



LEGADO  
DAS ÁGUAS  
RESERVA VOTORANTIM



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report  
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tapir was found

# SDGs at Legado das Águas

The basic premise for all the work undertaken at Legado das Águas over the past six years is complying with at least one of the 17 Sustainable Development Goals (SDG) launched by the UN in 2015 (learn more about the SDGs in the article on page 12).

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# Legado das Águas

## MANAGEMENT OF ENVIRONMENTAL CONSERVATION NEW BUSINESSES

The upcoming pages reflect the dedication of the nearly 100 professionals, including employees, researchers, and partners who, along the year of 2018, devoted their energy and professionalism for the benefit of an innovative proposal: create businesses, while conserving forests.

We currently work hard in various fields. Our ecotourism activities, for example, are becoming increasingly well established and recognized. Our nursery has been yielding a significant number of plants that rise up to the quality standards demanded by the landscaping market.

In 2018, we had our first experiences with legal reserve compensation, a market that proved to be extremely promising and represents one of the most important areas in our business model.

Our environmental education department benefited hundreds of students from public and private schools at Vale do Ribeira and São Paulo state, through hands-on activities amidst the forest and school exhibitions and lectures.

Scientific research made advances, especially through the innovative project known as Floresta Digital (Digital Forest), dedicated to mapping the DNA of more than 50 plant species found at Legado das Águas, thus contributing to change the project's status from scientific research to business model. This is the most comprehensive Atlantic Forest gene bank known to exist.

The work developed with orchids led to significant discoveries. It is also worth mentioning the studies on butterflies, snakes and amphibians and the monitoring projects involving jaguars, pumas, muriquis and tapirs, among other mammals. The scientific projects helped us understand that learning is essential to conservation.

Social projects were also instrumental, fostering community development in Juquiá, Miracatu and Tapirai, cities where Legado das Águas operates. Our social efforts have also been extended to other Vale do Ribeira municipalities.

On a global perspective, we presented Legado das Águas at the New York United Nations General Assembly, as one of Brazil Global Compact's outstanding cases. Our recognition by UNESCO as an area within the Atlantic Forest Biosphere Reserve was also a major achievement.

Another noteworthy fact: Votorantim S.A. completed its 100th anniversary in 2018, calling for an important reflection about the perpetuity of the company's initiatives. If the area currently occupied by Legado das Águas had not been acquired by Antônio Ermírio de Moraes in the 1950s and conserved by our employees over the years, nothing of what we now see in full activity would have been achieved.

Despite having to continuously adapt to new developments and innovations emerging at all times, we do not lose focus on the main premises guiding our work: generate shared value by combining environmental conservation, land development and the sustainable use of the forest to create new business in the new economy.

**Enjoy your reading.**

*David Canassa, João Schmidt e  
Luiz Marcelo Pinheiro Fins  
Management of Reservas Votorantim*

# Reconnecting WITH NATURE

Over the past decades, Brazil's population began to be more concentrated in major cities due to an accelerated urbanization process. Consequently, people are being drifted away from country life. Although many of us still cultivate plants on apartment balconies, a great number of people lost or no longer stay connected with the land, water and air. However, an urge to reunite with nature has been emerging. For those visiting Legado das Águas, the immersion in nature is absolute. From dawn to the sound of birds singing to pitch-black and total silence at night, visitors can enjoy unique experiences that are only feasible when in contact with nature. ✿



# 2018 FACTS

2018 MARKED VOTORANTIM'S 100 YEARS OF HISTORY, SIX YEARS OF LEGADO DAS ÁGUAS AND MANY ACHIEVEMENTS

In the same year when Votorantim S.A. completed 100 years of history, Legado das Águas also had plenty to celebrate despite having completed only six years of existence. The most interesting of all is to realize that the Reserve's initiatives are gaining more importance and recognition year after year.

The key message in all the work developed by Legado das Águas' employees, researchers and partners is that conserving nature is remarkably worthwhile. Our participation in major international events, environmental conservation hands-on activities, dissemination to the media, courses and events are efforts that have been essential to engage an increasing number of people.

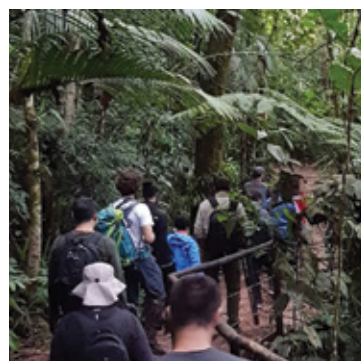
We present below some of the most important facts in 2018.

## may

### BIODIVERSITY EXPEDITION

To celebrate the International Day for Biological Diversity, Legado das Águas invited biologists, journalists, photographers, tourism experts, entrepreneurs, as well as professionals from other fields to enjoy a distinctive experience in the forest. Visitors followed Trilha da Figueira (Fig Tree Trail), enjoyed Jardim Sensorial (Sensory Garden), visited the nursery and went on a night walk, among other activities.

"Experiencing that portion of the Atlantic Forest is great by itself," said journalist Alvaro Almeida. "Legado das Águas is proof that conservation is worthwhile. I'd love everyone could have the opportunity to see that wonder," commented Monica Nunes, also a journalist.



In 2018, Legado das Águas also attended the following events:

- Viex Environmental Congress.
- IX Brazilian Congress on Protected Areas (CBUC).
- Careers Fair on Faculdade Anhanguera de Sorocaba.
- Festuris (Rio Grande do Sul), which gathers some of the leading representatives from Brazil's tourism trade industry.
- Vital Sport – Decathlon Sorocaba.
- Workshop "Desafios da Conservação do Bioma Mata Atlântica na Região Metropolitana de Sorocaba" (Challenges in Conserving the Atlantic Forest Biome in the Metropolitan Region of Sorocaba).
- Brazil's 10th Environmental Management Congress.

### LEGADO DAS ÁGUAS PUTS TOGETHER THE "FLORESTA VIVA" (LIVING FOREST) EXHIBITION IN JUQUITIBÁ

In celebration of the 53rd anniversary of the city of Jujuitiba, Legado das Águas partnered with the City Government to set up the "Floresta Viva" (Living Forest) exhibition at the Social Center, gathering 30 images by photographer Luciano Candisani, which portrayed the fauna, flora and various landscapes of the Reserve, as shown in the photographs below. In complement to the program, approximately 130 fifth-year basic education students and teachers from Jujuitiba municipal schools attended a lecture by the photographer, who explained details about the work he develops at the Reserve.



### LEGADO DAS ÁGUAS' CONSERVATION IS A HIGHLIGHT AT AVISTAR BRAZIL

The animal and plant species conservation projects called the attention of those responsible for organizing Avistar Brazil, Brazil's largest birdwatching event, held in May at the Butantan Institute, in São Paulo. As these initiatives have produced significant results and gained recognition, Avistar's organizers invited a few Legado das Águas' researchers to present their work during the event, addressing two species sensitive to ecosystem changes. Biologist Luciano Zandoná presented his studies on orchids and Mariana Landis, president of the Manacá Institute, spoke about tapirs.

"The invitation to present the conservation initiatives linked to scientific research at Avistar Brazil is a strong indicator that Legado das Águas' work creates a positive impact and contributes to knowledge generation and sharing. Having the opportunity to share knowledge with society is of utmost importance to us," declared Frineia Rezende, executive manager at Reservas Votorantim.



### LEGADO DAS ÁGUAS LAUNCHES VACATION INTERNSHIP PROGRAM

An important 2018 novelty was the launch of Legado das Águas' vacation internship program. The first selection process, a bit more modest, took place between May and June. It had ten candidates from four São Paulo educational institutions. The two candidates selected attended the internship program in July.

The second edition of the program was held in November, with 89 students enrolled from 42 educational institutions in 11 states: Rio Grande do Sul, São Paulo, Paraná, Rio de Janeiro, Minas Gerais, Espírito Santo, Amazonas, Tocantins, Mato Grosso, Paraíba and Rio Grande do Norte. The five students selected attended the internship program at the plant nursery in January and February 2019, when they had contact with the environmental education, ecotourism and protected areas management departments.

The requirements for applying include: candidates have to be at least third-year or sixth-period undergraduate students, have turned 18 years old prior to the first day of the internship program, have GPA equal to or higher than 6.5, attend one of the universities accredited with Reservas Votorantim and be regularly enrolled in the educational institution's course requiring mandatory internship.

"This program allows students from different courses to have an authentic experience on the day-to-day operation of a private reserve, from plant production and ecotourism activities, to managing people and new businesses. The idea is that this experience will help them prepare for their professional career in the near future," explained David Canassa, director at Reservas Votorantim. As of 2019, the vacation internship program will resume its activities in two editions: January / February, and July.

# jun

## LEGADO DAS ÁGUAS' PLANTS ON CALÇADA DE TODAS AS CORES (SIDEWALK OF ALL COLORS)

Approximately 1,600 native plants from Legado das Águas were used in the landscaping project that created Calçada de Todas as Cores, in the 2018 Casacor exhibition (exhibition of architecture, interior and landscaping design) held in São Paulo. A four hundred square meter area transformed the sidewalk into a living and interaction space with garden, cozy seating areas and artistic interventions. The plants included a variety of species, such as fig trees, juçaras, clusias, quaresmeirinhas (tibouchinas) and orelhas-de-onça (*Tibouchina heteromalla*).

One of the project's goals was to show that it is possible to create landscaping plans 100% made of native plants, without overvaluing exotic species brought from other biomes or countries. The benefits of only using native species include reduced maintenance cost, the thermal comfort from the shade of trees and an evenly ventilated environment.



*"The appreciation of native plants is a consequence of their use in modern landscaping projects conceived by visionaries who recognize the importance of rescuing and reconnecting with the Atlantic Forest. This is exemplified by the initiative carried out by Zoom Arquitetura and Lao Design e Engenharia, who created a magnificent structure on the entrance sidewalk of Casacor, allowing a large number of people to recognize that possibility and reconnect with it."*  
Frineia Rezende, executive manager at Reservas Votorantim

## OPEN DIALOGUE

In June, Legado das Águas held one of the engagement events of its social strategy portfolio. The event - called "Diálogos" (Dialogues) - shares the main results of social investments with representatives of the civil society and government authorities. Our social projects combine territory development and revenue generation through activities related to the new economy.

The Dialogues project also captures insights and new ideas and evaluates the possibility of replicating projects in other cities, as well as exchanges ideas to achieve better results.

The event was attended by representatives of the cities of Juquiá, Miracatu, Piedade, Registro and Tapiraí, as well as professionals from Votorantim S.A., the Votorantim Institute, Sebrae and Reservas Votorantim.

"Our experience shows that when our partners know what we are doing, good ideas arise and we can do even more," added David Canassa, director at Reservas Votorantim.

Still in June, we conducted a workshop on the Municipal Plans for Conservation and Restoration of the Atlantic Forest (PMMA) in partnership with SOS Mata Atlântica to encourage Vale do Ribeira municipalities to participate in the preparation of their plans. The workshop was attended by representatives of Eldorado, Juquitiba, Miracatu, Piedade, Registro, São Lourenço da Serra and São Paulo.



