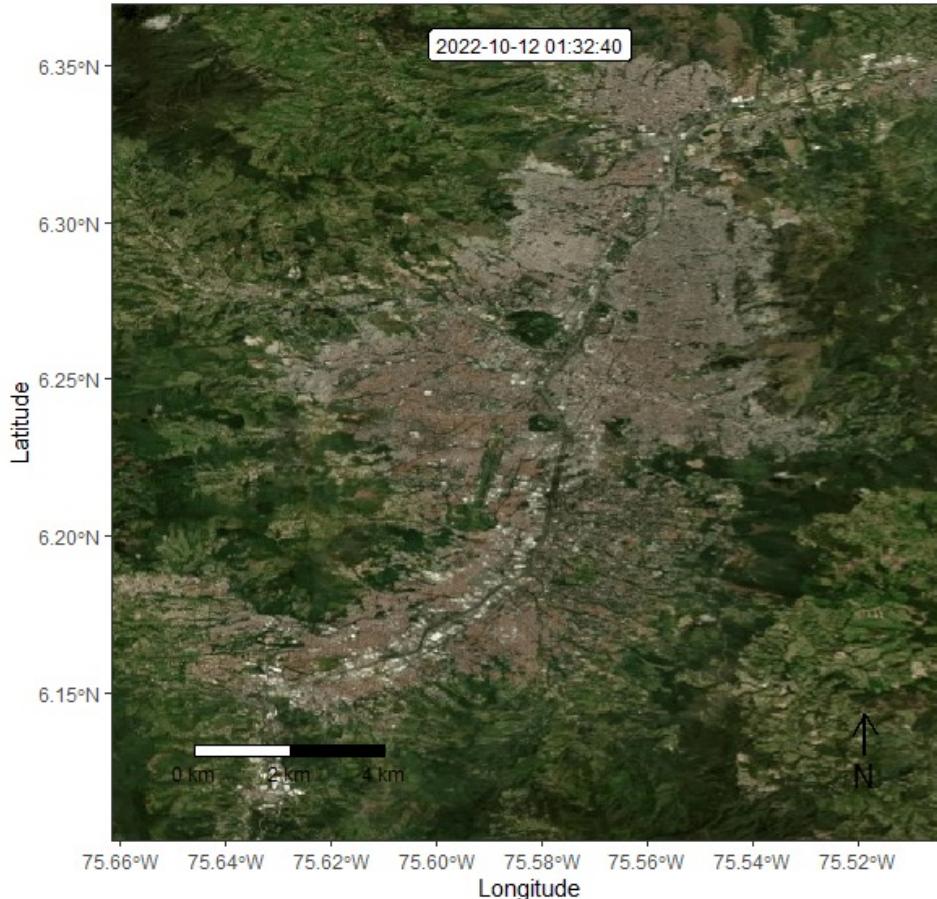


Vulnerability analysis of biotic communities due to climate change



Identification and clasification of wetlands

Species Movement Data: Foxes (raposa)



Names

Zorro07
Zorro06
Zorro05
Zorro03
Zorro04

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2 Scientific Expedition in a BiodiverCity with a Bioeconomy Approach

