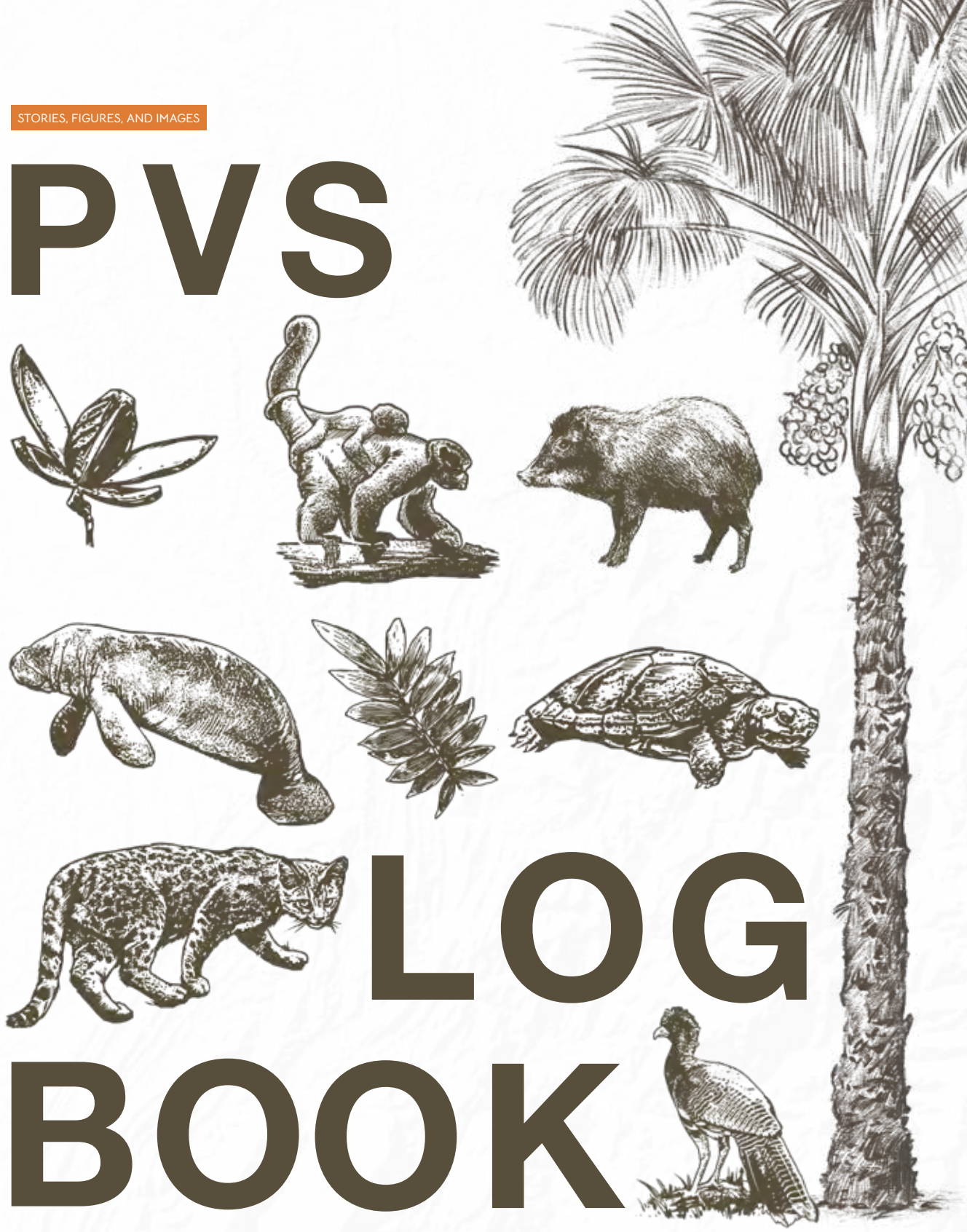
STORIES, FIGURES, AND IMAGES

PVS LOG BOOK



ecopetrol WCS Fondo Acción

A glimpse into **Proyecto Vida Silvestre**

PROYECTO VIDA SILVESTRE

Conservation of species in strategic areas of Colombia

STORIES, FIGURES, AND IMAGES

PVS LOGBOOK

A glimpse into
Proyecto Vida Silvestre

Cataloguing

The PVS Logbook is an informational document designed for general readers. It features stories, figures, maps, and photographs that collectively highlight the efforts of rural communities to support wildlife conservation across three landscapes in Colombia.

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Orinoco region

THE TAPIR CORRIDOR

THE GIANT SOUTH AMERICAN RIVER TURTLE'S ADOPTIVE GUARDIANS

MOVING AWAY FROM EXTINCTION

MM

Middle *Magdalena* Valley

ENVIRONMENTAL CATTLE FARMERS

SOCIAL FABRIC

GUARDIANS OF *LA SAN JUANA*

ASOMUCARE

PU

Putumayo

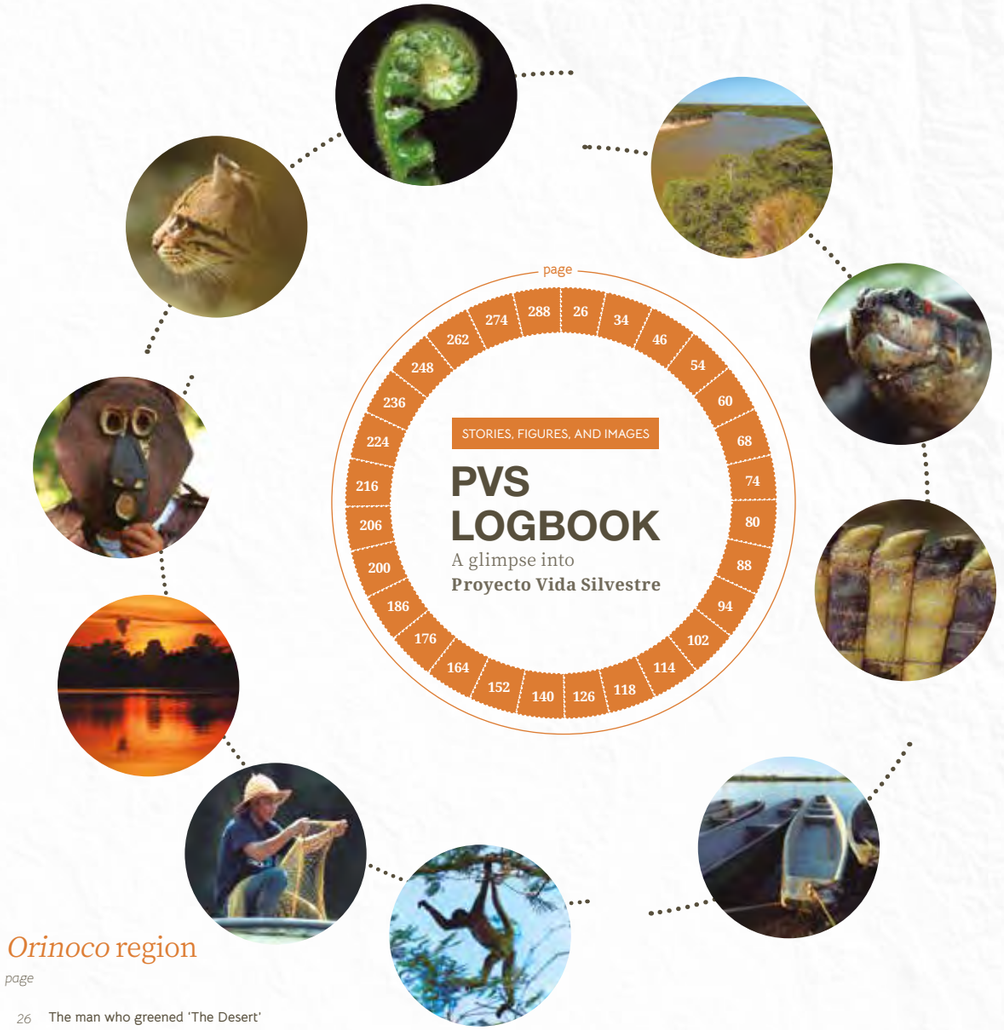
AMAZON CARETAKERS

BIODIVERSE FOOTHILLS

EC

Annex

ENERGY COMMUNITIES



Orinoco region

page

Middle *Magdalena* Valley

page

Putumayo

page

Annex: Energy Communities

Maps and figures

Orinoco region

page			source
42	**Map 1**	Burns near *Bita* River and its lower basin	WCS Colombia - NASA´s FIRMS. https://firms.modaps.eosdis.nasa.gov/
52	**Map 2**	The Tapir Corridor	WCS Colombia - Fundación Orinoquia Biodiversa (FOB)
58	**Map 3**	Camera traps in *Bita*	WCS Colombia
86	**Map 4**	Hatchling release at the riverbanks	WCS Colombia - Fundación Omacha
90	**Map 5**	Nesting sites	WCS Colombia - Fundación Omacha
112	**Map 6**	Monitoring of released crocodiles	WCS Colombia - Fundación Palmarito Casanare

Middle *Magdalena* Valley

page			source
136	**Map 7**	*El Sinaí* in PVS	WCS Colombia - CIPAV
144	**Map 8**	The PVS landscape and the historic forest loss	WCS Colombia - IDEAM, 2016
162	**Map 9**	Fishing agreements for conservation of the *Magdalena* catfish	WCS Colombia - Fundación Humedales
192	**Map 10**	Tracing the manatee	WCS Colombia - Cabildo Verde Sabana de Torres

Putumayo

page			source
232	**Map 11**	Paradise in *El Líbano*	WCS Colombia - Asociación GAICA
256	**Map 12**	Monitoring	WCS Colombia - Asociación Alas Putumayo
270	**Map 13**	Birdwatching in the Andean-Amazon corridor	WCS Colombia

Spatial baseline information

source

IGAC-2017, edited by WCS Colombia

ASTER Global Digital Elevation Map (https://asterweb.jpl.nasa.gov/gdem.asp)

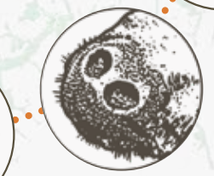
Global Surface Water (https://global-surface-water.appspot.com/map)

Orinoco region

page

Middle *Magdalena* Valley

page



Putumayo

page

Annex: Energy Communities

page

Presentation

In 2024, Cali, Colombia will host United Nation's Biodiversity Conference, referred to as COP16, a significant global event anticipated to welcome delegates from around 160 countries. It is the perfect moment to share with you the second edition of the PVS Logbook.

The first edition of this book came out in 2021. It is beautifully designed and shares a wide range of experiences from rural voices across Colombia. These stories highlight Proyecto Vida Silvestre (PVS) and its decade-long efforts to protect one of Colombia's greatest treasures: its biodiversity.

With the steadfast support of 14 environmental organizations committed to biodiversity conservation, PVS, led by Ecopetrol, WCS, and Fondo Acción, operates across three key regions in Colombia: the *Orinoco* region, the Middle *Magdalen*a Valley, and the Andean-Amazon foothills. Each of these landscapes presents unique natural features and conditions.

The *Orinoco* region grapples with significant environmental challenges as it faces pressures to become a major driver of economic growth for the country. In the Middle *Magdalena* Valley, natural landscapes have experienced the most dramatic historical changes. Meanwhile, the Andean-Amazon foothills remain a crucial natural corridor, connecting the biodiversity that thrives in the upper areas of the Colombian massif with that inhabiting lowland rainforests.

In these three landscapes, PVS has been involved in various **conservation** activities focused on protecting 15 threatened wildlife species and creating sustainable livelihoods for local communities. A key part of this work is strengthening and supporting community-based monitoring efforts. This innovative approach allows local residents to assess the conservation status of the wildlife they share their land with.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Another key aspect of PVS is its focus on helping farmers, settlers, fishermen, and their families find productive alternatives that not only improve their quality of life but also foster a careful balance between economic activities and environmental protection. PVS has been crucial in promoting the protection of strategic ecosystems and has demonstrated notable progress in enhancing the health of various animal and plant species across forests, jungles, rivers, savannas, and wetlands. This includes species that are either at risk or vital to the well-being of rural communities.

Lastly, this updated edition introduces an important new component in PVS: energy communities. This strategy focuses on promoting cleaner, more sustainable, and renewable energy solutions. The goal is to improve the quality of life for local communities while also supporting the conservation of natural landscapes and the wildlife they harbor. This effort is part of Ecopetrol's broader commitment to a just energy transition.

We invite you to explore the second edition of the PVS Logbook. With its compelling stories, beautiful illustrations, vivid images, and informative maps and data, this book takes readers on an inspiring journey, demonstrating how dedicated rural efforts and essential biodiversity conservation can go hand in hand.

Prologue

Colombia boasts an extraordinary wealth of biological diversity across its forests, savannas, paramos, wetlands, and other natural landscapes. Rural communities inhabiting these ecosystems face significant socio-economic challenges. Addressing these complexities calls for an integrated, multidisciplinary, and multisectoral approach that aims to foster innovation and explore alternative pathways that enhance the well-being of these communities while safeguarding biodiversity and its invaluable contributions to humanity.

Proyecto Vida Silvestre, known as PVS, is a careful, strategic initiative that involves meticulous planning and active community participation. Its goal is to preserve and restore biodiversity, improving the well-being of local communities.

To better understand the unique challenges of each area and effectively plan and implement actions to mitigate these pressures, this model focuses on landscape species. They not only embody the essence of the project but also help strengthen our vital connections with biodiversity.

These species are striking and charismatic, including the blue-billed curassow, the brown spider monkey, the manatee, the *Orinoco* crocodile, and the lowland tapir. They not only capture our attention and effort but also motivate us to address complex challenges, take diverse actions, and safeguard other, sometimes less visible animals or plants —some of which may still be unknown to science— that share their ecosystems.

Thus, PVS has led to multiple on the ground actions, such as implementing restoration activities, establishing nurseries, planting tree species for living fences, experimenting with non-timber forest products, creating groups and associations for women, fishermen, and nature observers, establishing connectivity corridors, and developing silvopastoral systems that align cattle farming with forest conservation efforts. In summary, PVS has championed collaborative Nature-Based Solutions (NbS) to improve human well-being and recover biodiversity.

Orinoco region

Middle *Magdalena* Valley

Putumayo

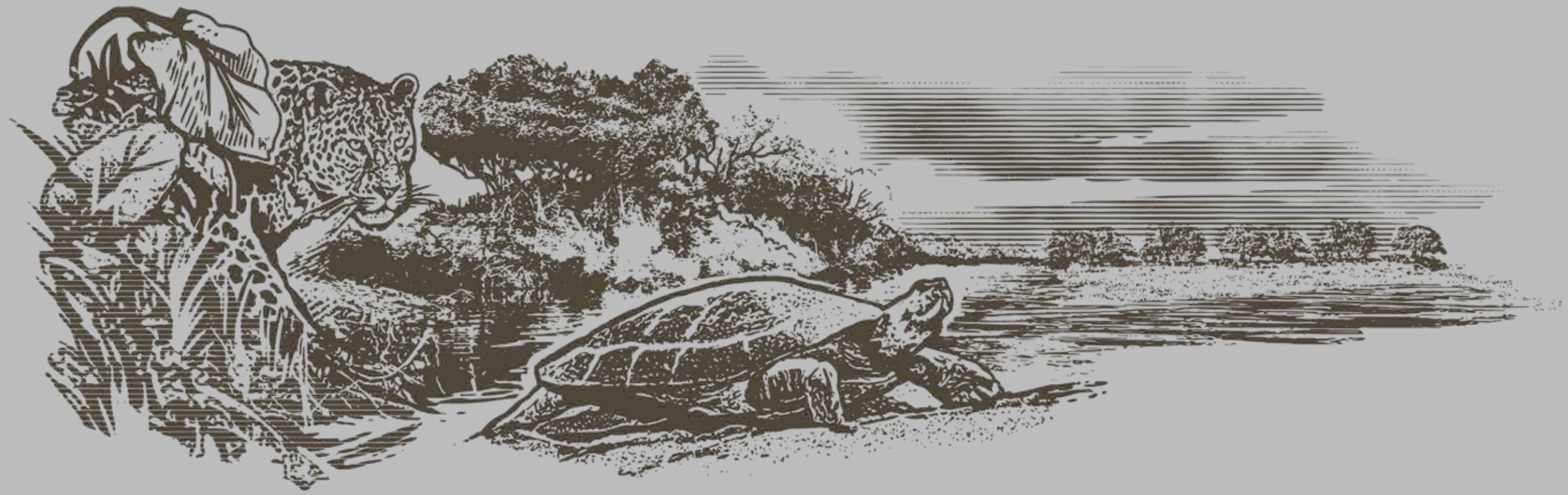
In its ten years of continuous work, PVS has encouraged many farm owners to designate part of their properties to conservation efforts. In exchange for guidance on increasing productivity and achieving sustainability, farmers and ranchers have learned to care for local wildlife and flora species while developing projects that improve their incomes and quality of life.

This recognition also includes a considerable number of fishermen who have adopted sustainable fishing practices and have found support through PVS to lead other various agricultural ventures. The efforts of these valuable riverside inhabitants are now contributing to the proven recovery of flagship animals and resources, like the *Magdalena* catfish.

This book explores the stories, efforts, and achievements of the people living in the rural areas intervened by PVS. It celebrates their efforts, lessons learned, and insights as they strive for a better quality of life, emphasizing the preservation and sustainable use of biodiversity.

Alfredo Molano, a notable Colombian sociologist and writer once said, “History isn’t just something that’s already happened to notable and famous men. It’s much broader —it’s what happens to ordinary people every day...”. In that spirit, the PVS logbook highlights, celebrates, and shares the environmental sustainability stories unfolding daily along the *Magdalena* River, across the vast plains of the *Orinoco* region, and in the foothills connecting the Andean and Amazon ecosystems.

Germán Forero Medina
Science and Conservation Director
WCS Colombia



Orinoco region

Middle *Magdalena* Valley

Putumayo

READING CUE **ONE**

Three regions, three opportunities

Proyecto Vida Silvestre operates in geographically diverse regions of Colombia to mitigate their environmental degradation.

780,962

hectares intervened by Proyecto Vida Silvestre

PVS in numbers

The expansion of agroindustry, degradation of wetlands and primary forests, unsustainable hunting, pollution of major rivers and tributaries, and the decline of wildlife and plant species pose environmental challenges across three diverse regions: Middle *Magdalena* Valley, *Orinoco*, and *Putumayo*. In response, Proyecto Vida Silvestre (PVS) is working in each area to mitigate the impact of these issues by tailoring its interventions to the needs and preferences of local communities.

In the Middle *Magdalena* Valley, cattle farming and agricultural expansion —including the cultivation of African palm— has resulted in the loss of natural vegetation. However, sightings of iconic wildlife species such as jaguars, brown spider monkeys, and blue-billed curassows still occur. The *Magdalena* River and its surrounding marshlands are crucial lifelines for local communities, providing essential hydrobiological resources. PVS has focused on empowering these communities to lead, design, and adopt sustainable practices and restoration efforts. This initiative spans across *Yondó* (*Antioquia*) and *Cimitarra*, *Puerto Parra*, and *Barrancabermeja* (*Santander*), encompassing approximately 232,763 hectares.

The *Orinoco* region boasts exceptional natural heritage, yet encounters similar challenges to those of the Middle *Magdalena* Valley. It harbors one of the largest populations of birds and large mammals and hosts the *Bita* River, a globally significant waterway recognized as a Ramsar World Heritage Site. However, agriculture and extensive cattle farming have intensified, alongside the hunting of giant South American river turtles for their meat and eggs. PVS is promoting proactive natural resource management, collaborating closely with local communities and landowners. In this region, PVS's intervention spans across 529,302 hectares, covering 107,244 hectares in the localities of *Nueva Antioquia* in *Vichada* and *La Virgen* in *Cravo Norte* (*Arauca*), and 422,047 hectares in *Puerto Carreño* (*Vichada*) in the *Bita* River's lower basin.

Meanwhile, the Amazon region stands as Colombia's epicenter of deforestation, with *Putumayo* mirroring this trend. In this region, PVS is working in the locality of *El Líbano* in the municipality of *Orito* to foster a harmonious relationship between local families and their natural resources. In this area, the remnant forests of the Colombian Massif's eastern slope and the world's largest tropical rainforest converge. Over time, local communities have come to recognize the intrinsic value of biodiversity, viewing species as catalysts for ecotourism. As a result, the forest has transformed into a home for all its inhabitants.

In *Putumayo*, like in the Middle *Magdalena* Valley and *Orinoco*, biodiversity is becoming a newfound opportunity for sustainable development.

READING CUE **TWO**

Communities begin to value their territories

Proyecto Vida Silvestre's environmental initiatives are implemented in collaboration with local communities, providing benefits to fishermen, farmers, and cattle ranchers.

Orinoco region

Middle *Magdalena* Valley

Putumayo

26

rural communities work as strategic partners in the three landscapes prioritized by PVS

PVS in numbers

In Colombia, environmental programs and plans always strive to enhance biodiversity. Yet, this effort can be strengthened by promoting social interventions that raise community awareness about their ecological wealth. This remains a core focus of Proyecto Vida Silvestre (PVS) in *Orinoco, Putumayo,* and the Middle *Magdalena* Valley.

As the reader delves into the stories within these pages, one clear theme emerges: placing community needs at the forefront has been crucial for the successful implementation and progress of PVS. The project has directly impacted the lives of over 700 people —including fishermen, farmers, and cattle ranchers— while also empowering 22 community organizations who have changed their perception of both themselves and their environment.

In some regions, strong social bonds have formed among once-isolated and independent human groups, leading to agreements to protect natural heritage. Women, previously confined to household duties with limited prospects, have now become leaders, actively contributing to family economies and participating in decision-making processes. Moreover, productive projects involving youth are underway, with many expressing a desire to stay in their territories and contribute to local development, a departure from trends in many other municipalities.

PVS has also encouraged fishermen to unite and create associations. Five of these, Asopesbocar, Asopezchucurí, Asodesba, Apacco, and Asopesgrum bring together 453 members who are actively participating, sharing their practical knowledge, engaging in meaningful dialogues with government authorities, and supporting two fishing seasons' bans for the *Magdalena* catfish to ensure the species' reproduction.

Sustainability is now a familiar concept, and many local residents are starting to think about the impact of unsustainable wildlife hunting. They are gradually understanding the value of only taking what they need for sustenance without exceeding that limit. This is complemented by an increasing awareness of good cattle farming and agricultural practices, as well as a transition toward organic farming methods to replace agrochemicals.

Additionally, PVS is building connections with landowners and cattle farmers, who, given their considerable economic power, might otherwise disregard sustainable practices. As a result, some of them have established agreements to protect the blue-billed curassow and the brown spider monkey. They are also interested in creating a certification that accredits their products as environmentally sustainable.

From a social perspective, there is a consensus among the communities and professionals involved in Proyecto Vida Silvestre: collectively learning through the project effectively enhances conservation efforts for flora and wildlife species. As a result, they have come to appreciate their own capacities and the ecological wealth of their environment.

READING CUE **THREE**

Biodiversity monitoring shows progress in the conservation of landscape species

Orinoco region

Middle *Magdalena* Valley

Putumayo

Using camera traps, PVS analyzes how ecosystems respond to rehabilitation or conservation measures.

Monitoring natural resources is crucial for Proyecto Vida Silvestre (PVS). This involves various methods, such as using camera traps to observe forests without disturbing wildlife and tapping into the practical knowledge of local communities. The main goal is to assess changes in certain species' populations and confirm the effectiveness of actions to enhance their abundance, activity patterns, or habitat utilization. Simply put, the objective is to determine whether ecosystems and their inhabitants positively respond to measures designed for their rehabilitation or conservation.

In the Middle *Magdalena* Valley and *Orinoco* regions, efforts in this direction are yielding promising results. Leonor Valenzuela, Analysis and Synthesis Coordinator at WCS Colombia, explains that ongoing monitoring activities are revealing positive outcomes, including successful environmental education programs. Additionally, the role of conservation agreements with farm owners to establish biological corridors, as well as commitments to reduce hunting and prohibit unsustainable fishing practices, is noteworthy. As a result of these efforts, populations of landscape species such as the *Magdalena* catfish, brown spider monkey, and lowland tapir are showing signs of recovery.

45,360

camera trap nights showcase PVS's efforts to monitor species.

PVS in numbers

In the Middle *Magdalena* Valley, specifically in rural areas of *Puerto Parra* and *Barrancabermeja* (*Santander*), as well as in *Yondó* (*Antioquia*), *Magdalena* catfish populations have seen a five percent increase. This data comes from analyses conducted in the marshlands of *Bocas del Carare*, *San Rafael de Chucurí*, and *Riberas del San Juan*.

Regarding the blue-billed curassow and the brown spider monkey, camera traps were used to measure the probability of colonization —suggesting the likelihood of both species beginning to inhabit areas they previously avoided. An increase in colonization rates has been observed in locations where landowners signed conservation agreements, dedicating part of their land to protecting strategic ecosystems.

Indirectly, the conservation of these landscape species is improving conditions for other small and large mammals that have historically been hunted for human consumption. As a result, pumas and river otters are now being spotted.

In the *Orinoco* region, deforestation rates have dropped in areas where conservation agreements and activities are underway. For instance, in the *Bita* River basin (*Vichada*), PVS has established the "Tapir Corridor." This initiative involves reintroducing *moriche* palms and *congrio* trees to certain areas, as they are resilient timber species.

This progress could inspire more effective protection measures and strengthen medium-term efforts to ensure a sustainable future for both flora and wildlife species across the region. Such endeavors are also crucial for maintaining biodiversity balance throughout the country. ■

Orinoco region

Middle *Magdalena* Valley

Putumayo

READING CUE **FOUR**

Conservation agreements: a truce with wildlife

Land or farm owners dedicate a portion of their lands to conservation efforts. In return, they receive guidance to enhance productivity.

Land or farm owners engaged with Proyecto Vida Silvestre (PVS) often show a dedication to protecting fauna and wildlife species within their territories.

They have designated a portion of their properties solely for preserving natural resources, helping restore forests, wetlands, riparian zones, and other ecosystems. These efforts help create biological corridors, allowing species who have lost their habitats —like the brown spider monkey and the lowland tapir— to move freely. Such compassionate and selfless actions directly benefit flora and wildlife species while also curbing deforestation and hunting pressures.

Furthermore, this lays the groundwork for voluntary conservation agreements, a concept promoted by PVS in the regions to enhance its rapport and collaboration with local communities.

187

conservation agreements established by PVS over a ten-year period.

PVS in numbers

Behind this action, there is a reciprocal arrangement: by dedicating a portion of their lands to conservation, farm owners receive benefits such as restoration activities or support for sustainable income-generating initiatives. In other words, they get help with managing their crops or livestock. This includes converting pastures into productive lands, setting up fences for livestock, restoring degraded ecosystems, planting promising species like the *moriche* palm or the cashew tree, implementing beekeeping or silvopastoral systems where trees or forage serve as feed, installing energy-efficient kitchens, developing home gardens, and receiving guidance on managing small husbandry species, among other topics.

In a sense, it is a mutually beneficial pact, where all parties come out as winners. Environmental organizations find crucial allies in farmers and cattle ranchers to advance their mission for wildlife conservation. Forests also benefit from this truce. Lastly, farm owners receive direct benefits that enable them to enhance productivity.

Since PVS began until mid-2024, approximately 187 conservation agreements have been signed with landowners, including fishermen, of which 115 remain active.

As a result of this effort, conservation agreements cover an area of approximately 33,168 hectares, including 4,596 hectares of forested land.

Conservation agreements are not new or isolated efforts. They are part of a broader global strategy supported by the Convention on Biological Diversity, which established the Aichi Biodiversity Targets. These targets seek to tackle the root causes of biodiversity loss worldwide, reduce pressures on species, and promote sustainable resource use. Additionally, they call for the protection of at least 30% of each country's terrestrial areas worldwide. ■

READING CUE **FIVE**

A long web of life

Proyecto Vida Silvestre (PVS) is dedicated to preserving the survival of 15 species spread across three distinct and geographically diverse landscapes.

From a scientific standpoint, one of the most significant goals of Proyecto Vida Silvestre (PVS) can be summed up in a single statement: it is an initiative focused on the recovery of 15 species, some vulnerable and others critically endangered, with the ultimate purpose of reconnecting them with the future.

This approach is justified: the *Orinoco*, *Putumayo*, and Middle *Magdalena* Valley regions, where PVS operates, show evident environmental degradation. Therefore, they require a focus on nature conservation.

WCS, as the scientific leader for PVS, partnered with 10 organizations from different sectors in the three regions to restore wildlife and plant populations and craft a sustainable strategy to ensure their survival over time.

In the localities of *Puerto Parra*, *Cimitarra*, and *Barrancabermeja* (*Santander*), *Yondó* (*Antioquia*), and the middle basin of the *Magdalena* River, PVS focused on protecting several species, including the manatee, *carreto* tree, brown spider monkey, blue-billed curassow, and *Magdalena* catfish, with the last three particularly at risk of extinction.

In the *Orinoco* region, PVS's conservation efforts targeted species like the *moriche* palm tree, the timber-producing *congrio* tree, the lowland tapir, and two reptiles on the brink of extinction: the Giant South American river turtle and the *Orinoco* crocodile. These initiatives focused on *Vichada*, specifically *Puerto Carreño*, the middle and lower basins of the *Bita* River, and *Santa María de la Virgen* in the *Cravo Norte* locality (*Arauca*).

In *Putumayo*, PVS promoted the protection of various wildlife and plant species, including the Northern tiger cat, white-lipped peccary, *cedro* tree, black tinamou, and woolly monkey. In this region, activities focused on the *El Líbano* locality, which makes up 1% of the department and 8% of the municipality of *Orito*.

Conservation efforts for individual species often yield widespread ecological benefits. For instance, in the *Orinoco* region, farm owners are working to create a biological corridor for the lowland tapir, which has also fostered the return of numerous smaller mammals, thus revitalizing the area's food chain. Moreover, safeguarding species like the *Magdalena* catfish, manatee, or *Orinoco* crocodile simultaneously protects the rivers and wetlands they inhabit. Similarly, efforts to prevent the extinction of the brown spider monkey are crucial in combating deforestation and preserving the habitats of many bird species.

Every conservation initiative has an additional layer of impact: the protection of individual species also shapes the governance of various, often overlooked, regions. Additionally, these efforts help rebuild the social fabric in communities that have been affected by armed conflict.

In conclusion, PVS extends far beyond the conservation of 15 species. In reality, the efforts to protect these species have a ripple effect, safeguarding hundreds more. This creates a virtuous cycle, where each conservation effort multiplies, forging a robust and extensive web of life. ■

Orinoco region

Middle *Magdalena* Valley

Putumayo

15

landscape species protected by Proyecto Vida Silvestre

PVS in numbers

Orinoco
region

Middle
Magdalena
Valley

Putumayo

ORINOCO REGION

THE TAPIR CORRIDOR

THE GIANT SOUTH AMERICAN RIVER TURTLE'S ADOPTIVE GUARDIANS

MOVING AWAY FROM EXTINCTION

THE TAPIR CORRIDOR

The man who greened ‘The Desert’

Guillermo Hernández shares his journey of transforming barren land by planting native trees such as the *congrio* tree and the *moriche* palm tree. His efforts are helping establish a biological corridor for the conservation of the lowland tapir.

From a modest kitchen window in his home, one can glimpse this quintessential *llanero* at work.

12

Civil Society Natural Reserves (RNSC, for its acronym in Spanish) registered.