# jul

## BOTANY SCHOOL

In 2018, we held three expeditions (in March, May and July) to Legado das Águas to offer a botanic experience in Brazil's largest Atlantic Forest private reserve. "Our workshops attracted 30 people from various backgrounds, including landscapers, artists, designers, photographers, architects, tattoo artists, as well as other professionals who found at the forest inspiration for their work," said Anderson Santos, pedagogical director at the Botany School, a partner institution of Legado das Águas.



# aug

## LEGADO DAS ÁGUAS WINS THE MURIQUI AWARD

Legado das Águas won the Muriqui Award in the legal entity category. Created in 1993 by the National Council of the Atlantic Forest Biosphere Reserve, the award aims to encourage initiatives that contribute to conserve biodiversity, as well as foster and promote sustainable development in the Atlantic Forest.



## BOTANY IN THE ATLANTIC FOREST

A partnership between Legado das Águas and Brasil Bioma promoted the 35th Course on Field Identification of Atlantic Forest Tree Families and Main Genera. The workshop was created for technical, undergraduate and graduate students from environmental, biology, and ecology areas, agricultural, environmental and forestry engineers, environmental consultants, and botanists, as well as other interested professionals. "This partnership offers students, environmental consultants and researchers an on-site and detailed learning opportunity in one of the country's most important native Atlantic Forest ecosystems, which, due to its advanced stage of conservation, facilitates important studies in the botany field," explained Frineia Rezende, executive manager at Reservas Votorantim.

# sep

## VALE DO RIBEIRA IS A HIGHLIGHT IN UNITED NATION'S NEW YORK EVENT

The value of the standing forest was the theme of a panel at the event "Sustainable Development Goals in Brazil - the role of the private sector", held on September 26, at the headquarters of the United Nations (UN) in New York, USA, during the World Economic Forum.

During the panel, David Canassa, director at Reservas Votorantim, presented Legado das Águas and its innovative business model dedicated to environmental asset management and shared value generation, topics included in the Sustainable Development Goals (SDG).



# oct

## VISITS BY JOURNALISTS AND INFLUENCERS

Many journalists and influencers visited Legado das Águas to learn more about the new ecotourism activities available to the public, particularly the new trails. After the visit, they published news articles in various printed and electronic media vehicles, in addition to posts on social media. On Instagram, for example, the publication of 23 photos yielded more than 6,500 interactions, reaching 400,000 people.



photo: Andrews Santana

**THE ORNAMENTAL ATLANTIC FOREST**

In another innovative landscaping project, plants produced at Legado das Águas' nursery were used in a large area of Votorantim, in Vila Leopoldina, a neighborhood in western São Paulo city. The area occupied by Metalúrgica Atlas between 1944 and 2014 is currently undergoing a major revamp, including the renovation of two warehouses in 2018. One of warehouses focuses on office spaces and the other facility, called ARCA, holds events such as the São Paulo Fashion Week (SPFW), held in October. "The partnership with Legado das Águas offers great synergy. The landscaping with Atlantic Forest plants distinguishes the project, valuing the enterprise and contributing to replenish the biome. In addition, it represents an excellent opportunity to give more visibility to the Reserve, as thousands of people attend the events held there," said Carolina Matsumoto, real estate investment analyst at Votorantim S.A. In addition to the SPFW, ARCA hosted events such as Nike Battle Force, Mercedes-Benz Night and Votorantim 100 Years.



nov

**CÓDIGO VERDE WINS THE AUTOMATION AWARD IN THE SUSTAINABILITY CATEGORY**

Código Verde (Green Code) Project ranked first in the Sustainability category of the Automation Award. Código Verde brings the use of technology to Legado das Águas' nursery. It added automation to the traceability process during plant production, thereby ensuring follow-up and guarantee of origin from seed collection at the headquarters to final consumers.

The award was created by GS1 Brasil to value the creativity and efforts of companies and professionals who invest in automation and standardization to improve business management with solutions that increase efficiency and market competitiveness. "By guaranteeing our clients that our plants have a seal of origin, we prove our commitment to maintaining the Atlantic Forest alive," declared Frineia Rezende, executive manager at Reservas Votorantim.

*"Our initiative to include the GS1 standard and QRCode technology in our plants was revolutionary. It is an innovative, unprecedented and unique project. Our nursery is meant to be an important environmental and social hub, encouraging local economic development and the conservation of this highly endangered biome." Frineia Rezende, executive manager at Reservas Votorantim*



photo: Jair Leite

Código Verde is the result of a partnership between Legado das Águas and Associação Brasileira de Automação-GS1 Brasil (Brazilian Automation Association), PariPassu, Zebra Technologies, and 3M.

**BIODIVERSITY COP, EGYPT**

In November, Reservas Votorantim, who is responsible for the management of Legado das Águas and Legado Verdes do Cerrado, attended the 14th Convention on Biological Diversity Conference of the Parties (COP), held in Sharm El Sheikh, Egypt. "In the parallel events section, we presented the projects Floresta Digital (Digital Forest) and Código Verde (Green Code), along with our partner researcher Mauro Rebelo, as well as the approach on SDGs in an event organized by professor Patrícia Iglecias, from the Law School of the University of São Paulo (USP)," said Frineia Rezende, executive manager at Reservas Votorantim. Still under the COP umbrella, Legado das Águas also attended the Tech Fair to present the Digital Forest under the topic "Technologies and Solutions for Conservation."



dec

**100 YEARS WITH MUSIC**

Shortly after the Scientific Technical Meeting, the Senai Sorocaba Jazz Philharmonic Orchestra gave a presentation to celebrate the 100 years of Votorantim, maintaining institution of Legado das Águas. "Few companies complete one hundred years. Votorantim does much more than that, it reinvents itself year after year, facing and rising to challenges. Its values and legacies endure and are examples for the entire society. Legado das Águas is one of those examples where entrepreneurship perpetuates on different fronts, now with the Atlantic Forest. This was, therefore, a moment for great celebration. Uniting art and nature made perfect sense and was a gift to all: shareholders, employees, partners and the community," said David Canassa, director at Reservas Votorantim.



**CLIMATE COP, POLAND**

Also in December, Legado das Águas attended the 24th United Nations Conference on Climate Change (COP 24) in Katowice, Poland. "During the conference we discussed the valuable environmental conservation work conducted at Legado das Águas and Legado Verdes do Cerrado and the importance of forests for global carbon stock," said David Canassa, director at Reservas Votorantim.



it was on the media

In 2018, Legado das Águas also made the headlines on regional, national and social media.

REGIONAL

**123 news items published**

**75 on the internet 42 on printed media**

**1 on the radio 5 on TV**

**valuation R\$ 3,074,973.79**

NATIONAL

**175 news items published**

**143 on the internet 24 on printed media**

**2 on the rádio 6 on TV**

**valuation R\$ 39,547,727.56**

SOCIAL MEDIA

Nowadays, building social media presence is critical to enhance brand value and increase the awareness of initiatives by the general public. "The year of 2018 was excellent for valuing what Legado das Águas has to offer: nature and excellent images and moments," said Paulina Chamorro, responsible for creating social media content. "The change in Facebook's algorithm forced us to redesign our strategy. We chose to rely entirely on Instagram, which yielded excellent results. Between January and year-end, views grew 156%. We invested a lot on videos and stronger engagement through the stories feature," added Chamorro. ✨



**452 posts**  
**112,889 interactions**  
**175,321 followers**  
**156,479 in 2017**



**391 posts**  
**94,547 interactions**  
**13,921 followers**  
**4,049 in 2017**

**156% growth**





# SDG REACHING BEYOND COMMITMENT

by Frineia Rezende, executive manager at Reservas Votorantim

In 2015, the UN launched the 17 Sustainable Development Goals (SDG) (figure 1) to determine the global course of action and commitment not only to protecting the environment and facing climate change, but also to eradicating poverty and promoting prosperity and well-being for the almost nine billion human beings who will inhabit the planet by 2030.

## THE 17 SUSTAINABLE DEVELOPMENT GOALS (SDG) UNDERLINE THE UN'S AGENDA IN FAVOR OF ECONOMIC GROWTH WITH SOCIAL WELL-BEING AND RESPECT FOR THE ENVIRONMENT

Despite constantly having to face global economic crises, many people still do not understand the direct relationship between the economy, social well-being and the environment. Since their launch, the SDGs have helped an increased number of people and governments understand this intricate relationship.

In 2016, Johan Rockström, chairman of the EAT Advisory Board, and Pavan Sukhdev, founder and CEO of Gist Advisory, presented an interesting interpretation of the SDGs at the opening of the EAT Forum. This interpretation, named wedding cake (figure 2), emphasizes the importance of having as base protected and functional ecosystem services (and natural resources).

figure 1



The understanding we may grasp from this premise is that social development is not feasible without conserving and adopting a balanced use/distribution of natural resources; and, consequently, there is no prosperity (economic development) without social equity. The interdependence is clear.

### US\$109 BILLION IN ASSETS TO BE DISCOVERED IN THE FOREST, IF WE PROTECT BIODIVERSITY

For decades, biologists, ecologists, climatologists, as well as other researchers who use environmental data as the basis for their research have been pointing out that large-scale impacts may compromise the access to natural resources at levels that could accelerate social and, consequently, economic inequality. The Intergovernmental Panel on Climate Change (IPCC), created in 1988, has been demonstrating how climate changes affect global temperature and negatively impact, for example, agricultural crops, forests and oceans.

As for biodiversity, current human development comes from approximately 0.1% of known species. Nevertheless, we know approximately two million species, and estimates suggest that there are 10 to 100 million. Deforestation, climate change, water shortage and habitat loss extinguish about 15,000 species per year. In addition, fifty-seven percent of all US medical prescriptions derive from biodiversity components.

The value of active ingredients not yet discovered in tropical forests is estimated at US\$109 billion – in other words, the extinction of biodiversity also leads to financial loss.

Recent data show that many of the species currently living in the tropics will be unable to survive in these areas when climate becomes warmer, as they cannot adapt to higher temperatures. Countless species will probably become extinct and those that can relocate will migrate permanently. Species living in temperate climates will tend to migrate to the poles, while tropical species, would relocate to temperate areas. The same reasoning also applies to the oceans.

### NO FOREST, NO WATER

Agricultural production and fishing as we know will pose a virtually impossible challenge. Forests, in turn, not only play an irreplaceable role in global temperature control, but are also responsible for rain in several territories. Without forests, there is no water; without water, there is no agriculture – which, in turn, is also affected by pollination shortage, an ecosystem service provided by bees, bats, butterflies and some bird species. In short, without biodiversity, there is no agriculture, and without agriculture, we cannot feed people. I am particularly referring to small-scale, family agriculture, which accounts for approximately 70% of the food consumed worldwide, especially vegetables and fruits.