Where? Barranquilla



Ciénaga de Mallorquín EcoPark



Local Markets



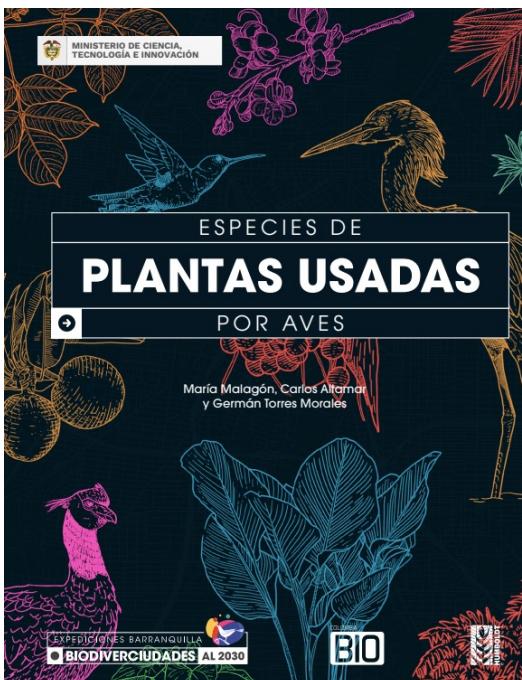
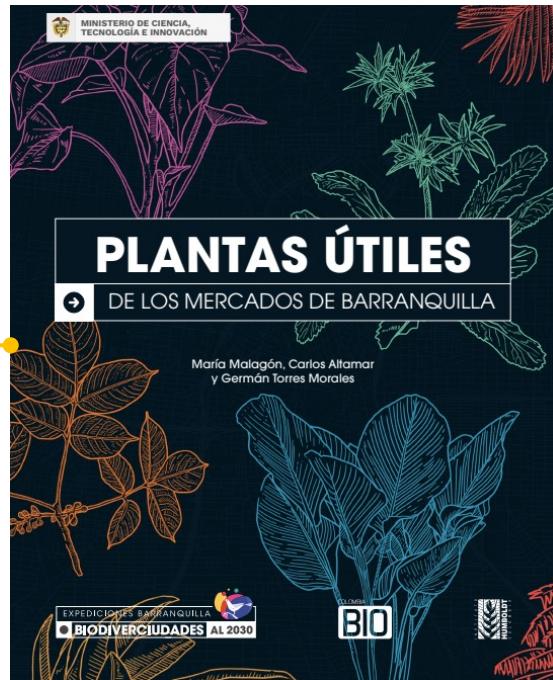
Urban Green Areas

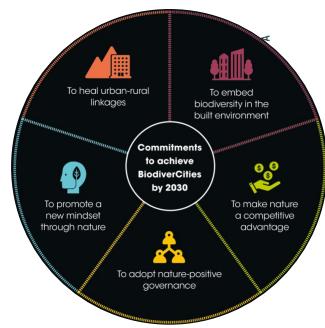




What did we find?

Corozo palm and ecotourism as options for a new regional bioeconomy in the Colombian Caribbean





COMMITMENTS

2 5 8

3 Citizen Science: BioBlitz in 8 BiodiverCities

Where? Montería, Armenia, Manizales, Pasto, Barrancabermeja, Villavicencio, Yopal y Leticia

BioBlitz Leticia



El ambiente
es de todos

Minambiente

#LaBiodiversidadImporta

Citizen Science: BioBlitz in 8 BiodiverCities

Where? Montería, Armenia, Manizales, Pasto, Barrancabermeja, Villavicencio, Yopal y Leticia



- 60 participants
- 2 Indigenous Communities: Cabildo T.I.WA and La Playa

#LaBiodiversidadImporta

eBird Results in Leticia

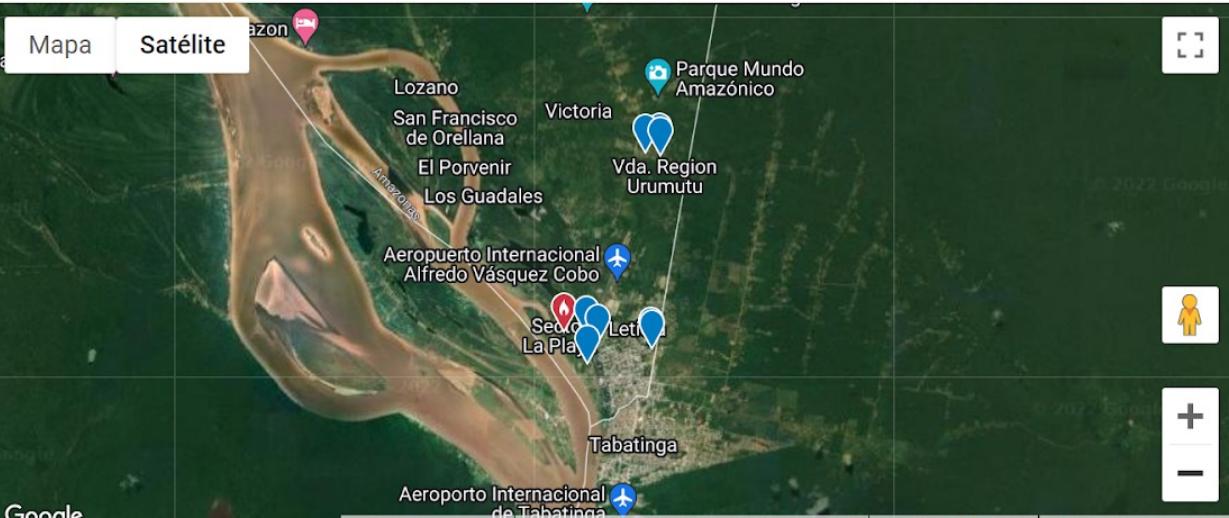
 eBird Enviar Explorar Mi eBird Ciencia Acerca de Noticias Ayuda