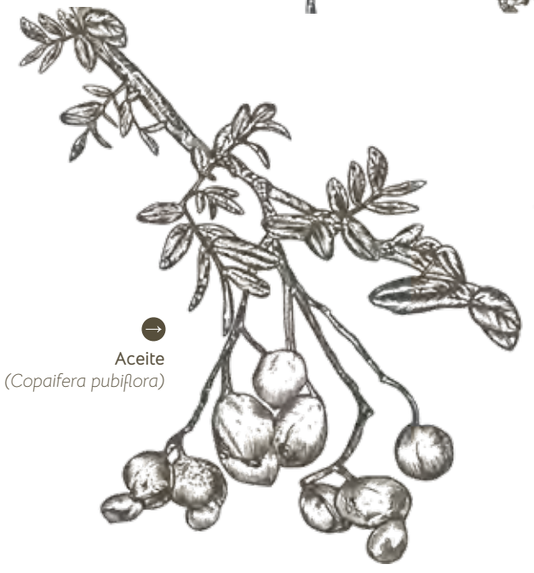
PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

↙ Alcornoco
(Bowdichia virgilioides)



→ Aceite
(Copaifera pubiflora)

↖ Guandalay
(Jacaranda obtusifolia)

They call him ‘Tarache’, his second surname. Here, he shares some of the medicinal plants he has come to rely on.

When Guillermo Hernández first arrived at what would eventually become his home, there was nothing. No houses dotted the landscape, no trails beckoned, and human presence was absent.

Originally from *Orucué* (*Casanare*), he started doing whatever work he could find. Agriculture and cattle farming were always at the center of his life, leading him to spend many years managing various farms, always on “land belonging to others,” as he puts it. Then, one day, he felt the urge to pursue something of his own. It was then that he found his way to *La Esmeralda* locality, a four-hour journey from *Puerto Carreño*.

It was a pristine place, almost untouched. So, he started with the basics: building his home. “The next step was to name my land, and the only name that came to mind was ‘The Desert’.”

↗ Guásimo
(Guazuma ulmifolia)

↖ Malagüeto
(Xylopia aromatica)

↗ Palma de cucurita
(Attalea maripa)

↗ Bejuco guaco
(Aristolochia ringens)

Guillermo is seldom called by his given name; rather, he is recognized as ‘Tarache’, his second surname. This is how everyone identifies this native of the *Orinoco* region, who has had a deep connection with the plains, horses, birds, rain, the ‘dry season’, and hard work since childhood. Now, 39 years after founding an entire settlement and laying the groundwork for his lifelong journey, he has transformed into a dedicated wildlife protector.

‘The Desert,’ as Guillermo calls the newly discovered land, has undergone a significant change. Located in the *Bita* River basin —a globally recognized Ramsar wetland— it has become a haven, sheltering streams, forest patches, and, more recently, serving as a refuge for various animals. Here, they find food and, most importantly, a safe harbor amidst the ongoing conflict they have faced for years, fueled by deforestation and hunting.

↖ Cafeto
(Trichanthera gigantea)

Orinoco
region

Middle
Magdalena
Valley

Putumayo

It is a familiar sight: during the yearly rainy season, certain low-lying areas of ‘The Desert’ are submerged.

‘I HAVE BEEN LED ASTRAY’

At 67 years old, ‘Tarache’ has transformed into a passionate reforestation advocate.

He has not forgotten about rice, plantain, corn, or cassava —the staples that sustain him and his livelihood. But now, with Proyecto Vida Silvestre and support from the Fundación Orinoquia Biodiversa (FOB), he is diversifying. In a portion of his mostly savanna-covered farm, he is planting a variety of native plants. These are later transplanted to another area, helping to establish the ‘Tapir Biological Corridor’. This corridor consists of interconnected vegetation patches, forming an extensive and continuous pathway. It provides a stress-free environment for many of these mammals to move and reproduce, ensuring their populations endure.

For decades, the lowland tapir has been hunted relentlessly, resulting in its current status as a threatened species. Protecting it is paramount, and by dedicating himself to this cause, Tarache not only helps protect the lowland tapir but also indirectly supports a myriad of other wildlife species.

“I have eaten tapir meat many times,” he shares. “There was a time when you had to hunt to survive. I killed several for food. Even when I regretted it and promised not to do it again, some families who settled in the region would give me meat, and I would find myself led astray again,” he explains.

That is why he does not deny having witnessed the near-disappearance of the lowland tapir. “For a considerable time, I did not see a single trace of it,” he says. It is like they turned into ghosts because much was said about them, but very few actually saw them. However, over the years, and especially now with the conservation strategies underway, he has witnessed their recovery.

Orinoco region

Middle *Magdalena* Valley

Putumayo

THE FOOTSTEPS OF A MAVERICK

Therefore, he supports the regular cultivation of species like *aceite*, *moriche*, and *congrio* trees, which help rehabilitate the forest patches that provide vital food sources for wildlife.

Around four years ago, he planted 800 specimens of these species, and another 712 last year. Looking ahead, his goal is to reproduce at least 200 more annually, which should be transplanted during the rainy season. They are usually planted in areas near water sources. “This work is rewarding; I feel delighted when I see tapirs; it is good to see them again. They are the size of a donkey, very cute, dark gray. Their footprint is similar to that of the capybara, with three hooves,” says Tarache.

He shares that through camera traps strategically positioned in ‘The Desert’, or even during his regular walks, he has come across white-lipped peccaries, lowland pacas, pumas, blue-billed curassows, squirrels, foxes, anteaters, and plenty of deer. Monkeys have also been spotted.

Out of the 1,482 hectares on his farm, Tarache has designated 150.6 hectares exclusively for conservation. In parallel, he has implemented sustainable production practices, particularly for managing livestock through living fences and forage banks, which also serve as cattle feed.

As time has passed, he went from being just a quintessential *llanero* to becoming a role model among his friends and acquaintances. Initially criticized for “planting too many trees,” time has proven him right, showing that his path has been the most compassionate and generous. Now, several of his peers are inspired to do the same. “When you see a maverick, know that others are following.”

He believes that many times farmers “get frustrated with tapirs because they can quickly devour their crops; I stress the importance of fencing, protecting livestock, being cautious, and organized; because tapirs can be as greedy as cows, but we have learned that it is much better to see them alive than to remember them dead.”

49

farms with conservation agreements, totaling 47,910 hectares.

PVS in numbers

These three small snapshots capture a glimpse of Tarache’s daily life.

Orinoco region

Middle *Magdalena* Valley

Putumayo

THE TAPIR CORRIDOR

Responsible fire management: a crucial resource for the *llanero*

In the *Orinoco* region, fire is a vital element of both the ecosystem and regional culture, used to prepare lands for harvesting and cattle grazing. Today, farm owners are increasingly aware of its proper management.

The image captures the expressive glow of flames amidst an *Orinoco* night.

Orinoco region

Middle *Magdalena* Valley

A firebreak is a cleared strip of land designed to prevent vegetation from growing excessively.

FIRE

Fire stands as one of humanity's most significant discoveries. Over time, in the *Orinoco* region, it has become a natural part of agricultural activities and the landscape, cherished by cattle ranchers and farmers alike.

USED BY SMALL-SCALE AND LARGE ESTATE OWNERS

In the *Orinoco* region, small-scale and large estate owners alike use fire to clear their lands of weeds or grass, and to remove dead leaves. Other people use it to control the density of various plant species, including those that may pose a threat.

METHOD

Sometimes, land plots ranging from 10, 20, or 50 hectares are squared off and set ablaze. The goal is for small grass to start regrowing within five to eight days after the burn, providing grazing for the cattle for one to two months.

THE PROBLEM

Fire stimulates the growth of tender grass, which is easier for animals to digest compared to full-grown savannah plants. However, re-igniting land that has already been burned is not recommended. This practice can spiral out of control and become unsustainable.

ALTERNATIVE USE

Just as indigenous communities in the region have done for generations, fire has also been used for centuries in the departments to prepare *conuco* plots, which serve as household gardens.

1,005

kilometers of firebreaks laid out in strategic areas throughout the implementation of PVS

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

BURNING SEASON

Fires escalate uncontrollably, spreading across thousands of hectares. In just one dry season, as many as 55,000 burnings can be recorded throughout the *Orinoco* region. The resulting smoke contributes between 6 and 16 percent of the atmospheric pollution in *Bogotá*, *Medellín*, and *Bucaramanga*.[1]

LAID OUT EXTENSIONS

Each year, around 126 kilometers of firebreaks are laid out through a collaborative effort involving farmers, PVS, and the Agriculture Secretariat of *Vichada*. This initiative requires investments, particularly in machinery transportation, vehicle operation, fuel, and other logistical expenses.

OPTIMAL CONDITIONS

Farm owners who often use fire in preparing their land emphasize the importance of conducting burns and implementing firebreaks under ideal circumstances: low temperatures, minimal wind to prevent flame spread, and on flat or sloping terrain, avoiding downhill slopes.

RISKS

Flames could be considered both a natural and cultural influence shaping the landscape of the Colombian *Orinoco* region. However, harnessing fire presents significant challenges, as many wildfires unintentionally spread, leading to the loss of plant and animal life across vast savannas and forests.

[1] These statistics stem from a study funded by Colciencias and carried out by experts from the Universidad Nacional and the Universidad de los Andes. The study incorporated imagery from NASA's Aqua and Terra satellites. Published in 2019, it identified at least 400,000 wildfires in the Colombian-Venezuelan *Orinoco* regions between 2006 and 2016.

These are some of the firebreaks laid out by PVS to support wildlife conservation.

Harnessing fire presents significant challenges, as many wildfires unintentionally spread, leading to the loss of animal and plant life in savannas and forests.

Orinoco
region

Middle
Magdalena
Valley

Putumayo

Not an easy feat: creating firebreaks demands enduring scorching, lengthy days of tractor and rake labor.

Map 1

Burns near *Bita* River and its lower basin

FIREBREAKS

Firebreaks are cleared strips of land intended to prevent excessive vegetation growth. These delineated strips encircle areas designated for protection, such as crops, pastures, natural vegetation, or sites undergoing restoration.

PVS

Proyecto Vida Silvestre (PVS) supports farm owners in the *Orinoco* region to effectively manage fire. In partnership with the Secretariat of Agriculture of *Vichada*, PVS assists them in designing and implementing firebreaks, a yearly effort carried out in a structured manner.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Intervention area

0 3,75 7,5 15 22,5 30

Kilometers

Flames reported over a 17-year period

- 2000 - 2004
- 2005 - 2009
- 2010 - 2014
- 2015 - 2017

BUFFERS

Firebreaks are also used as a buffer to protect lands used for nurseries or plantations of *moriche* palms or *congrio* trees. This is crucial to restore populations of these threatened species and facilitate the creation of the Tapir Corridor within the *Bita* River basin.

Meta River

Bita River

Bita River

PUERTO CARREÑO

VICHADA

Orinoco River

Tomo River

HOW FIREBREAKS WORK

These strips, formed by a tractor-pulled rake, can penetrate the soil between 25 to 30 centimeters deep and span between 7 and 15 meters in width. Without vegetation, any fire reaching this area finds no 'fuel' and is quickly extinguished.

P
V
S

Orinoco
region

Middle
Magdalena
Valley

Putumayo

Cluster of flames by the *Meta* River. These lands are part of the vast *Vichada*.

THE TAPIR CORRIDOR

Farmers are committed to protecting their wildlife

Through community agreements, landowners in *Vichada* designate a portion of their farms to conservation efforts, supporting habitat recovery for species like the lowland tapir.

Scientifically known as *Tapirus terrestris*, lowland tapirs face significant threats from hunting and habitat loss.

Orinoco region

Middle *Magdalena* Valley

Putumayo

The conservation corridor to revitalize lowland tapir habitat spans approximately 71,336 hectares.

Several farm owners in the *Bita* River basin, *Vichada*, have struck a non-aggression pact with lowland tapirs. Recognizing the need to restore habitats for species affected by deforestation and hunting, they have undertaken this spontaneous initiative to protect the largest terrestrial species on our continent.

Each farm owner has set aside a portion of their land exclusively for conservation. This is not a common action, as it may involve transitioning from traditional practices to more sustainable ones or sacrificing land that could otherwise be used for crops or livestock. Yet, it is all part of the effort to restore healthy habitats for wildlife species.

Whenever a landowner or small farmer sets aside an area, it is akin to adding a piece to a vast puzzle. Gradually, these pieces merge to form an expansive and continuous forested area, alongside natural savannas, known as the 'Tapir Corridor.'

So far, each of these patches has helped create a conservation corridor spanning 71,336 hectares for the lowland tapir. This vast expanse of forest serves as a sanctuary for the *Tapirus terrestris* —the scientific name for the lowland tapir— allowing them with abundant space for reproduction and feeding.

"Improving connectivity between ecosystems is crucial to provide safe spaces where the tapir can feed and thrive, free from threats like hunting. This achievement owes much to the dedication of local communities, who have protected and consolidated these forested areas for tapir conservation," explains Mayra Alejandra Villanueva, a biologist with the Fundación Orinoquia Biodiversa and a member of Proyecto Vida Silvestre (PVS) in this region.

Rolling hills, *moriche* palm tree forests, and gallery forests are essential elements of the 'Tapir Corridor' landscape.

8

sustainable livelihoods promoted in the *Orinoco* region: tourism, silvopastoral systems, fruits and vegetable home gardens, cashew crops, sugarcane crops, *moriche* palm tree harvesting, poultry farming, and beekeeping.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

A snapshot of the *Bita* River basin during the *Orinoco* rainy season.

Putumayo

REVITALIZING FORESTS

According to the International Union for Conservation of Nature (IUCN), the lowland tapir is classified as a 'Vulnerable' species. Every effort made to preserve it presents an opportunity for population growth and the conservation of other wildlife species living nearby, such as white-lipped peccaries, turtles, pumas, armadillos, and deer.

The lowland tapir found in the *Orinoco* region is one of Colombia's three tapir species. Despite being able to survive in the wild for about 20 years, its reproduction is slow, with each female giving birth only once every two years.

It feeds on plants and fruits, making it a vital seed disperser. By depositing seeds in the soil through its feces, it plays a key role in the continual renewal of the forest's plant life.

Despite its ecological significance, lowland tapirs have been hunted for years for their meat, considered a delicacy in many places of the *Orinoco* region. Furthermore, deforestation has led to a decline in their populations.

20

years, on average, is the lifespan of a lowland tapir in the wild.

PVS in numbers

ALL IN, ALL WIN

These arrangements, where farm owners allocate hectares of their land for preservation, are known as voluntary agreements. "As the name implies, they can be dissolved at the farm owner's discretion. It is like a gentlemen's agreement," explains Carlos Saavedra, director of Proyecto Vida Silvestre (PVS).

The properties earmarked for conservation are not chosen at random. Each undergoes a thorough analysis to ensure its contribution to expanding the corridor, protecting water sources, and preserving endangered flora species like the *congrio* and *moriche* palm trees. Well-known farms include *Mi Familia*, owned by Ramiro Borja, a cattle rancher involved in restoration initiatives. Others include *El Desierto*, owned by Guillermo Hernández Tarache; *El Ocarro*, owned by Víctor Torres; and *Doñana*, owned by Alejandro Herrera, among others.

They receive support and advice for effectively managing their crops or livestock in exchange for dedicating a portion of their land to conservation efforts.

Nataly Herrera, from the *Doñana* farm, attests to this. A portion of this farm, registered as a Civil

The selection of properties for conservation is not arbitrary. Each property is assessed to determine its contribution to the corridor and its potential extension.

Map 2

The Tapir Corridor

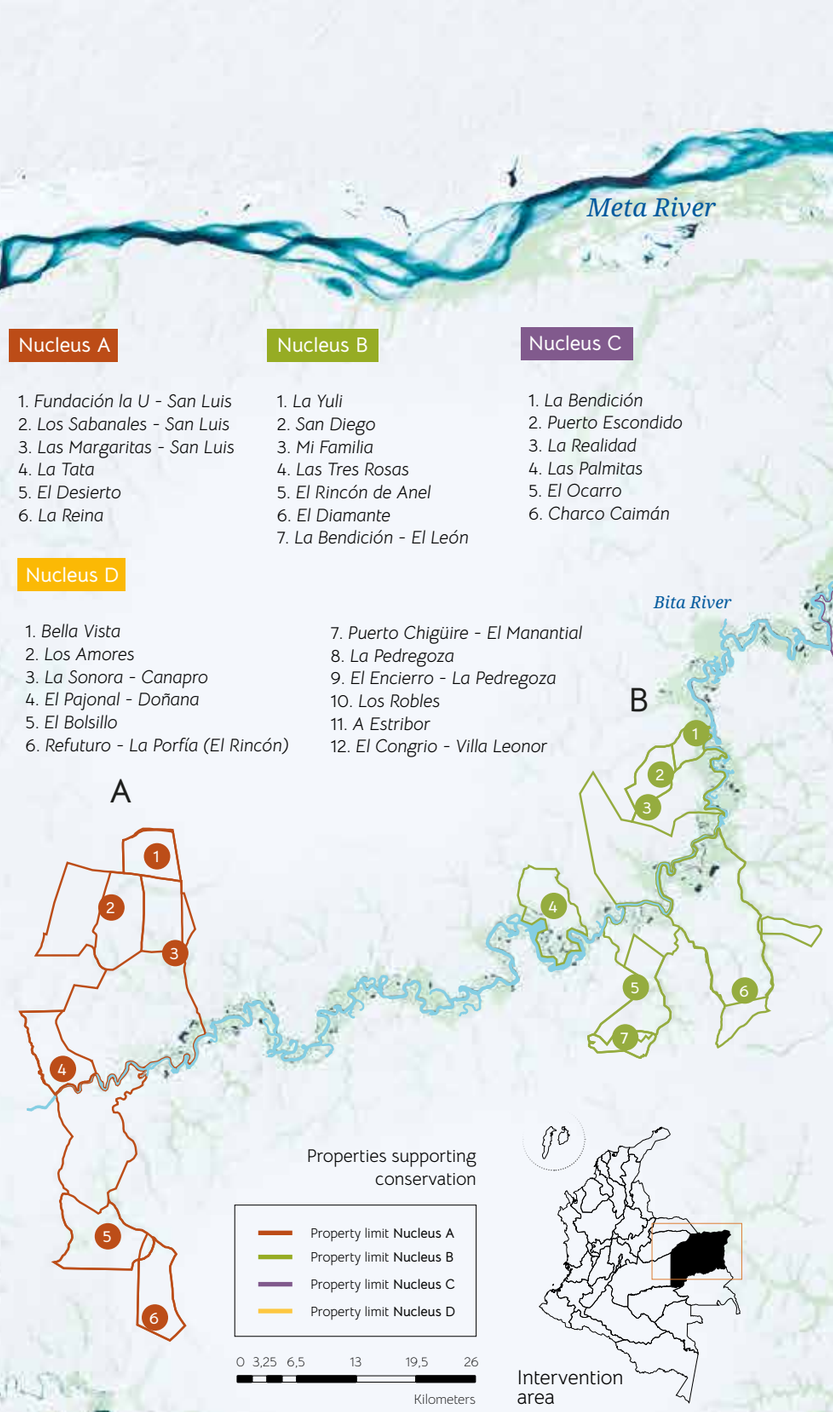
Orinoco region

Middle *Magdalena* Valley

Putumayo

Society Natural Reserve, saw the planting of 14,200 *moriche* palm trees and the establishment of fire-breaks, protecting a conservation area designated by Nataly and her family. Collaborating with PVS, they have implemented a controlled burning plan to prevent emergencies. “Over time, with the plantings, we have noticed an increase in certain wildlife species, like deer. Sometimes, if you are up early, you might catch them in the yard, though we have to shoo them away to protect the crops. Whenever my father goes on his rounds, he often comes across tapirs or their tracks,” she explains.

“These processes do not yield results overnight and depend on their sustainability,” says Juan Carlos Correa from *La Tata* farm. In exchange for assistance in planting cashew trees, he designated approximately 200 hectares of his land —located near the *Bita* River— for conservation, representing the most sensitive area of his property.



There are several incentives available, such as support for rice farming, converting pastures into more productive crops, building livestock fences, restoring strategic areas like forests, promoting beekeeping, implementing silvopastoral systems using trees or forage for animal feed, and establishing household gardens.

In this process, WCS Colombia has gathered valuable technical data using camera traps. This information has revealed that the most significant threat faced by lowland tapirs in our region today is habitat degradation. Leonor Valenzuela, a biologist overseeing biodiversity monitoring programs implemented by WCS across various projects, including PVS, underscores the importance of protecting these habitats. “Protecting these territories is crucial,” she emphasizes. “Our studies consistently reveal lowland tapir presence in areas with over 400 hectares of well-preserved forest.”

When experts unveil these figures, the voluntary agreements signed with farm owners and communities take on even more meaning. They not only represent the emergence of a form of production that skillfully respects conservation efforts but also suggest that the tapir’s and its habitat-associated species’ lives could naturally extend over time.

Orinoco region

Middle *Magdalena* Valley

Putumayo

THE TAPIR CORRIDOR

Capturing wildlife moments

Through camera trap monitoring, we uncover the distribution and population density of various species, offering a glimpse into the intimate lives of forest inhabitants —a feat once unimaginable.

In this image, we capture a glimpse of the white-tailed deer.

1. Cebus albifrons
Farm: La Realidad

2. Tayassu pecari
Farm: La Esperanza

3. Myrmecophaga tridactyla
Farm: El Desierto

4. Odocoileus virginianus
Farm: El Diamante

5. Mitu tomentosum
Farm: El Bolsillo

CAMERA TRAP MONITORING

Before the creation of camera traps, studying and observing wildlife behavior presented a considerable challenge.

Biologists explain that their methods primarily relied on "indirect detection," such as searching for tracks, excrements, torn vegetation, or hair snagged in the environment. This was the primary means of assessing whether a species remained active in its habitat. Nevertheless, researchers also relied on serendipitous encounters during fieldwork, which occasionally brought them face-to-face with large mammals like bears or jaguars.

In recent years, there has been a notable shift in how we monitor wildlife, with camera traps emerging as a highly effective and less intrusive method. This change has been made possible by advancements in technology, which have improved the capabilities of these specialized devices while also making them more affordable. As a result, camera traps have replaced the need for direct human observation, where success in detecting elusive species was often limited. Now, they provide insights into the behavior of animals, especially those that are stealthy or nocturnal, enhancing our understanding of their ecology.

In Proyecto Vida Silvestre (PVS), camera traps are used to monitor wildlife, allowing us to track changes in species populations and verify the effectiveness of conservation activities, as well as observe population density and behavioral patterns, or habitat usage. "We have managed to include variables related to the pressures affecting the species of interest, which also helps guide conservation and management strategies," explains Leonor Valenzuela, Analysis and Synthesis Coordinator at WCS Colombia.

52

wildlife species have been recorded through the camera traps installed in the *Bita* River basin (22 birds, 27 mammals, and 3 reptiles).

PVS in numbers

7. Sciurus sp.
Farm: Rancho Bravo

6. Pteronura brasiliensis
Farm: La Realidad

Orinoco region

Middle *Magdalena* Valley

Putumayo

The images accompanying this text feature some of the photographic records captured by camera traps installed in different properties across the *Bita* River basin in the *Orinoco* region. These include sightings of pumas, anteaters, deer, and even white-lipped peccaries, all "captured" by hidden lenses. These moments, revealed as if gathered by a clandestine observer, offer vivid glimpses into the wilderness, bringing us closer than ever to the raw reality of the forest. ■

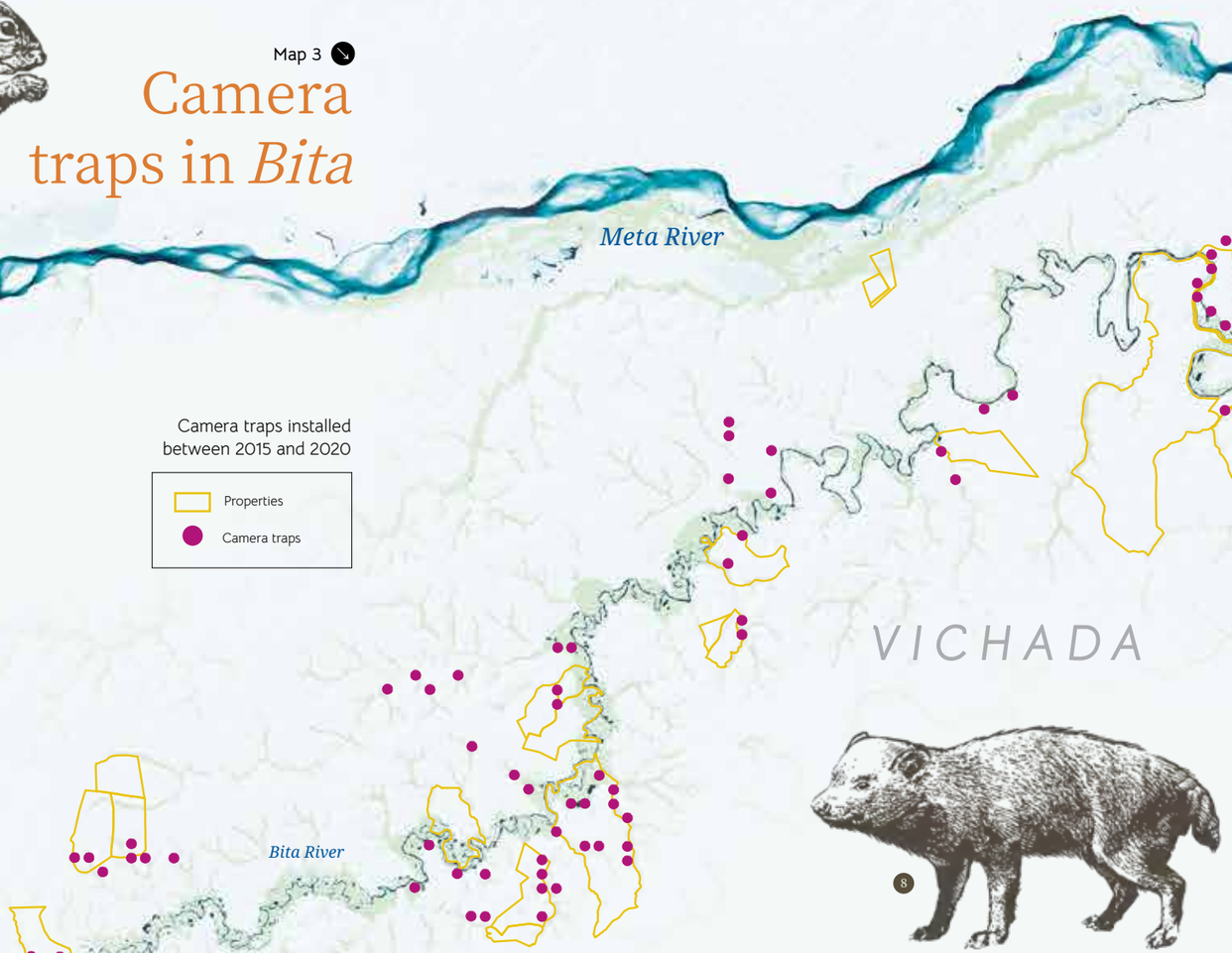
Map 3

Camera traps in *Bita*

Camera traps installed between 2015 and 2020

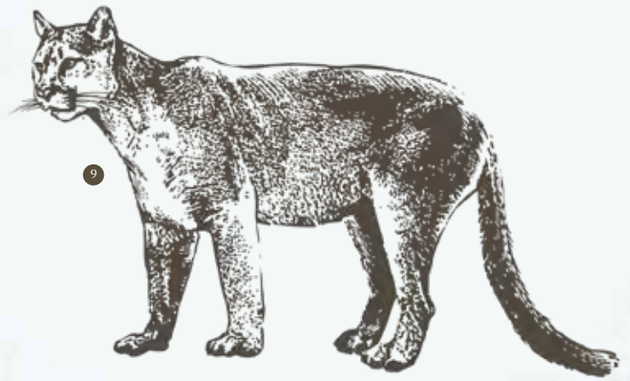
Properties

Camera traps



8. Spheotos venaticus
Farm: El Diamante

9. Puma concolor
Farm: El Diamante



Orinoco region

Middle *Magdalena* Valley

Putumayo

THE TAPIR CORRIDOR

‘I have shown that we can produce while conserving’

Alejandro Herrera is one of the farm owners who has engaged in conservation agreements to create a corridor for lowland tapirs in the *Bita* River basin.

A native of *Vichada*, Alejandro acknowledges that his love for the *Orinoco* region is unbreakable and unconditional.

Installing a solar-powered electric fence to protect *moriche* palm crops from cattle.

Orinoco region

Middle *Magdalena* Valley

Putumayo

I am passionate about animals, plants, and savannas. Living in the city is just not my thing; I really cannot stand it. I thrive in nature's embrace and that is why I have dedicated my whole life to its conservation.

I was born in *Puerto Carreño*. Despite only making it through third grade, I have amassed a wealth of knowledge about the countryside and the plains —insights that even the most educated folks from *Bogotá* often miss.

I have learned to read these lands, which is not an easy task. It takes grit, loads of patience — qualities I inherited from a true role model: my father.

His name was Luis Alejandro Herrera. It is not the cheeriest story, but he ended up in *Vichada* after a shipwreck. Back around 1950, the government finally remembered this region and sent 40 police officers to keep an eye on the border. They cruised down the *Orinoco* River from *Guaviare*.

I am not sure if they were all from inland, but when they reached *Puerto Carreño*, then nicknamed '*El Picacho*,' some of them spotted crocodiles. It was quite a sight, and the excitement led everyone to lean over that side of the boat, causing it to tip over. Only three survived; the others either drowned or became prey to crocodiles. They had to send another group of police officers, and among them was my father. He hailed from *Santander* but had been living in *Guaviare*, working in rubber collection and serving as an inspector. That is where he met my mother, a Venezuelan from *Apure*, whose family was involved in cattle farming.

After raising 10 children, he decided to embrace life in the countryside. As I mentioned earlier, I was not keen on schooling, so I happily joined him in that venture. It was the 1970s. We had a farm we named '*El Toro*.' There, I started to see the world in a new light, realizing that the real challenge was to work the land and raise livestock while still preserving it.

We were careful enough. We never harmed animals, and we never bought into superstitions or rituals like the one that suggested eating rattlesnake meat could prevent cancer—a belief that sparked widespread interest in its consumption. No, that was not our style.

We carefully controlled burnings, cherished the savannah, and fostered the growth of native trees, creating those stunning gallery forests. Deer were a common sight, but we stuck to fishing. I cannot recall ever tying up a dog. My father was always deeply committed to conservation, not destruction. He did not lecture or impose; he lived it silently. You see, just by watching, you learn what needs to be done.

"Reading these lands is not an easy task. It takes grit, loads of patience — qualities I inherited from a true role model: my father."

12

farm owners in *Arauca* have entered conservation agreements spanning 8,826 hectares.

PVS in numbers

Captivating glimpse of the slender *moriche* palm tree, adorned with its leaves and fruits.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Orinoco region

Middle *Magdalena* Valley

Putumayo

After my father's passing and the division of our family's land among my siblings, I ventured into commerce, mainly in cattle farming. Then, around 2000, my wife and I decided to purchase another farm, which we named *Doñana*, as a tribute to my mother, Ana Alejandra Villegas.

We affectionately called that piece of land '*El Peladero*'. Many questioned why I had invested in what they dubbed a mere 'sandpit', while others joined in, dismissing *Vichada's* lands as mere scenery. Determined to prove them wrong, I set out to show the land's true potential. In '*El Peladero*' and its surrounding landscape, we have grown corn, beans, pineapples, mangoes, watermelons, and even passion fruit —all without harming the local resources or resorting to agrochemicals. Our approach has been guided more by intuition than technique.