Still addressing biodiversity, agriculture and financial resources, approximately 35% of global agricultural production depends directly on pollinators, mostly bees. The disappearance of bees (colony collapse disorder) in the US alone caused a loss of more than US\$14 billion between 2006 and 2008, whereas in the last six years, North-Americans spent US\$2 billion to replace 10 million beehives. In addition, it is needless to say, we love honey.

The UN estimates that 2.7 billion human beings will have no direct access to water by 2025; currently, one billion people already face that problem. Furthermore, over the past 50 years the world's population has tripled, while water consumption recorded a six-fold increase. Developing countries also share alarming data; their water consumption is expected to increase by up to 200% in 25 years.



figure 2

Besides that, agriculture is the sector with the highest water consumption. How will it be possible to feed almost 10 billion people by 2050? Considering this scenario, the industry that feeds us will be competing with us for water, the same water we need to drink every day.

Adapting to these conditions will happen in a blink of an eye for the planet, but not for us, human beings, nor for the rest of biodiversity. In our case, adapting also means changing harvesting and production processes and adjusting to water shortage and the setbacks in agriculture.

If this scenario seems catastrophic for our species, then we had better work to avoid reaching that stage. SDGs 6, 13, 14 and 15 specifically address the basic topics for maintaining ecosystem services, which include climate regulation, water availability, and soil quality, among other aspects. That is a commitment to our survival. Attaining all other goals depends on partnerships (SDG 17) that will ensure compliance with these four goals, thus leading to the achievement of the other 13.

The proverb says that nature is the answer to all human problems. How about protecting natural resources, not only to solve problems, but also to achieve goals and allow humanity to truly thrive? 🌸

# THE MOST COMPREHENSIVE tropical forest DATABASE

by Mauro Rebelo\*

THE DEVELOPMENT OF A NEW BIOPROSPECTING TOOL ENABLE THE CREATION OF A LIBRARY WITH VALUABLE INFORMATION ON MORE THAN 100 ATLANTIC FOREST PLANT SPECIES

Certain estimates suggest that everything that was created by society comes from 0.01% of the existing species. Imagine... what would we be able to create if we managed to prospect the other 99.9%?

The Digital Forest project seeks the answer to this challenging question. In other words, the project's goal is to accelerate the bioprospecting and development of new products for society. When we launched this project in 2015, we did not exactly know what we would accomplish. Nevertheless, we knew that we could not settle for what we had at the time. We were restless with the situation on hand because the forest's sustainable exploitation using low technology generated low value-added products (such as fruits, seeds, grains). These products were not capable of generating the volume of revenue we needed to compete with the exploration economy or even to maintain the forest.

The high-tech tools we had at our disposal enabled us to begin sequencing the DNA of Legado das Águas' species in search of enzymes and proteins of interest to the cosmetics industry. We developed a new proprietary bioprospecting methodology that is automated and scalable, unlike the methods used in Costa Rica and Brazil in the late 90s. As a result, over the past three years, we developed the most comprehensive tropical forest database ever created, which we called "Floresta Digital" (Digital Forest).



digital forest

## NEW BUSINESS MODEL

The first product born under the Digital Forest umbrella was an enzyme to modify limonene, an orange juice industry byproduct with low added value that could be transformed into a wide range of more valuable byproducts. Last year, our laboratory produced 500 microliters of alpha-terpineol from limonene, thus conceptually proving the technology. However, the high degree of challenge posed by the technical aspects of that technology still seemed less demanding than the obstacles yet to be overcome to ensure the project's economic viability.

The lack of a clear bioprospecting business model jeopardized the interaction with potential customers. We then decided to adopt the Lean Startup methodology to identify the value propositions for our clients and create a new business model. We interviewed the most relevant market players and many venture capitalists in Brazil and abroad, doing what the method calls "client discovery."

We identified the need to include the extracts of the plants we had been studying in the Digital Forest, as well as their phytochemical composition and the screening of matrices. We sequenced the first complete genome of an Atlantic Forest tree and studied the business models currently adopted by the pharmaceutical industry as well as the peculiarities of the cosmetics industry.

**“The promise to partner with one of Brazil's most prominent pharmaceutical companies and one of the world's largest cosmetics companies proves that we are on the right track.”**

*\*Mauro Rebelo is a partner-scientist of Bio Bureau Biotecnologia, partner of Legado das Águas in the development of new technologies for the forest, and biophysics professor at the Federal University of Rio de Janeiro (UFRJ).*

We concluded that biotechnology knowledge was more valuable when associated with the forest and vice versa. The promise to partner with one of Brazil's most prominent pharmaceutical companies and one of the world's largest cosmetics companies proves that we are on the right track.

The Digital Forest is now making progress towards full automation with the use of a block chain platform to record all product development phases and artificial intelligence algorithms in order to validate the connections identified between genes and the environment. Our goal is to create a library with more than 200 species, including traceability data, access to biodiversity, as well as species' genetic and phytochemical profile by the end of 2019. We are now certain of one thing: these early results are only the beginning. Many new developments are yet to come. ✿





# Environmental Education

## A YEAR FULL OF ACTIVITIES

One of the most recognized environmental slogans says that if we want a better planet in the future, we need to transform today's children into true advocates of nature. This way, when they grow up, they will be responsible for maintaining and conserving it.

Legado das Águas adopted this premise in 2016 and, in 2018, the institution intensified its efforts towards organizing and participating

in various initiatives related to environmental study and education. "Last year, the number of basic education and high school units with an interest in visiting Legado das Águas increased, as it also grew the number of partnerships with other institutions," said Elaine Moura, environmental education analyst.

**We present below some of the main activities conducted:**

### 3 water

On March 20-23, during the **week of the World Water Day**, approximately 1,100 students from a Juquiá municipal school, a state school and four Tapirai municipal schools attended lectures related to the topic.

On the 26th and 27th, in celebration of the anniversary of the city of Juquitiba and the **World Water Day**, the **Floresta Viva (Living Forest)** exhibition was organized. Approximately 300 children attended the lecture given by photographer Luciano Candisani. In total, approximately 400 people visited the exhibition.

### 5 biodiversity

On May 8, in celebration of the **Environment Week** and in partnership with the Environmental Department of Piedade, the city's Technical School (ETEC) hosted the lecture **Serpentes da Mata Atlântica (Snakes of the Atlantic Forest)**, presented by Giuseppe Puerto, director at the Butantan Institute.

On the 16th, celebrating the **Biodiversity Day and the Atlantic Forest Day**, the same lecture was held at EMEF Profª Enir da Silva, in Tapirai.

On the 17th, also in celebration of the Biodiversity Day and the Atlantic Forest Day, Giuseppe Puerto spoke at EMEF José de Moura Glasser, in Tapirai.

### 6 the environment

On June 11 and 12, students from the basic education municipal schools Profª Benedito Pires da Cunha and Vereador Vanderlei Júlio da Costa, both in Tapirai, attended a lecture on **the importance of biodiversity for the Atlantic Forest**.

On the 19th, celebrating the **Environment Week** and in partnership with the Registro Environmental Police, Legado das Águas held a lecture at Escola Serraria.



### ESTUDO DO MEIO (STUDYING THE ENVIRONMENT)

In 2018, one of the most important achievements was the publication of a detailed catalog featuring the environmental education activities in Legado das Águas' portfolio. "The goal of the publication is to show all the activities that we offer using a simple and didactic language. We also point out which topics should be addressed when studying the environment," said Elaine de Moura. The catalog is available for download on Legado das Águas' website: [www.legadodasaguas.com.br](http://www.legadodasaguas.com.br)

### ENVIRONMENTAL EDUCATION ACTIVITIES

**Topics:**

**Water, Biodiversity and the Atlantic Forest**  
13 municipal schools, 2 state schools,  
1 technical school, 27 lectures and more than  
3,000 students involved.

**Cities:**

Juquiá, Tapirai, Miracatu, Piedade and Aluminio.

**Topic: Waste and Energy**

(partnership with Votorantim Energia)  
EMEIF Escola Serraria - Juquiá,  
with 50 students involved.

**Partner institutions:**

Tapirai Department of Education, Juquitiba Department of Education and Culture, Registro Environmental Police, Butantan Institute, Manacá Institute, COMTUR, ACBRA, CBA and Votorantim Energia.

### 7 waste management

On July 27, we held an interaction activity with Legado das Águas' employees. The Reserve's employees responsible for separating organic waste attended a **training on worm farm management**.



### 8 symposium

On August 14, 15 and 16, we held the **First Tapirai Environment Symposium** in partnership with the Municipal Department of Education. Legado das Águas' partner researchers and community members discussed various environmental issues during the three-day event. At the time, we also set up the Floresta Viva (Living Forest) exhibition with images by photographer Luciano Candisani.

### 9 tree

On September 5, on the wake of the **Tree Day** celebration, two Tapirai basic education municipal schools hosted the lecture **Metamorfose das Borboletas (Butterflies Metamorphosis)**, in partnership with the Butantan Institute.

### 10 conservation

On October 11, Bairro Alvorada Municipal School, in Miracatu, hosted the lecture **Importância da Conservação da Mata Atlântica para a Biodiversidade (Importance for Biodiversity of Conserving the Atlantic Forest)**.

On the 13th, Legado das Águas was present at Feira de Profissões (Careers Fair), invited by Faculdade Anhanguera, a college in Sorocaba. The fair welcomes state high school students in search of information on which professions to pursue. In the environmental area, one of the event's highlights was the 360° glasses, offering participants an immersion in Reserve.

# TIME TO REAP good fruit

AFTER TWO YEARS OF ACTIVITIES, THE NURSERY ENTERS A MATURE PHASE REGARDING THE PRODUCTION OF PLANTS FOR LANDSCAPING AND REFORESTATION PROJECTS

How about taking the beauty, aesthetics and diversity of Atlantic Forest plants to the urban environment? This is one of the main goals of Legado das Águas' native plant nursery, which produces more than 100 plant species from matrices found at the Reserve's more than 31,000 hectares.

As of 2016, several species found at Legado das Águas have been studied and used for landscaping and reforestation projects. In 2018, for example, plants produced at Legado das Águas were used on the stage of the FRU. TO Seminar held in January, in addition to featuring the landscaping project of a sales booth in a major real estate development of Gamaro, launched in southern São Paulo city. "It was a success. We used plenty of carqueja (Baccharis trimera). Many visitors enjoyed learning that the species comes from an Atlantic Forest reserve," explained Ricardo Cardim, responsible for the landscaping project. Another initiative held in São Paulo gathered around 1,600 ornamental plants of several species on Calçada de Todas as Cores (Sidewalk of All Colors), during the 2018 Casacor exhibition.

These initiatives are helping reverse landscaping practices. Oddly enough, although Brazil is one of the countries with the highest biodiversity in the planet,

approximately 90% of ornamental plants are exotic; in other words, they come from other countries. Fortunately, the Legado das Águas' nursery began to change this scenario as the specimens produced there began to grasp the attention of various professionals

## QUALITY, PRODUCTION AND MANAGEMENT GAINS

"In 2018, we perfected the existing processes, created new ones and reaped extremely positive results, in addition to achieving excellent levels of quality, production and management to leverage production and the business in 2019," said Silas Cezar da Silva, production coordinator. The nursery's production system overcame technical and operational challenges. It is ready to produce and offer plants that meet the standards demanded by landscapers.