Bioblitz Leticia 2022
14 – 15 jul 2022 (2 días) Pública

Amazonas, Colombia
Aves BioBlitz Biodiverciudades, Fiorela Delgado Chaves

[Compartir](#) [?](#)

Mapa Satélite



Google Combinaciones de teclas | Datos del mapa ©2022 Imágenes ©2022 TerraMetrics | Condiciones del Servicio | Informar un error en el mapa

Bioblitz realizado en la Biodiverciudad de Leticia los días 14 y 15 de julio de 2022. Durante esta jornada de ciencia participativa personas interesadas en reconocer y registrar la biodiversidad de la ciudad.

DATOS PARA: [Grupo \(todos los participantes\)](#)

 113 Especies observadas +1 otros taxones	 10 Listas	 12 Especies con fotos
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BIODIVERCITIES BY 2030 TRANSFORMING CITIES WITH BIODIVERSITY |

EXPERIMENTATION |

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WIN-WIN SCENARIOS

Nathaly Rojas
Sara Cabrerizo
Secretariat of Environment of Villavicencio, Colombia.

Alejandro Serrano
Villavicencio Planning Secretary's Office, Colombia.

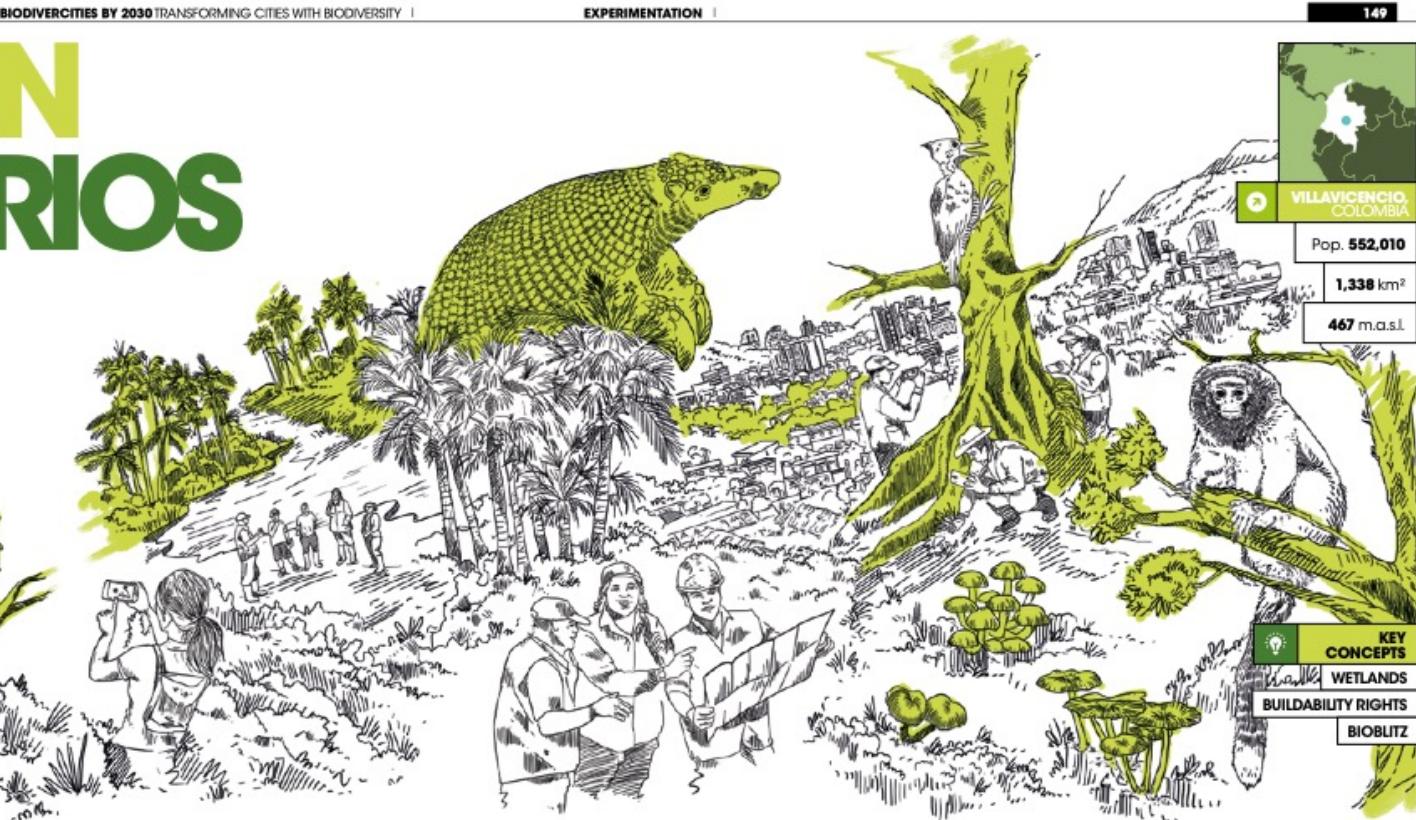
Two decrees aim at recovering six valuable and biodiverse wetlands in Villavicencio.