We have set aside 3,079 hectares for conservation in the Tapir Corridor, where we are using camera traps for monitoring.

So, when my family and I came across Proyecto Vida Silvestre[2], we saw a golden chance to learn and explore new ideas. The more I learned, the more my love for my homeland grew. With PVS support, handling all the paperwork and crafting an Environmental Management Plan, we have turned 1,208 hectares of *Doñana* into a Civil Society Natural Reserve. We even set up a nursery to grow four thousand *moriche* palm trees, planted across three hectares of our land. I have taken great care of them. These lands are alive with hundreds of animals, especially birds. My daughter is so inspired that she wants to include them in an eco-tourism project.

I have another farm, '*San Luis*', named after my father. With PVS support, this farm has also been designated as a Civil Society Natural Reserve. Through '*San Luis*', we have designated 3,079 hectares to conservation efforts, contributing to the Tapir Corridor. We have conducted camera trap monitoring to learn more about this fascinating yet understudied species. Although our approach may seem unconventional —protecting before fully studying— the data from our land shows a notable increase in their population.

As I reflect on my 62 years, I find comfort in the contributions I have made, though often feeling quite alone in these endeavors. It is not just my own energy waning, but also the lack of substantial support from institutions— here one moment, gone the next. And let us not forget the lack of solid decisions from those in charge.

Let us talk about the real issue: for the animals of the savannah, it is not about hunting, but the scarcity of food. That scarcity is linked to the tough grasses of the savannah and the disappearing forests where the best food is found. It is no secret. Imagine this: just as a crop ripens, all the animals show up —deer, foxes, monkeys— and parrots swoop in for the mangoes. Even the tapir, with its limited food options, comes closer in search of a meal. So, we end up having to build fences, install electric barriers, all to protect our crops, making it hard to turn a profit.

Despite it all, I keep pushing forward, even though many of my neighbors and others in the community continue to hunt deer, capybaras, and chop down trees —many of them struggling with poverty. I even know someone who has taken down four jaguars. Changing their ways and convincing them to do something positive for what they have is no easy feat. You see, it is hard to get people to focus on conservation when they are still grappling with the daily struggle of putting food on the table. ■

[2] Proyecto Vida Silvestre has joined forces with Alejandro Herrera to build firebreaks three times a year, protecting the *moriche* plantations he speaks of in his testimony. In this collaboration, PVS has offered technical assistance and various forms of support. PVS also led the process to declare *Doñana* and *San Luis* as Civil Society Natural Reserves (RNSC, for its acronym in Spanish). Additionally, PVS supported the creation of a Tourism Plan for the *Doñana* RNSC, designed to encourage visitors to explore the area sustainably —an objective Herrera is working towards with his family's support, as he mentions in his story.

Orinoco region

Middle *Magdalena* Valley

Putumayo

THE TAPIR CORRIDOR

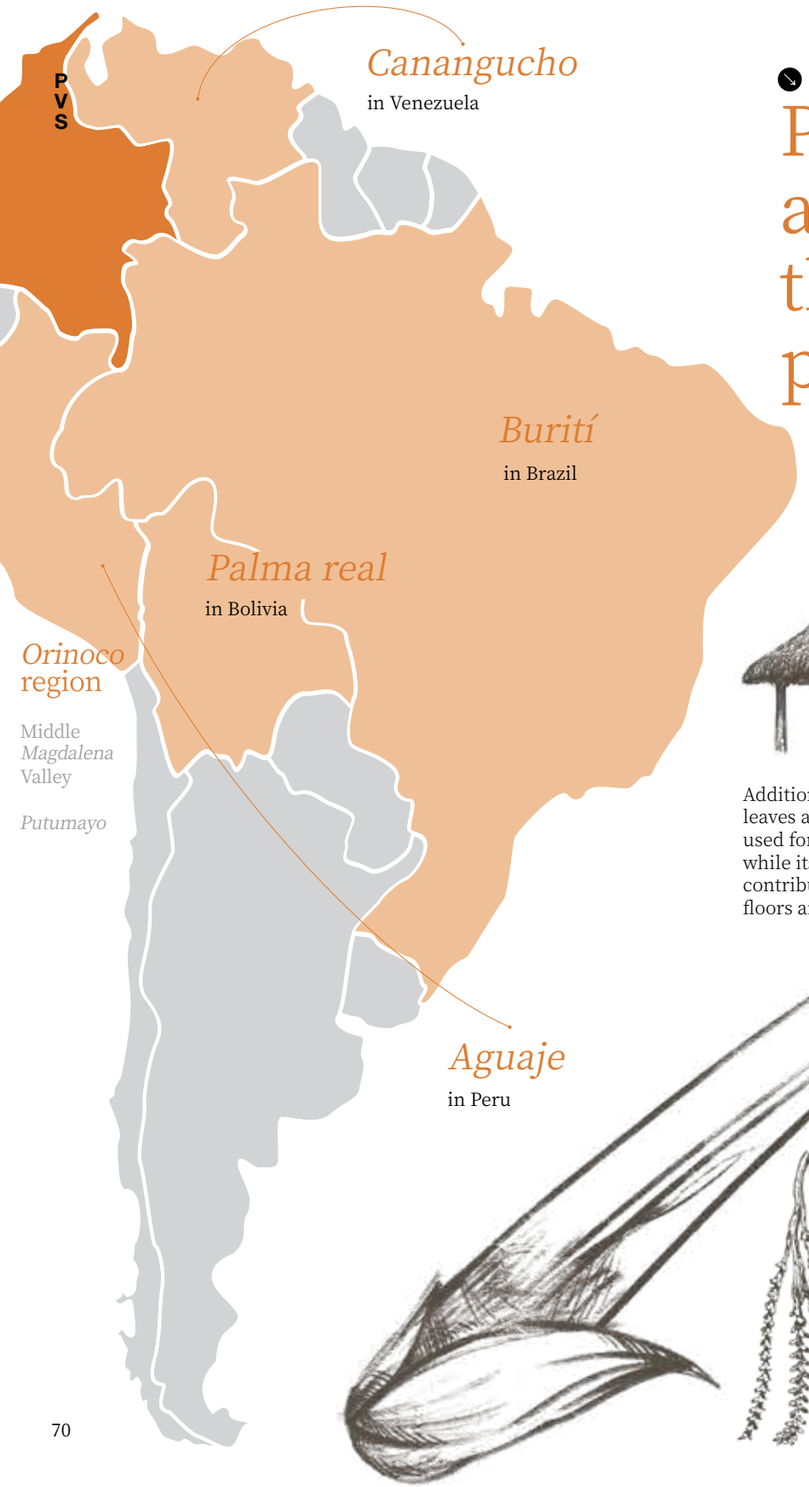
Powerful and exuberant

Moriche palm tree fruits serve not only as food but also as a resource in the agribusiness sector. Yet, this invaluable species is threatened by deforestation. Initiatives are underway to recover this species in the *Bita* River basin (*Vichada*).

The scenic and remarkable *moriche* palm groves also infuse life in the 'Tapir Corridor.'

Figure 1

Properties and uses of the *moriche* palm tree

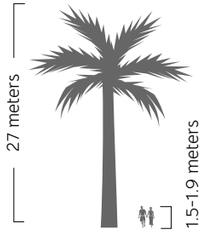


This species thrives in the *Orinoco* region. Locals primarily harvest its shoots for fiber, essential in crafting a variety of goods like hammocks, backpacks, hats, baskets, and coasters.

Additionally, its leaves are commonly used for roofing, while its stems contribute to building floors and walls.

However, a concerning trend has emerged: to access its fruits, many opt for cutting down the entire plant rather than climbing its trunk for fruit collection.

In some areas, *moriche* palm groves are facing serious threats, mainly due to the expansion of agroindustry and wildfires.



These palm trees can reach heights of up to 27 meters, a growth process that may take up to 30 years. However, those growing in areas with ample sunlight exposure can mature in half that time.

It flourishes in swamps or within gallery forests, where water is abundant. These habitats often boast palm groves or extensive plant communities, providing essential refuge and sustenance for wildlife populations.

Data for developing this infographic was provided by Rodrigo Bernal, a botanist from the Universidad Nacional and a leading expert in palms. His extensive work includes 'Management of *Mauritia flexuosa* for fruit production in the southern Colombian Amazon'.

14,200

moriche seedlings planted by PVS to sustain *moriche* palm tree populations.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Moriche palm seedlings and flowers are part of a traditional wisdom that transforms into tangible cultural heritage.

THE TAPIR CORRIDOR

The resilient yet imperiled *congrio* tree

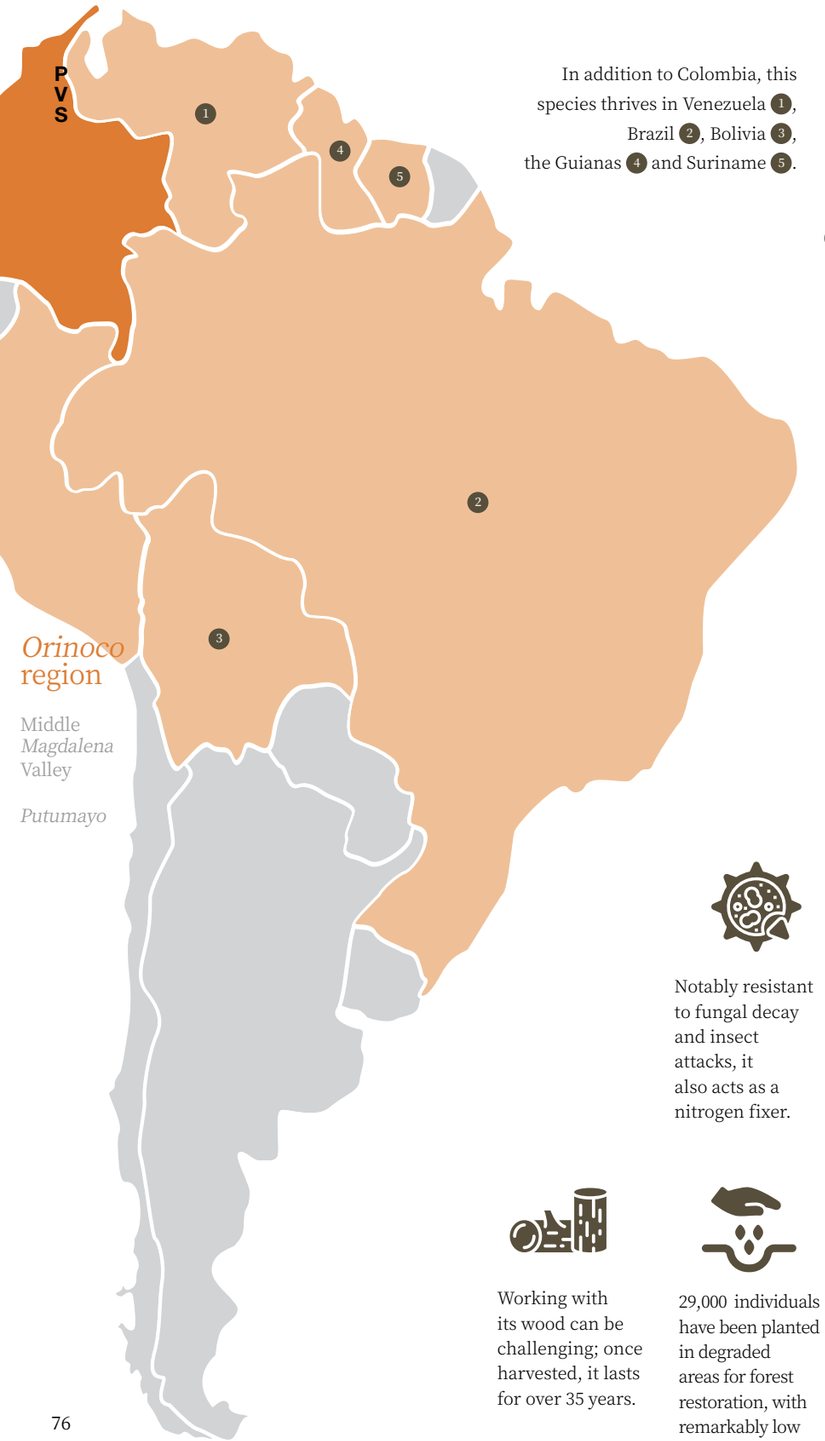
The *congrio* tree is well-known in the *Orinoco* and Amazon regions for its fine, resilient wood. However, rampant deforestation threatens its existence. The signs of overexploitation are clear, but there are concerted efforts underway to restore its populations.

Lowland areas where this species predominates are commonly known as *congrio* tree groves.

Figure 2

The *congrio* tree

Scientifically known as *Acosmium nitens*.



In addition to Colombia, this species thrives in Venezuela 1, Brazil 2, Bolivia 3, the Guianas 4 and Suriname 5.

In Colombia, this species can be found mainly in *Arauca, Caquetá, Casanare, Guainía, Meta, Vaupés,* and *Vichada*.

Notably resistant to fungal decay and insect attacks, it also acts as a nitrogen fixer.

In the *Orinoco* region, *congrio* tree groves are utilized during the dry or low-rainfall seasons.

Working with its wood can be challenging; once harvested, it lasts for over 35 years.

29,000 individuals have been planted in degraded areas for forest restoration, with remarkably low mortality rates.

Congrio, a dominant tree species, exhibits resilience against pests like termites.

Proyecto Vida Silvestre and La Pedregoza lead *congrio* tree conservation efforts in the *Bita* River basin.

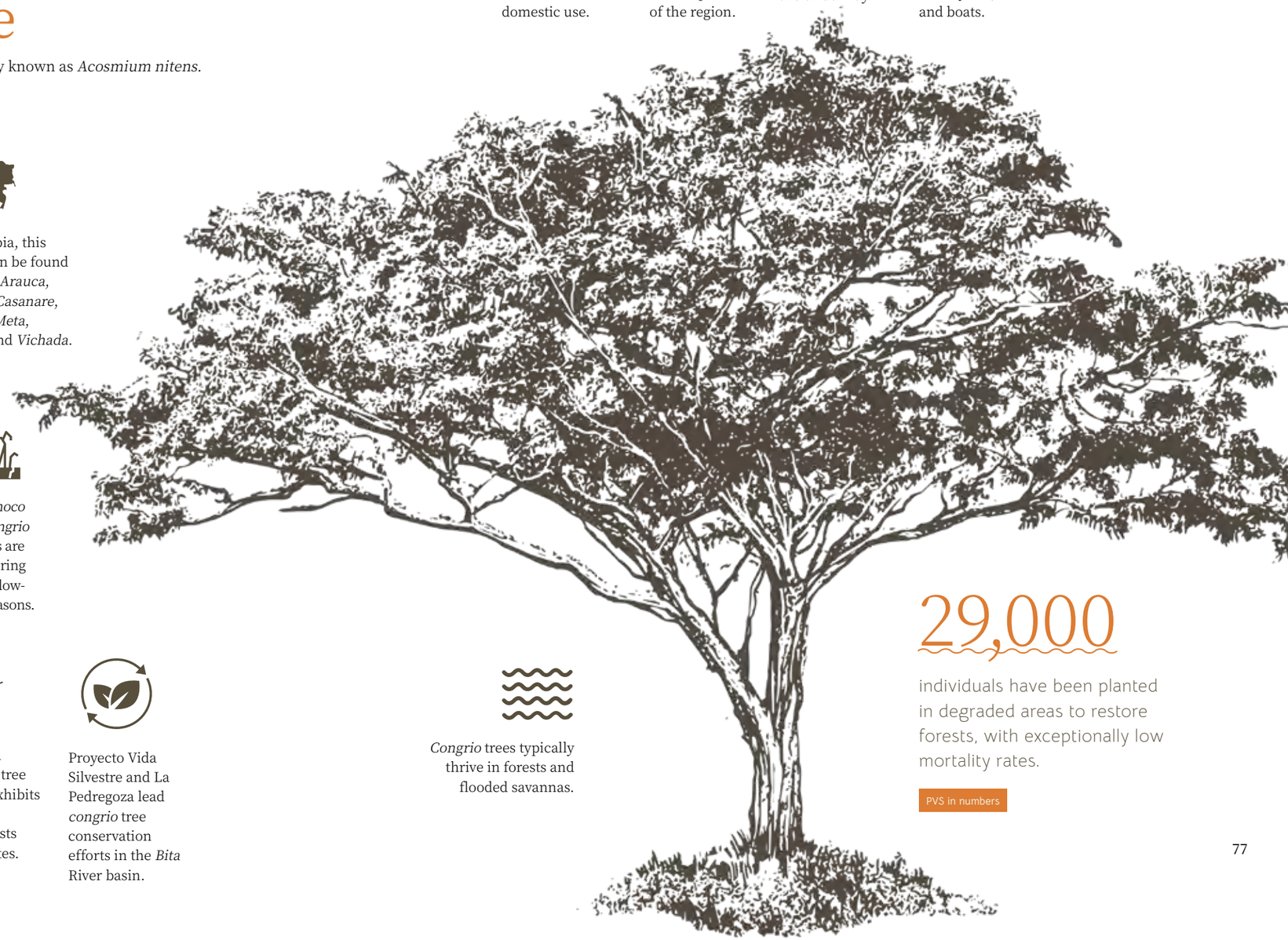
Planting occurs in properties where conservation agreements have been signed with farm owners.

However, illegal loggers persist in harvesting *congrio* trees. The wood is then sold in farms for domestic use.

Congrio plantations are enhanced with *moriche* palm trees, a native species of the region.

Efforts to raise awareness and reduce human impact on *congrio* tree populations are underway.

The wood is utilized for crafting fences, beams, vehicle bodywork, railway ties, and boats.



Congrio trees typically thrive in forests and flooded savannas.

29,000

individuals have been planted in degraded areas to restore forests, with exceptionally low mortality rates.

PVS in numbers

Orinoco
region

Middle
Magdalena
Valley

Putumayo

Nurseries
are crucial in
growing healthy
congrio trees.

Orinoco region

Middle *Magdalena* Valley

Putumayo

THE GIANT SOUTH AMERICAN RIVER TURTLE'S ADOPTIVE GUARDIANS

The giant South American river turtle's adoptive guardians

Women and men stroll along the riverbanks revealed by the *Meta* River, stretching from *Vichada* to *Arauca*, to safeguard the breeding season of the *Orinoco* region's most iconic turtle species: the giant South American river turtle (locally known as *charapa*)

A group of hatchlings is released during a *Charapa* Festival.

Orinoco region

Middle *Magdalena* Valley

Putumayo

She goes by 'Totó'. Though probably not older than 20, this young woman already captains a small boat, leading a crew that sets out at midnight toward a riverbank exposed by the dry season. We find ourselves between *Vichada* and *Arauca*, cruising along the calm, slender waters of the *Meta* River.

'Totó' directs two men, one of whom looks older, maybe even her father. The other is the boat's helmsman, a young man tasked with navigating cautiously to avoid grounding the vessel. Progress is slow, allowing for moments of stargazing under the moonless sky. Amidst the calmness, someone notes that some of the stars shining brightly in the east make up the Orion constellation. But whether true or not is beside the point; our real mission is in the search for *charapa* turtles.

'Totó' not only captains the skiff but also leads this small group tasked with observing *charapas*. It is February, and they are hatching in large numbers, prompting their first forays as swimmers in a current that will become refuge from now on.

After an hour-long journey, we disembark at a spot they call 'Control.' 'Totó' quickens her pace inland, eager to spot the first nests and to see if any hatchings have occurred.

This species is critically endangered due to decades of human hunting for its meat and eggs.

2019 MILESTONE

We are in the vicinity of *Santa María de la Virgen*, a locality within the *Cravo Norte* municipality (*Arauca*). Here, Proyecto Vida Silvestre, a collaboration between WCS and Fundación Omacha, has promoted the conservation of the *Podocnemis expansa*, locally known as the *charapa* turtle. This species is critically endangered due to decades of human hunting for its meat and eggs.

During our boat trip, I was always accompanied by three people, part of a larger group known as the *Charapa* Turtle's Adoptive Guardians, comprising seven members in total. As we entered the 2019 breeding season, in which I participated for a short period, they marked four years of continuous monitoring of turtle nesting sites laid between December and January along the shores of the *Meta* River.

Between late February and May, the 'Adoptive Guardians' face an even more demanding task: safeguarding the hatchlings born from this collective nesting. This effort is crucial, as scientists have confirmed that this area is home to the second-largest population of *charapa* turtles in the *Orinoco* region, making it a vital nesting site for their survival.

The *charapa* turtle is the largest river turtle species in South America.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Bale of *charapa* hatchlings. The scientific name for this species is *Podocnemis expansa.*

Map 4

Hatchling release at the riverbanks

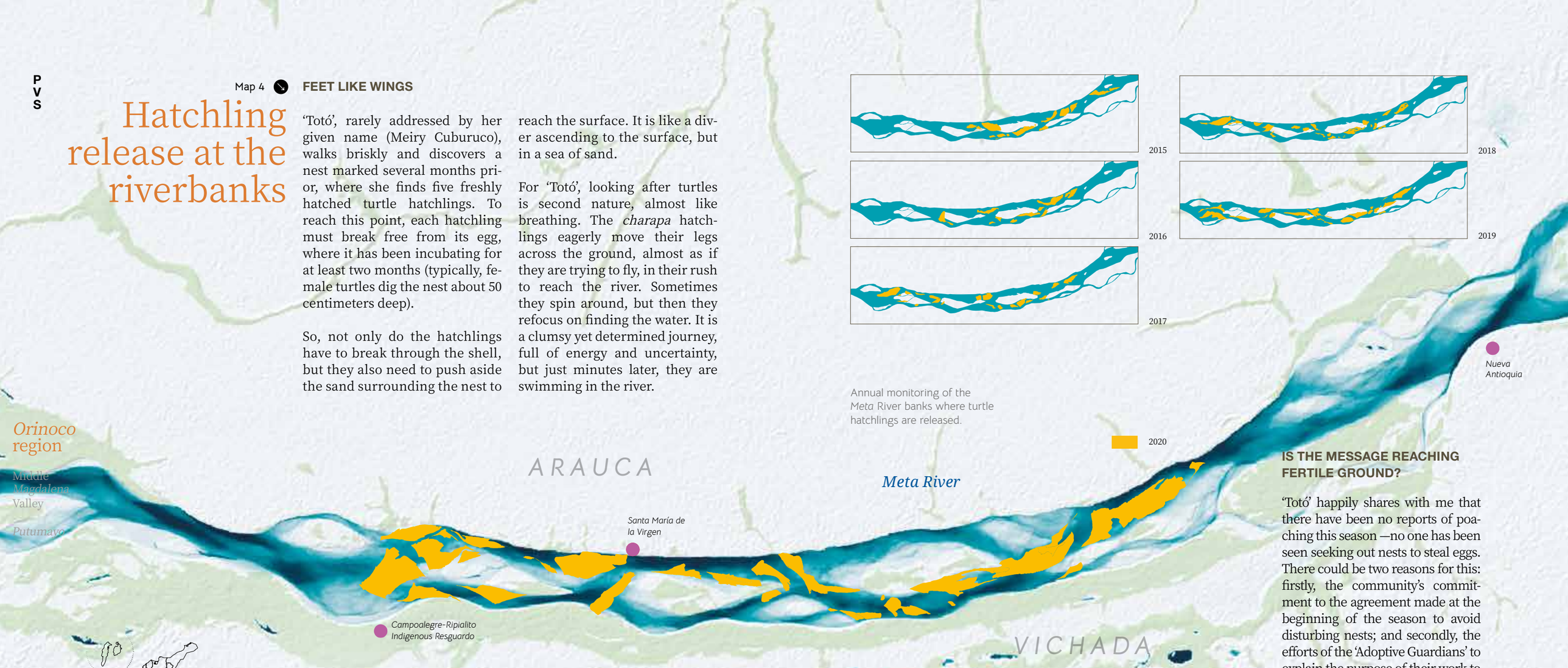
FEET LIKE WINGS

'Totó', rarely addressed by her given name (Meiry Cuburuco), walks briskly and discovers a nest marked several months prior, where she finds five freshly hatched turtle hatchlings. To reach this point, each hatchling must break free from its egg, where it has been incubating for at least two months (typically, female turtles dig the nest about 50 centimeters deep).

So, not only do the hatchlings have to break through the shell, but they also need to push aside the sand surrounding the nest to reach the surface. It is like a diver ascending to the surface, but in a sea of sand.

For 'Totó', looking after turtles is second nature, almost like breathing. The *charapa* hatchlings eagerly move their legs across the ground, almost as if they are trying to fly, in their rush to reach the river. Sometimes they spin around, but then they refocus on finding the water. It is a clumsy yet determined journey, full of energy and uncertainty, but just minutes later, they are swimming in the river.

Annual monitoring of the *Meta* River banks where turtle hatchlings are released.



RECORD HATCHINGS

The surveillance work carried out by the 'Adoptive Guardians' is complex, involving hours of walking on loose, deep sand that sometimes makes stepping difficult. It requires stamina, determination, and a high tolerance for sacrifice, as it involves early mornings without pause, and sometimes even camping and sleeping on the riverbanks.

Although this task has traditionally been associated with men, 'Totó' has taken it on without complaint. "I have always enjoyed challenging work, finding it fulfilling and exciting, especially when it involves protecting a species native to my home," she explains. For reasons not entirely clear, she and her colleagues recorded a remarkable 2,500 nests during the 2019 season, the highest number since Proyecto Vida Silvestre began monitoring the area.

To ensure the safety of all these nests, they monitored 12 riverbanks day and night. Another 6 were left unmonitored, simply observed to better understand the natural hatching process and confirm the vital role of the *charapa* turtle in the local ecosystem: while it relies on various invertebrates for food —supplemented by fruits and plants— it remains a top target for caracaras, catfish, foxes, jaguars, crocodiles, and river otters, which are always on the prowl.

IS THE MESSAGE REACHING FERTILE GROUND?

'Totó' happily shares with me that there have been no reports of poaching this season —no one has been seen seeking out nests to steal eggs. There could be two reasons for this: firstly, the community's commitment to the agreement made at the beginning of the season to avoid disturbing nests; and secondly, the efforts of the 'Adoptive Guardians' to explain the purpose of their work to community members and anyone they encounter during their patrols. Perhaps the message for a more promising future for *charapa* turtles is reaching fertile ground.

However, there is no certainty about this. Therefore, for as long as they can, all the 'Adoptive Guardians' will remain on the front lines in the battle against the extinction of these extraordinary turtles, which 'Totó' describes in four simple yet powerful words: "they are my daughters." ■

A partial eclipse of the iconic giant South American river turtle

This species (locally known as *charapa*) is critically endangered due to human hunting for its meat and eggs.

Expectant mothers basking in the sun in a *cambote* —the local word used by *llaneros* to describe a gathering of nesting female turtles.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Map 5

Nesting sites

Three years of monitoring

2015
2016
2017

ARAUCA

Meta River

Santa María de la Virgen

Orinoco region

Middle *Magdalena* Valley

Campoalegre-Ripialito indigenous Resguardo

Putumayo

VICHADA

10

years of continuous monitoring of the *charapa* in *Vichada* and *Arauca*.

PVS in numbers

Each female *charapa* can lay about 100 eggs on a single beach, carefully crafting her nest.

Flowing from the Eastern Andes, the *Meta* River acts like a unifying thread, weaving through the territories of *Vichada*, *Casanare*, and *Arauca*. Meanwhile, the *Caquetá* River, in the vicinity of the *Cahuinarí* National Natural Park, nourishes the vast Amazon *River*, the world's largest freshwater reserve.

Despite their geographical separation, both rivers share a common connection: they provide a home for a remarkable and iconic species known as the *charapa*, the largest river turtle in South America. This species is not confined to Colombia alone; it also inhabits Brazil, Peru, Ecuador, Venezuela, and Bolivia.

Even though this reptile stands up to scrutiny from both social and scientific perspectives, it holds one undeniable truth: despite its immense biological significance, it is critically endangered, especially in the Colombian *Orinoco* basin.

For example, the *charapa* plays a crucial role in dispersing fruits and seeds along rivers, contributing to the renewal of flora species and the stability of various habitats.

Moreover, it serves as a vital food source for birds, catfish, foxes, jaguars, crocodiles, and river otters, forming a crucial link in the intricate food chain.

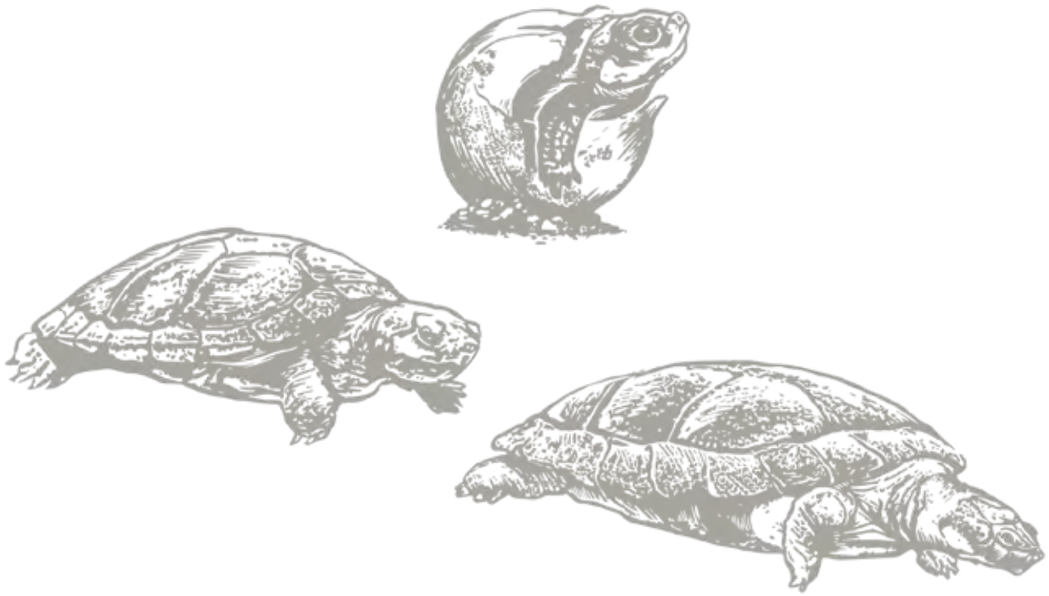
One fascinating aspect of its behavior is that *charapas* embark on extensive journeys, yet unfailingly return to their birthplace, often laying their eggs on beaches very close to where their mothers did.

Adding to this scientific perspective is another aspect: the *charapa's* role as a cultural symbol for local communities. This is particularly evident in the *Orinoco* region, along the border between *Vichada* and *Arauca*, where an annual festival is held in its honor.

During this event, held in the locality of *Santa María de la Virgen* in the municipality of *Cravo Norte*, participants emphasize the importance of protecting the *charapa* and highlight significant moments in the species' life cycle. One such moment occurs when dozens of adult females, aged over 15 years, emerge to spawn en masse. Nesting typically begins in December or January and reaches its peak in February, tapering off by March.

Future mothers perform this task only once a year, usually in the early morning hours when there is no full moon. At this moment, they carefully choose high, sandy beaches to dig nests with their hind legs, burying their eggs about 50 centimeters deep. On average, each nest contains around 77 eggs, though the range can vary from 1 to 221 eggs per nest. This gives the clutch a chance to survive unexpected floods.

Undoubtedly, due to the sheer number of eggs they lay, *charapa* mothers are incredibly prolific. However, their reproductive capacity alone cannot offset the ongoing loss this species faces due to human activities.