Numbers show that the nursery's maturing process is well advanced. In 2018, it produced more than 114,000 plants among pots and tubes, approximately 20,000 of which were pots, to be used in landscaping projects and as interior design ornamental plants. This is a demanding market, and we are ready to meet its needs. Considering that the nursery has annual production capacity of 200,000 plants, we still have a lot to grow.

Learn about some of the species grown at the nursery:

- 1- Carqueja (Baccharis crispa)
- 2- Clúsia (Clusia criuva)
- 3- Orelha-de-onça (Tibouchina heteromalla)
- 4- Cambuci (Campomanesia phaea)
- 5- Juçara (Euterpe edulis)



## OTHER 2018 HIGHLIGHTS

### Automation Award, Sustainability category

The award promoted by GS1 recognized the Código Verde (Green Code) Project, developed through a partnership between Legado das Águas, Associação Brasileira de Automação-GS1 Brasil (Brazilian Automation Association), PariPassu, Zebra Technologies, and 3M. The Código Verde Project consists of automating the traceability of plants, from the collection of seeds (or vegetative propagation material) from plant matrices to the final sale, thereby ensuring genetic origin, nursery origin and control of all the steps along the production process.

### Mini-forest

In 2018, the nursery launched a novelty: the mini-forests, name given to a product consisting of a core plant in a small pot with several other plant species not usually appreciated or even regarded as "weed", but which have an important role in the forest's cycles of life.

### Porto Raso Acclimatization Yard

To expand production capacity and meet the needs of the landscaping market, it was necessary to create a structured and larger yard, where we could produce potted plants - that need more space than tube plants-, in addition to a first-class irrigation system. With that in mind, the Porto Raso Yard became operational in 2018, with capacity for up to 16,000 potted plants. The yard has a composting area, drip irrigation system - which includes water tanks, pump houses, hoses and nozzles-, a central warehouse and an operational center equipped with kitchen, bathrooms, office and working area.

## 2019 CHALLENGES

- develop technologies to offset plant metabolism slowdown in winter months, whether during germination or plant growth;
- improve alternative production systems for certain special and rare species, such as *avenca majestosa* (species of fern) cambuci (Campomanesia phaea), bromelias, and ferns;
- implement a logistics solution especially for supplying potted plants and a yard in the Greater São Paulo.

# MEETING TO DISCUSS sustainable landscaping

The year of 2018 featured another important achievement, the holding of Legado das Águas' 1st Landscaping and Atlantic Forest Meeting at the end of November. The goal was to gather industry professionals and the Reserve's technical team to discuss joint initiatives that could be undertaken to raise awareness among community members and market participants to generate business opportunities and strengthen the production chain, focusing on the use of native plants.

"Legado das Águas produces a large number of native species with state-of-the-art technology. This meeting enabled us to show that we can diversify the market and the landscaping sector by offering improved and more economically viable alternatives that will encourage environmental conservation," said David Canassa, director at Reservas Votorantim. ✿



More than

114,000 plants produced

Approximately 20,000 were pots to be used in landscaping projects and as interior design ornamental plants

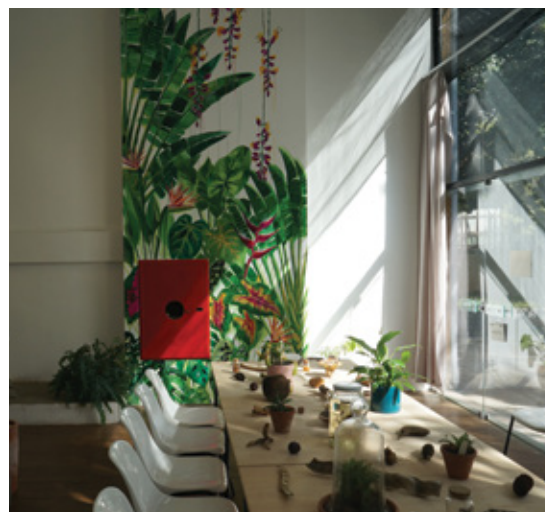
# HOW botany BECOMES ART IN THE URBAN ENVIRONMENT

by  
Anderson Santos\*

Recent decades represent a milestone in the history of the Planet when it comes to the interaction between humans and plants, particularly if these living beings interact in urban centers. The architectural and urban layout in Brazilian capitals and other urban centers has been causing those subject to this millennial interaction to drift apart, particularly after the verticalization of cities. People living in apartments seldom realize that they are being deprived of certain elements that have always coexisted with humans because of this architectural layout, such as direct sunlight and wind.

A simple question elucidates the severity of this lack of interaction with basic elements of nature: on which side of your home does the sun rise? Few people living in urban centers can give a fast answer to that question. When it comes to plants, the gap is even wider and, although vegetables are the basis of human food, someone drinking a beer would rarely realize that many plants are involved in what is inside the glass. It is hard to find people in a metropolis who know the species of trees in their neighborhood.

Countless initiatives and programs are created with the goal of restoring the connection between the urban population and plants. All over the world, initiatives to join urban agriculture and city life prove the need to restore the connection with plants on a day-to-day basis. These efforts show interesting results about the perception of people regarding the learning experience that comes from the contact with plants and their observation. The reconnection between urban population and plants can be perceived through another contemporary phenomenon - the Arts.



## FABRIC PRINTS

Hard working and creative minds have used art as a tool to create a connection between humans and plants. The urban environment is surrounded by artistic representations that became known as botanical art. They are the expression of graffiti artists, tattoo artists, painters, illustrators, and designers specialized in portraying plants. In addition, the inclusion of plants in the creative universe has evoked the rescue of artisanal processes left aside by previous generations, such as fabric dyeing using plants (botanic printing in which plants are used as fabric pattern), the preparation of pigments and natural dyes from plants, artisanal photographic processing (in which plants can be the basis for processing emulsions), and accessing the traditional scientific botanical art (in which watercolor painting is the main technique used to faithfully reproduce live models).



## EUROPEAN TRADITION

The involvement between commercial enterprises and botanical arts is remarkable. The new residential buildings show apartments decorated with nature-inspired paintings, engravings and walls on balconies and indoor areas, suggesting that it is possible to live side by side with nature. Even the First Notary Public Office of São Paulo decorated its inside walls with plants and a graphite covering all the walls in areas with access to the public.

Europeans' relationship with plants is stronger and the botanical arts universe is expressed more abundantly in urban areas. In London, during spring and even in other seasons, store windows and building façades open space for floral arrangements and paintings. The relationship between the English and botanical art is old, mainly influenced by the fact that England is home to the world's largest botanic garden, the Royal Botanic Gardens - Kew, which



## PROCESSES

**The inclusion of plants in the creative universe has evoked the rescue of artisanal processes left aside by previous generations.”**

lodge a Gallery opened in 1882, dedicated to displaying the botanic art of Marianne North, an English naturalist who lived in the 19th century. Marianne North visited several countries and traveled through all continents, painting the flora and natural landscapes. She created more than 800 paintings. Between 1872 and 1873, she lived in Brazil and painted several Brazilian plants.

## LEGACY OF PURE ART

The Atlantic Forest is a source of inspiration for art, design and technology, and its living elements are important references sought by many creators and artists in urban areas. Legado das Águas is a living school of pure art, full of references and ideas created by nature. An example of that was "Expedição Criativa na Mata Atlântica" (Creative Expedition in the Atlantic Forest), promoted by the Botany School. The expedition mainly focused on encouraging participants' creativity based on the perceptions and observations yielded from the Atlantic Forest. ✨

*\*Anderson Santos is a biologist, with a Master's degree in botany from the São Paulo Institute of Botany. He is founder of the Botany School and presents the Terra Brasil nature show, broadcast on Animal Planet, Discovery and Netflix.*

# IN PURSUIT OF THE ATLANTIC FOREST giants

RICARDO CARDIM AND TWO FRIENDS TRAVELLED ACROSS MORE THAN 12,500 KILOMETERS TO REGISTER, THROUGH TEXT AND PHOTOS, WHAT HAPPENED WITH ONE OF BRAZIL'S MOST ENDANGERED BIOMES. THEY IDENTIFIED SECULAR AND IMMENSE TREES IN REMNANT AREAS. ONE OF THE LARGEST SPECIMENS WAS FOUND AT LEGADO DAS ÁGUAS

As a child, botanist Ricardo Cardim had a great curiosity: knowing how the original Atlantic Forest was. "I wondered if the flowers and the trees I saw were the same as those in the original forest," argued him. Over time and after decades of study and research, he began to better understand the matter and comprehend the reasons and mechanisms leading to the most relevant processes that almost destroyed one of the largest and most threatened Brazilian biomes.

"Although there are several books on the Atlantic Forest, most only adopt a contemplative approach. The area lacked a piece of work telling the forest's story and revealing what happened to it over time," explained Cardim.

This urge to tell the story of the Atlantic Forest through photos and text remained vivid in his mind for a long time until, with the support of several sponsors (including Fibria Celulose and Reservas Votorantim), the idea of producing the book came to life. "At first, in 2017, it came to life as a catalog for an exhibition held at Museu da Casa Brasileira, in São Paulo," recalled Ricardo Cardim.

## EXPEDITIONS TO REMNANT AREAS

Subsequently, the catalog materialized into the book *Remnants of the Atlantic Forest: the great trees of the original forest and their traces*. The book gathers approximately 540 photos along its 344 pages, some of great historical value. According to Ricardo Cardim, during his field expeditions he worked with biologist Luciano Zandoná and photographer Cássio Vasconcelos to gather an extensive array of older images portraying the transformation of the forest due to human action in the last few centuries. For three months, the three of them traveled across approximately 12,500 kilometers, covering the states of Santa

“At Legado das Águas, we found a monumental fig tree (*Ficus gomelleira*) with enormous tabular roots that do not allow a comparative measurement. Nevertheless, it can be considered one of the largest and currently most known in the genus in the biome.”

Ricardo Cardim, botanist



Large Atlantic Forest trees

Catarina, Paraná, São Paulo, Espírito Santo, Bahia and Alagoas. On these visits to the remnant areas of the Atlantic Forest that originally covered approximately 1.3 million square kilometers, they spotted 90 secular trees, some of which more than 60 meters high. These forest giants still stand in the approximately 245,000 original forest fragments that survived the devastation caused by humans in the last centuries - nowadays, vegetation remnants cover only around 12% of the original area. It is a sad and emblematic portray of what happened to the biome that is home to a rich diversity of species, many of which are still unknown to science. ✿

At Legado das Águas, we found a 40-meter high fig tree spread through an area of 21.4 meters in circumference, the tree with the largest diameter among all specimens catalogued for the book.

In Ubatã (Bahia state), we located a 64-meter high specimen of jequitibá-rosa (Cariniana legalis).