COMMITMENTS

Ciudad de Bogotá, M. A. Amaya Espinel, J.D. (eds.)
Biodivercidades by 2030 Transforming Cities with Biodiversity Bogotá, Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.
3022, 285 pages.

Through two decrees and a broad inter-institutional committee, the Villavicencio mayor's office seeks to recover six of the more than 270 wetlands identified in the municipality and their associated biodiversity, including endemic and endangered species, by proposing another alternative for the care of these ecosystems.

Although there are important environmental areas in the municipality of Villavicencio, such as **wetlands**, one of the biggest problems is the loss of ecosystem services due to urbanization and noncompliance with man-



agement plans. As a result, these areas are exposed to land movements, deforestation, land filling, draining of swamps, hunting of animals, and pesticides affecting fish and amphibians, among other harmful activities to the ecosystem. These problems have been reported over the years by environmental organizations and have been the subject of control and monitoring processes by the Secretary's Office of the Environment.

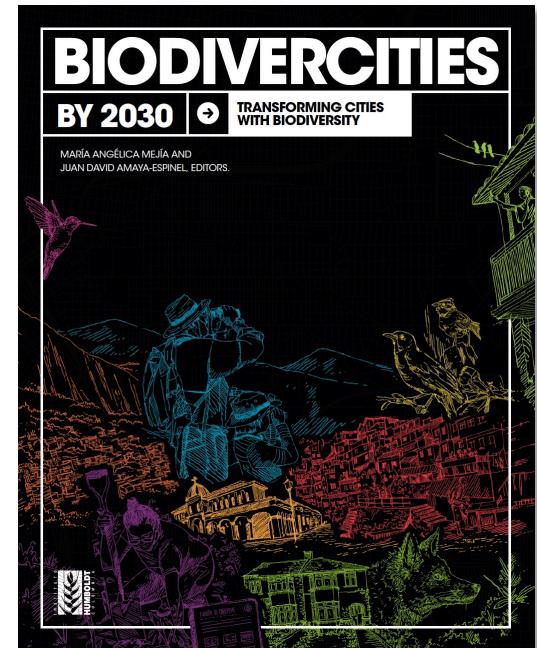
Within the long road of the institutional framework to address this environmental deterioration is the Land Management Plan (LMP) 287 of 2015. This instrument has made it possible to generate, establish and

implement **buildability rights** for construction and regulate the ownership of these environmental areas. The necessary conditions were thus established in the approval of Decrees 304 of 2020 and 152 of 2021, which seek to promote the protection of the municipality's wetlands.