Orinoco region

Middle *Magdalena* Valley

Putumayo

Colombia has implemented regulations to protect them, including a ban on their capture since 1964.

DECLINE OF TURTLE-FILLED BEACHES

Naturalist Alexander von Humboldt, who explored the *Orinoco* in 1800, described riverbanks stained black by the sheer number of *charapas*.

However, their populations rapidly declined due to intense hunting in the early 20th century, when they were unrestrictedly commercialized. Additionally, their eggs were harvested for oils used in artificial lighting.

These hunting practices persist, as do raids on nests and the illegal trade of turtle hatchlings as pets. Certain fishing methods also inadvertently capture *charapas*, further threatening their survival.

EFFORTS TO PRESERVE THEIR VITAL POPULATIONS

Colombia has regulations in place to protect them, including a ban on their capture since 1964. Additionally, these regulations specify that consumption for subsistence is limited to specimens measuring a minimum of 80 centimeters in length for their shell.

However, enforcement of these regulations faces challenges, particularly due to the vast territories they cover. This makes it difficult for authorities to effectively monitor remote areas. This is evident in places like *Santa María de la Virgen* (*Arauca*) or *Nueva Antioquia* (*Vichada*), which are home to the second-largest known population of *charapas* in the *Orinoco*, and the most significant nesting area in the region.

Ten years ago, Proyecto Vida Silvestre began its efforts to engage local communities in the conservation of the *Podocnemis expansa*, the scientific name for the *charapa* turtle. Additionally, scientists aim to establish a conservation program as part of 85 other initiatives dedicated to the species recovery across the continent.

These conservation efforts remain relevant because *charapa* populations in this part of the Americas still require protection —an opportunity lost in other continents like Asia, where some turtle species became extinct many years ago.

The situation in Asia serves as a stark reminder of this threat, highlighting the crucial need for strengthening conservation efforts for the *charapa* in Colombia. These endeavors are vital in preventing a total eclipse from permanently casting a shadow over the future of this significant species. ■

On the banks of the *Meta* River, a young *charapa* turtle hatchling stands out just before venturing from its nest.

2,500

adult *charapas* protected.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

THE GIANT SOUTH AMERICAN RIVER TURTLE'S ADOPTIVE GUARDIANS

Juan Moyetón, protector of the giant South American river turtle

Juan Moyetón is now a dedicated guardian of the endangered giant South American river turtle, locally known as *charapa*.

The canoe glides through a narrow tributary of the *Meta* River during the peak of the dry season.

2,500

breeding females, essential for the species' conservation, have been protected

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

As April unfolds, the unyielding sun casts its rays upon the exposed banks of the *Meta* River

Those who describe Juan Moyetón as a *charapa* aficionado are not far off. Yet, his true devotion lies in their conservation.

I first met him as he sketched the shell of a *charapa* on a house wall. Over time, this sketch evolved into a multicolored mural —a painted masterpiece reflecting the surrounding landscape of the *Santa María de La Virgen* locality in *Cravo Norte* (*Arauca*). With a keen eye, he carefully perfected the green and gray silhouette of his *charapa*, ensuring no detail was overlooked —a marking on its shell, the size of its eyes, a claw, or a line on its head.

He did not speak much about science, yet he wielded a more powerful weapon: the innate wisdom of a farmer intimately acquainted with his surroundings. He understood that his efforts to protect this endangered reptile—one of the 28 species of continental turtles, endemic to the country—were not just reasonable but imperative.

In the community, he has always been an expert among those passionate about conservation. Moyetón's words carry the weight of experience, and when he speaks, everyone listens.

April brings little rain and merciless sun to the exposed banks of the *Meta* River. It is a crucial time when adult turtles emerge, needing careful monitoring and protection —an essential task for Moyetón and the community. Yet, equally significant is the hatching of nests, carefully hidden months earlier by mature female turtles. In this moment, the hatchlings take their first breaths and move for the first time.

At 5:30 in the morning, Moyetón sets out on foot to monitor and tally these births as part of his duties within the *Charapa* Adoptive Guardians group —an initiative promoted by Proyecto Vida Silvestre in this remote region.

After trekking for at least half an hour, we reach a previously identified nest. While others see nothing, Moyetón spots the unmistakable tracks of 17 turtles. "They were born here; each one left its mark," he notes, maintaining his brisk pace. With a resolve reminiscent of a predator, he scans for signs of survival among other small turtles, fueled by his unwavering dedication to protect them.

Juan Moyetón takes a break after discovering a bank with *charapa* nests.

A *CAMBOTE* CHANGED HIS LIFE

Juan Moyetón is one of the few people who can claim to have been born twice. His first birth occurred 65 years ago in the landscapes of *Maní* (*Casanare*), a place he describes as a natural paradise, where the sight of multicolored birds and the sound of crystal-clear rivers knew no bounds. He especially recalls, with astonishment, the incredible sound of Colombian red howlers, a sound similar to the roar of the wind when it hits the jungle.

What he struggles to explain is why, despite witnessing the breathtaking biodiversity of his homeland as he grew up, during his youth, he turned a blind eye to hunting, deforestation, or children harming birds. He even even partook in consuming turtle meat without feeling any remorse or questioning whether it was right or wrong, simply because he found it delicious. He did so occasionally, out of habit, like any other local.

Over thirty years ago, while fully dedicated to agriculture in support of his family, Juan Moyetón's life took an unexpected turn. Just days after settling in *Nueva Antioquia* (*Vichada*), a community nestled along the banks of the *Meta* River bordering *Arauca*, a friend introduced him to the breathtaking sight of a *cambote* —a gathering of one or two hundred nesting female turtles. "Seeing that bustling congregation of turtles on the shoreline stirred something deep within me, a sensation beyond words. It marked a profound transformation, the first step of my journey toward a new perspective on life."

This was like a second birth for Juan, but this time as a guardian of nature. He started thinking about sustainability, finding better ways to manage waste, and sharing his knowledge.

Orinoco
region

Middle
Magdalena
Valley

Putumayo

Summer vibes. The winds ripple the waters of the *Meta* River, creating vast sandbanks.

Orinoco region

Middle *Magdalena* Valley

Putumayo

TOWARD A SEASON FREE FROM TURTLE EGG LOOTING

Moyetón explains that *charapas* face numerous threats, predominantly from wildlife, yet humans now present their most significant challenge. “As soon as they are born, native birds like caracaras, foxes, and crocodiles, or even catfish, are ready to prey upon them. It is natural, it is part of the food chain. However, sometimes, people destroy or raid their nests to steal the eggs for consumption or sale; this has been happening for years. We want to prevent this from happening again. That is why I work tirelessly, day and night, to protect them, like a guardian,” he explained.

During hatching seasons, there are sometimes instances of looting. However, the ultimate goal, as he emphasizes, is to eradicate this practice: “Our turtles deserve to thrive; I cannot imagine this place without them.”

Charapas face numerous threats, predominantly from wildlife, yet humans now present their most significant challenge.

28

species of continental turtles inhabit the country, including the *charapa*.

PVS in numbers

Over the years, ‘Don Juan’ —as he is called— has now wholeheartedly embraced nature, becoming a passionate advocate for the planet guided by intuition. This passion is evident as work on his mural nears completion. His masterpiece features species like the pink dolphin, the crocodile, various birds, and fish, all competing for space in this corner of the Earth. Moyetón concludes this community endeavor with a straightforward message that resonates with all residents of this settlement along the *Meta* River: “Here, we protect the charapa turtle.” It could not be more fitting, as for him, this enduring message does not symbolize sacrifice but rather serves as a testament to his redemption. ■

Snapshot of a soon-to-be *charapa* mother cooling off by sprinkling sand over herself.

Orinoco region

Middle *Magdalena* Valley

Putumayo

MOVING AWAY FROM EXTINCTION

A tribute to the *Orinoco* crocodile

Spanish conservationist Rafael Antelo shares his quest to safeguard this species. He achieved the first-ever recorded release of *Orinoco* crocodiles. These releases mark a crucial turning point following years of unchecked hunting.

A snapshot of an adult crocodile at *Bioparque Wisirare*, located near *Orocué* (*Casanare*).

The *Orinoco* crocodile thrives solely in the lowlands of the vast *Orinoco* River basin.

Orinoco region

Middle *Magdalena* Valley

Putumayo

SINCE THE DINOSAURS

"Does this animal inspire reverence? Absolutely. It stands as one of the four largest crocodiles on the planet."

I dream of the *Orinoco* crocodile (*Crocodylus intermedius*) no longer being a myth, but rather a familiar creature to future generations. Let us move past its portrayal as a fearsome legend and restore its true significance as a flagship species of the *Orinoco* region. I envision it being celebrated in songs, poems, and in every depiction of the savannah landscape.

Does this animal inspire reverence? Absolutely, and not just because of its size —it is one of the four largest crocodiles in the world, with some reaching up to 8 meters. But there is more to it than sheer size. Crocodiles are elusive creatures, often among the shyest on Earth. When they encounter humans, they activate their alarms, signaling and alerting through movements or sounds. In human terms, it is like saying, "Here I am," "Do not come closer," "Go away," urging us to respect their space and avoid disturbing them.

Have some *Orinoco* crocodiles attacked farmers or rural residents? Of course, but these have been isolated incidents that, unfortunately, have turned into stories passed around, repeated in many places over the years, unfairly fueling the species reputation as 'man-eating' animals.

96

Orinoco crocodiles were reintroduced into the *Tomo* River, located within *El Tuparro* National Natural Park.

PVS in numbers

MEDEM SOUNDED THE FIRST ALARM

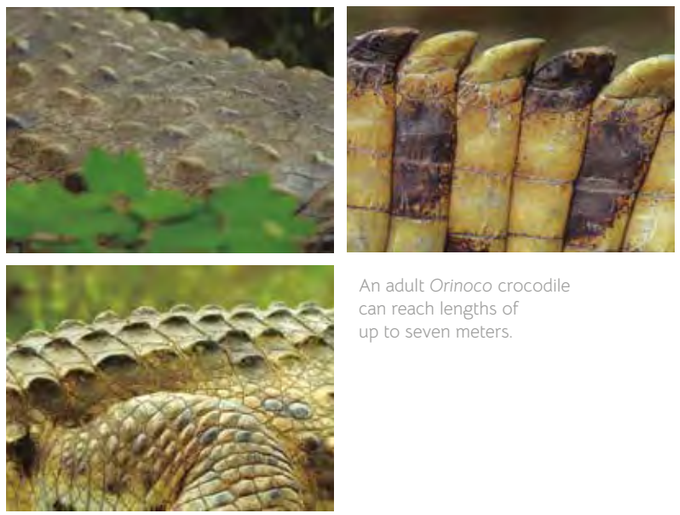
Communities where crocodiles have long been a familiar sight have learned to coexist with these creatures, accepting them as part of their surroundings. However, in areas where crocodiles are a recent presence, they often provoke fear and alarm, leading to their elimination. This pattern mirrors Colombia's history in the early 20th century when people formed groups to hunt hundreds of crocodiles for their skins, exporting them to Europe or the United States for accessory manufacturing, resulting in a widespread and continuous hunt. In 1955, Federico Medem, a renowned reptile expert born in Latvia, settled in Colombia after leaving his country following the Russian Revolution. He conducted crocodile research from the Universidad Nacional's biological station in *Villavicencio* (*Meta*), which was named in honor of the professor and physician Roberto Franco. Medem was the first to raise concerns about their declining populations. Initially, there may have been around 3 million individuals across Colombia and Venezuela. However, a census conducted by Medem himself in the late 1960s revealed fewer than two thousand specimens remaining in the wild. This alarming diagnosis coincided with decisions to ban hunting and implement a trade embargo on skins (1965-1968). Unfortunately, these measures were enacted too late.

300

crocodiles are believed to be left in the wild across Colombia, making it a critically endangered species.

PVS in numbers

Around 1997, the Ministry of Environment and Sustainable Development conducted another survey and found that the situation was even worse, with perhaps no more than a thousand remaining. Since then, little has changed. I often emphasize that there may be no more than 300 left, placing them in critical danger of extinction. But we cannot allow them to disappear! This is primarily an ethical concern: these creatures have inhabited our planet for over 200 million years. They were terrestrial before becoming aquatic. They precede our existence by millennia. Essentially, we are living alongside dinosaurs, and for that reason alone, they deserve to thrive for generations to come.



An adult *Orinoco* crocodile can reach lengths of up to seven meters.

The *Orinoco* crocodile (*Crocodylus intermedius*) is listed as 'Critically Endangered' (CR) by the IUCN.

Orinoco region

Middle *Magdalena* Valley

Putumayo

It is clear what needs to be done to restore the crocodile population: we need to breed them in captivity and release them in many strategic locations.

I FELL IN LOVE WITH THE *ORINOCO*

Animals always fascinated me, so it was no surprise I ended up studying biological sciences at the Universidad Autónoma de Madrid. Initially, I was drawn to plant studies, but everything changed when my friends returned from a trip to Mexico with captivating photos of its vibrant wildlife. That is when I knew I wanted to work in the Americas. With support from the Universidad Autónoma and guided by Javier Castroviejo, a renowned Spanish biologist, I pursued a master's in Ecology and later a Ph.D. in Biological Sciences, focusing on research at *El Frío* farm *in Apure*, Venezuela. According to historians, this ranch was reportedly a gift from Simón Bolívar to José Antonio Páez, a Venezuelan hero, and played a crucial role in providing cattle for the liberation army. It was also a sanctuary for hundreds of crocodiles. However, in 2009, Hugo Chávez expropriated the land for agricultural use, abruptly halting all scientific endeavors.

Later, I traveled to Bolivia, and around 2012, I settled in Colombia as the scientific director of the Fundación Palmarito. I have to admit: what really captured my heart and motivated me to stay in the country was the *Orinoco* region. Seeing capybaras, deer, frogs, jaguars, anacondas, pumas, and the diverse landscapes has been truly special. That is what ultimately led me to dedicate my life to crocodile conservation.

During the last century, hunting severely depleted *Orinoco* crocodile populations in Colombia.

SEVEN MALES AND TWO FEMALES

The plan for recovering the species is crystal clear: we must breed them in captivity and strategically release them into selected sites to establish new wild populations. Ideally, this effort should span across various regions of Colombia. However, our current focus has been on relocating nearly 242 individuals to three key locations: the *Cravo Norte* River (*Arauca*), the *Hato La Aurora* natural reserve in *Casanare*, and the *Tomo* River within the *El Tuparro* National Natural Park (*Vichada*). Captive breeding has been carried out at *Wisirare*, a park converted into a biological station in *Orucué*, temporarily assigned by the *Casanare* Governor's Office to the Fundación Palmarito. By early 2020, we had 354 additional crocodiles in captivity, including eight adults.

Some of these figures and achievements have become a reality, largely thanks to our partnership with Proyecto Vida Silvestre (PVS) in late 2014. This collaboration came at just the right time for us, as their support allowed us to enhance the station and bolster technical aspects necessary for successful releases. This involved identifying optimal reintroduction sites and closely monitoring the specimens. Additionally, we managed to improve the facilities at *Wisirare*, ensuring access to water, building secure enclosures for the crocodiles, establishing nesting beaches, and setting up incubators to care for eggs during nesting seasons. Whenever a female lays eggs, we collect and incubate the clutch at room temperature for at least 85 days until the hatchlings emerge. Subsequently, the hatchlings are moved to ponds, where they are organized by size and their growth is monitored.

With the support of Corporinoquia and guidance from WCS Colombia and the National Natural Parks office, our collective efforts have gone beyond simply releasing crocodiles. We have also pioneered the development of the first-ever Crocodile Reintroduction Protocol, which includes monitoring over fifty individuals using acoustic transmitters.

258,370

hectares make up the landscape of the middle and lower basins of the *Tomo* River, where efforts to conserve the *Orinoco* crocodile are underway.

PVS in numbers

PVS

Map 6

Monitoring of released crocodiles

Sighting spots

- Trails
- 2015
- 2016
- 2017

Bita River

Tomo River

VICHADA

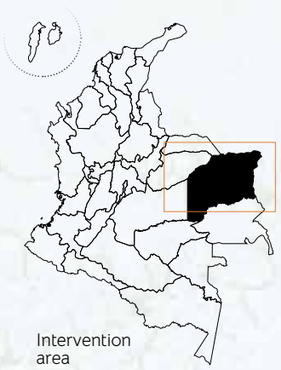
Orinoco region

Middle *Magdalena* Valley

Putumayo

Orinoco River

Waters and riverbanks of the *Tomo* River near *El Tuparro* National Natural Park (*Vichada*).



CROCODILES IMPROVE FISHING OPPORTUNITIES

It is immensely gratifying to relocate crocodiles to environments where they can thrive and reproduce freely. This not only aids in their recovery but also enhances the health of the ecosystems they inhabit. Crocodiles play a crucial role in wetlands and streams, attracting abundant fish populations. This is due to historical imbalances: during the years of unregulated crocodile hunting, the unchecked proliferation of piranhas and other predators led to the depletion of commercially valuable fish species such as catfish, tambaquis, payaras, and peacock bass.

Crocodiles do not just regulate piranha populations to ensure a balanced river ecosystem; they also help maintain stability among freshwater fish species. Additionally, they play a crucial role in preventing canals from becoming clogged during dry seasons by stirring up sediment at the bottom, thus keeping water currents flowing. Amidst their activities, they hunt turtles, birds, or mammals, utilizing motion sensors on their bodies to track prey, even in darkness. They do this through swift movements supported by webbed feet and a long tail used as a rudder.

This reptile holds immense ecological value, acting as a silent protector of wetland habitats. Colombia, with its 2002 Management Plan for the Conservation of the Reptile, has established all the necessary regulations for its preservation —a goal that our work has actively supported. Instead of additional regulations, what is crucial is to give a significant boost to this plan for ongoing progress. This species deserves our attention because conserving the crocodile also means preserving the *Orinoco* region.■

Orinoco region

Middle *Magdalena* Valley

Putumayo

MOVING AWAY FROM EXTINCTION

Acoustic monitoring of crocodiles

By monitoring *Crocodylus intermedius* released into the *Orinoco* region, Fundación Palmarito and WCS seek to understand the species' movement patterns and determine if there is a viable population for effective conservation initiatives.

Captivating landscapes at *Bioparque Wisirare*, a key site for Fundación Palmarito's efforts to protect the *Orinoco* crocodile.

71

young specimens, each measuring at least 82 centimeters in length before their release, have been reintroduced into the *Tomo* River within *El Tuparro* National Park.

PVS in numbers

Figure 3

Permanent monitoring of the *Orinoco* crocodile

Here are some insights about the continuous monitoring of this massive reptile.

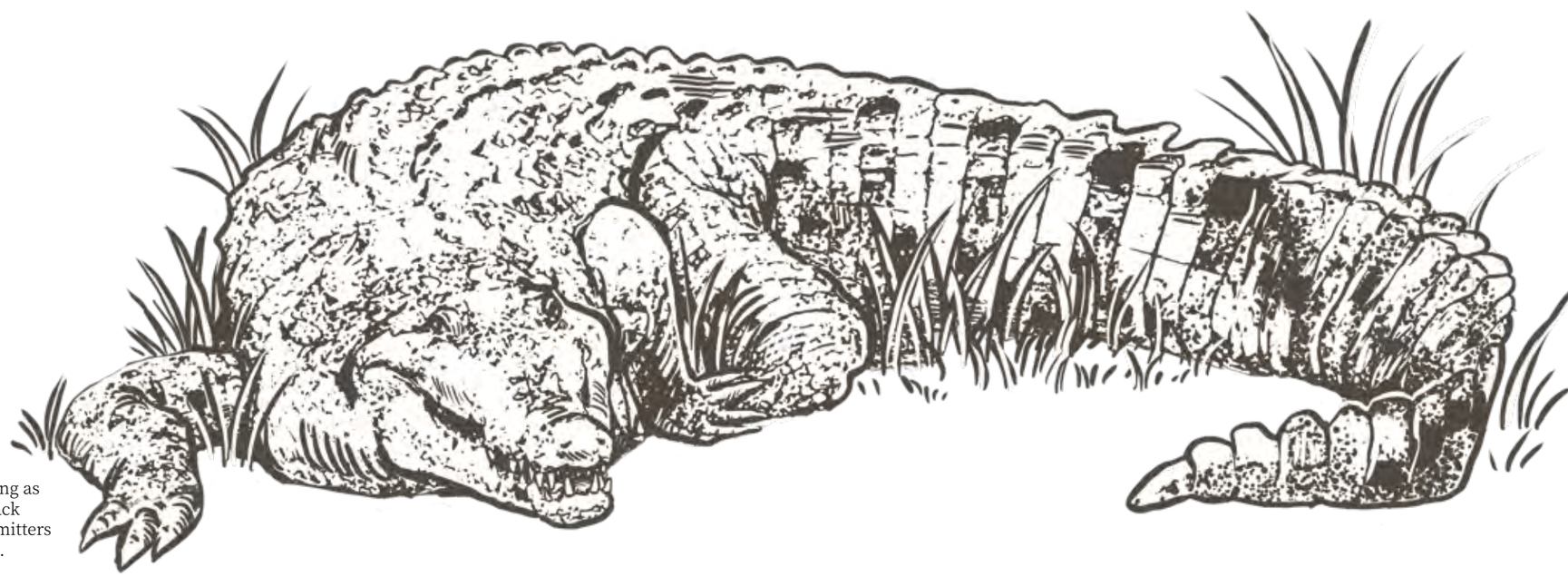
The crocodiles reintroduced and monitored have been relocated to areas previously evaluated and deemed suitable habitats for these reptiles, or where they historically thrived.

The whole process is communicated and coordinated with nearby residents or farmer/indigenous communities.

55

animals are currently being monitored by Proyecto Vida Silvestre in the *Tomo* River.

PVS in numbers



Through an antenna acting as a receiver, people can track signals sent by the transmitters carried by the crocodiles.

This technology includes a motion sensor to detect prolonged periods of inactivity, indicating potential mortality or transmitter loss due to collisions or impacts with obstacles.

The monitoring of *Orinoco* crocodiles has been conducted with specimens bred and born in captivity within the *Wisirare* station, located in *Orucué* (*Casanare*).

50

percent of the crocodiles released in this protected national area have stayed in a zone close to their release site, potentially ensuring a stable population.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

MOVING AWAY FROM EXTINCTION

To the rescue of the *Orinoco* crocodile

This flagship reptile of the *Orinoco* region is on the verge of extinction. In a sector of the *Tomo* River in *Vichada*, within *El Tuparro* National Park, captive-bred specimens are being reintroduced to the wild.

Inhabiting rivers, streams, lagoons, and other waterways, this massive creature finds its natural home.

96

crodiles have been reintroduced into *Laguna Caimán*, located in the *Tomo* River basin (*Vichada*), within *El Tuparro* National Park, in accordance with protocols established for areas within Colombia's Natural National Parks System.

PVS in numbers

Figure 4

The *Orinoco* crocodile

Scientifically known as *Crocodylus intermedius*, this species —endemic to the *Orinoco* River basin— is one of the four major types of crocodiles in the planet.

Back in the early 20th century, these impressive reptiles roamed the region, with their population exceeding 3 million individuals across a vast territory stretching over 600,000 square kilometers across Venezuela and Colombia.

Today, all the released crocodiles are being tracked using a radiotelemetry system to study their movements and behavior in the rivers and wetlands.

Historically, this species has been a cultural icon of the *Orinoco* region, inspiring folk songs and remaining closely linked to the health of wetlands and abundant fishing.

CR

Today, in Colombia, this species is critically endangered, as recognized by the International Union for Conservation of Nature (IUCN). Suggesting that there are 500 individuals left in the wild might be an optimistic assessment.

Crocodiles play a vital role in nature by helping to maintain the water flow. Their movement prevents these areas from getting clogged with sediment buildup.

Reaching lengths of up to 6 meters, it thrives in lagoons and wetlands, feeding on invertebrates and medium-sized vertebrates.

5,500

kilometers of routes tracked to monitor released young specimens. This monitoring effort by PVS evaluates attempts to restore a portion of the species' populations.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Young *Orinoco* crocodile, resembling those reintroduced by PVS into the *Tomo* River.

Orinoco region

Middle *Magdalena* Valley

Putumayo

MIDDLE *MAGDALENA* VALLEY

ENVIRONMENTAL CATTLE FARMERS

SOCIAL FABRIC

GUARDIANS OF *LA SAN JUANA*

ASOMUCARE

Orinoco region

Middle *Magdalena* Valley

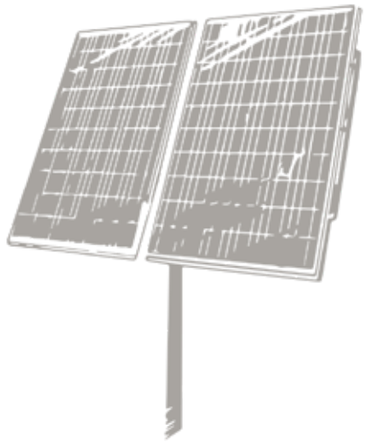
Putumayo

ENVIRONMENTAL CATTLE FARMERS

Sustainability: Ariolfo's main concern

At his farm, Ariolfo combines living and electric fences powered by solar panels. He has implemented silvopastoral systems and converts organic matter into fertilizer and methane gas. His dream? To create a 'productive forest.'

With the sun as his constant companion: this is the daily life of an indefatigable farmer.



Orinoco region

Middle *Magdalena* Valley

Putumayo

Unknown to many, as he is not one to show off, Ariolfo Díaz was born to change the story of a hidden piece of land, once a forest, surrounded by streams, and long ago named *El Sinaí*. To reach this peaceful place by river, you must navigate a portion of the *Magdalena* River, then the *Carare* River, before heading toward a stream known as *San Juan*, nestled in a jungle where howler monkeys, brown spider monkeys, and herons of all sizes can be spotted.

At some point, you have to leave the boat, descend, and traverse through greatly transformed terrain, where it is clear that there used to be much more biodiversity. Among the emerging farms, Ariolfo's 'oasis' stands out. Located in the *Riberas del San Juan* locality within *Cimitarra* (*Santander*), this territory is governed by a simple rule: protect the soil, water, and trees; prioritize sustainability above all else.

Ariolfo leads this effort —an individual shaped by agricultural labor, driven by a love for learning and research. He is an avid follower of agricultural television programs, self-taught through trial and error. Today, he mentors this small but essential part of Colombia, covering no more than 32 hectares.

He was born in *Cimitarra*, but did not grow up there. He traveled with his father through *Puerto Parra* (*Santander*), and later through *Aguachica* and *San Alberto*, in *Cesar*, making a living and striving to complete his high school education. One day, his father sold a plot of land he had kept in *La Dorada* (*Caldas*), and with that money, he bought another one in *Riberas del San Juan*, where he had to clear the land and prepare it in any way possible. These were years of clearing, burning, and mistreating species that are now scarce, such as *canelo*, *comino*, and *carreto* trees. "It was all based on instinct and little technique," he admits.

After settling in and focusing on cultivating cassava, corn, and plantains, Ariolfo's life took a significant turn when he met Brigitte Rodríguez, now his partner and main support. They married about ten years ago, and Brigitte has since become the mother of his three children. Together, they work on Ariolfo's projects aimed at ensuring their family's food security while also caring for the environment.

With Brigitte, Ariolfo has lived in *El Sinaí* for about five years. While the property was inherited by her from her father, Ariolfo has taken on the task of gradually improving it, aiming to transform it into what they affectionately refer to as a 'productive forest'. This concept has been supported by Proyecto Vida Silvestre (PVS).

Turning *El Sinaí* into a 'productive forest": that is the dream Ariolfo and his family share.

Forage plants: a vital resource for *El Sinaí*'s productive system.

0.5

hectares: the extent of the forage bank on the *El Sinaí* farm.

PVS in numbers

Orinoco
region

Middle
Magdalena
Valley

Putumayo

Life in *El Sinaí*
largely revolves
around working
with livestock.

CATTLE FARMING AND LOGGING

In the entire country, "cattle farming and deforestation go hand in hand," as explained by former Minister of Environment and Development Manuel Rodríguez Becerra. Livestock management has historically been the leading cause of ecosystem transformation, clearing forests and draining wetlands to create pastures.[3]

Therefore, what PVS has aimed to demonstrate by guiding Ariolfo from the Center for Research in Sustainable Agricultural Systems (CIPAV, for its acronym in Spanish), is that besides environmental stewardship to support livestock development, there are other ways to utilize the land for agroforestry purposes.

According to CIPAV's research, in regions like the Middle *Magdalena* Valley, significant changes in agricultural and livestock management are often possible, setting examples for the entire region. Ariolfo and *El Sinaí* exemplify this, as evident when he leads us on a tour of his farm, speaking like a seasoned professional.

6

hectares of forest are dedicated to conservation on Ariolfo and his family's farm.

PVS in numbers

AN ENVIRONMENTAL QUIXOTE

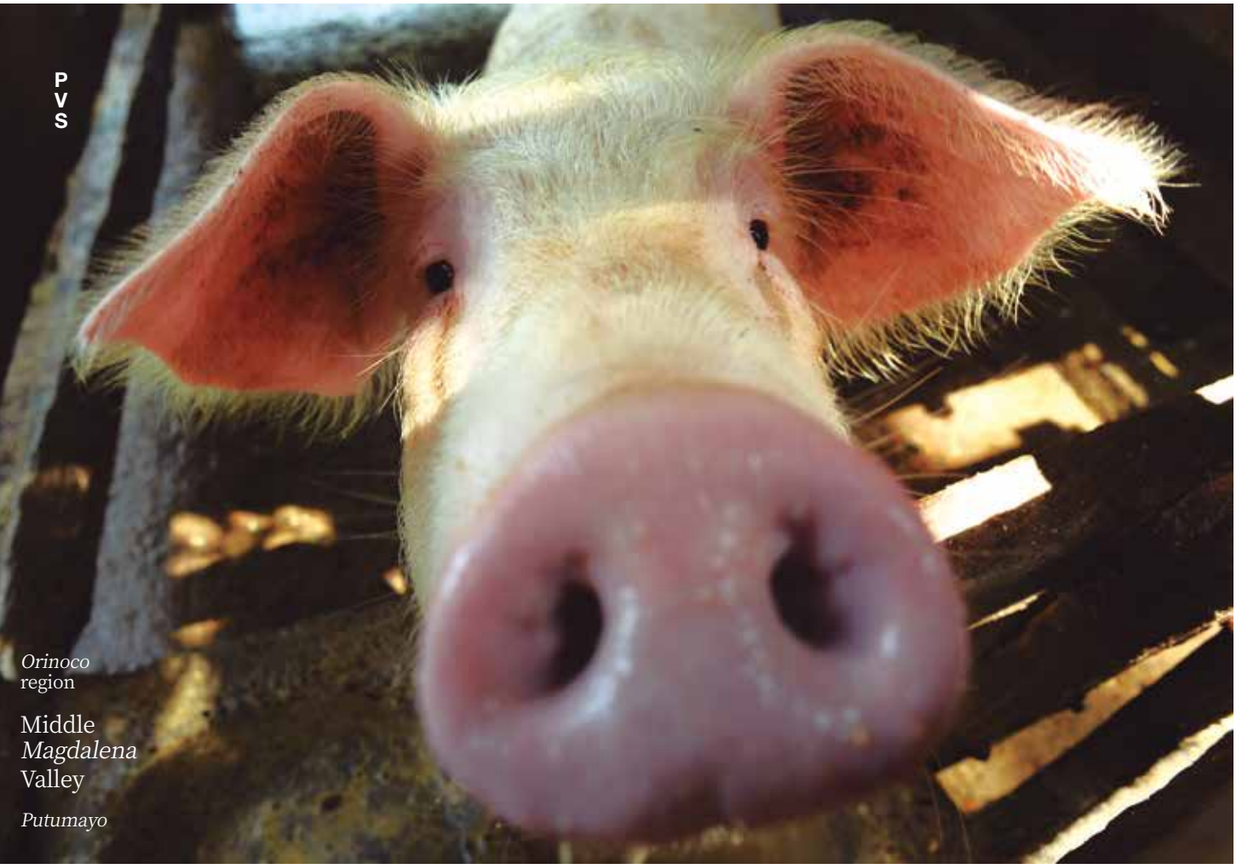
In the region, when PVS activities first began, Ariolfo was seen as a 'fervent planter', almost like an environmental quixote. Today, he has become an influential neighbor, a prime example of what can be achieved through dedication and care.