### BOOK INFORMATION

*Remnants of the Atlantic Forest: the great trees of the original forest and their traces*

Author: Ricardo Cardim

Number of pages: 344

Issue: Portuguese-English

Format: 25.5x33.6 cm

Cover: hard cover

Suggested Price: R\$ 150

Editora Olhares

# Experiencing THE FOREST

HIKING, MOUNTAIN BIKING, KAYAKING, BIRDWATCHING ... LEGADO DAS ÁGUAS IS OPENED TO THOSE WANTING TO EXPERIENCE THE NATIVE FOREST

Many people have been trying to reconnect with nature, not only as one of the main ways to escape large cities' stressful routine, but, above all, due to the physical and psychological benefits offered by being in touch with the forest.

Encouraged by this trend, more people have been embracing ecotourism and adventure tourism. In fact, the growth in this type of tourism is a global trend. The adventure tourism market alone responds for a financial volume worth US\$683 billion (almost R\$3 trillion) worldwide. According to the Brazilian Ecotourism and Adventure Tourism Trade Association (Abeta), in Brazil this market's annual growth averages 15%.

## IMMERSION IN THE FOREST

Different from what most people imagine, you do not always have to go far from major urban centers to experience an immersion in the Atlantic Forest. Legado das Águas expanded its portfolio and created new activities just over two hours away from São Paulo for those willing to experience this biome.

The options include trekking and birdwatching (including many rare species). However, it does not stop there! Mountain bike lovers can enjoy the Cachoeira da Fumaça - Porto Raso trail, which runs for 41.6 km with elevation gain of 2,431 meters. Canoeing enthusiasts can take a moderate-effort route that is nine kilometers long. "In addition to strengthening the options we already offer, in 2018, we made great progress launching new products," said William Mendes de Souza, a sports and ecotourism analyst.

One of the most important novelties is the inauguration of the Canta Galo - December Crossing, which runs through slopes and summits at Serra de Paranapiacaba, allowing visitors to enjoy enchanting landscapes, various waterfalls and watercourses, as well as the region's fauna and flora diversity. The activity was launched in July 2018 with the participation of mountaineers, journalists, and influencers, among other professionals with experience in long hikes amidst the forest.

The Crossing consists of two trails. The first, **volta menor (shorter trail)**, is 12-km long and can be completed in about eight hours. The second, **volta maior (longer trail)**, is 23-km long, involving a two-day adventure which includes spending one night at the forest.

We established another important partnership in 2018, with WWF-Brasil, thanks to which the Canta Galo - December Crossing is now part of Caminho da Mata Atlântica (Atlantic Forest Trail). The Atlantic Forest Trail combines several long trails (*learn more in the article published on pages 26 and 27*).

## BIRDWATCHING

In 2018, Legado das Águas also received dozens of birdwatchers urging to spot some of the 286 catalogued species, most of which endemic to the Atlantic Forest. Note that 33 of those are endangered species. One of these endangered species is the araponga or bellbird (*Procnias nudicollis*), which falls into the "vulnerable" category. With any luck, birdwatchers can spot species such as the uru or spot-winged wood quail (*Odontophorus capueira*) and gavião-de-penacho or ornate hawk-eagle (*Spizaetus ornatus*), while species such as the saíra-sete-cores or green-headed tanager (*Tangara seledon*) and the sanhaçu-de-encontro-azul or azure-shouldered tanager (*Tangara cyanoptera*) are frequently found even in communal areas of Legado das Águas ❀



photo: Jefferson Otaviano

**This is the most preserved Atlantic Forest area I have ever visited. In terms of conservation status, I've never seen anything like it."**

*Maria Helena de Almeida (Public Use Coordinator of the Ipanema National Forest of the Chico Mendes Institute for Biodiversity Conservation), participant at the event to launch the Crossing*



## SAFE ADVENTURE

Ensuring visitors' safety of is one of Reservas Votorantim's main concerns. With that in mind, in 2018, the team of monitors attended training events on topics such as Poisonous Animals, in partnership with the Butantan Institute; and First Aid in Remote Areas and in Waters of Rapids, with Nols and Rescue 3 Brasil.

The Manacá Institute held training sessions for monitors available to the public and residents of the region. "We created a course on long trails, based on the rules set forth by the Brazilian Association of Technical Standards (ABNT). We included in the grid topics related to compliance with the standards focused on long trails and involving overnight stay and camping in the wild," explained mountaineer Pietro de Oliveira Scarascia, vice-president of the Manacá Institute.

## PARTNERSHIP WITH JURUPARÁ STATE PARK

At the end of 2018, Legado das Águas entered into an Authorization of Use Term with Jurupará State Park (PEJU). Thanks to this partnership, ecotourism itineraries integrating Legado das Águas and PEJU will be available as early as 2019 to adventurers visiting the Atlantic Forest - activities such as biking, hiking, visits to waterfalls and whitewater rafting on the Juquiá River will be offered as of April 2019. One of the options will be a cycling tour from PEJU to the base of Porto Raso, at Legado da Águas, in a route created in partnership with Fundação Florestal (Forestry Foundation). In total, the route runs through 53 kilometers with elevation gain of 2,615 meters.

- In 2018, Legado also entered into the following partnerships:*
- *Shimano: participation in Pedal das Capivaras (Biking with the Capybaras), whose goal is to draw attention to the depollution of the Pinheiros River;*
  - *Decathlon: participation in Vital Sport, a 24-hour simultaneous world event dedicated to practicing and experiencing sports;*
  - *Senac Registro: technical visit by students enrolled in the tourism course subject "Guia de Condutores" (Conductors' Guide).*



# THE ATLANTIC FOREST trail AND LEGADO DAS ÁGUAS

by Anna Carolina Lobo and Felipe Feliciani\*

In 2016, the U.S. National Park Service - the world's oldest and most visited protected areas system - celebrated its 100th anniversary. Year after year, approximately 310 million people visit U.S. parks and, at the time, to celebrate the date, then President Barack Obama highlighted: "It is not possible to understand that (Yosemite Falls) on an iPad, on television or even in an oil painting. You need to come here and breathe yourself... you get transformed just by being here."

Even in the U.S., where parks are extremely valued by society, visitation is stagnant and the financial and human resources to manage these unique areas are becoming scarce due to, among many other factors, weakening popular support - especially from new generations. Unfortunately, this same phenomenon has been noticed in many other countries.

A giant by own nature, Brazil is the country with the highest biodiversity in the world, with 150 million hectares of protected areas created along 81 years and... 10 million visitors. The scarcity of resources to manage these areas is even greater than in South American neighboring countries.

THE CREATION OF A MORE THAN 3,000-KILOMETER TRAIL FROM RIO GRANDE DO SUL TO RIO DE JANEIRO, PASSING THROUGH 70 CONSERVATION UNITS, IS UNITING MORE THAN 30 PUBLIC, PRIVATE AND CIVIL SOCIETY INSTITUTIONS

## INFLUENCING NEW GENERATIONS

We must act differently. We must encourage new generations' awakening to the beauty of our national parks and the benefits reaped when in contact with nature. In short, we need to foster broad popular support.

This context gave birth to Movimento Borandá, incubated by WWF Brasil. Created to bring the Atlantic Forest to people's lives and people to the heart of the forest, the initiative embraced Caminho da Mata Atlântica (Atlantic Forest Trail), with the goal of connecting protected areas and people along the breathtaking Serra do Mar (mountain range in Southeastern Brazil).

Conservation Units located at Serra do Mar are the closest contact millions of Brazilians have with nature. From hiking to observe the incredible diversity of the Atlantic Forest, to discovering ancient cultures, there are countless opportunities to learn from our protected natural areas along the stretches of Serra do Mar. This represents an extraordinary opportunity to bring people closer to the Atlantic Forest, thus generating a sense of appreciation and protection inspired by other countries' best practices, exemplified by the Appalachian Trail, in the United States, and Rota Vicentina, in Portugal. We want people to experience the forest and share their knowledge and discoveries through this trail.

The Atlantic Forest Trail, running through more than 3,000 kilometers from Rio Grande do Sul to Rio de Janeiro, is under construction to connect trails, paths and crossings (many of which already exist), underlying the importance of protected areas not only to biodiversity conservation, but also to the regional economy, leisure, and health.

The Atlantic forest Trail is an initiative of many partners, including public and private natural protected areas, mountain clubs and federations, hiking groups, ecotourism and adventure tourism guides and companies, as well as volunteers, among other interested parties. These partners gather more than 30 public, private and civil society institutions. In more than four years of articulation, the project has engaged more than 1,500 volunteers from the five states involved, working to connect more than 70 conservation units.

In 2018, for example, the project organized more than ten community joint efforts related to trail management and signaling, with more than 400 kilometers of trails available for visitation. One of the most important routes is the nearly 23-km long Canta Galo - December Crossing at Legado das Águas, which includes the first stretch opened for public use on a private property. The trail runs through an area with lush Atlantic Forest vegetation, featuring waterfalls and unique attractions.



**"The nearly 23-km Canta Galo - December Crossing at Legado das Águas is the first stretch opened for public use on a private property. The trail runs through an area with lush Atlantic Forest vegetation, featuring waterfalls and unique attractions."**

## INSPIRATION FOR NEW OWNERS

The partnership with Legado das Águas shows the importance of strengthening the ties between the public and private sectors. It is a good example for the entire country, inspiring new owners to join this virtuous engagement and conservation chain. This type of partnership is also of utmost importance to strengthen the tourism production chain, encouraging local initiatives focused on sustainable tourism by creating a collaborative environment among different players and new income-generating alternatives based on green jobs.

We are here for the same reason - because we love our Atlantic Forest. In a joint effort we can greatly impact the places that matter the most, connect people and inspire future generations by strengthening not only our connection with these unique places, but also our shared responsibility to conserve them for future generations.



The partnership with Legado das Águas is certainly of great significance to strengthen people's mobilization and engagement with the outdoors, showing the relevance of nature in our lives and, consequently, expanding the network in favor of the appreciation and protection of the Atlantic Forest. Borandá! ✨

\*Anna Carolina Lobo acts as coordinator of Programa Marinho e Mata Atlântica (Sea and Atlantic Forest Program) of WWF-Brasil. Felipe Feliciani is conservation analyst at WWF-Brasil.



# Vulnerable Species

Just like various plants and animals that live in the Atlantic Forest, the channel-billed toucan is also listed as a vulnerable species. This photograph was taken by Luciano Candisani at Legado das Águas.

# Photography

## AT THE FOREST by Luciano Candisani



IMAGES PRODUCED AT LEGADO DAS ÁGUAS ATTRACT PUBLIC FOR PHOTOGRAPHY COURSES

*The Photography at the Forest initiative is in its seventh edition and has already taken to Legado das Águas approximately 100 amateur and professional photographers from 12 Brazilian states*

Four years ago, I initiated the Floresta Viva (Living Forest) project with the goal of generating extensive photographic documentation of Legado das Águas' protected forest areas. The main idea was to create a visual narrative composed of images capable of showing, in an effective and comprehensive manner, the ecosystem's excellent conservation status in the 31,000 hectares of the Reserve, both in terms of vegetation coverage and Atlantic Forest endemic fauna. The broad dissemination of this information could earn essential subsidies to all initiatives under development at Legado das Águas.