Firstly, through Decree 304 of 2020, a broad inter-institutional committee was created that has carried out different diagnoses of six wetlands in Villavicencio to recognize the potential of these areas and manage them in the best way possible. The problems identified in this work gave rise, on the other hand, to the formulation of Decree 152 of 2021, which regulates the management in-

strument called "transfer of additional buildability rights for environmental conservation applicable to regional protected areas." This new regulatory framework allows landowners to understand that the protected land, which previously had no value and was seen as a burden, is now seen as a benefit. They, therefore, may do their part to protect it until, in return, they can opt through the decree for a higher building height or additional density.

These planning tools illustrate how the infrastructure sector is a key partner in urban biodiversity conservation and can also benefit from coordinated action with the local authority.



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BIODIVERCITIES BY 2030 TRANSFORMING CITIES WITH BIODIVERSITY |

COLLABORATIVE WORK STRATEGIES

The creation, study, and implementation of Decrees 304 of 2020 and 152 of 2021 have occurred through various processes:

- Intersectoral dialogues: Decree 152 has been an opportunity to get to know the various stakeholders in the territory related to protected areas. NGOs and environmental leaders in the city have become critical allies of property owners in monitoring and controlling their properties.
- Inter-institutional coordination: The joint work through workgroups between the Villavicencio mayor's office and Cormacarena¹ was fundamental in the creation of the decree.
- Participatory diagnosis: Thanks to the approach of the Secretary's Office of the Environment to environmental protection groups and communities living in areas near wetlands, the formulation of the decrees took into account the knowledge that these groups had in terms of biodiversity. Another form of citizen participation consists of **bioblitzes**, citizen science activities through which the inventories of protected areas, wetlands, and forest reserves are strengthened thanks to the use of citizens' mobile devices.

RESULTS OF THE BIoblitz 2021

OBSERVATION SITE	NUMBER OF SPECIES		
	Birds	Mammals	Macro-invertebrates
Alma Viva Metropolitan Park	47	0	0
Bavaria Forests	46	1	0
Coroncoco Wetland	18	0	0
La Gloria Park	27	1	9
TOTAL	138	2	9

As an example, it can be understood that for every 9.3% of land in building rights, the builder will obtain 930 m² of buildable area per hectare, equivalent to 9 cm per square meter.

- A new space for environmental governance is created for protected areas, which is multilevel and includes the mayor's office, Cormacarena, the community, and various environmental organizations.
- The Secretary's Office of the Environment should coordinate and carry out recovery and conservation programs for protected areas in possession of the mayor's office, per the corresponding management plan.

KEY LESSONS

- ➔ The transformation of wetlands and other areas of environmental importance makes it necessary to review their zoning. There are preservation or con-

EXPERIMENTATION |

ADDITIONAL BUILDABILITY RIGHTS FOR ENVIRONMENTAL CONSERVATION SUMMARY DECREE 152 OF 2021

Type of assignment

Buildable square meters
(without exceeding the maximum allowed in the LMP)

Assignment calculation

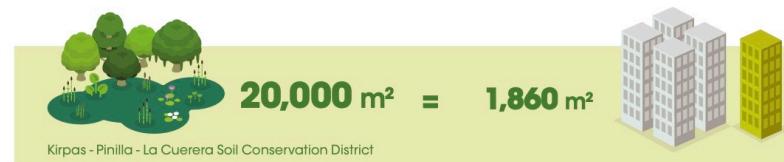
Area to be received* x 9.3%** = m² to be granted

*Generating area **Benefit ratio.

Owners of land located in regional protected areas can take advantage of the management instrument described in Decree 152 of 2021. The purpose of this norm is to transfer to the municipality of Villavicencio the ownership of the generating areas in exchange for receiving greater buildability in receiving areas. The following are two hypothetical examples illustrating how this mechanism could be applied in regional protected areas.