On his farm, what immediately catches the eye is the remarkable abundance of timber trees, now reaching various sizes. When he and his family first arrived, the forest covered less than a hectare. Today, these plants stretch across at least 11.9 hectares. The area is now bustling with numerous bird species, and one can even spot brown spider monkeys, a species with remarkably long arms that sometimes resemble giant spiders.

Another priority has been to establish a half-hectare forage bank, supplying food for cows while also growing crops for his family. This effort has improved the microclimate and turned these areas into havens for many animals. "Our purpose is to maximize our yield, to the point where we can eventually ensile or store surplus for times of scarcity," he explains. Nearby, he gathers livestock and pig manure, utilizing them in a biodigester to produce methane gas. This methane is not released into the atmosphere but is instead used as fuel in the kitchen.

"Our purpose is to maximize our yield, to the point where we can eventually ensile or store surplus for times of scarcity."

[3] Rodríguez Becerra M. In '*Nuestro planeta, nuestro futuro*'. Bogotá. Editorial Debate. 2019



Orinoco region

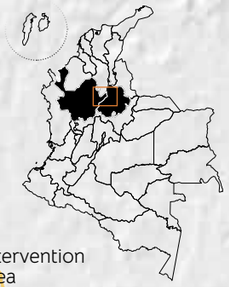
Middle *Magdalena* Valley

Putumayo

The accomplishments of *El Sinaí* are also a win for the diverse wildlife crucial to conservation efforts.

Map 7

El Sinaí in PVS



0 2,5 5 10 15 20
Kilometers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Antioquia

Barbacoas marshland

Ciénaga Grande marshland

Chucurí - Aguas Negras marshland

Chucurí - Aguas Blancas marshland

El Clavo marshland

La Colorada marshland

Magdalena River

Carare River

El Sinaí farm

La San Juana marshland

Santander

El Sinaí farm details

PVS polygon in the Middle *Magdalena* Valley

El Sinaí farm

Distribution of the silvopastoral system in *El Sinaí* farm

Points of interest

- Farm entry point
- Beekeeping area
- Nursery
- Continuous flow biodigester

Current farm zoning

- a Common use areas
- b Silvopastoral systems by natural regeneration management
- c Mixed forage bank
- d Area rehabilitation for silvopastoral systems
- e Conservation areas
- f Pasture rotation for rehabilitation of areas designated for silvopastoral systems
- g Internal communication routes
- h Transition zone from old pastures to future conservation areas

194

hectares designated for restoration through the implementation of silvopastoral systems in the Middle *Magdalena* Valley.

PVS in numbers

These waste materials also serve as organic matter and fertilizer for the forage bank. They are transported there by a pump powered by solar panels, capable of delivering up to two thousand liters of this natural fertilizer every 45 minutes.

Nearby the pump, there is a nursery where he propagates *comino*, *cedro*, *ceiba*, *orejero*, and fruit trees like oranges and *zapotes*, among others. He is currently working diligently to plant over five thousand native trees, adding one to the ground almost every day.

In his territory, Ariolfo, who makes a living by selling cheeses he crafts himself, has a rule: his livestock does not go to the water, a practice that often leads to water source contamination. To solve this, he has installed an aqueduct system specifically designed for cows, drawing water from a two-thousand-liter tank. With pride, he says that at *El Sinaí*, "it is the water that comes to the cattle."

Orinoco region

Middle *Magdalena* Valley

Putumayo

In a designated paddock, the animals are not left to roam freely; instead, they are grouped together. During certain seasons, he has managed to gather as many as 5 specimens per hectare, surpassing the country's average of two animals per hectare. He rotates them strategically within this area, making use of the enriched soil. This method allows the livestock to graze in one area while promoting grass regrowth elsewhere. Afterwards, they move to areas where seedlings have sprouted, allowing previously grazed sections to regenerate.

Part of the stable has been constructed using living fences or trees, providing valuable shade in this hot region. Additionally, the paddock is enclosed with electric fences powered by a 50-watt solar panel, which also supplies energy for two light bulbs in the house.

150

individuals of six different species have been planted to date in order to establish several living fences.

PVS in numbers

MY CHILDREN DESERVE A CAREFULLY PLANNED COUNTRYSIDE

As evident from his presentation, each aspect represents smaller-scale efforts that, when combined, contribute to the creation of a productive landscape.

Ariolfo's relentless work ethic extends to his efforts to boost community honey production with Apis bees and revive rice cultivation. Despite being a crucial food staple for generations, rice has been overlooked in recent years among his neighbors.

This project will require intensive effort as its consolidation will not come easily. Over the years, the region's soil has been heavily exploited, leading to a decline in quality and compaction from constant livestock trampling. Erosion is a frequent issue in this area.

So, little by little, he has found that these alternatives not only bring about quick changes but also provide extra income, crucial for him and his family's well-being. "People always focused on the here and now, never the future. I dream of setting aside 12 out of the 32 hectares I manage for conservation," he explains. "Not just for us, but for the generations growing up today, who deserve a carefully planned countryside," he adds, before sharing a final thought: "It is easier to clear and burn; the real challenge is conserving and finding sustainable production solutions. Nearby farms have pastures as big as my whole farm, yet they have shifted from ridicule to interest in what we are doing; there is still time to make things right." ■

Ariolfo and his family aspire to set aside 12 out of the 32 hectares of *El Sinaí* for conservation purposes.

Orinoco
region

Middle
Magdalena
Valley

Putumayo

ENVIRONMENTAL CATTLE FARMERS

Lucitania: a successful combination of cattle farming and conservation

Lucitania is a thriving farm with over three thousand head of cattle, located in the Middle *Magdalena* Valley. *Lucitania* is a Civil Society Natural Reserve working to restore forest habitats crucial for the conservation of the brown spider monkey and the blue-billed curassow.

The blue-billed curassow (*Crax alberti*), endemic to Colombia, is currently at critical risk of extinction.

Orinoco region

Middle *Magdalena* Valley

Putumayo

The *Lucitania* Civil Society Natural Reserve (RNSC) was established in 2019, with 166.4 hectares under conservation.

Decades ago, when Juan Andrés Jaramillo was in his early twenties and just starting to learn about large cattle farms in the Middle *Magdalena* Valley, he noticed unsustainable practices being used to boost productivity and profitability. One common method was clearing forests to create pastures, aiming to expand the herd over vast, open, unshaded areas.

On *Lucitania*, the farm he inherited from his father in the locality of *El Águila*, near the urban area of *Cimitarra* (*Santander*), and just two kilometers from the *Carare* River and 20 kilometers from the *Magdalena* River's midsection, similar practices sometimes occurred. Native plant species, many of them valuable timber trees, were cut down to increase grazing areas. This approach often led to inefficient cattle farming, typically requiring the equivalent of two soccer fields to raise just one or two cows.

Juan Andrés, a devoted conservationist, has spent years learning how to protect nature. He witnessed the harmful effects of deforestation and understands its consequences better than anyone.

Under his leadership, *Lucitania*, which spans over 2,800 hectares, has moved away from outdated, unsustainable practices. Today, it serves as a model for conservation.

In an effort to reforest the damaged areas and restore the forests, Juan Andrés partnered with the Fundación Proyecto Primates and WCS, under Proyecto Vida Silvestre. He is transforming his land —where cattle are fattened for meat production— into a productive system that supports conservation and protects water sources.

He has created a piece of land that promotes efficiency and ecological connectivity, with a strong focus on respecting the landscape. The cattle, numbering at least three thousand, share space with the planting of native tree seedlings such as *guamo*, *nogal*, and *cedro* trees, helping to restore the soil. The goal is to develop a functional landscape that, in 10 to 20 years, could start to resemble its original state before the uncontrolled deforestation of the mid-20th century, which transformed over 80 percent of the region and affected primary tropical forests and marshlands.

PURSUING CONNECTIVITY

Anyone walking through *Lucitania* and looking as far as they can might initially think the property is a dense, continuous forest stretching to the horizon. However, this can be deceiving. From above, those seemingly connected forests often appear isolated, like patches or islands of vegetation.

A typical fragment of the once-thriving *Carare-Opón* rainforest in the Middle *Magdalena* Valley in *Santander*.

The goal is to connect these areas and ensure continuity so that many species can reproduce, integrate, and interact with each other, finding suitable habitats within the *Carare-Barbacoas* marshland complex. This is already happening through habitat rehabilitation and restoration in sensitive areas like stream edges.

From 2016 to 2024, a total of 9,500 trees of 30 different species, including *caracolí*, *orejero*, *samán*, *polvillo*, and *balso*, have been planted across 143 hectares chosen for intervention. These efforts aim to create thriving ecosystems, supported by nurseries and monitoring areas to track and improve tree survival rates.

This intervention also aims to consolidate at least five main biological corridors. These corridors have been fenced off in some of their most sensitive areas to prevent animal contact, protect plantings from damage, and encourage natural regeneration. Over time, these areas are becoming pathways and transit zones for birds, reptiles, amphibians, and mammals.

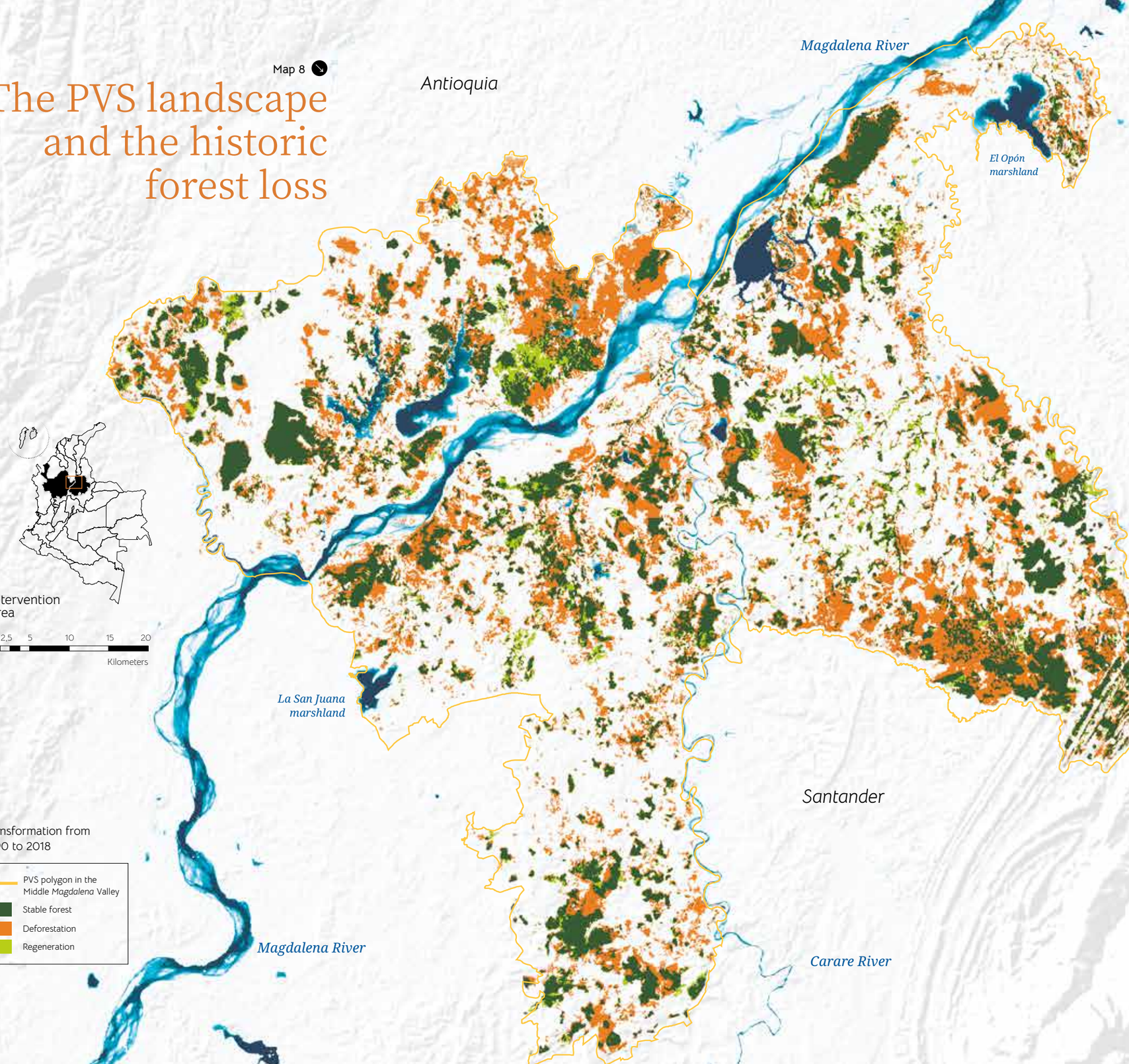
9,500

individuals have been planted in the seven biological corridors that now bring more life to *Lucitania*.

PVS in numbers

Map 8

The PVS landscape and the historic forest loss



MORE FORESTS FOR THE BROWN SPIDER MONKEY

Among the large animals prioritized for conservation and already making appearances in some of the created corridors is the brown spider monkey, also known as the *Magdalena marimonda* or *choibo* (*Ateles hybridus*). Deforestation has left many of their populations isolated, pushing this species to the brink. Today, it is considered one of the 25 most endangered primates in the world.

This species is highly sensitive to human presence and vulnerable due to its slow reproductive cycle, producing only one offspring every three years. This species depends on vast stretches of forest to survive. Its life is intricately intertwined with the trees, and without them, it becomes defenseless. Consequently, many groups have become isolated, leading to inbreeding within the same family, which poses a serious threat to the health of their populations.

"We want to prove that even though the pastures have been established and mistakes were made in the past push for productivity, we can turn back the clock and revive ecosystems through eco-friendly cattle farming," says Juan Andrés.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Three snapshots of the brown spider monkey in the remnant forests of the Middle *Magdalena* Valley in *Santander.*

Orinoco region

Middle *Magdalena* Valley

Putumayo

NETWORK OF RESERVES TO ENSURE LONG-TERM CONSERVATION

In a sustainable habitat like the one achieved in *Lucitania* over five years, the brown spider monkey emerges as a crucial steward of its ecosystem. Thriving on a diverse diet of fruits, it serves as a natural seed disperser, continually revitalizing the local flora.

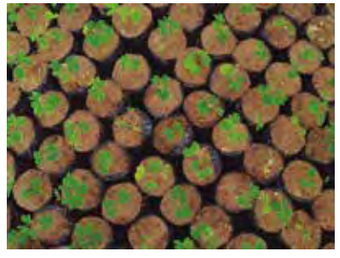
In this region, along with other biological corridors established through Proyecto Vida Silvestre, trees like crespos (*Aniba perutilis*), abarcos (*Cariniana pyriformis*), cedros (*Cedrela odorata*), sapotes de monte (*Pradosia sp.*), jobos (*Spondias mombin*), ceibas sapo (*Hura crepitans*), gualandays (*Jacaranda hesperia*), and guayacanes (*Tabebuia rosea*) are thriving steadily. These areas are also adorned with orchids, bromeliads, and passionflowers. Notably, one of these breeding sites is home to the *Zamia incognita*, a species endemic to the region and facing extinction.

The flourishing vegetation directly supports the survival of other vital wildlife species still found on the farm. These include peccaries, ocelots, agoutis, guans, armadillos, river otters, raccoons, iguanas, and jaguarundis —all captured on camera traps in mid-2020. Remarkably, breeding pairs of the critically endangered blue-billed curassow (*Crax alberti*) have also been spotted.

Based on local reports and field observations, it is clear that *Lucitania* serves as both a habitat and a transit area for various wildlife species. These include pumas (*Puma concolor*), white-faced capuchin monkeys (*Cebus albifrons*) or Colombian red howler monkeys (*Alouatta seniculus*), red-tailed squirrels (*Sciurus grantensis*), red-footed tortoises (*Chelonoidis carbonaria*), spectacled caimans (*Caiman crocodilus*), and a diverse array of cane toads (*Rhinella marina*). Additionally, the region boasts approximately a hundred bird species, ranging from Amazon parrots to straight-billed woodcreepers, woodpeckers, tanagers, and tropical kingbirds. “Everyone here, including the workers, knows hunting any animal is off-limits and not something we do,” Juan Andrés adds.

Protecting all this biodiversity is absolutely essential. That is why Proyecto Vida Silvestre is encouraging neighboring farms to join in these efforts by promoting practices like agroforestry and using electric or living fences to keep animals away from creek water. The Civil Society Natural Reserve Network ‘*Caño Dorada*’ is taking shape, with *Lucitania* and *Pampas-Porvenir* already on board. The plan is to bring in other nearby farms like *Capote* (including the *Anaconda*, *La Esperanza*, and *Piedra Alta* sectors), *La Estrella*, *San Sebastián*, and *Agua Linda*. The purpose? To ensure that natural resources are protected for generations to come. This means enhancing natural connections, adopting sustainable farming practices, and planting species that support animal welfare across at least three thousand hectares of land.

“I have always felt strongly about conservation; even with the demands of business and fieldwork, respecting the landscape is crucial. It is not all about profit,” Juan Andrés concludes. ■



Over 30 native species are cultivated across the 3 nurseries within the *Lucitania* RNSC.

36

species have been documented through the camera traps deployed in this sector of the Middle *Magdalena* Valley.

PVS in numbers

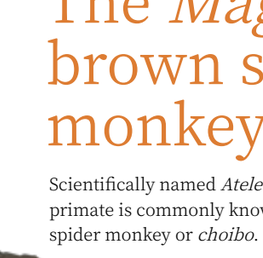
Figure 5

The *Magdalena* brown spider monkey

Scientifically named *Ateles hybridus*, this primate is commonly known as the brown spider monkey or *choibo*.

Although its diet mainly consists of various wild fruits, it also enjoys certain seeds and flowers.

Using their prehensile tails, they skillfully support their bodies during both feeding and movement.



Its natural range is confined to the northern regions of South America, mainly in Colombia and some parts of Venezuela.

These monkeys prefer tall, untouched forests, so spotting them in areas with human activity or secondary vegetation is rare.

Their top choice for sustenance includes the fruits of various trees. Once digested and expelled, these fruits enhance the vitality of the forests.

However, due to habitat fragmentation, hunting, and the illegal pet trade, they are critically endangered (CR).

Orinoco region

Middle *Magdalena* Valley

Putumayo

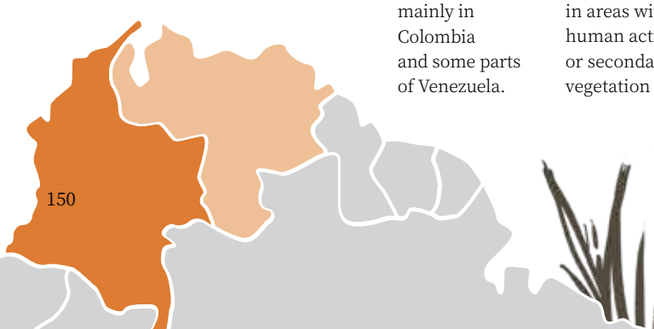


Figure 6

The blue-billed curassow

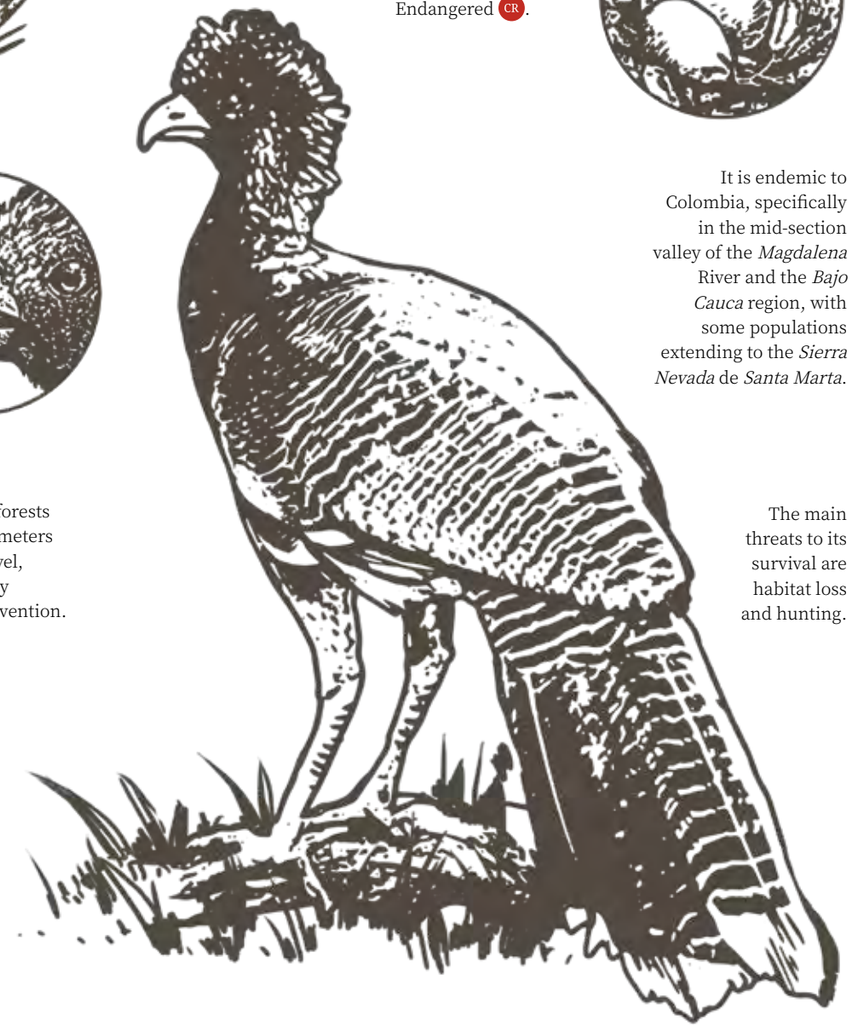
Scientifically known as *Crax alberti*, this species breeds during the dry season, from December to April.

In 2007, the IUCN classified this species as Critically Endangered (CR).

It is endemic to Colombia, specifically in the mid-section valley of the *Magdalena* River and the *Bajo Cauca* region, with some populations extending to the *Sierra Nevada* de *Santa Marta*.

It thrives in forests below 1,200 meters above sea level, untouched by human intervention.

The main threats to its survival are habitat loss and hunting.



SOCIAL FABRIC

The *Magdalena* catfish: past and present

Two fishermen share their perspectives on the past and their hopes for the future of a species that has served as the lifeblood of countless communities in *Barrancabermeja* and *Cimitarra* (*Santander*), in the *Magdalena* River basin.

Nidio, a seasoned fisherman, weaves a new net on the edge of the *Aguas Claras* marshland.

PAST: MOISÉS ÁVILA, 'CHINCHE'

Orinoco region

Middle *Magdalena* Valley

Putumayo

As unsustainable practices came to light, the direction of fishing started to change.

"There were so many boats and lights on the water! At night, it felt like the whole town had moved to the river; canoes scattered everywhere, with groups of fishermen in every direction —maybe 8, 10, 12 boats, each carrying 8 or 10 people; I lost count. I had never seen so much fish, especially catfish.

I have always been an adventurous type. I worked as a fisherman, a real one, on the *Nare* River in *Antioquia*, catching *bocachico*. But even there, I never experienced anything like what we saw here in *Bocas del Carare* back in January 2010.

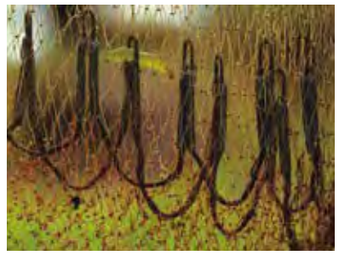
Despite any regulations in place, people fished tirelessly, every evening, and through the night. Even the least productive group could reel in up to 1,250 pounds in a single day —equivalent to at least 100 adult fish— a substantial income for their efforts.

I remember a friend, Robeiro, who pocketed nearly two and a half million pesos (approximately 609 dollars) in just 15 hours (about five times the minimum wage back then). Buyers scrambled to keep up, hastily selling their catches in *Barrancabermeja*. Meanwhile, local fishermen spent their days drinking; few saved or invested in homes or equipment. The catfish had its heyday, its golden era, but few considered the future beyond those fleeting moments of abundance.

There was a lot of destruction, and frankly, a ton of selfishness. People were just focused on filling their own pockets, and if resources ran out, tough luck for everyone else. And to add to the mess, there was an increase in trammel nets and other harmful practices like fishing for small fry. Then, everything started to go downhill.

Today, I do not fish as much. I make ends meet by ferrying folks around with my motorboat and running some *tejo* (a traditional throwing sports with steel projectiles) courts; that is what helps me bring food to the table. And let me tell you, catfish fishing has turned into a real struggle, a sacrifice. Try pulling in the same 1,250 pounds from those old nights, and let me know how that works out!"

The *Magdalena* catfish (*Pseudoplatystoma magdaleniatum*), found only in Colombia's *Magdalena* River basin and the *Cauca* and *San Jorge* sub-basins, enjoyed its golden years during the 60s and 70s. Back then, it was the star of the fishing scene, often making up over 50 percent of total catches during peak seasons in the *Magdalena* River basin. However, its decline prompted a shift in attention to other species like *bocachico* or *blanquillo*.



The spread-out nets capture the tranquil moments of rest enjoyed by fishermen.

As outlined in the Red Book of Colombia's Freshwater Fish, by the late 1980s, notable changes were occurring, signaling a critical situation. It became increasingly apparent that the freshwater fish population was under severe pressure, largely due to widespread overfishing that often ignored size restrictions. The urgency of the situation was underscored in 1988 when it was reported that the species showed unmistakable signs of decline, attributed to overfishing and habitat degradation. These factors posed significant risks, including genetic depletion and potential extinction.

By 1990, the catfish's contribution to the overall fishing yield had dropped to only 9 percent. This represents a significant 90 percent decline over the span of 30 years (from the 1960s to the 1990s).

Biologists typically describe catfish as measuring just over a meter. However, research by Mauricio Valderrama, director of the Fundación Humedales, reveals

250

fishermen, on average, participate in the *Magdalena* Catfish Roundtable, pooling efforts to protect this species.

PVS in numbers

Orinoco
region

Middle
Magdalena
Valley

Putumayo

For fishermen in the *Magdalena* riverbank, the *Magdalena* catfish is the ultimate prize catch.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Many fishermen today acknowledge that they play a crucial role in the recovery of *Magdalena* catfish populations.

a troubling trend: average sizes have shrunk from 92 centimeters to 42 centimeters in some regions. Given that this species reaches maturity within a range of 65 to 89 centimeters, these findings highlight the critical state of the species and its uncertain future.

However, poorly planned fishing practices, improper tools, and unsustainable approaches are not the sole factors contributing to this critical situation. Other factors in the Middle *Magdalena* Valley have indirectly played a role in degrading the habitat of the *Magdalena* catfish. For instance, the introduction of non-native crops, combined with improper agricultural techniques, has led to increased deforestation and contamination from agrochemicals. Land use changes, primarily for expanding cattle farming, have encroached upon wetlands crucial for the catfish's early life stages. Moreover, chemical discharges from agribusiness and mining activities are further polluting water ecosystems. Additionally, the impacts of hydroelectric plants, still under investigation, have altered river courses and levels, hindering the species' two annual migrations.

PRESENT: PEDRO NEL FUENTES ASOPESBOCAR

"For those of us who were born fishermen, we are facing a really tough situation. In my opinion, here in *Bocas del Carare,* catfish populations in the *Carare* and *Magdalena* rivers have dropped by about 80 percent. You can spend two or three hours fishing and only catch three or four; it used to be ten or fifteen. The *blanquillo* is disappearing too. We are left with the *bocachico*, but we have to catch a lot more to make up for what we earned before. Another thing that is striking is the sizes. Nowadays, adult catfish are tiny, weighing only 3 to 5 pounds. Before, they would not be less than 10 or 20 pounds. It is clear that the uncontrolled and unsustainable fishing practices that have been going on for so long got us into this situation.

That is why we believe that the best way to tackle this issue is by joining efforts and agreeing on better practices. Proyecto Vida Silvestre (PVS), in collaboration with WCS and the Fundación Humedales, helped us establish the *Asociación de Pescadores Artesanales Bocas del Carare* (Asopesbocar). Through this association, we now have a stronger voice with the Autoridad Nacional de Acuicultura y Pesca (AUNAP). They have supported us by hiring us to clean some streams and monitor the catfish. All with the purpose of finding a solution.

With PVS as our partner, we have reached agreements to honor minimum fishing sizes, not just for catfish, but for all species. We understand the importance of using only cast nets and hooks for fishing. We are protecting four key sites: *El Clav*o and *Aguas Negras* marshlands —located in *Bocas del Carare* and *San Rafael de Chucurí*— which we leave untouched. Moreover, at *La Colorada* and *Aguas Blancas* marshlands (also in *Bocas del Carare* and *San Rafael de Chucurí*), we only fish during daylight hours, until four in the afternoon.

A glimpse of a small forest patch resiliently standing along the banks of the *Magdalena* River.

As an association of 48 fishermen, we have made another significant contribution besides honoring fishing agreements. This effort has also generated some income for us. We have been involved in cleaning the *El Clavo* marshland and monitoring catfish in specific areas. This has helped us confirm the need to adjust the fishing ban dates, a proposal supported by Asopezchucurí (an association similar to Asopesbocar, representing fishermen from *San Rafael de Chucurí*). Today, we are certain that the dates for species reproduction (locally known as *candeleo*) are changing —they are no longer as consistent as before. Therefore, it is crucial for the fishing ban to align with the actual reproduction period to truly benefit catfish reproduction. This understanding is essential! In *San Rafael de Chucurí* and *Bocas del Carare,* we have already started implementing the ban on different dates when catfish reproduction is observed. This approach should be adopted nationwide.

Sure, I recognize that we need to do more for catfish conservation. It requires a stronger commitment from communities, as well as from fishermen and their families. We can bring it back if we all pitch in. Let us say we achieve that. But what is the use if we keep doing things wrong afterward? We do not need a lot of rules. It is a matter of awareness because, truth be told, its preservation is in our hands." ■

357

fishermen engaged in the participatory monitoring of the *Magdalena* catfish between 2021 and 2022.

PVS in numbers

Orinoco
region

Middle
Magdalena
Valley

Putumayo

As the day comes to an end, two fishermen in the *Chucurí* marshland are seeking their daily livelihood.

Map 9

Fishing agreements for conservation of the *Magdalena* catfish

Orinoco region

Middle *Magdalena* Valley

Putumayo

Intervention area

0 3,75 7,5 15 22,5 30

Kilometers

PVS polygon in the Middle *Magdalena* Valley

Community agreement
FISHING PRACTICES

Exclusively for rivers
- Six-point gillnet (12 cm mesh size).
- Four-point seine (8 cm mesh size).
- Heavy six-point trawl (12 cm mesh size - not allowed in fish corrals).
- Four-point bottom gillnet (8 cm mesh size).
- Two-point *barbulera* bottom gillnet.
- Six-point cast net (12 cm mesh size).