These images capable of conveying information and enchanting were captured due to the development of innovative remote photography techniques, such as the disguised studios set up at the forest, thanks to which elusive animals (name given to animals rarely spotted by humans) trigger their own photos when detected by infrared sensors connected to high resolution cameras (which, for example, can identify a tick on a jaguar's body). Likewise, professional underwater photography equipment was used at the Reserve's rivers, yielding an unprecedented perspective of these Atlantic Forest environments.

### INTERNATIONAL REPERCUSSION

Thanks to these techniques, many emblematic images captured at Legado das Águas' forests were and are still being exhibited at relevant events worldwide, as well as in widely broadcast vehicles, exhibitions, scientific journals and institutional disclosure materials. An example of that is the albino tapir photo sequence - the first record of an albino specimen of this species in the wild. In 2015, the images earned space in the international edition of the *National Geographic* magazine, whose audience totals 40 million readers worldwide. The repercussion was enormous. In Brazil, the images were featured in some of the most-watched television shows. The albino tapir is now a symbol of the city of Tapirai (in São Paulo state) thanks to the visibility gained by the photos in major media vehicles.

The repercussion of the images captured under the Floresta Viva project also caught the attention of photographers and photo enthusiasts interested in nature. This allowed me to create a photography course focused on the conceptual and technical peculiarities of photography in tropical forests. In a

five-day experience at the Reserve, I share with participants my creative motivations and their technical demands, in the context of the documentary project under development at Legado das Águas called *Fotografia na Floresta* (Photography at the Forest). The course is an experience to inspire and guide eyes eager to interpret the still unknown world concealed by the shade of tropical forests.

*Fotografia na Floresta* is in its seventh edition and has already brought to Legado das Águas approximately 100 amateur and professional photographers from 12 Brazilian states, including environmental experts linked to important national media vehicles, such as Herton Escobar, from the newspaper *O Estado de São Paulo*. Escobar attended the fourth edition of the course and, inspired by the images produced by the studios set up in the forest, prepared a special article on the "Invisible Fauna" of the Atlantic Forest.

The article hit the headlines through the pages of the *Estadão* newspaper and on a permanent Internet portal (<http://bit.ly/fauna-invisivel>). The work, vastly illustrated with my photographs from Legado das Águas' image bank, won the 2017 Petrobras Journalism award, under the Innovation category.

The experience gained in the photography course also allowed me to propose measures that improved one of the Reserve's most important trails, making it easier and safer for visitors. The challenge was to manage Trilha Dezembro (December Trail) without altering its scenic beauty and originality. Users of different visitation modalities approved the new layout.

Inspired by the Floresta Viva project and its ramifications (such as the *Fotografia na Floresta* course), I continue to seek innovative ways to use photography as an effective conservation and sustainable development tool. 🌸

*'Luciano Candisani is a biologist and photographer for National Geographic magazine, among other publications. He won several international awards, such as the 2012 Wildlife Photographer of the Year*



# THE PRIVATE SECTOR IN FAVOR OF ENVIRONMENTAL protection

In 1990, two years before the iconic Rio-92, an event that became a milestone for global environmental conservation, the Boticário Group Foundation was created by inspiration of Miguel Kringsner, founder of O Boticário and current chairman of the company's Board of Directors. "We began operating supported by other institutions' initiatives and became one of the main funders of environmental projects in Brazil," said **Malu Nunes** (*photo on the right*), executive director at the Boticário Group Foundation for Nature Protection and a member of the Nature Conservation Experts Network. In 2018, the Foundation and Legado das Águas partnered with other institutions such as SPVS to create the Atlantic Forest Great Reserve. We will give more details on the interview below..



WITH EXPERIENCE OF NEARLY 30 YEARS WORKING IN DEFENSE OF NATURE, THE BOTICÁRIO GROUP FOUNDATION FOR NATURE PROTECTION PARTNERED WITH LEGADO DAS ÁGUAS TO CREATE THE ATLANTIC FOREST GREAT RESERVE

## WHAT ARE THE MAIN GOALS OF THE FOUNDATION?

**Malu Nunes:** The Foundation supports nature conservation initiatives throughout Brazil, granting financial support to more than 1,500 projects. The Foundation also protects 11,000 hectares of Atlantic Forest and Cerrado (tropical savanna) through the creation and maintaining of two natural reserves. It uses its best efforts to make biodiversity conservation a priority in business and public policies, in addition to helping nature serve as an inspiration. In other words, the Foundation helps nature become a tool for solving various problems of society. It also promotes innovative mobilization, awareness and communication activities to bring people closer to nature in their everyday life.

## WITHIN THIS CONTEXT, WHAT IS THE IMPORTANCE OF PRIVATE NATURAL HERITAGE RESERVES (RPPNS)?

**Malu Nunes:** Private Natural Heritage Reserve (RPPN) is a Conservation Unit category created by the National System of Conservation Units (SNUC) that allows the creation of areas legally protected by individuals interested in conserving nature. An RPPN may be established by individuals or legal entities who own rural or urban real estate properties with a nature conservation potential. The initiative must be voluntary and, after an area becomes a Private Natural Heritage Reserve (RPPN), it will be granted a permanent private protected area status, thus contributing to maintain the region's ecological and climate balance, as well as protect biodiversity, water resources, scenic beauties and environments of historical significance for current and future generations.

## Salto Morato NATURAL RESERVE

The Reserve is located in Guaqueçaba (Paraná state), within the largest continuous remnant of Brazil's Atlantic Forest and belongs to a Natural Heritage site recognized by Unesco – the Atlantic Forest Biosphere Reserve. Its rich biodiversity attracts researchers and tourists from several states and countries. The main attractions include an approximately 100-meter waterfall and a centennial fig tree. The location is also propitious for birdwatching: there are 326 species catalogued (106 of which can only be found in the Atlantic Forest). The reserve is also home to more than 70 mammal species (35 of bats), 34 reptile species, 54 amphibian species and 55 species of fish.

## WHICH ACTIVITIES CAN BE DEVELOPED IN THESE AREAS?

**Malu Nunes:** The activities that can be developed by owners after creating a reserve include scientific research, and ecotourism and education activities. The creation of an RPPN allows private owners to conserve not only biological diversity in their land, but also the environmental services offered in these areas, thus contributing to governmental efforts to protect Brazilian ecosystems.

## DOES THE BOTICARIO GROUP FOUNDATION MAINTAIN UNITS LIKE THAT IN ADDITION TO SUPPORTING PROJECTS THAT ENCOURAGE THE CREATION OF RPPNS?

**Malu Nunes:** Yes. We maintain two of these conservation units: the **Salto Morato Natural Reserve (Paraná state)** and the **Serra do Tombador Natural Reserve (Goiás state)**. The first area was created in 1994 to protect the Atlantic Forest and is home to approximately 70% of Brazil's population. Founded in 2007 to conserve the Cerrado (which considered Brazil's water tower), the

## Serra do Tombador NATURAL RESERVE

Acquired in 2007 and recognized as an RPPN in 2009, the Reserve is located in Cavalcante (Goiás state), in a region considered a high priority conservation area by the Ministry of the Environment. Spread through 8,730 hectares and not open to the public, the reserve is home to and protects a great number of Cerrado species, as well as perennial and intermittent rivers. The main goals are protecting the biome and scientific research. In the few studies conducted, researchers identified at least 18 bird species and two species of mammals endemic to the Cerrado, in addition to seven mammal species and seven endangered bird species, such as the rare pato-mergulhão or Brazilian merganser (*Mergus octosetaceus*).

second reserve is home to the springs of three large river basins responsible for the country's water supply. The Atlantic Forest and the Cerrado are Brazil's most endangered biomes (*learn more about these areas in the table above*).

## WHAT IS THE BOTICÁRIO FOUNDATION'S OPINION ON THE PARTNERSHIP WITH LEGADO DAS ÁGUAS AND OTHER INSTITUTIONS REGARDING THE CREATION OF THE ATLANTIC FOREST GREAT RESERVE?

**Malu Nunes:** The joint effort by several institutions and government authorities to transform this last large remnant of Atlantic Forest (which also includes marine areas) into a development model based on local nature conservation is of utmost importance. These partnerships were specifically created to take advantage of this Great Reserve, between Northern Santa Catarina and Southern São Paulo, in order to offer opportunities for the region's inhabitants and generate income. Maintain, conserve and recover these areas should be the most important strategy for these institutions and society. ✨



# THE ATLANTIC FOREST Great Reserve

LEGADO DAS ÁGUAS FORMS THE LARGEST ATLANTIC FOREST ECOLOGICAL CORRIDOR. IT IS CONSIDERED THE LAST LARGE REMNANT OF THE BIOME, CROSSING THREE STATES, 46 CITIES AND DOZENS OF PROTECTED AREAS

The Atlantic Forest is one of the most threatened biomes on the planet. In Brazil, approximately 72% of the population (149 million people) lives in this biome's distribution range. Deforestation and urban occupation largely contributed to its fragmentation, thus reducing the forest to only 8% of its original coverage area. Our history was built in the Atlantic Forest. It is witness to the development of Brazil. Human activity transformed most of its landscapes. Its natural resources were intensively exploited, causing environmental imbalances and affecting people's quality of life.

The good news is that there is a significant portion of conserved forest left: the last large continuous remnant of the biome is located in a stretch covering areas of Santa Catarina, Paraná and São Paulo states. As an integrated effort involving protection and conservation initiatives, the so-called Atlantic Forest Great Reserve is home to dozens of public and private Conservation Units, as well as protection areas that account for 28% of its territory. The initiative gained international recognition as a Biosphere Reserve and a World Natural Heritage Site.

## STRENGTHENING OF INTEGRATED INITIATIVES

The Atlantic Forest Great Reserve gathers initiatives that were already being developed by various local, state, national and international players – public and private institutions, non-governmental organizations and the academia – partnering to carry out actions to foster the region's development, taking into consideration their biodiversity conservation talents and regional culture.

Legado das Águas is part of the initiative that adopted a networking proposal through which institutions from several segments can exchange experiences and act to create a conservation culture for society. All participants act together and in a well-articulated manner to achieve the same goal: promote the Atlantic Forest Great Reserve. ✿

**The Atlantic Forest Great Reserve covers 24 federal and state full protection Conservation Units, six sustainable use units and more than 40 Private Natural Heritage Reserves (RPPN), in addition to Legado das Águas, with its 31,000 hectares**



Due to its vast territory (3,889,824 ha), the Atlantic Forest Great Reserve was divided into five sectors:

### SERRA DO MAR SUL

This sector includes the entire continuous stretch in Santa Catarina (Serra da Dona Francisca, Itapoá and Baía de São Francisco), in addition to the coastal area and Serra do Mar Sul in Paraná (Guaratuba, Matinhos, São José dos Pinhais and Tijucas do Sul);

### SERRA DO MAR LAGAMAR

Central sector. It includes the north coast of Paraná, with its west limit running along Serra do Mar;

### ALTO MONTANA E ARAUCÁRIAS

The west portion of Serra do Mar, which includes araucaria forest areas as well as the water sources of Curitiba until the São Paulo border;

### LAGAMAR NORTE

This section includes the cities in the south coast of São Paulo, from Cananeia to Peruibe;

### ALTO RIBEIRA

Remnant along Serra do Mar going north through the state of São Paulo. It includes border cities in the states of Paraná and São Paulo, extending continuously until the metropolitan region of São Paulo city.