Elements to which it applies

Commercial buildings, equipment, and housing projects other than social and priority interest housing.



Type of assignment

Number of buildable units
(Maximum 250 units)

Assignment calculation

Hectares to be received* x number of homes** = number of constructible homes to be granted

*Generating area **For priority interest housing, multiply by 42 units. For social interest housing, multiply by 28 units.



servation areas that have lost all their biodiversity, so it is essential to update and modify some of the official documents that are guidelines for the wetland management route.

- ➔ The instrument's recent application demonstrated the need to review the requirements for owners to be able to transfer area to the municipality. Some deeds and topographic surveys do not match.
- ➔ Many environmental management plans are obsolete, expired, and without characterization. There is also no control or monitoring of such plans, and these are overloads that hinder the implementation of the decrees.

➔ It is urgent to create transparent policies and governance instruments that protect the permanence of biodiversity conservation initiatives such as the decrees referred to here that seek to strengthen conservation strategies.

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■ UNRECOGNIZED WETLANDS
■ RECOGNIZED WETLANDS
■ OTHER WATER BODIES

**BOGOTÁ HAS
725 ha
OF WETLANDS
1,45% OF THE
ESTIMATED AREA FOR
EARLY XX CENTURY**

La Conejera Wetland
**ONLY WATER BODY
WORLDWIDE HOSTING
*Senecio carbonelli***

**BIRDS IN URBAN
WETLANDS HAVE
DECREASED FROM
175 TO 112
2 spp. & 6 ssp.
OF THIS ARE ENDEMIC**

CI - AEEB, 2000.
IDEA-UN, 2005.

BOGOTÁ WETLANDS RECORD
5 FISH SPECIES
3 NATIVE & ENDEMIC
Eremophilus mutisii
Pygidium bogotense
Grundulus bogotensis

**2011 & 2012
ONE SINGLE WETLAND
3.000 DUCKS**

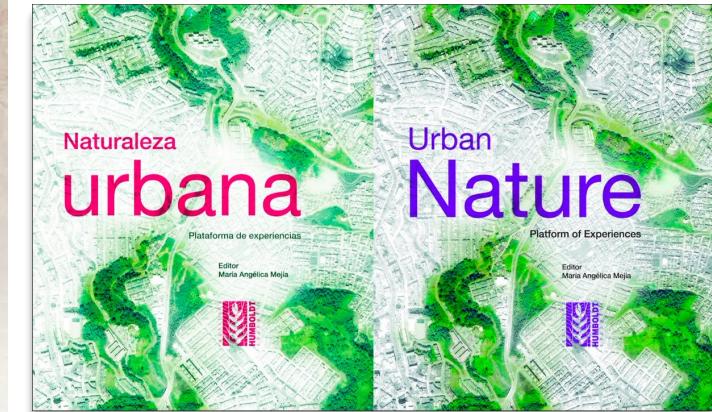
Tibabuyes Wetland
**BOGOTÁ'S
BIGGEST WETLAND
222,50 ha**

FIRST COLLECTIVE MAPPING ON
URBAN WETLANDS – BOGOTÁ CITY

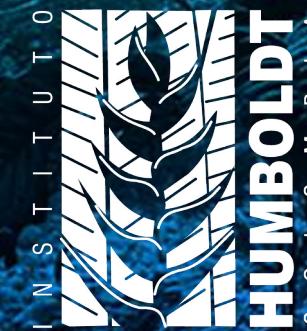
**THIS INITIATIVE
HAS GATHERED
~8.000
VOLUNTEERS
100 LOCAL
RESEARCHERS**

BOGOTÁ
1.636,59 km²
7.878.783 hab.
2.625 m.s.l.
2,97 Km
Credits: Google Earth.
Landsat, DigitalGlobe (2015),
CNES/Astrium (2015).

 Escobar Moreno Jorge, 2016.



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Instituto de Investigación de Recursos Biológicos Alexander von Humboldt

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Former Lead, BiodiverCiudades al 2030