For rivers and marshlands
Hook and sinkers.
3.5-point cast net (7 - 8 cm mesh size).
Arrow.

Prohibited everywhere
Dragging.

Community agreement
RESERVE ZONES

***Aguas Negras* and *El Clavo* marshlands**
These areas must be environmentally protected, and no fishing of any kind is allowed.

***Aguas Blancas* and *La Colorada* marshlands**
Fishing with hooks or a 3.5-point cast net is permitted only from Monday to Friday, 6:00 a.m. to 6:00 p.m. Night access is limited to recognized "hook fishermen" approved by the communities and in need of bait.

Community agreement
FISHING BAN

First period: one month
Using May as a reference, its start will depend on the reproduction period, a phenomenon closely tied to water levels.

Second period: 15 days
Using October as a reference, its start (either in the first or second half of the month) will be determined by water dynamics and their relation to the *Magdalena* catfish's reproductive season. Fishermen provide this information to the AUNAP.

Antioquia

Santander

Chucurí - Aguas Negras marshland

Chucurí - Aguas Blancas marshland

El Clavo marshland

Barbacoas marshland

Ciénaga Grande marshland

La Colorada marshland

Magdalena River

San Bartolomé River

Carare River

La San Juana marshland

Guayabito River

Orinoco region

Middle *Magdalena* Valley

Putumayo

SOCIAL FABRIC

Leaders are not born; they are made, just like Walfran

He stands for a hundred fishermen from *San Rafael de Chucurí*, in *Barrancabermeja* (*Santander*), championing their knowledge, engaging directly with authorities, and striving to protect the future of the *Magdalena* catfish, a prized asset of the Middle *Magdalena* Valley.

Caught in a moment of joy, this seasoned fisherman takes a cheerful break amidst his work.

Orinoco region

Middle *Magdalena* Valley

Putumayo

“No one ever imagined it could vanish; well, it has not disappeared completely, but it is just not fished like it used to be. Such a situation was not on anyone’s radar, not even in their worst nightmares.”

This is how Walfran Martínez talks, as if he could travel back in time, reminiscing like flipping through an old family album filled with black-and-white photos. He seems to admit that during those golden days, when catfish were plentiful, most fishermen just lived in the moment, not thinking about the future. Essentially, some, like him, lacked foresight, failing to save for what lay ahead. This, despite the fish itself, with its occasional absences, sent warnings that went unnoticed. They saw them as mere blips rather than signs of an impending crisis.

Sitting at the bow of his canoe, with his gaze fixed on *San Rafael de Chucurí*, a humble locality of *Santander* nestled along the *Magdalena* River, this young, smiling man does not hold back his thoughts on the crisis affecting “the greatest treasure of our grand river basin,” as he describes it.

Right there, drifting along with the current on an afternoon in 2019, he fondly recalled his fishing routine from about 20 years ago. He used to fish at night, seemingly immune to fatigue and mosquitoes, operating at full throttle. At the age of 18, he already had enough experience and strength to handle the weight of any net, regardless of obstacles like fallen logs. And if he felt like it, he could team up with two or three buddies to pull in between 200 and 300 catfish, which could amount to 2 to 3 million pesos today, a significant sum if we think back to those prosperous years.

There were times when his body begged for a break, so he would head out around 5 in the afternoon and return home by 8 in the evening. These short trips usually yielded between 20 and 30 catches. Yet, even with such modest results, the day felt worthwhile. With the earnings, he could cover his expenses, quiet the nagging voice of conscience, and give in to the temptation for a drink or two. He had made a resolution to cut back on spending so much on beer and instead save for bricks and materials to build his own house. But it was not just one, or even two outings; it was many. He did this, among other things, because the activity on the river was non-stop and demanded alertness. Dozens of docks remained active; there were festivals or open-air discos where the party never stopped; and the flow sometimes resembled a bustling highway with tugboats bearing names of planets like Mercury or Venus, and others named after distant volcanoes such as *Puracé* and *Galeras*.

What if they had been more careful? Few were. It was a time when rules were not heeded. “Anything with eyes in the river had a price,” as the saying went. Fish of all sizes were caught, many of them small and sold cheaply, but in large quantities. Hooks and nets were in constant use, even during the reproduction season (locally known as *candeleo*), a time when it has always been recommended to give the species a few days of peace for undisturbed reproduction.

Walfran also observed the sudden arrival of trammel nets, which are placed in the water to sweep up as much as possible from the bottom and catch hundreds of fish without restrictions. People felt invincible, living as if in an ideal world. There was so much wealth circulating that they even scorned the job opportunities offered by Ecopetrol, questioning why they should tolerate a boss or stick to schedules.

Walfran sees his fishing nets as an integral part of himself.

11,441

records in the participatory monitoring correspond to species of interest for fishing.

PVS in numbers

THEY VALUE EMPIRICAL KNOWLEDGE

Walfran believes that common sense could be the key to ensuring the *Magdalena* catfish stays far from extinction for good.

Things have changed, and suddenly Walfran's memories seem to be fading away.

Then come the words of the present, of today. He shares that it has been fourteen years since he last had a drink. He reflects on how he built his house with the help of his brothers and father, and now, with support from Proyecto Vida Silvestre (PVS), he has become an active advocate for fishing —an occupation he admits has given him everything.

These days, he is not journeying upriver as frequently. Instead, Walfran dedicates his experience to serving Asopezchucurí. Within this forum, he amplifies the voices of fishermen, spearheads community fishing agreements, and, with the support of the Autoridad Nacional de Acuicultura y Pesca (AUNAP), he advocates for a sensible approach to thwart the looming threat of the *Magdalena* catfish extinction. This tragedy has often felt close at hand, shadowing its every move.

He also gets support from Asopesbocar, a similar association backed by WCS Colombia and the Fundación Humedales, located in *Bocas del Carare*, a nearby community to *Chucurí*.

He acknowledges that what was previously disregarded is now seen almost as an urgent necessity. Specifically, it involves respecting the minimum sizes of all caught and traded species, agreeing on the use of only cast nets and hooks as official fishing gear, honoring the reproduction season, and, at the very least, allowing the marshlands of *Aguas Negras* and *El Clavo*, where fishing is prohibited, to rest. In two other marshlands, *La Colorada* and *Aguas Blancas*, fishing is only permitted during daylight hours.

He points out that most of his fellow fishermen are willing to abide by these new rules, especially the fishing ban. However, he complains and finds it puzzling that despite this measure being in place for over 40 years, the government has never provided assistance or subsidies to fishermen left without work during those two months each year. Moreover, he observes that the reproduction season, once very predictable and following the planned schedule, now occurs at other times of the year, often after the ban has been lifted. Therefore, he believes that since the ban does not align with the catfish's reproduction cycle, all those dates and schedules need to be revised.

85

percent of the fishermen registered in the monitoring sessions honored the agreements established to protect the *Magdalena* catfish.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Marshlands are crucial ecosystems to maintain river health.

The cast net: a display of balance, patience, skill, and deep wisdom.

Orinoco region

Middle *Magdalena* Valley

Putumayo

THE FISHERMAN IS NOT SOLELY TO BLAME

Walfran takes pride in recognizing that with the establishment of Asopezchucurí, fishermen have started to be heard, their traditional knowledge valued. These agreements, reached collectively, have evolved into a pilot project with potential for replication across the entire region. This initiative includes compensating fishermen for marshland cleaning during fishing bans, thus promoting the reproduction of new specimens.

He is also pleased to acknowledge that by safeguarding the catfish, they are also preserving other species like the *blanquillo*, *bocachico*, and *doncellas*, all of which were once abundant.

Yet, he also feels frustration when he hears that the decline of hydrobiological resources is solely attributed to fishing practices. Just as he witnessed the introduction of the first trammel nets many years ago, he has also seen deforestation for palm or cattle farming, activities that affect the basin and the habitat where fish thrive. These animals endure increased sedimentation from erosion caused by such practices. Moreover, he adds, we must consider the contamination from agrochemicals stemming from these new monocultures. It is an undeniable poison that affects catfish at every stage of their development.

He admits that the toughest battle has not been convincing authorities of Asopezchucurí's value as an organization or promoting their traditional knowledge through it. According to him, the real challenge lies in rallying fellow fishermen, uniting their efforts, and asserting their position throughout the sales and commercialization chain.

However, over time, the community has changed and shown more support for him. Meanwhile, he is working to bring on board another hundred fishermen who are not entirely convinced yet that unity is strength. And in the midst of it all, he has discovered leadership within himself —not inherited, but cultivated through months of advocating for the iconic *Magdalena* catfish. ■

2367

of 2019 is the resolution by AUNAP adopting the fishing ban agreement during the catfish's reproduction season.

PVS in numbers

Bringing fishermen together seems to be the biggest challenge in preserving the *Magdalena* catfish.

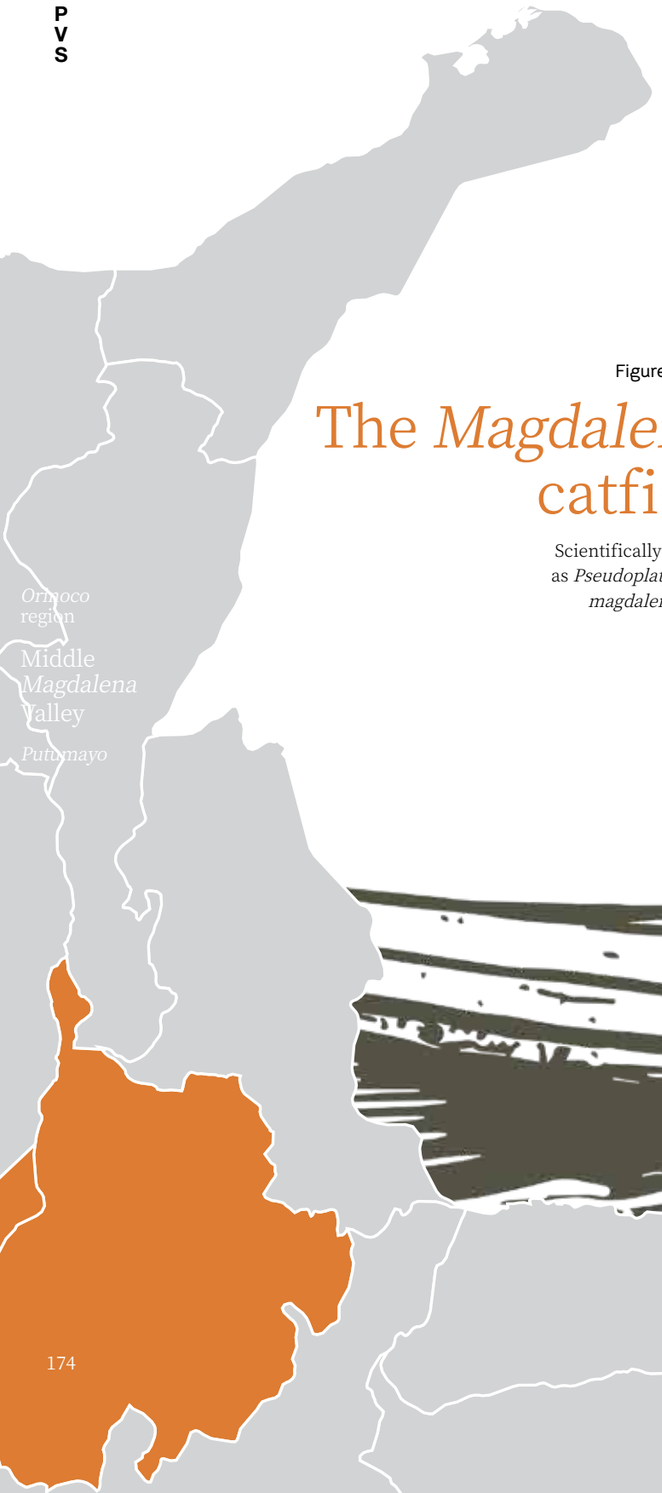


Figure 7

The *Magdalena* catfish

Scientifically known as *Pseudoplatystoma magdaleniatum*.

Inhabiting the expansive rivers and floodplains of the *Magdalena* basin, the *Magdalena* catfish is endemic to these regions.

Reproduction occurs year-round, with notable peaks coinciding with the highest water levels in April and September to October.

This species holds considerable commercial value within the *Magdalena* basin.

Two fishing ban seasons are in place: May 1 to 30 and September 15 to October 15.

During these two periods, commercialization of the species is also prohibited.

90%

The *Magdalena* catfish population has plummeted by almost 90% in the last three decades.

This decline, largely due to overfishing, has pushed the species dangerously close to extinction.

PVS is working to conserve the *Magdalena* catfish in the *Carare-Barbacoas* marshland complex.

12.2

marks the recovery percentage of *Magdalena* catfish populations in the *Magdalena* basin as of today.

PVS in numbers

The expansion of agricultural and livestock activities, as well as mining, dam construction, and waterway development, continue to worsen the situation for this vulnerable species.

PVS

Orinoco region

Middle *Magdalena* Valley

Putumayo

SOCIAL FABRIC

Fishermen are shifting from water to land

With guidance from Proyecto Vida Silvestre (PVS), communities are venturing into organic rice farming, honey production, and raising “happy chickens” for eggs. These initiatives aim to not only diversify income but also offer solutions to the ongoing catfish crisis.

A beautiful gift from the shores of the *Magdalena* River to ‘Don Daniel’, a resident of *San Rafael de Chucurí.*

Orinoco region

Middle *Magdalena* Valley

Putumayo

Aurelia Lozano inherited her father's passion for fishing. She was so devoted that she sometimes skipped school just to join him on his trips through the *Chucurí* marshland.

Once, as a teenager, she even hid the symptoms of malaria, including a fever approaching 40 degrees. She was afraid that revealing her illness would mean missing out on a full day with her father, who had promised her a chance to drive the boat, even if only for a short while. These outings usually resulted in a haul of several pounds of fish.

Under his guidance, she became adept —like no other women in the Middle *Magdalena* Valley— at using the cast net. Known as 'Doña Yeya', Aurelia is renowned for her ability to throw and catch *blanchillos*, *bocachicos*, or *picudos*, typical species in the area.

As she sits by the marsh where she spent her childhood, Aurelia reminisces about the past. She remembers a time when setting up to 300 hooks was a common practice, providing enough fish to sustain her family and sell to her neighbors.

Today, she notes that the abundant fishing of previous years has drastically decreased, to the extent that she barely catches enough for personal consumption. This decline could be due to pollution from palm plantations or the proliferation of buffaloes, which have replaced cattle in some areas, causing disturbance and sedimentation in the wetlands. While she does not have all the answers, she seems uninterested in seeking them. Nonetheless, it is now common to catch very small fish that are hardly worth the effort.

"The situation has forced us to shift from water to land," she remarks. She is talking about how, like some of her family and neighbors living along this beautiful waterway, she has started looking for other ways to earn extra income to cope with the crisis.

So, 'Doña Yeya' is turning to the productive ventures supported by Proyecto Vida Silvestre (PVS) in the Middle *Magdalena* Valley. This initiative runs parallel to conservation efforts for the blue-billed curassow, the brown spider monkey, the *carreto* tree, the manatee, and the *Magdalena* catfish.

With her sister Denis, her husband Eleuvid, and other neighbors, 'Doña Yeya' has been setting up a system to produce "happy chicken" eggs —a vital product often in short supply. They began with 300 chickens, feeding them from a forage bank near the coop, which includes maize and plants like kudzu, giant taro, and tree marigold.

Productive ventures have become a valuable alternative for many fishermen.

This initiative is rooted in a simple truth: beyond its environmental conservation mission for a group of species, PVS aims to empower communities by fostering economic opportunities. Similar efforts are underway with young members of the Torcaima organization in the locality of *Bocas del Carare*. There, they manage a poultry shed housing 200 hens.

"In *San Rafael de Chucurí*, we have an untapped market for eggs. They only arrive from *Bucaramanga* every eight days or so. That is why we believe that if we establish a reliable supply in the medium term, we could see strong sales," explains Denis Lozano. She highlights that women and young people primarily handle the management of the hens, while adult men are involved in other agricultural activities.

"It is really strange to think about giving up fishing, especially since it has been my livelihood for years, supporting my three children," 'Doña Yeya' shares. "The marsh is not what it used to be, that is true, and it pains me to turn away from it, but we have to keep living."

23

families and over eighty people have benefited from the adoption of sustainable livelihoods initiatives.

PVS in numbers

Orinoco
region

Middle
Magdalena
Valley

Putumayo

The fertile soils of certain islands along the *Magdalena* River offer hope for fisher-farmers.

Orinoco region

Middle *Magdalena* Valley

Putumayo

RICE COMPETES WITH LIVESTOCK

Local residents are starting to realize that there are income opportunities beyond raising cattle.

Other similar ventures emerge in tune with the landscape. For instance, in *Riberas del San Juan*, a locality in *Cimitarra,* just a few kilometers from *San Rafael de Chucurí*, another group of small-scale farmers, historically dedicated to cattle farming, have started growing cereal crops, reviving a practice that thrived in the region during the 1970s and 1980s but gradually fell out of favor.

Ernesto Ome, a specialist in Sustainable Livelihoods at WCS Colombia, who supports these families, notes that the initial objective has been met. People are discovering alternative income opportunities beyond cattle farming and realizing that their farms can flourish sustainably with diversity.

"People have learned to manage resources like soil and water, and grassroots organizations have successfully obtained materials and supplies to support these endeavors," explains Ome.

Everyone is receiving training in pest control and the use of organic fertilizers, replacing synthetic chemicals and other substances for soil and plant nutrition.

Hobed Bulla, a small-scale farmer from *Riberas del San Juan*, explains that now he can get more out of his land. "By fertilizing it, we can grow corn, fruit trees, and fodder to feed our cattle, chickens, and poultry," he says.

Along this same locality, Proyecto Vida Silvestre (PVS) is supporting 10 families for the production and sale of honey, utilizing beehives housing five groups of bee species, including stingless and Apis bees.

In every case, thanks to PVS, beneficiaries have pitched in their labor in exchange for materials, supplies, and guidance. This guidance does not just offer practical know-how for implementing or revamping production —it is all about empowering people with skills that ensure these projects become sustainable in the long term. This involves enhancing their productive, environmental, and commercial abilities.

As a gesture of gratitude, communities and small-scale farmers are committed to biodiversity conservation. They have designated a portion of their land for this purpose, allowing forests to regenerate and create corridors for various wildlife species, such as primates, birds, and other animals.

Put simply, it is a win-win situation where both the plant and wildlife species come out on top. ■

6

productive initiatives have been implemented by this project with their respective work groups.

PVS in numbers

P
V
S

Orinoco
region

Middle
Magdalena
Valley

Putumayo

When fish is
scarce, these three
staples step up:
plantain, corn,
and cassava.

Orinoco region

Middle *Magdalena* Valley

Putumayo

GUARDIANS OF *LA SAN JUANA*

Manatee Protectors

Teachers, fishermen, and farmers from *Bocas del Carare* in *Puerto Parra*, and *Riberas del San Juan in Cimitarra* (*Santander*), serve as Protectors of the Manatee. They work as environmental educators, stressing the importance of protecting and respecting the mammal's habitat.

Long canoe journeys: just one part of the dedicated effort this group puts into their mission.

Orinoco region

Middle *Magdalena* Valley

Countless waters in the Middle *Magdalena* Valley are a second home for the Manatee Protectors.

Putumayo

2016

was the year in which these protectors began their mission to conserve the manatee.

PVS in numbers

In his youth, Julio Palacios often found himself gliding through the marshlands with just a paddle or pole, where he would regularly spot many manatees. These serendipity encounters with the shy creatures, akin to chubby dolphins, were a common occurrence during his nostalgic trips with his father through wetlands like *La San Juana*, where they embarked on leisurely expeditions or set out to catch fish for their family.

Julio is not one to pinpoint his place of origin. "I have always lived by the river, it is where I was born and raised, and it is where I still call home," he shares. Perhaps due to his deep connection with this fascinating environment, Julio often gazes upon "aquatic cows" —a local name for manatees— without much surprise. These creatures maintain a strictly herbivorous diet, relying solely on plants for sustenance.

"When we went out, the boat hardly ever had a motor. We moved quietly, and maybe that is why they emerged so boldly. I watched them like it was no big deal, just as common as spotting a brown spider monkey."

He acknowledges that it has only been in the past five or six years, since he joined the Manatee Protectors group supported by Proyecto Vida Silvestre (PVS) in the Middle *Magdalena* region of *Santander*, that he truly delved into learning about this shy mammal, often as "aggressive" as a teddy bear. This group, comprising members from the localities of *Bocas del Carare* (in *Puerto Parra*) and *Riberas del San Juan* (in *Cimitarra*), seeks to raise awareness about the significance of *Trichechus manatus* —the scientific name for the manatee.

"This project really changed my perspective. We used to think seeing one of these animals was not a big deal around here."

A glimpse into the dietary choices of manatees in the Middle *Magdalena* Valley: aquatic and semi-aquatic plants.

Orinoco
region

Middle
Magdalena
Valley

Putumayo

A close-up of a plant commonly consumed by manatees in the *La San Juana* marshland.

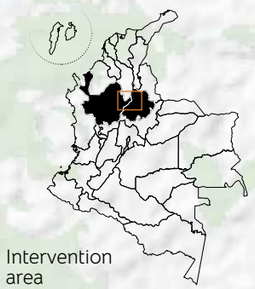
Map 10

Tracing the manatee

Orinoco region

Middle *Magdalena* Valley

Putumayo



CLASSIFIED AS 'VULNERABLE'

Times have changed. Julio has learned to value the species, even though sightings are becoming less frequent. Nowadays, spotting a manatee is a rare occasion worth celebrating. Encountering one, with its massive cylindrical body weighing up to 600 kilograms, its distinctive large rear fin, and its snout adorned with a long mustache, is quite exceptional. Yet, their populations are dwindling, leading the International Union for Conservation of Nature (IUCN) to classify them as 'Vulnerable'. The primary reasons for this decline are habitat destruction and hunting.

"It is strange, but there are people in the region who, despite having plenty of food available, sometimes hunt manatees for consumption. They say that by dissecting them, you can get up to seven different types of meat. A few years ago, I saw one being opened up, and I noticed that parts of its body looked white, just like catfish, while others resembled beef or pork. I tried it, and it is simple: it tastes like meat, just one kind."

That is why Julio sees the Manatee Protectors' presence as crucial; their mission is straightforward: raising awareness. The group does not aim to ban the capture or act as enforcers against hunters.

Its members have taken on the role of observers, keeping an eye out for reports of manatees found dead, sick, ensnared in nets, or stranded in the marshlands surrounding the *Carare* and *San Juan* rivers. In such cases, they promptly notify the relevant authorities.

Essentially, their role boils down to being environmental educators. They travel through villages, teaching why capturing manatees is harmful and emphasizing why all residents of *Santander* should value their presence. "But protecting them will not mean much if we do not preserve their habitat," he adds.

Barbacoas marshland

Magdalena River

Santander

La Colorada marshland

Carare River

San Juan stream

La San Juana marshland

Manatee traces

1. Study of feces
2. Sightings at fixed points
3. Observations of feeding areas
4. Detection using side-scan sonars

So, another vital message from the group, which includes not just Julio but also teachers, farmers, fishermen, and cattle farmers like Orlando Rueda, Moisés Ávila (known as Chinche), Yelsin Salgado, Yorladis Mena, Pedro Nel Fuentes, Ana Yibe Díaz, Ariolfo Díaz, Hobed Bulla, José Reinaldo Parada, Luz Díaz, and Epifanio Rentería, stresses that manatees inhabit wetlands and rely on these marshy ecosystems to remain stable. This means they need to stay connected to rivers and streams, allowing water to flow in and out freely. This is essential, among other reasons, for the renewal of native vegetation and to ensure a sustainable food supply for the manatees.

Unfortunately, this vital process is being threatened by harmful agricultural and cattle farming practices that contribute to sedimentation and pollution, leading to a decline in wetland depth.

> The current issue involves the shrinking depth —or even their complete drying out— of some wetlands.

Moreover, some marshlands are dried up to make space for certain crops, depriving the animal of food and space (it needs to come up for air and nibble on plants growing on the banks every 20 minutes). As food becomes scarce, manatees tend to leave their natural habitats and embark on long journeys to find food, putting them at risk of becoming stranded.

WORKING TO CREATE A RESERVE

Katherine Arévalo, from the organization Cabildo Verde de Sabana de Torres, has been leading the technical efforts of the Manatee Protectors group, supported by PVS. She notes that their collaboration has resulted in the establishment of three conservation agreements with both large and small farm owners, while also providing training on sustainable production practices.

On one hand, they restored 13 hectares of land connected to the mammal's habitat. In the same area, they planted approximately 1,700 trees. Lastly, 151 hectares in the *Santa Martha* farm obtained recognition as a Civil Society Natural Reserve (RNSC, for its acronym in Spanish). This recognition highlights the vital role of terrestrial ecosystems in safeguarding aquatic wildlife species.

But perhaps the biggest hope, Katherine explains, is for the 2,808 hectares of the La San Juana marshland and its surrounding areas (which still have well-preserved zones and provide connectivity for native fauna species with the *Magdalena* River and other tributaries) to be designated as a conservation area. This idea has already gained support from the community, which sees a potential form of protection in a Regional District of Integrated Management (DRMI, for its acronym in Spanish). This designation does not restrict low-impact artisanal activities, like fishing, but also encourages the conservation of wildlife, flora, and ecosystem services. It is a proposal in its early stages, needing several steps before becoming a reality.

Meanwhile, Julio recognizes that the creation of this protected area can be critical for the future of the manatees, especially those still surviving in this region. He stresses this because he understands that without them, life as we know it would be different.

"Quietly, and without many knowing, they play a role in fish conservation because, among other reasons, their feces serve as food for fish," he explains. "And it does not stop there. They also regulate the excessive growth of aquatic macrophytes or plants like the water hyacinth, which can disrupt water oxygenation. Furthermore, they are considered a landscape species because conserving them lays the foundation for a healthy, productive ecosystem, ensuring its fertility."

"Do you remember earlier when I mentioned seeing many of them when I was young? Back then, I never realized that what I had in front of me was such an extraordinary creature," he adds. Julio now understands this very well, affirming it convincingly and expressing it naturally because he will surely remain one of their most enthusiastic protectors, forever. ■

7

communities serve as protectors: *Bocas de Carare, Campo Amalia, Asodesba, Asopezchucuri, Campo Cerrito, Campo Duro, and La Sierra*

PVS in numbers

Drainage channel in *La San Juana* marshland: a favorite spot for manatees.

Figure 8

The manatee

50 million years ago, there was a terrestrial animal that slowly adapted to water, evolving into the oldest relative of the manatee.

Capable of holding its breath underwater for up to 20 minutes, it must resurface to breathe and replenish its lungs with fresh air.

Furthermore, its skin, thick and tough, is adorned with fine hairs, particularly on the snout, which act as sensors.

Their dense, solid bones, with little or no marrow, help stabilize buoyancy at the bottom of the water.

Their small ears allow them to pick up sounds that are imperceptible to land mammals.

Manatees have a digestion process that lasts between six and seven days, significantly longer compared to other mammals.

Throughout their lives, these mammals have only twelve molars in their mouths: six on the top and six on the bottom.

Their large, flattened tails make this organ a powerful fin for swift propulsion.

This aquatic mammal, which can grow up to 4.5 meters long, reaches an adult weight ranging from 200 to 600 kilograms.

13

months: the gestation period of the manatee. They typically have only one calf every 4 or 5 years.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Manatee Protectors observing the *Carare* River waters during the afternoon.

Orinoco region

Middle *Magdalena* Valley

Putumayo

GUARDIANS OF *LA SAN JUANA*

Protecting a wetland

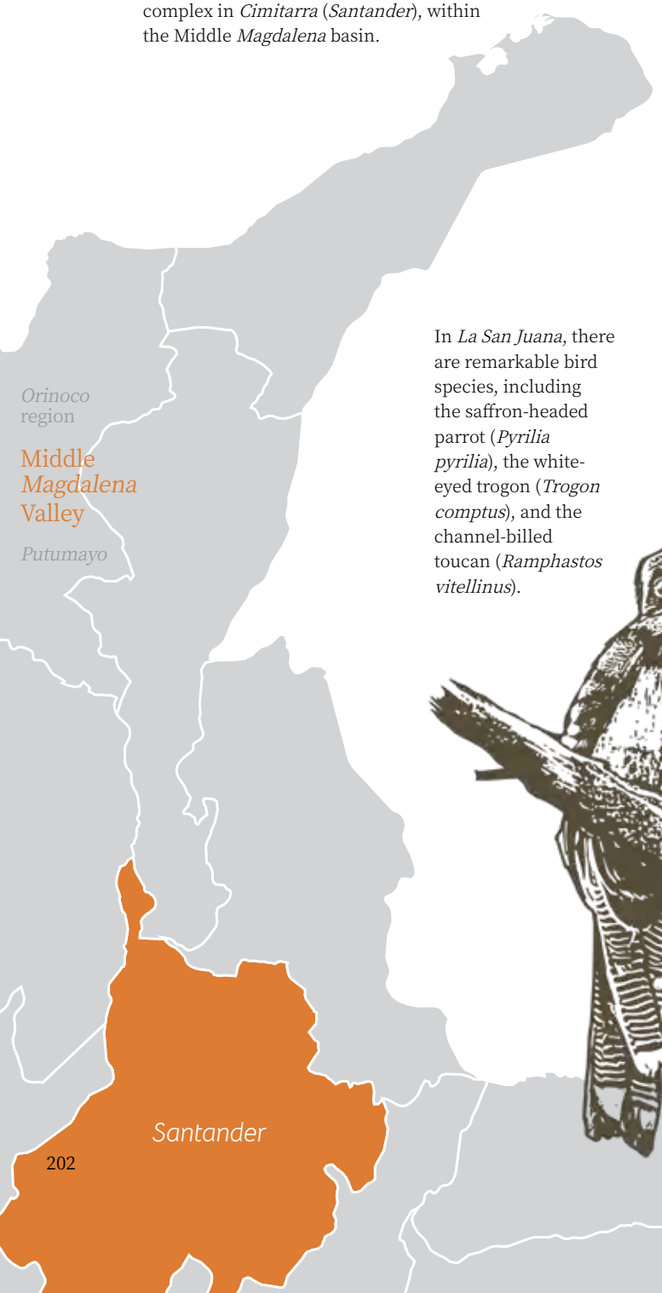
Located in the municipality of *Puerto Parra* in *Santander, La San Juana* marshland plays a pivotal role in the ecosystem of the *Magdalena* River. Beyond sustaining the river's health, these waters and their surroundings are vital habitats for a diverse range of native flora and wildlife species.

A stunning tribute: this preserved wetland in the dusk that adorns the Middle *Magdalena* Valley.