# A RARE VISION, A SIGN OF **hope**

por B. Lorraine Smith\*

THE BIRTH OF A NEW BUSINESS MODEL. THE SO-CALLED REGENERATIVE ECONOMY GENERATES VALUE, WHILE STRENGTHENING THE COMMUNITY WITHIN A PROMISING BIOSPHERE

I always pay close attention to regenerative businesses. As an enthusiastic ornithologist who observes rare species, I get very excited when I see good examples. Even so, considering that regenerative businesses are not easy to find, we do not know what to look for or where. Moreover, there is a reason for that - from theoretical administration books to Hollywood success stories, our business references are not based on regenerative principles.

It is important to clarify what I mean by that term. There are many ways to define regenerative economy. The Capital Institute, for example, an institution located in the United States, conducts innovative work in that sense, establishing eight specific principles, such as respecting communities and understanding wealth in a holistic way. On my understanding and in an extremely simplified way, a company belongs to a regenerative economy when its core business (and not its parallel activities) helps communities thrive while protecting or even restoring an ecosystem.

## SYSTEMIC CHANGE

Under this premise, we will need to foster systemic change in organizations to ensure the continuity of all communities within a healthier biosphere. This means that we must not only recognize this type of business that is coming to life, but the existence of several of them, and soon, will also be essential.

Therefore, imagine my joy when I got to know one of Brazil's largest Atlantic Forest reserves and saw from up close the countless businesses generated by Legado das Águas.

Why did this visit have such a strong impact on me? To answer that question I will share with you some examples of what I saw and heard, suggesting that some seeds of this great transformation are already germinating. In addition, I am sure that this report also includes many interesting data that further emphasize the importance of Legado das Águas' business.



**I heard scientists sharing knowledge.** For example, during a Technical Meeting held at Legado das Águas' facilities I watched a presentation by researchers who work there and study malaria. They described an important change with innovative potential when they shifted their focus from "eradicating" the disease to becoming "resilient" to it. This is a much more powerful and enduring way to improve people's lives and strengthen communities.

**I saw a botanist working with orchid seedlings sewn to tree trunks in a greenhouse.** This is not just a space for growing beautiful flowers, but also a place for collecting substantial genetic data, exploring new ingredients to feed innovative businesses worldwide and cultivating a profound appreciation for biodiversity.

**I took walks amidst the forest and practiced mountain biking on several trails, where I saw huge species blooming.** A butterfly flew right in front of our group of cyclists for hundreds of meters, sharing with us a moment of rare beauty. Its color was so incredibly vivid and unusual that I thought I was hallucinating. It may also have been the fact that riding through the hills of the Reserve meant great physical challenge...

**I saw executive officers who have worked for many years at Votorantim - one of the most traditional Brazilian business groups - acting proud, excited and eager about this new growing business.** That is a good omen for the next 100 years. A business that strengthens communities, also contributing to biodiversity and people's health and well-being generates financial return and has the potential to become a truly regenerative business.

This is only the beginning for Legado das Águas. Many conditions will have to work in the company's favor for it to succeed, as it happens with any other corporation. Legado das Águas, in turn, certainly has some of the most vital elements of success since its inception. I am eager to see what this young business will materialize into in the near future. ✿



*\*B. Lorraine Smith is a writer and independent consultant who works to encourage the transition to a regenerative economy, in which society advances in a healthy biosphere. She is a Canadian who lives in New York and benefits from the experience of having lived and worked in Australia, Brazil, Ethiopia, Germany, New Zealand and the United Kingdom. Since 2004, she offers consulting services to major companies.*

“A business that strengthens communities, also contributing to biodiversity and people's health and well-being generates financial return and has the potential to become a truly regenerative business.”

B. Lorraine Smith



# TO BETTER UNDERSTAND Legal Reserve COMPENSATION

PATRICIA IGLECIAS, ESPECIALIZING IN ENVIRONMENTAL LAW, EXPLAINS CERTAIN DETAILS ON THIS INSTRUMENT THAT HELPS RURAL PRODUCERS COMPLY WITH THE BRAZILIAN FOREST CODE

One of Legado das Águas' main challenges is proving that a 31,000-hectare protected natural area can generate revenue (and even profit) to pay for its own maintenance. In this sense, the prevailing legislation, and particularly the Brazilian Forest Code, offers alternatives that show that maintaining the standing forest can be a valuable asset.

These alternatives exist because the Forest Code stipulates that all rural properties greater than four tax modules on July 22, 2008 (this measure can fluctuate and may vary depending on the state) must preserve a percentage area of native coverage. This area is called Legal Reserve and varies in size depending on the biome. At the Legal Amazon, for example, the preserved area must be equivalent to 80% of the property. In the Cerrado and Legal Amazon, that figure is 35%, versus 20% in the other regions of the country.

Rural producers have three alternatives to comply with the law: 1) replenish the Legal Reserve area; 2) allow its natural regeneration; or 3) compensate for the Legal Reserve. In the first two cases, properties' production area will be reduced to restore vegetation cover, while the third alternative creates the possibility of contracting a third party reserve, a service offered by Legado das Águas.

It was to learn more about the last alternative that we talked to Patricia Iglecias, associate professor at the Law School of the University of São Paulo (USP) and a lawyer specializing in environmental law. Between January 2015 and July 2016, Iglecias acted as Secretary of State for the Environment in São Paulo. Subsequently, she was a partner lawyer at Iglecias & Famá Advogados law firm (when she granted us this interview). Since January 1 of the current year, she has acted as the CEO of Companhia Ambiental do Estado de São Paulo (Cetesb).



Patricia Iglecias: "Now is the time to apply the rules and move forward. It would be the best solution for all Brazilian sectors".

## HOW DOES THE LEGAL RESERVE COMPENSATION MECHANISM WORK?

Iglecias: In the state of São Paulo, many landowners preserved a higher native area percentage than that required by law. As a result, they now have preserved area surplus, allowing them to offer part of this surplus to other landowners who still need to comply with the law. We call that compensation. This is the case of Legado das Águas, whose preserved area is far larger than the mandatory 20%.

## WHAT ARE THE MAIN GUIDING PRINCIPLES?

Iglecias: There is an agreement establishing both parties' rights and duties. In addition to other rules set forth in the Forest Code, the legal reserve area and the area to be compensated must have the same biome. Furthermore, these stretches must be considered priority preservation areas by the states or the federal government. In addition to having the same biome, the Supreme Federal Court (STF) determined that areas to be compensated must have the same ecological identity.

## HOWEVER, WHAT EXACTLY IS ECOLOGICAL IDENTITY?

Iglecias: In fact, as the votes of all the Ministers of the Supreme Court have not yet been published, we must wait to see what the Supreme Court will understand by ecological identity. On my understanding, they should only consider the same biome aspect, refraining from imposing other requirements.

## WHAT IS THE IDEA BEHIND THAT RATIONALE?

Iglecias: Other issues also seem relevant to me. When I worked at the Environment Secretariat of São Paulo, we considered facilitating legal reserve compensation in other states as long as it brought some sort of benefit to São Paulo. For example, a water resource benefit, as this is one of the highest vulnerability issues for the state of São Paulo. In short, we must be careful to avoid imposing too many restrictions on something that was created to bring environmental benefits.

## HOW MANY YEARS DO LEGAL RESERVE COMPENSATION AGREEMENTS LAST?

Iglecias: These agreements have a 15-year validity term. It is a reasonable amount of time, considering that the person paying for the Legal Reserve compensation must have legal safeguard. Other relevant conditions must also be included in the agreement. Landowners, for example, must protect and preserve the areas as well as allow their inspection and monitoring by competent bodies.

## IS THIS COMPENSATION MECHANISM ALREADY WELL KNOWN?

Iglecias: Unfortunately, it is not. It needs to be more widely promoted. It is an extremely valid instrument, which was recently regulated at the federal level. In addition, it represents an interesting market for those who have preserved native areas that are larger than that set forth in legislation.



## DO YOU BELIEVE THE NEW FEDERAL GOVERNMENT WILL CHANGE ANYTHING?

Iglecias: It is hard to say that nothing will change. Nevertheless, as that law has already been enacted, the government has to initiate a legislative process to make any changes. Laws cannot be amended by resolutions or other instruments. The law must be enforced. I think it is general understanding that agribusiness has an interest in complying with the Forest Code because many commodities are sold in the international market. I see no reason for change. From 2012 to date, too much time has been spent just discussing the law without applying it, a fact that slows down economic growth. I understand that now is the time to apply the rules and move forward. It would be the best solution for all Brazilian sectors. ✨

# Scientific RESEARCH IS VITAL TO OUTLINING CONSERVATION STRATEGIES

WITHOUT INFORMATION, CONSERVATION BECOMES IMPOSSIBLE. LEGADO DAS ÁGUAS' SCIENTIFIC RESEARCH INITIATIVES CONTRIBUTE TO THE CHALLENGE OF PROTECTING THE ENVIRONMENT AND HELP US LEARN MORE ABOUT THE RICH BIODIVERSITY OF THE ATLANTIC FOREST

Can you imagine having at your disposal a living laboratory with approximately 31,000 hectares of Atlantic Forest in advanced stage of conservation? That is exactly what happens with several partner researchers who carry out their studies on Legado das Águas' protected forest.

They all focus on the same aspect: learn more about the Reserve's rich biodiversity and generate public knowledge, better understand the behavior of various animals and the functionality of plant species and, with any luck, identify new species. The main results of this work are presented in the upcoming pages.

## TAPIRS

During a two-year monitoring, the Manacá Institute team covered more than 1,500 km of trails at Legado das Águas looking for signs of tapirs and installing more than 40 photographic traps. The traps yielded 2,634 records of medium to large mammals (26% of which, of tapirs).

*Researchers covered more than 1,500 km of trails, gathered 2,634 records of medium to large mammals, 26% of which, of tapirs*



Although the size of the population has not yet been estimated, this high number of records and the occupancy ratio indicate that the species is abundant in the area.

"Tapirs are herbivorous who play a key role in forests, influencing the future of countless plant species and, consequently, of herbivores that share the same environment. Tapirs are also important seed spreaders, especially of large seeds, helping maintain the distribution and abundance of plant species. Due to all these characteristics, tapirs are considered a key species because they play a relevant role in the ecosystem", said Mariana Landis, president of the Manacá Institute.