Figure 9

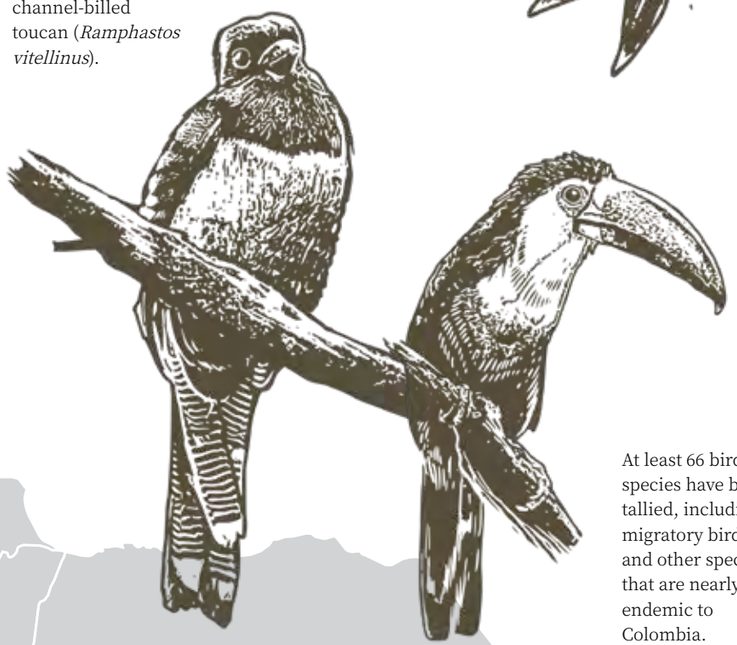
The diversity of *La San Juana*

Located in the *San Juan - Carare* marsh complex in *Cimitarra* (*Santander*), within the Middle *Magdalena* basin.

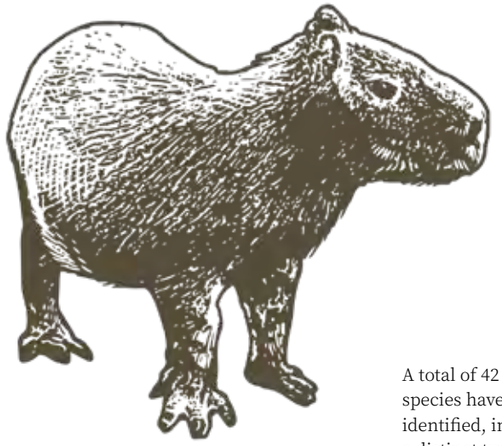


Within this landscape, 156 plant species thrive, including the coco de cristal (*Lecythis mesophylla*) and the marfil (*Isidodendron tripterocarpum*), found exclusively in the *Magdalena* valley.

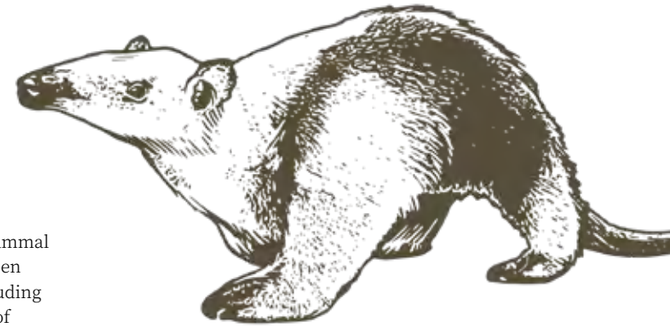
In *La San Juana*, there are remarkable bird species, including the saffron-headed parrot (*Pyrilia pyrilia*), the white-eyed trogon (*Trogon comptus*), and the channel-billed toucan (*Ramphastos vitellinus*).



At least 66 bird species have been tallied, including migratory birds and other species that are nearly endemic to Colombia.



A total of 42 mammal species have been identified, including a distinct type of capybara scientifically named *Hydrochoerus isthmius*.



The diverse expanse of this crucial wetland includes remarkable species like the white-fronted capuchin (*Cebus versicolor*) and the gray-handed night monkey (*Aotus griseimembra*).

101

hectares comprise the body of water that gives life to *La San Juana* marshland.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Crystal-clear waters still hug fragments of forest: the captivating scene of *La San Juana* marshland.

Orinoco region

Middle *Magdalena* Valley

Putumayo

ASOMUCARE

The female leaders of *Bocas del Carare*

They make up the Asomucare organization. Through it, nine of these women, who contribute to their households' income, help their fisherman husbands cope with the economic crisis caused by the decrease in *Magdalena* catfish fishing.

The valuable heritage of this passionate group is reflected in the skill of their hands.

2

productive areas established by this group: one covering 200 m² and the other 3,000 m².

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

The catch of *Magdalena* catfish in the Middle *Magdalena* Valley is decreasing.

According to Sorani Gil, the species started to become scarce about 13 years ago, as the once abundant "times of plenty," as they were known in the region, began to occur less frequently.

She still remembers those years when her husband, or any other fisherman, could bring in up to 60 pounds of fish (some specimens reaching up to a meter in length) in a single trip. This could provide enough income for a family for many days.

Sorani lives in *Bocas del Carare*, a locality in *Puerto Parra* (*Santander*), located on the banks of the *Carare* River, a tributary of the great *Magdalena* River. Throughout its recent history, the community has relied on this fish for sustenance. But with fewer catfish than before, the peaceful and abundant days have disappeared.

"In moments like these, you have two choices: either you get used to living with uncertainty or you go out and face it head-on," she says.

Now more than ever, Sorani truly grasps the power of this phrase. She chose to live by it, letting go of her insecurities to join a group of women, all wives of fishermen, in founding the Asociación de Mujeres de Bocas del Carare (Asomucare). This initiative has turned them into leaders in championing various important causes in their locality.

Once dedicated to household chores, and as she herself puts it, "to idling away time watching soap operas, playing bingo or cards, and chatting about anything," now, through this organization, they have set up a restaurant —possibly the only one in *Bocas del Carare*— serving traditional dishes available by order. They have also launched a bakery offering a variety of pastries, including donuts, churros, large round loaves, seasoned bread, mini loaves, cold cakes, and cupcakes. Additionally, they offer tailoring services and are refining their skills in crafting artworks inspired by the species surrounding their locality —a biodiverse region they are just beginning to explore.

"Biologists and people from other parts of Colombia had to come for us to realize we live in a natural paradise," says Deyanira Fuentes, one of the group members.

"That is when we stopped being little girls," says Kelly Vanessa Cuervo, another group founder. She means they are no longer solely reliant on what their fisherman husbands earn from selling the small catches they manage to reel in during their extensive journeys covering several kilometers, including trips to various marshes.

The dedicated work of the women at Asomucare inspired two men to join their efforts.

Now, on the other hand, they are earning their own income. They are also able to counteract the decline of *Pseudoplatystoma magdaleniatum*, commonly known as the *Magdalena* catfish. The financial assistance they provide to their households is particularly valuable during the two seasonal bans, each lasting 30 days, imposed by the Autoridad Nacional de Acuicultura y Pesca (AUNAP) on catching or selling the fish. This measure aims to allow for its reproduction without pressure and, to some extent, aid in the recovery of its populations.

The warm landscapes of the Middle *Magdalena* Valley fuel the dedication of this group of entrepreneurs.

Orinoco
region

Middle
Magdalena
Valley

Putumayo

Baking and pastry making provide a significant income stream for Asomucare.

Orinoco region

Middle *Magdalena* Valley

Putumayo

152,000 PESOS TO GET STARTED

Asomucare came to life with Proyecto Vida Silvestre (PVS) arriving in the Middle *Magdalena* Valley and the decisive support of the Proyecto Primates. It all started with a culinary challenge: for the launch event in late January 2015, they wanted to treat guests, including local authorities, to cookies. But these were not just any cookies —500 units were carefully crafted. The aim was for them to represent the species the project works to protect in this area: the blue-billed curassow, the *Magdalena* catfish, the brown spider monkey, the manatee, and the *carreto colorado* tree.

"Not being experts, we decided to give it a shot. It was a long night," Sorani remembers. "We baked them together, using a small borrowed oven; some were chocolate, others vanilla, even though we had no baking experience; we pulled it off with sheer determination." And they sold out.

With the earnings, totaling no more than 152,000 pesos, the Association took off. Today, it is the driving force behind the Choibo Festival (named after the brown spider monkey, locally known as *choibo*), a one-day celebration held annually between February and March to highlight the value of this endangered primate. In essence, this organization stands as one of the most significant social achievements of PVS. This is because the project recognizes the vital role of engaging and supporting the human communities that share their habitat with the protected wildlife and flora species. These communities are crucial for successful wildlife conservation efforts.

"Every time we enter a new area, our goal is to protect the species, but we strongly believe it must be done in collaboration with local communities. Conservation efforts should consider the needs of these communities, provide guidance on their objectives, and support them in their endeavors," says María Antonia Espitia, regional coordinator of the PVS for the Middle *Magdalena* Valley, who supported Asomucare throughout its founding process.

500

kilograms of organic fertilizers are produced and sold monthly by Asomucare as part of their supplementary activities.

PVS in numbers

With their artisanal expertise, Asomucare skillfully reimagines the early stages of life for this blue-billed curassow.

Success is therefore rooted in the understanding that efforts for nature conservation must be built upon social action and the empowerment of local communities.

Asomucare's steadfast belief in this principle has made its members advocates for environmental conservation. They now recognize the natural wealth of their territory, understand the biological and ecological characteristics of species, and engage with their neighbors and institutions to promote environmentally friendly practices.

"If PVS were to end one day, we could still manage resources and work independently, both to create economic opportunities and to conserve biodiversity, as we now have the momentum to keep moving forward," explains Yorladis Vera.

The group includes Flor Ángela Salgado, María Ovedis Vera, Yaqueline Nieto, Kelly Jhoanna Palacio, and María de los Ángeles Lizarazo, some of whom were affected by violence and forced displacement decades ago. Despite their limited formal education, they have used this experience to learn about administration and accounting. They are joined by two men: Pedro Nel Fuentes and Denis Salgado.

Continuous teamwork has been essential for all of them, as Deyanira concludes: "Before, our children and husbands used to criticize us for always being at home. Now, they criticize us for spending too much time away from it. We gather often, and we talk a lot; some say it is just to pass the time and gossip. But the truth is different; we come together because we want to transform our lives." ■

Asomucare also advocates for and promotes a message of natural resource conservation.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Asomucare showcases wildlife as a cultural expression.

Orinoco region

Middle *Magdalena* Valley

Putumayo

ASOMUCARE

A festival for the brown spider monkey and its friends

In a corner of the Middle *Magdalena* Valley, people celebrate the importance of wildlife species and make a heartfelt plea for their preservation.

An annual gathering held in *Bocas del Carare*, a community in *Santander*.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Every year, in *Bocas del Carare*, a locality in *Puerto Parra* (*Santander*), locals gather for the *Choibo* and Friends Festival. Residents from *Cimitarra*, *Yondó*, *Puerto Parra*, and *Barrancabermeja* come together to dance, dress up, and showcase representations of their favorite animals.

This festival serves as a natural platform to emphasize the importance of species and the urgent need for their preservation. This festival is inspired by the brown spider monkey (locally known as *choibo*), one of the most affected animals in the region.

Despite its agility, with arms like wings and a long tail used as another limb, the *Magdalena* brown spider monkey has not been able to escape the alarming situation affecting nearly half of the world's 634 primate species: deforestation.

This assessment from the International Union for Conservation of Nature (IUCN) is particularly concerning for *Ateles hybridus*, its scientific name, as it has been listed among the 25 most threatened primate species globally.

The forests where the brown spider monkey lives have been disturbed to make way for various productive activities, often progressing without adequate control or planning. This renders the monkey highly sensitive to human presence in its habitat. Because it relies on large forested areas for survival, deforestation is increasingly isolating it.

Unlike a jaguar or other terrestrial mammals that can traverse deforested areas, the brown spider monkey's life depends on trees for its survival. Without them, it becomes defenseless.

As their habitat becomes more fragmented, many groups of the species are becoming isolated, sometimes by impassable rivers. This leads to inbreeding within family groups, negatively impacting their health and causing medium- and long-term diseases.

Through the *Choibo* Festival, Proyecto Vida Silvestre (PVS) promotes the creation of a biological corridor within the community to facilitate the brown spider monkey's movement and reproduction. This involves signing agreements with farm owners and large-scale cattle farmers to designated lands for ensuring connectivity.

If a stable territory for the brown spider monkey can be achieved, it is likely that the monkey itself will play a significant role in maintaining its sustainability. As the largest primate in the Middle *Magdalena* Valley and relying on a diverse diet of fruits, it serves as a primary seed disperser. Seeds passing through its digestive tract are deposited in isolated and optimal locations for germination through feces, thereby contributing to the regeneration or preservation of the forest ecosystem.

This is what the people of *Bocas del Carare* celebrate: the presence of a creature that enriches the well-being of all. Because where there are brown spider monkeys, forests flourish. And with abundant forests, life gains greater meaning. ■

1,000

people, approximately, attended the fifth edition of the Brown Spider Monkey Festival in 2019.

PVS in numbers

Above all, this festival is a plea for the urgent conservation of wildlife.

Orinoco region

Middle *Magdalena* Valley

Putumayo

In the photo:
a macaw, howler monkeys, and a *Magdalena* catfish, all guests of this special celebration.

PUTUMAYO

AMAZON CARETAKERS

BIODIVERSE FOOTHILLS

Orinoco region

Middle *Magdalena* Valley

Putumayo

AMAZON CARETAKERS

Putumayo farmers: guardians of wild felines

Through conservation agreements, farm owners are managing their properties, reducing conflicts with northern tiger cats and other carnivorous mammals.

Leopardus tigrinus, commonly known as the northern tiger cat, captured in its natural habitat.

Orinoco region

Middle *Magdalena* Valley

Putumayo

The northern tiger cat is affected by both illegal wildlife trafficking and habitat loss.

In areas where these felines attack livestock and devour calves and poultry, the response for many might involve creating groups equipped with weapons to go on a hunt. This strategy is frequently employed in certain regions of the country.

As forests disappear to make way for cattle farming and agriculture, mammals are left without their natural food sources. Hungry and searching, they are pushed closer to human settlements. This sets the stage for "retaliatory hunting," where farm owners feel compelled to protect their livestock by targeting these animals.

Recently, scenes resembling a suspenseful drama, portraying a struggle between good and evil, have become increasingly frequent in the locality of *El Líbano* in *Putumayo*. Here, populations of the northern tiger cat, locally known as *oncilla*, are grappling with the repercussions of illegal trafficking. Yet, it is the loss of habitat that now poses the greatest threat, escalating tensions with human communities.

Giovani Burbano, a 43-year-old farmer from *Santa Rosa* (*Cauca*), knows for sure that "something is prowling" very close to his house in the heart of the rural area. He is not quite sure if it is a small cat or perhaps the northern tiger cat that everyone has been talking about.

"In any case, sometimes it arrives around 2 in the morning and starts prowling. I get up and try to shoo it away: I walk around, turn on the radio to see if the movement will deter it, but no luck. It continues until 4 or 5 in the morning. I have never seen it, just caught a glimpse of its eyes gleaming in the beam of my flashlight once. It targets anything that moves, even the dogs."

Giovani thinks he could have grabbed a shotgun a while back and dealt with that threat.

"But instead, I want to work on getting it to leave, reclaim its territory, head back into the jungle, and stop bothering us. Because as long as it stays away, we will not have a reason to hunt it, and we can relax."

And that same principle, of not threatening their lives, is shared by twelve more farmers. With support from Proyecto Vida Silvestre and Asociación Gaica, they have decided to come together and sign conservation agreements committing to refrain from hunting or cutting down forests for two years. This joint effort aims to allow the environment to recover to some extent. In this way, the felines could enjoy a better natural habitat, enough food, and fewer reasons to approach humans.

PVS works towards setting boundaries between poultry farms and the natural habitats of small felines.

17

farmers have reported conflicts with felines and expressed a commitment to wildlife conservation efforts.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Solar-powered electric enclosures bring joy and peace of mind to smallholders.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Organic fertilizer made by local farmers in *El Líbano*.

12

properties under conservation agreements were prioritized to implement anti-predator strategies.

PVS in numbers

Yolanda Guapucal is one of the women who signed these agreements. She worked with PVS to build enclosures for her animals like pigs and cows, along with chicken coops and forage banks to feed them. This approach helps keep her animals from roaming freely on her property, ultimately reducing conflicts with wildlife species.

"The new environmental guardians will also help us set up living fences, home orchards, compost bins, and a multilayer agroforestry system with guamo trees, cocoa, plantains, and cassava. We are also engaging in environmental education with the children and teens in the community; we have even formed a conservation club called 'Conservation Footprints'," shares Viviana Samboní, legal representative of Asociación Gaica.

Farmers, who are providing labor and wholehearted commitment to planting native species, have pledged to care for forested areas and allow the installation of camera traps on their lands. These traps are being used to monitor the wildlife roaming around properties and to accurately identify which species are approaching rural homes. Among these species could be the *Tayassu pecari,* a peccary also known as the white-lipped peccary, which is hunted extensively for its meat.

Besides Giovani, other signatories include Jorge Eliécer Coral, José Rafael Acosta, Manuel Ángel Acosta, Luis Alberto Jiménez, and Elvia Ligia Martínez. Their aspirations go beyond conservation; they seek to cultivate crops such as corn, coffee, or other products to attain self-sufficiency or surplus for commercial purposes.

Plantain, sugarcane, and cassava are also key sources of income for many farmers in the *Putumayo* foothills.

PVS

Map 11

Paradise in *El Líbano*

Santuario de Fauna y Flora Plantas Medicinales Orito Ingi-Ande

Guamuez River

Miseria stream

Muralla River

Orinoco region

Middle *Magdalena* Valley

Romerillo stream

Sucio River

Putumayo

Putumayo

Details of *El Paraíso* farm

Intervention area

0 0,425 0,85 1,7 2,55 3,4

Kilometers

Churuyaco River

Éuler Guerrero, a dedicated volunteer, is certain that a jaguar frequents his farm. Living in *El Líbano* for years has familiarized him with the signs left by these mammals near his home. Although he has lost several cows over time, Éuler has learned that confrontation or capture is not the answer. "The key is farm planning," he emphasizes. Éuler has installed fences to keep his cows separated, preventing them from wandering into the areas around the streams that provide drinking water."

But Éuler still complains, and sometimes he does not feel at ease because the threat is always looming. Plus, it is clear that the forest will not recover overnight, no matter how much care it receives. "You understand why many people get frustrated and lose patience; someone told me the other day that 'a bullet is cheaper than a chicken', meaning if the attacks do not stop, the only option may be to shoot the predator," Viviana shares.

But for now, the main focus of PVS is the well-being of the people, who can now sleep more peacefully and wake up without worrying about losing two or three animals. More residents are expected to gradually get involved, as all this effort will drive felines to explore deeper into the forest as a long-term solution. ■

PVS polygon in *Putumayo*

Santuario Orito Ingi-Ande

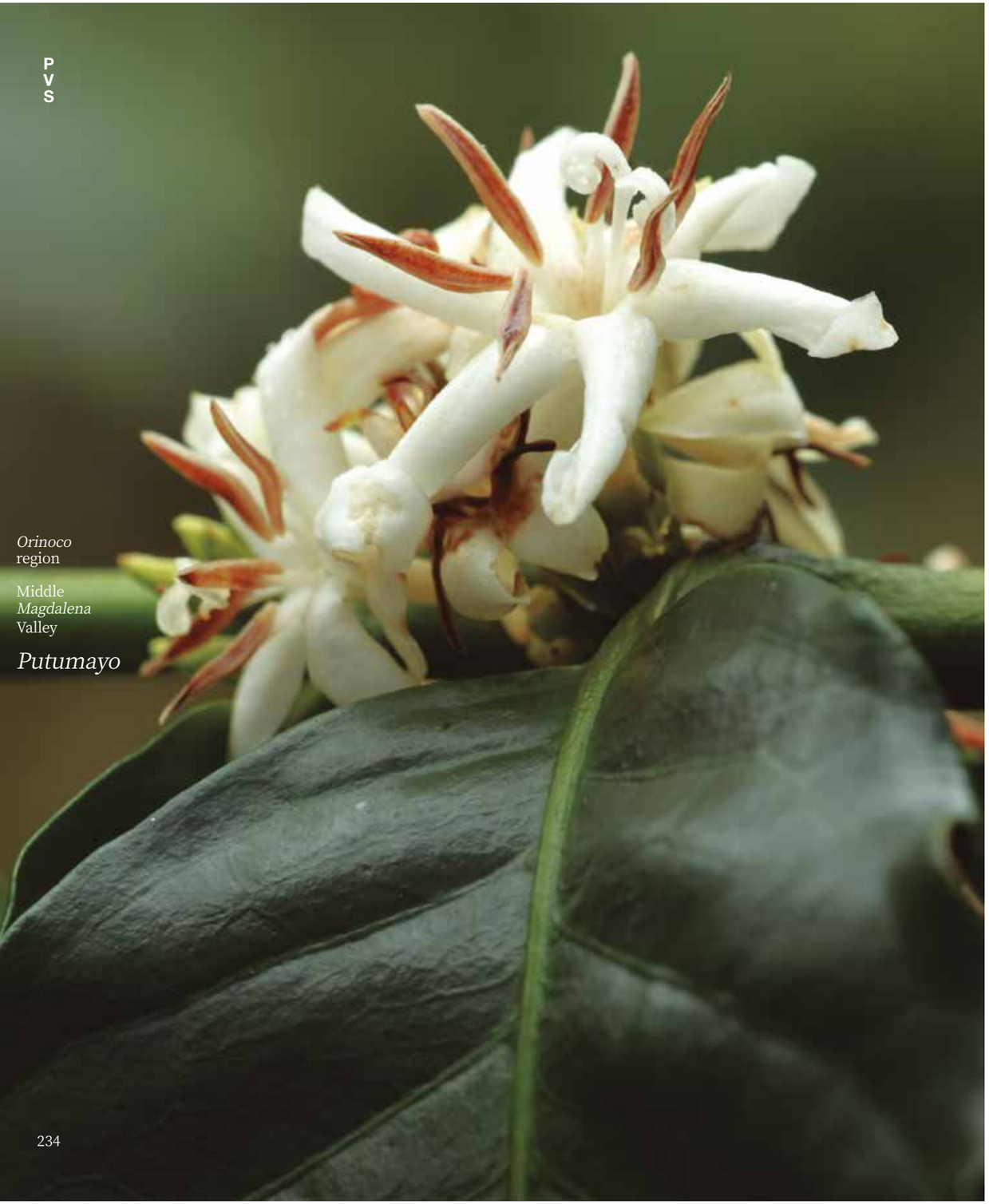
Distribution of *El Paraíso* – Locality of *El Líbano*

Sites of interest

- *Cedro* trees
- Electric fence
- Northern tiger cat corridor
- Central pathway
- *Guamuez* River

Current property zoning

- a Açaí crop
- b Coffee crop
- c Bola de oro pasture grass
- d Sugarcane crop
- e Fish pond
- f Solar panel
- g Septic tank
- h Home orchard
- i Kitchen oven
- j Sugarcane press
- k Livestock pen



Orinoco region

Middle *Magdalena* Valley

Putumayo

In return for protecting wildlife, PVS also supports small coffee growers.

Orinoco region

Middle *Magdalena* Valley

Putumayo

AMAZON CARETAKERS

Stingless beekeeping takes off

In *Putumayo,* families are being trained in beekeeping to encourage honey production as an alternative source of income. This strategy not only helps reduce deforestation but also supports the conservation of the black tinamou.

A *Melipona eburnea* bee spotted in the locality of *El Líbano* (*Putumayo*) in the Andean-Amazon foothills.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Zoila Cuacialpud and Rosalba Montenegro, from *El Líbano* in *Orito* (*Putumayo*), share a common interest: beekeeping to produce honey. This timeless tradition has been part of human life since the days of nomadic and foraging societies, spanning thousands of years.

Inspired by the Alas Putumayo organization and supported by Proyecto Vida Silvestre (PVS), they lead the charge as the most enthusiastic members of a group of local residents encouraged to install beehives in their yards or farms for stingless beekeeping. This initiative involves raising different species of stingless bees such as *angelitas* and *boca de sapo*, scientifically identified as *Tetragonisca angustula* and *Melipona eburnea*, respectively.

The purpose is to use honey initially as a food alternative, but studies have found very interesting characteristics of honey, such as antibacterial properties and high levels of antioxidants.

"However, we cannot rule out the possibility of soon being able to sell it to our neighbors," says Zoila, outlining one of the medium-term goals she has set for herself, involving her closest family members.

PREVENTING DEFORESTATION

In this part of *Putumayo*, for example, 54 people have received training in stingless beekeeping.

Jonh Jairo Mueses, from WCS, who advises the locals, explains that the first step was teaching them how to manage artificial beehives.

These hives, resembling wooden cubes with roofs and equipped with plastic-sheet divisions or floors, provide shelter for the bee colonies. They can be placed in various locations to protect them from the sun, rain, and potential attacks by flies or ants.

These colonies are crafted from existing ones. In essence, a portion of the original colony is transferred to a new beehive, a process known as "splitting," enabling the creation of more colonies. Alternatively, bee colonies can be captured using baits and relocated to an artificial hive.

This initiative also serves an additional purpose: conserving the habitat of the black tinamou (*Tinamus osgoodi*), a bird native to the cloud or humid forests of the Amazon foothills. This species has been classified as 'Vulnerable' by the International Union for Conservation of Nature (IUCN), due to threats such as hunting and habitat deforestation.

Promoting stingless beekeeping helps protect existing forests, which are crucial food sources for bees. It also discourages people from collecting wild colonies, a practice that can damage the trees where the nests are found and negatively affect natural bee populations.

Mueses notes that 15 species of stingless bees have been identified in *El Líbano*, out of at least 35 species found in *Putumayo* and the *Bota Caucana* regions.

3

modules from Proyecto Vida Silvestre's introductory course on stingless beekeeping.

PVS in numbers

Zoila Cuasialpud showcases some of the beehives she uses for stingless beekeeping at her home.

Orange's region

Middle Magdalena Valley

Putumayo

Entrance to a *Melipona eburnea* bee colony; offering a peek inside.

Orinoco region

Middle *Magdalena* Valley

Putumayo

A varied selection of honey samples produced by stingless bees in *Putumayo*.

ACROSS THE THREE LANDSCAPES

PVS's support for beekeeping extends beyond *Putumayo*. Similar efforts are being made in the Middle *Magdalena* Valley and the *Orinoco* regions.

These initiatives aim to compensate farm owners who have signed conservation agreements, helping establish biological corridors, improve the reproduction of the *carreto colorado* tree, support the manatee population recovery, and promote sustainable cattle farming. Some fishermen have even taken up beekeeping to find new ways to offset income lost amidst declining catches of species like the *Magdalena* catfish.

Beekeeping projects have been established in *Putumayo*, the Middle *Magdalena* Valley, and the *Orinoco* region.

ECOTOURISM OPTION

Rosalba Montenegro manages about four beehives, striving to enhance honey production and sales, as Zoila explained earlier. However, she envisions other profitable avenues beyond simply collecting this sweet, viscous nectar.

One potential avenue is renting out these same beehives to make divisions and establish additional populations in nearby locations or neighboring farms.

Alternatively, her garden, adorned with native flowers, orchids, and a small vegetable garden, could serve as a venue for welcoming visitors interested in learning about the initial stages of stingless beekeeping and appreciating the intricate organization of bees, where workers are predominant, accompanied by drones and a single queen bee.

This is a long-term endeavor, not aiming for immediate results or involving hundreds of people.

"We are aware that we are just getting started, learning as we go, and there is still a lot to do to establish a sustainable honey production. But it is typical for important projects to begin slowly, driven by goals that may initially seem unreachable," remarks Rosalba.

For the PVS, predicting the final outcome of this initiative may be challenging. However, it's important to note that it has already generated considerable initial interest, focused on a product that has been valued by various cultures for its nutritional and medicinal benefits. ■

15

stingless bee hives have been established in the locality of *El Líbano* under Proyecto Vida Silvestre.

PVS in numbers

Figure 10

Stingless bees

Stingless bees belong to the taxonomic group *Meliponini*, often known as meliponinas.

Stingless bees are social insects with distinct roles: queens, drones (or males), and workers, which make up over 80% of the colony's population.

In their natural habitat, stingless bees can nest in tree trunks, ground cavities, or even human-made structures such as walls.

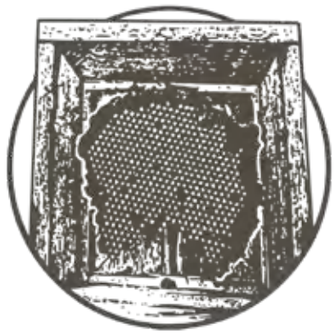
In Colombia, there are around 120 species of stingless bees, found at elevations ranging from sea level to 3,400 meters.

Orinoco region

Middle *Magdalena* Valley

Putumayo

The honey production of *Melipona eburnea* varies due to factors such as colony strength, temperature, and the abundance of flowers for nectar collection.

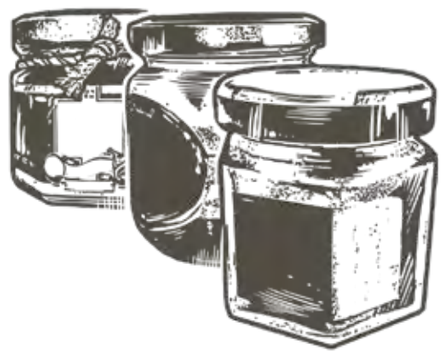


Stingless beekeeping involves the breeding and management of native stingless bees, providing an economic opportunity for rural families.

A colony of stingless bees can produce between 1 and 11 kilograms of honey annually, depending on the species.

A queen bee can live up to 42 months, while workers and drones typically survive for 2 to 3 months.

In *Putumayo*, *Melipona eburnea*, often known as *boca de sapo*, is a commonly used stingless bee species.



15

species of stingless bees were recorded within the PVS project area during biological characterization.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Different angles showcasing three stingless bees, all belonging to the *Melipona eburnea* species.

Orinoco region

Middle *Magdalena* Valley

Putumayo

AMAZON CARETAKERS

The woolly monkey's protective mothers

Women from *Orito, Putumayo*, are protecting this primate to underscore its significance for the Amazon forests, despite threats from hunting. This initiative also promotes gender equity.

In the Andean-Amazon foothills, life begins for this eight-month-old baby woolly monkey.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Some 25 years ago, as May or June rolled in, it also signaled the time to set out in pursuit of woolly monkeys. Hence, in many homes of *El Líbano*, in *Orito* (*Putumayo*), there was always a shotgun ready for the hunt.

By midday, residents would head into the woods and return later with one or two animals slung over their shoulders. The hunt was intense, as these creatures were savored as a seasonal dish, taking advantage of the well-nourished woolly monkeys (also known as *chorongos*) available during this time of the year.

Men would hunt while the women cooked, creating a flavor reminiscent of pork that many found appealing. If any newborns survived —due to the females' strong defense of their offspring— they would either become cherished pets or be sold for profit. The earnings were often used to buy ammunition, sustaining the tradition.

Rosa Melo, a local resident, recalls how this tradition led to the loss of hundreds of specimens. As time passed and the locality became more connected to urban areas, access to food improved, families found new sources of income, and hunting ceased to be a viable livelihood, partly due to the declining populations of this mammal.

Rosa admits she could not bring herself to eat another one, a habit she shared with neighbors in her youth. And certainly not now, because she recognizes their significance.

Today, she prefers to support the Colectivo de Mujeres Defensoras del Mono Churuco, in collaboration with Fundación Sambica. Under Proyecto Vida Silvestre (PVS), this group aims to highlight the biological and ecological significance of these primates in the vital landscape of the Amazon foothills.

SKILLED YET VULNERABLE

In this region, the woolly monkey has always stood out as a charismatic creature, perhaps due to its muscular build and the thick, prehensile tail it uses as an extra limb. Some even refer to it as "the woolly one" because of its fur. It is agile, skillful, and resourcefulness, adept at evading threats. However, it faces an inherent vulnerability: unlike species that can bounce back from losses with prolific breeding, the woolly monkey reproduces slowly, with adult females typically giving birth to just one offspring every two years. Additionally, ongoing habitat destruction, fueled by activities such as cattle farming, agriculture, and logging, poses further challenges for these animals.

The woolly monkey, scientifically known as *Lagothrix lagothricha*, holds a 'Vulnerable' status according to the International Union for Conservation of Nature (IUCN). These designations underscore the pressing need for conservation efforts to secure the future of this species. With its role as a key seed disperser, its presence in the forest ecosystem should always be celebrated.

7

agreements were signed during the project, totaling approximately 300 hectares, to conserve the woolly monkey.

PVS in numbers

A typical day of woolly monkey sightings by the protective mothers.

Orinoco
region

Middle
Magdalena
Valley

Putumayo

View of the foothill forests in *Putumayo*, which serve as the habitat for woolly monkeys.

Orinoco region

Middle *Magdalena* Valley

Putumayo

"I FEEL STRONGER"

Driven by their commitment to preserving life itself, the Colectivo de Mujeres Defensoras del Mono Churuco has embarked on a mission in its defense. With around 15 dedicated women, they spearhead initiatives for environmental education and awareness. Besides receiving training on biodiversity conservation, they engage in activities like bingo sessions to convey the importance of safeguarding this distinctive species to the broader community. Moreover, they participate in workshops and courses, deepening their understanding of honey production, sustainable cattle farming, birdwatching, and productive processes.

One of their main activities involves going on forest walks, accompanied by a biologist, to explore the woolly monkey's habitat and look for its traces, as explained by Juliett González, a primatologist from the Fundación Sambica.

Although none of the women in the group have seen the woolly monkey in the wild, they have learned why its conservation is crucial. The monkey's intense care for its offspring serves as an example to humans.

Juliett highlights the significance of these walks, where group members learn about sighting techniques, data collection, conduct tours and follow-ups, and keep field notes. She explains, "Our goal is to make these sessions more 'recreational', creating a space for them to chat freely and share knowledge."

Proyecto Vida Silvestre's mission goes beyond conservation alone. It is about empowering the communities it serves. It is not just about protecting flora and wildlife species; it is also about empowering those who live amidst this natural wealth.

This achievement is exemplified by Irlanda Acosta, a mother and active member of the group. She shares how being part of the group has not only deepened her understanding of the mammal's role but has also strengthened her independence. Acosta now finds comfort in discussing topics with her peers that were previously challenging to address at home, and together, they seek solutions to personal challenges. "Now I realize that even amidst challenges and loneliness, I can persevere. The group has empowered me, showing me the strength in independence and fostering newfound confidence. It is incredible what a group of women dedicated to the welfare of a previously unfamiliar primate can achieve. As we protect it, we become stronger." ■

The group's members engage in sightings, undertake lengthy walks, and document their activities.

The woolly monkey is also referred to as *chorongo* by indigenous and farming communities in *Putumayo*.

20

days of expeditions between *Isla Escondida* and *Los Quebradones* confirmed the presence of the woolly monkey in *El Líbano*.

PVS in numbers

PVS

Map 12

Monitoring

Muralla River

Guamuez River

Santuario de Fauna y Flora
Plantas Medicinales
Orito Ingi-Ande

Miseria stream

Romerillo stream

Orinoco region

Middle Magdalena Valley

Putumayo

Sucio River

El Líbano

Churuyaco River

Guamuez River

List of properties

a. Los Andes
b. El Cóndor
c. La Gaitana
d. Paraíso Las Lomitas
e. El Remanso
f. El Porvenir
g. El Paraíso
h. Agua Bonita
i. Alto Bonito
j. El Bosque
k. La Cocha
l. La Pradera
m. Los Nogales
n. El Palmar
o. La Esperanza
p. La Granja
q. El Guayabal
r. La Paz
s. Diamante
t. La Coltejer
u. La Esperanza
v. Tres Esquinas
w. La Primavera

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

- PVS polygon in *Putumayo*
- Intervened property limits
- Monitoring cells
- Camera traps
- *Santuario Orito Ingi-Ande*

Intervention area

0 3,75 7,5 15 22,5 30
Kilometers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Conserving the woolly monkey's habitat also means safeguarding many other species that coexist with this primate.

Figure 11

The woolly monkey

Scientifically identified as *Lagothrix lagothricha*, it ranks among the Amazon's most imperiled primates, largely due to habitat destruction, hunting, and trafficking.

As the second-largest monkey species in the Americas, its name reflects its abundant coat and ample midsection.

Orinoco region

Middle *Magdalena* Valley

Putumayo

Being diurnal and gregarious, it lives amongst other individuals of its species.

This species can be found in tropical and subtropical humid forests, both on solid ground and in floodplains. Typically, it inhabits the middle to upper parts of trees.

With its thick fur, this monkey earns its nickname "woolly." Agile, it epitomizes dexterity and determination.

This primate reaches sexual maturity between five and seven years of age. They usually have one offspring every two years.

15

trap cameras installed in the canopy complemented the monitoring of woolly monkeys in this territory.

PVS in numbers

The woolly monkey's diet is diverse, mainly comprising fruits and, to a lesser extent, leaves, invertebrates, seeds, tree bark, and flowers.

As per the threat assessment criteria by the International Union for Conservation of Nature (IUCN), the woolly monkey is categorized as 'Vulnerable' VU.

Orinoco region

Middle *Magdalena* Valley

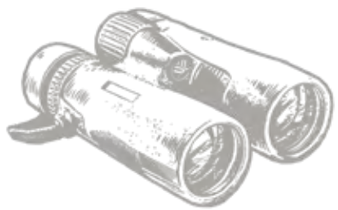
Putumayo

BIODIVERSE FOOTHILLS

A bird sanctuary in *Putumayo*

Meet the Andean Cock-of-the-Rock conservation group: a passionate community group based in *El Líbano, Putumayo,* devoted to preserving local birdlife and promoting eco-tourism through birdwatching.

Scientifically known as *Rupicola peruvianus*, the Andean Cock-of-the-Rock is the captivating species featured in this photograph.



A sighting moment for the avid birdwatchers of the Cock-of-the-Rock conservation group.

Orinoco region

Middle *Magdalena* Valley

Putumayo

297

bird species were recorded during observation tours in the locality of *El Líbano*.

PVS in numbers

If you are new to birdwatching and eager to explore, consider starting your bird tourism journey in the locality of *El Líbano*, in *Orito* (*Putumayo*).

A leisurely walk through its forests may reward you with the sight of a majestic raptor in flight or a colorful toucan perched on the branches of an ancient tree. No need for extensive searching —just keep your eyes peeled and your voice low.

We were lucky to team up with Esteban Cuacialpud, an expert guide, for a tour near the *Sucio* and *Guamuez* rivers, the latter fed by the waters from *La Cocha* Lagoon (*Nariño*) —Colombia's largest. These waters carve out an extraordinary landscape: an island lush with vegetation, untouched by the logging and hunting prevalent elsewhere in the region.

In this unique triangle, often hailed as a natural gem, we not only spotted hummingbirds of different sizes, some flitting remarkably close to us, but also woodpeckers and tanagers, notable for their striking mix of colors.

In this forest, there is a bird that stands out as the emblem of the area: the Andean Cock-of-the-Rock (*Rupicola peruvianus*). Everyone seeks it out, not just to admire its stunning plumage, a vibrant mix of red and orange, but also to marvel at its crest, which hides a barely visible beak. The Andean Cock-of-the-Rock is most active at dawn, fluttering near the streams, especially on mornings with little rain.

Esteban Cuacialpud knows this bird like the back of his hand. At 37 years old, after making a living through farming and other jobs in *Orito's* urban center, he moved to *El Líbano* seven years ago, devoting himself entirely to guiding tourists along various trails.

Foothill birds: Top Left - *Chlorophanes spiza*; Top Right - *Capito auratus*; Bottom - *Micromonacha lanceolata*.

Foothill birds: the gilded barbet, locally known as *torito dorado.* Also found in Peru, Ecuador, Venezuela, Bolivia, and Brazil.

Orinoco region

Middle *Magdalena* Valley

Putumayo

“No one ever thought you could make a living by birdwatching. Birds were just seen as part of everyday life, not as something valuable,” he says. But times have changed, and little by little, people are starting to appreciate the landscape they share with such a wide variety of plants and animals.

In this regard, Proyecto Vida Silvestre (PVS) is working with the community to protect the black tinamou (*Tinamus osgoodi*). By safeguarding it from hunting and unsustainable consumption, they are also protecting many other species like toucans, partridges, guans, curassows, herons, flycatchers, and owls.

This approach has a reason. This area is deemed a vital sanctuary for the conservation of Colombian birdlife. Initial studies, led by the Alas Putumayo organization, suggest that a remarkable 528 bird species can be found here. This figure is significant, representing almost a quarter of all bird species recorded in Colombia (1,954 according to the Sistema de Información sobre Biodiversidad-SIB).

This figure is attributed to *El Líbano’s* strategic location. Positioned at a crossroads between the Colombian Massif, portions of the Andes Mountain Range, and the vast tropical rainforest extending from lowlands towards the Amazon, *El Líbano* serves as a vital center for biodiversity.

In this area, a mix of environments from the Andean-Amazon foothills create diverse landscapes, housing multiple hydrological systems, ecosystems, and climates. This natural richness is complemented by a varied food supply.

During its monitoring activities, Alas Putumayo identified Amazon species like antbirds, named for their habit of chasing ants to feed on them. Fruit-eating birds, including the Andean Cock-of-the-Rock, indicate the good conservation status of certain areas. They also observed plum-throated cotingas (*Cotinga maynana*) and spangled cotingas (*Cotinga cayana*).

It is typical to see flycatchers like the Tropical Kingbird (*Tyrannus melancholicus*), known locally as *sirirí* or *toreador*, even with the changes in some areas due to agriculture. Additionally, there are over 23 migratory species, mostly from boreal regions (19 species), including the swallow-tailed kite (*Elanoides forficatus*), olive-sided flycatchers (*Contopus cooperi*), and warblers from the Parulidae family, like the Mangrove Warbler.

10

birdwatching routes have been proposed by PVS for the locality of *El Líbano*.

PVS in numbers

Foothill birds: Top - *Trogon viridis*; Top right - *Melanerpes cruentatus*; Bottom left - *Cotinga cayana*; Bottom right - *Amazona farinosa*.

PVS

Map 13

Birdwatching in the Andean-Amazon corridor

Miseria stream

Guamuez River

Sucio River

Putumayo

El Líbano

White-lored antpitta
(Hylopezus fulviventris)

Striolated manakin
(Machaeropterus striolatus)

Orinoco region

Middle *Magdalena* Valley

Putumayo

Maridel Ruiz knows this partial list inside out. Along with other members of the *El Líbano* community, including 8 children, she is part of the Andean Cock-of-the Rock conservation group. This group grew stronger after participating in a theoretical and hands-on diploma course in 2020, which underscored the importance of observing and conserving the *Putumayo* foothills.

Maridel mentions that she is now able to share basic knowledge about the presence of eagles and hawks, cardinals, parrots, macaws, and vultures, which really captivate visitors.

But what she emphasizes the most is her ability to recognize the importance of species that used to fly around freely and even visit her farm.

"Today, we understand our territory much better than before. The children know that the birds we see here are not easily found in many other places, which is why they take such good care of them. It is inspiring to see many of them engaging in friendly competition to spot different species. They head out into the field and effortlessly identify them. I may have come to birdwatching later in life, but it is reassuring to see that the younger generations are already embracing it."

Certainly, as Maridel suggests, this will ensure the long-term protection of these exceptional animals for future generations. ■

PVS polygon in *Putumayo*

Birdwatching tours

Birdwatching spots

Landscape sighting spots

Sites for observing key birdwatching species

Coppery-chested jacamar
(Galbula pastazae)

Golden-collared toucanet
(Selenidera reinwardtii)

Guamuez River

Orinoco region

Middle *Magdalena* Valley

Putumayo

Foothill birds: Top on opposite page - *Campylopterus largipennis*; Bottom on opposite page - *Euphonia xanthogaster*; This page - *Tangara chilensis*.

Orinoco region

Middle *Magdalena* Valley

Putumayo

BIODIVERSE FOOTHILLS

Home to miracle plants

Proyecto Vida Silvestre (PVS) aims to minimize the impact on certain timber trees in *El Líbano*, a locality in *Orito* (*Putumayo*), where there is a long-standing tradition of using flora species for medicinal purposes.

Manuel Cuasialpud, an experienced traditional botanist from the Andean-Amazon foothills, carefully observes a plant leaf.

Orinoco region

Middle *Magdalena* Valley

Putumayo

For decades, the effectiveness of botanical remedies in easing pain has been widely recognized in *Putumayo*.

The type of medicine indigenous communities refer to as 'Western', which prioritizes synthetic drugs, is widely recognized as one of the most well-known and, for some, the most successful medical approaches ever developed.

However, nature, refined over millions of years of evolution, also offers itself, along with the thousands of plant species thriving in strategic ecosystems, as a rich source of highly effective healing alternatives.

In the Andean-Amazon foothills, specifically in the locality of *El Líbano*, in *Orito* (*Putumayo*), the power of botanical remedies to combat and alleviate diseases has been recognized for years, successfully relieving pain.

Manuel Cuacialpud understands this well, unlike many in the region. He was born in *Puerres* (*Nariño*) and raised in *El Carmen*, a town in *Córdoba*, another municipality in *Nariño*. At just 13, he arrived in *Putumayo* to farm beans, corn, and plantains, sustaining himself on these crops. "From then on, maybe out of curiosity and the necessity to find a purpose for neglected plants, I started to learn about them and use them for everyone's well-being," Manuel explains.

A glimpse of unique and vibrant shapes that attract pollinators.

AN ENDLESS ARRAY OF HEALING POTENTIAL

We ventured on a guided tour with him, covering several kilometers. In just minutes and across small patches of forest, he revealed dozens of plants with remarkable healing properties.

Manuel is not a shaman, nor does he possess knowledge of scientific names. Yet, with the confidence of a seasoned botanist, he effortlessly identifies the common names of numerous plants, branches, leaves, trunks, or flowers —elements that to the untrained eye might seem just as regular plants.

He started by talking about wormwood (*Artemisia absinthium*) and bitterwood (*Quassia amara*), both used to create a liquid that helps with stomach pains and liver issues.

He showed us lemongrass (*Cymbopogon citratus*), great for coughs or asthma. He also mentioned the pata de vaca (*Bauhinia forficata*), known for its blood sugar regulating properties, and the golden-scaled male fern (*Dryopteris affinis*), effective in disinfecting wounds or ulcers. He also pointed out the mulberry herb, with its yellow, menthol-flavored flower, which can reduce inflammation, even around the teeth. Lastly, he highlighted elderberry (*Sambucus nigra*) as a potent antiviral.

72

plant species identified in *El Líbano* hold promise and potential for utilization.

PVS in numbers

Orinoco region

Middle *Magdalena* Valley

Putumayo

Captivating structures of three distinct plant species, all captured in the understory of *El Líbano, Putumayo.*

Orinoco region

Middle *Magdalena* Valley

Putumayo

1,283

flora records were obtained during the biological characterization conducted in the locality of *El Líbano*.

PVS in numbers

"Getting to know plants and their benefits is not something you achieve overnight; it is more like a journey of trial and error, experimenting with different preparations, and refining them over time," says Manuel. He mentions that the only plant he has not grown or used is coca, simply because he prefers to stay away from the unlawfulness and uncertainties associated with it.

Neighbors turn to this calm and gentle man for advice, often treating him as if he were a doctor with the remedy for all ailments. Experts also seek his guidance in uncovering the most valuable species.

He collaborated with experts from Proyecto Vida Silvestre (PVS), supported by the Instituto Amazónico de Investigaciones Científicas (Sinchi), in conducting an initial plant characterization. This effort resulted in the identification, as part of a preliminary study, of 1,283 records: 1,195 corresponding to vascular plants (like ferns, pines, or orchids), 72 to non-vascular plants (such as mosses without stems or flowers), and 16 to lichens.

This research confirms the importance of medicinal plants in the region. Among the species cataloged with specific uses, 50 are utilized for medicinal purposes and 48 for timber.

Moreover, the investigation revealed 24 previously unknown records for the Colombian Amazon. This includes two bromeliads (*Guzmania dissitiflora* and *Pitcairnia squarrosa*), previously only documented in the *Chocó* region. Additionally, 67 species were reported as new records for the national flora, with 28 species identified as endemic to the country.

While there were positive findings, the research also confirmed the precarious situation faced by certain mosses and epiphytes, as well as the cedro rosado tree (*Cedrela odorata*), classified as endangered (EN). Efforts to restore this species are led by the Comité de Ganaderos de Puerto Asis (Coganasis), a key partner of PVS in *Putumayo*. Additionally, crucial tree species such as the canelo (*Ocotea quixos*), barbasco negro (*Minquartia guianensis*), and chonta or white palm (*Wettinia maynensis*) are also facing challenges.

Manuel confirms that these plants are not very abundant: it takes hours of walking to spot a few specimens, and those often seen are young plants.

It is no surprise that he also admits that, in his early twenties, he tried to make a living by selling boards cut from trees like *granadillo* or *peine mono*, which many people bought for building or fixing their homes. "I tried to keep this sale controlled, just enough for my livelihood, and I did not cut down too many trees. But not everyone had the same mindset, or maybe many of us found ourselves doing the same thing," he explains.

This is further evidence that selective logging in the region has had consequences, highlighting the pressing need to intensify reforestation efforts in response to deforestation. Manuel is now one of the leading advocates in this endeavor, striving to combat degradation and ensure that the forest remains a source of healing for us all. ■

La Pinta (top left) and *Ayahuasca* (top right): both hold significant traditional value for certain indigenous communities.

Figure 12

Medicinal plants and their diverse uses

These pages provide just a glimpse of the floral inventory that Manuel generally relies on in various aspects of his daily life.

Basil

Ocimum basilicum

Acts as a natural insect repellent in vegetable gardens.

Inchi

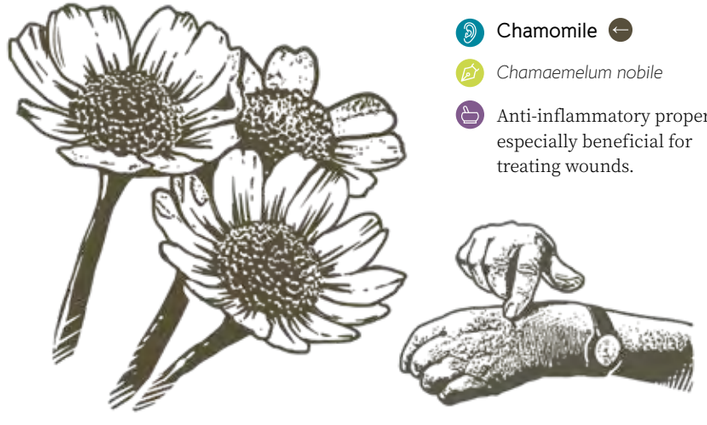
Caryodendron orinocense (Karsten)

Used in stews and dressings.

Orinoco region

Middle *Magdalena* Valley

Putumayo



Chamomile

Chamaemelum nobile

Anti-inflammatory properties, especially beneficial for treating wounds.

15

medicinal species are widely recognized and utilized by the residents of *El Líbano*.

PVS in numbers

Guayusa

Ilex guayusa

Renowned for its sleep-inducing effects and its ability to ward off cold.

Araza

Eugenia stipitata

Its pulp is commonly used in juices, jams, and yogurt.

Taro

Colocasia esculenta

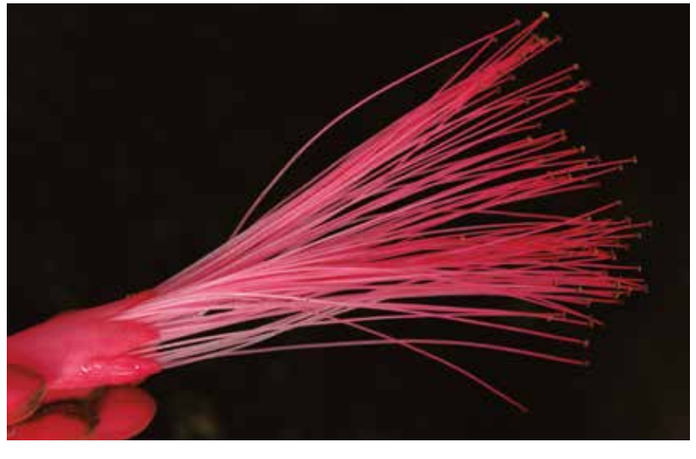
Used to make purées and for frying, similar to potatoes.

- Common name
- Scientific name
- Medicinal and other uses
- Culinary uses

Orinoco region

Middle *Magdalena* Valley

Putumayo



In the foothills, where the Amazon and Andean ecosystems converge, the flora reveals itself with vibrant colors and unique forms.

ENERGY COMMUNITIES

ANNEX

ANNEX: ENERGY COMMUNITIES

PVS empowers Energy Communities

Proyecto Vida Silvestre (PVS) promotes the use of renewable energy to boost productivity in rural communities and support the conservation of species in the *Orinoco* region, the Middle *Magdalena* Valley, and the *Cali* River basin, in *Valle* del *Cauca*.

This solar panel, installed on a rural home, is a vital technological resource for the daily lives of its residents.

Energy solutions transform production methods and our relationship with biodiversity.

Energy Communities

Óscar Caro came back with his boat packed full of *Magdalena* catfish, thanks to a sudden influx of fish. He was hoping to make some extra money, and he also had *bocachicos* and *dorados* on board.

But even with a boatload of fish, the excitement did not last long in *San Rafael de Chucurí*, a locality of *Barrancabermej*a (*Santander*) on the *Magdalena* River.

"As soon as I stepped into town, I could tell by the way people were acting that I wouldn't get the price I had hoped for," Caro says.

With the fish needing to be sold right away —fresh from the river and impossible to store— the traders buying from him and other local fishermen set prices so low that there was hardly any profit to be made.

"I sold my catch, but honestly, I almost gave it away. Otherwise, I would have had to keep some for myself and throw away the rest," he says.

This happened recently, but it is a recurring issue. Without a way to refrigerate perishable goods, this will continue to be a long-standing problem in the locality.

"We're used to dealing with temperatures that rarely drop below 30 degrees Celsius. To make a difference, we need the sun to bring us a bit of coolness," Óscar explains.

Although it sounds a bit paradoxical, this is not just a far-fetched idea. It is a real plan from Proyecto Vida Silvestre (PVS), which is now working on a new renewable energy component, known as Energy Communities. This initiative aims to set up community refrigerators powered by solar panels to keep fish fresh and in good condition. This would not only improve storage but also help sell the fish when prices improve.

Supported by Ecopetrol, PVS is pioneering an initiative to develop inclusive interventions that encourage both sustainable production practices and better interactions with biodiversity. Ecopetrol, committed to community development and a just energy transition, is co-financing the installation of solar panels and other renewable energy solutions. The project also focuses on working closely with local fishermen, who will manage and maintain these systems after receiving training in technical and organizational skills.

Around 150 fishermen from the Asopezchucurí association will benefit directly from this initiative. Additionally, about 500 other local residents will gain access to a service offering 'cold hours' to help keep perishable foods fresh.

Asopezchucurí would also benefit from a new income stream, enabling it to support its members, especially during the *Magdalena* catfish fishing bans. These bans, set by the Autoridad Nacional de Acuicultura y Pesca (AUNAP), occur twice a year for 30 days each time. They are crucial for allowing the *Magdalena* catfish (scientifically known as *Pseudoplatystoma magdaleniatum*) to reproduce and help prevent its extinction. The species is currently listed as "Critically Endangered" due to overfishing over the past 40 years.

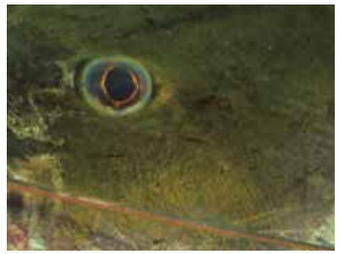
If everything goes as planned, this initiative could soon establish an Energy Community in *San Rafael* de *Chucurí*, in the Middle *Magdalena* Valley.

40

years is the approximate time during which the *Magdalena* catfish has been overfished.

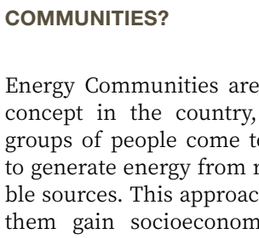
PVS in numbers

If fishermen had the ability to refrigerate their catches, it would help ease overexploitation of the *Magdalena* catfish.



WHAT ARE ENERGY COMMUNITIES?

Energy Communities are a new concept in the country, where groups of people come together to generate energy from renewable sources. This approach helps them gain socioeconomic and environmental benefits and ensures long-term sustainability. In simple terms, Energy Communities use renewable energy to drive sustainable development and put the idea of a just energy transition into practice.



ENERGY COMPONENT (3,4)

Human development depends on social and economic well-being, which relies on consistent and reliable access to energy.

SOCIAL COMPONENT (1,2)

This approach helps vulnerable communities by decentralizing energy production, boosting local economies, and promoting environmentally friendly development.

Communities that generate more energy than they use, can sell the surplus, saving money in the process.

Energy should be safe, sustainable, and modern, ensuring it does not deplete resources for future generations.

SUSTAINABILITY COMPONENT (5,6)

Generating energy can help rural communities use natural resources more sustainably and effectively.

Additionally, managing their own energy projects can provide extra income for local residents.

Figure 13

Energy with the power to transform

This resource provides a crucial opportunity to drive the social and sustainable changes needed in rural communities across Colombia.

The concept of Energy Communities was partially regulated in Colombia with Decree 2236 of 2023 from the Ministry of Mines and Energy, along with other recent decrees and resolutions. According to Decree 2236, these communities can access funding to develop and expand their energy projects, provided they ensure that vulnerable populations have access to the service, decentralize energy generation, boost the local economy, and support environmentally friendly development.

Additionally, an Energy Community that produces more power than it consumes, can sell the surplus to other areas or partner with neighboring communities to increase generation and pursue more ambitious projects.

Energy
Communities

The United Nations (UN) also supports the use of clean energy to boost agricultural practices.

In Colombia, the Ministry of Mines and Energy reports that around 400,000 households still lack access to electricity

PRIVATE SECTOR ENGAGEMENT

"PVS's goal to create Energy Communities fits perfectly with government efforts and our own sustainability policies," explains Carlos Saavedra, Species Coordinator for WCS Colombia and PVS Coordinator.

The renewable energy projects supported by PVS were selected by a team of experts who ensured that the communities leading these initiatives were already committed to wildlife conservation efforts.

These projects are taking shape not only in *San Rafael de Chucurí* but are also set to expand into other landscapes like the *Orinoco* region and the *Cali* River basin (see attached note).

According to Jairo Andrade, the technical specialist for Energy Communities at PVS, this approach provides a strong incentive for communities dedicated to environmental protection. Their commitment is reflected in their conservation agreements and their focus on adopting sustainable practices on their farms.

MAKING ACCESS TO ENERGY FAIR FOR ALL

Energy Communities are part of a global push endorsed by the UN to ensure that human development includes social and economic well-being, with reliable and adequate access to energy.

"It is essential that energy is safe, sustainable, and modern, and that it does not compromise the economic future of coming generations," state the organization's representatives. This focus is central to one of the 17 Sustainable Development Goals established by the UN in 2015, which countries around the world have committed to achieving by 2030.

In Colombia, the Ministry of Mines and Energy reports that around 400,000 households still lack access to electricity. The Ministry highlights that "introducing new technologies is essential to close this gap and provide development opportunities." In *Santander*, nearly 237,000 people —about 10 percent of the population— live in energy poverty, according to the governor's office.

Óscar Caro underscores the problem, explaining that *San Rafael de Chucurí* has always struggled with poor energy services.

"Sometimes we go for days without electricity. Other times, the power is unreliable, causing damage to appliances. This makes it impossible to properly store or manage products, he says."

Access to cold storage, including ice, is often a luxury. Making it more accessible could help reduce the overfishing of species like *bocachico, dorado,* and *Magdalena* catfish.

Providing clean energy to rural areas can improve animal welfare on farms.

Electricity generation supports the local economy and encourages environmentally sustainable practices.

The goal of the energy service is to reach as many users as possible while promoting environmentally friendly development.

"If I could refrigerate my catch, I wouldn't need to fish every day. Many of my colleagues would benefit the same way, Óscar adds."

With better self-regulation in fishing, fishermen could preserve part of their catch rather than waste it when buyers are absent or prices are low. This would give species a much-needed break by reducing the amount of fish harvested.

Ernesto Ome, head of Productive Initiatives for the PVS, highlights that a key aim of the Energy Communities initiative is to improve the efficiency of a service that has been limited and uneven up to now.

"We focus on making access to energy more equitable, cutting down carbon emissions, supporting local livelihoods, and encouraging environmentally friendly energy solutions, with the active participation of users," says Ome.

In Colombia, many communities, including *San Rafael de Chucurí*, are working to set up Energy Communities. Time will tell whether these efforts truly provide the relief needed for the most underserved rural communities. ■

OTHER EMERGING ENERGY COMMUNITIES

PVS is extending its efforts beyond *San Rafael de Chucurí* to other areas like *Bocas del Carare* in *Puerto Parra* (*Santander*). In this area, PVS is installing solar panels at the headquarters of the Asociación de Mujeres Emprendedoras de Bocas del Carare (Asomucare) to support their restaurant and bakery operations and power various electronic devices at their facility.

In the same locality, another solar project will benefit the Asociación de Suscriptores del Acueducto y Alcantarillado de Bocas del Carare (Asabcarare), which provides water to 148 families from a deep well. While this aqueduct already uses solar energy for water extraction, the current system is struggling to meet the increasing demand. The new solar panels will enhance the pumping and purification processes, increasing water flow and improving purification efficiency.

PVS is also making strides in *Ciénaga de Chucurí, Puerto Parra,* where around 50 people live. The goal here is to set up a solar energy system to provide a more stable power supply for local homes.

In the *Cali* River basin (*Valle del Cauca*), PVS is promoting new Energy Communities. This will complement current efforts by PVS to support forest restoration in *Dagua,* which is vital for the Andean spectacled bear (*Tremarctos ornatus*), a species threatened by habitat loss. The project also targets buffer zones of the *Farallones de Cali* National Park. The plan is to use solar energy to enhance services in hotels, hostels, and glamping sites by providing hot water.

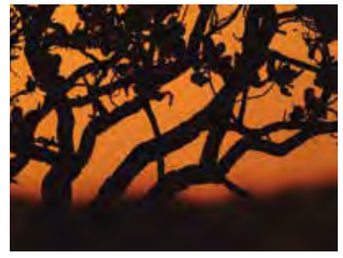
Another key area is La Virgen in *Cravo Norte* (*Arauca*), located along the *Meta* River, where efforts focus on protecting the Giant South American River Turtle. Here, solar energy will be used to power two cold storage rooms with 2,000-liter freezers for storing meat and other perishables. The local community relies on fishing and also raises chickens and pigs, so having reliable cold storage is crucial.

2,000

liters is the capacity of the solar-powered freezers planned for *La Virgen* (*Arauca*), designed to benefit local farmers.

Cifras del PVS

Fostering community stability with clean energy, reducing the need for deforestation.



Energy
Communities

PVS is helping create Energy Communities in the *Cali* River basin, where it also supports the protection of the Andean spectacled bear.


PROYECTO
VIDA
SILVESTRE
Conservation of species in strategic areas of Colombia