"In September 2018, we satisfactorily concluded the first monitoring phase at Legado das Águas. We were able to add new goals and partners during the project, thus maximizing the importance of the study developed", added Mariana Landis. "Now, with the extensive database at hand, we are working on the analyses and expect to publish interesting articles and documents in 2019, full of information relevant to the protection of tapirs at the Atlantic Forest," concluded her.

## BUTTERFLIES

Conducting research on butterflies is essential for various ecological reasons. Certain species, for example, are indicators of habitat quality, particularly regarding the type of vegetation. "We can tell if a habitat is well preserved or if it was highly transformed or fragmented based on the species occurring in the location and the abundance of individuals," said Laura Braga, biologist and PhD in ecology. "For this reason, it is also important to monitor butterfly populations on the long term as, this way, we can determine if any environmental or climate change occurred," added Laura.

The year of 2018 brought good results regarding the work conducted at the Reserve. "The two campaigns carried out registered 21 species that had not been sampled in the 2016-2017 campaigns. Now, we have a total of 203 species of butterflies cataloged at Legado das Águas," added the biologist.

*In 2018, we registered 21 new species of butterflies at Legado das Águas. In total, catalogued species amount to 203*

## A species that had not been spotted for almost 50 years

According to the researcher, despite the thorough study in twenty-six São Paulo state locations in search for butterflies in the past 50 years, Legado das Águas stands out not only for the forest's conservation status, but also for being part of the largest Atlantic Forest continuous area between Serra do Mar and Serra de Paranapiacaba, in Vale do Ribeira. Until then, butterfly experts had not studied that region. "This is the first study conducted on the Legado das Águas' butterflies. It has shown the region's richness of species, some of which had not yet been registered in the state", said Laura Braga.

Consequently, one of the highlights of the research conducted in 2018 was the spotting of a small butterfly endemic to the Atlantic Forest of the species *Godartiana byses*, which had not been seen in São Paulo for the past 49 years. "This record was of great value to better understand the geographic distribution of this species in the Atlantic Forest. This finding underlines how the Legado das Águas' forest is of utmost importance for the conservation of rare and endemic species", explained the biologist

*Researcher Laura Braga and a butterfly of the Morpho helenor species*





**Amphibians and reptiles are a sign of environmental quality. They are prey and predators. Any risk to a species of this group directly influences the food chain, the health of the environment and, consequently, human health and well-being”.**

*Giuseppe Puerto, biologist, herpetofauna specialist and director at the Butantan Institute.*



*From left to right: Marcelo Stefano Bellini Lucas, Adriana Mezini and Giuseppe Puerto (all from the Butantan Institute) and José Alves Batista (environ. monitor at Legado das Águas)*

### HERPETOFAUNA

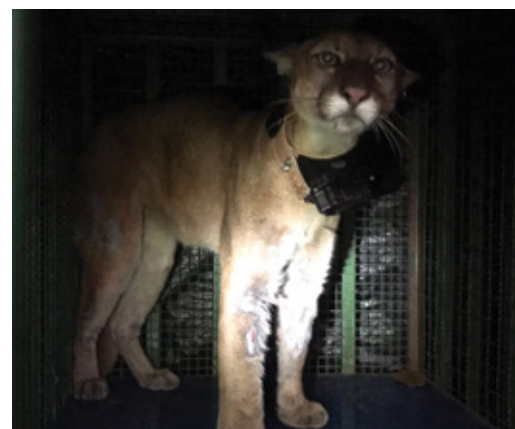
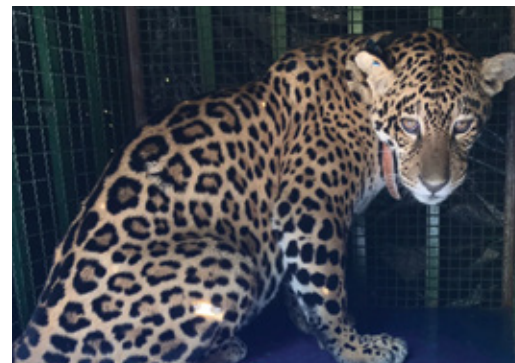
One of the most active research lines in 2018 is dedicated to the study of the herpetofauna, name given to the group of reptiles and amphibians in a region. "In comparison with 2017, the number of recorded species grew: amphibians, from 32 to 42; snakes, from 13 to 16; and turtles, from one to two," said Giuseppe Puerto, director at the Butantan Institute's Biological Museum.

The highlight of the season was the sighting and registering of the *Hydromedusa maximiliani* turtle at the Cambuci Trail. This chelonia species is considered as vulnerable according not only to the list of the Brazilian Institute of the Environment and Renewable Natural Resources (Ibama) but also to the Red List of the International Union for Conservation of Nature and Natural Resources (IUCN). "Amphibians and reptiles are a sign of environmental quality. They are prey and predators. Any risk to a species of this group directly influences the food chain, the health of the environment and, consequently, human health and well-being," explained Puerto.

This species, in particular, is endemic to Brazil, occurring in the Atlantic Forest biome, especially in the states of Bahia, Espírito Santo, Rio de Janeiro, Minas Gerais and São Paulo. "The main threat is habitat loss and anthropic interference in species' areas of occurrence," added the researcher.



*Hydromedusa maximiliani turtle. Vulnerable species found at the Cambuci Trail*



### JAGUARS AND PUMAS

As a way to advance in the study and monitoring of jaguars and pumas, in April a jaguar and a puma (photos above) were captured in Juquiá for monitoring. Each of them received a tracking collar, an equipment that uses GPS to send data about their habits in the wild. This meant considerable progress in research, since until then we only monitored these animals through photographic records.

"This is the first time we are able to monitor a puma in an Atlantic Forest environment. Now we can monitor its activities, receiving information from the tracking collar on an hourly basis. Thanks to this technology, we can find out which areas they visit, how they use the habitat and, maybe even study their eating habits," said Sandra Cavalcanti, researcher and president of the Institute for the Conservation of Neotropical Carnivores – Pró-Carnívoros.

Regarding the jaguar, the researcher emphasizes that monitoring is of utmost importance due to it being an endangered species. "We estimate that there are only 250 to 350 individuals in the wild," said her. The research team is processing the data.

### MURIQUIS (WOOLLY SPIDER MONKEYS)

The muriqui is the largest primate in the Americas, the largest non-human anthropoid (animals that more closely resemble human beings) in these continents and is a specialist in regrowing the forest. That is why they are considered the gardeners of the Atlantic Forest, not only because they take good care of the forest, but also because they feed on fruit and spread the seeds of several species of trees. "They disperse seeds at a distance of up to two kilometers from where they feed. Thus, we can estimate that muriquis plant large numbers of more than 100 species of trees every year. A fact that, by maintaining the standing forest, ensures the preservation of ecosystem services, such as the retention and production of good quality water," explained Mauricio Talebi, professor of Environmental Sciences at Unifesp, in São Paulo, and coordinator of the Muriquis Project developed at Legado das Águas.

The muriquis are seriously endangered despite the huge importance of the species for the forest's environmental balance. According to the expert, if the current pace of threats posed by human activities and the lack of financial support to research are maintained, the species may become extinct in 50 years.

**100 southern muriquis, equivalent to 8 a 10% of the population, live at Legado das Águas**

That is why the work done with the southern muriquis at Legado das Águas is so relevant. Current estimates show that Legado das Águas is home to 8% to 10% of the species' entire remnant population in the wild, which corresponds to approximately 100 individuals. "This work represents an opportunity to consolidate the visionary project of Votorantim's pioneers - let the forest germinate to protect water resources and, as a result of an effective control of anthropic threats, benefit from the chance to save from extinction in the wild this gardener of forests, a globally-known charismatic species," added Talebi.

## ORCHIDS

Biologist Luciano Zandoná - partner of Legado das Águas since 2015 - is a tireless advocate of the conservation of orchids, considered by many to be one of the most beautiful and thus most endangered plants of the Atlantic Forest. At Legado das Águas, however, they are safe and can still rely on the research and discoveries made by Zandoná in recent years, which have been crucial to the development of conservation strategies for these specimens.

One of his strategies involves the rescuing of orchids. He removes specimens from fallen trunks at the forest and takes them to the orchid greenhouse, located adjacent to the nursery. Once they are recovered and healthy, he relocates specimens on trees at the forest, thus ensuring them a longer life generating seeds and sprouts that will perpetuate the species at Legado das Águas.

Another plant conservation strategy is exchanging specimens between living collections. "That is why we donated 22 orchids to the collection of the Sorocaba Botanical Garden. The specimens included the *Octomeria estrellensis*, formerly considered extinct in the wild, but rediscovered at Legado das Águas. We also donated a seedling of the century-old *Myoxanthus exasperatus*," declared Luciano Zandoná.

35 months of work

238 field days

48 of these days in 2018 alone

217 species listed, 13 on the red list of endangered species

Approximately 7,000 plants rescued, more than 160 species in Legado das Águas' Orchid Greenhouse



### Global orchid conservation goals

The partnership between Legado das Águas and Luciano Zandoná and his team offers a partial contribution to the global goals for orchid conservation, through activities related to the four basic guidelines for protecting the *Orchidaceae* family, established in the First International Orchid Conservation Congress (held in Australia, in 2001). These goals are outlined below:

90% of the species endangered worldwide must be conserved in *ex situ* collections (outside their place of origin); **1**

50% of the endangered species must be included in conservation and recovery programs based on *in vitro* cultivation (laboratory), followed by reintroduction of these species in the wild; **2**

Instruct and train local communities on sustainable management, not only to foster large-scale propagation and the sale of cultivated seedlings, but also reduce the illegal harvesting of native orchids; **3**

All basic education children must receive information on plant diversity, including information on orchids and their importance to environmental balance. **4**



Spotting of approximately ten individuals from a very rare species of vanilla - *Vanilla dietschiana*. Until then, fewer than three records had been made in São Paulo since the first one in 1903. "The presence of Vanilla is a sign of the excellent conservation of Legado das Águas' forest. Maybe this is one of the reasons why it is so rare, since mature forest fragments are increasingly scarce nowadays." Luciano Zandoná



## DISSEMINATION OF SCIENTIFIC KNOWLEDGE

In addition to fostering scientific research, Legado das Águas promotes activities for the dissemination of scientific knowledge through the Environmental Education program, thus contributing to give voice to science, outreaching the Reserve's boundaries.

### Monitoring and educational activities

In 2018, Giuseppe Puerto and his team, composed by Marcelo Stefano Bellini Lucas and Adriana Mezini, also held scientific knowledge dissemination activities related to the care and monitoring of snakes through lectures, workshops and symposia in Tapiraí, Piedade and Legado das Águas itself, impacting approximately 750 people. "We have been producing good results with Legado das Águas' field teams. Employees frequently send us images of live snakes found during their routine activities. This is very useful for our studies," complemented Puerto.

### Orchid relocations and engagement of children and adults

Just as in past years, in 2018 Legado das Águas partnered with botanist Luciano Zandoná to continue their important environmental education work with 84 children from three schools that visited the Reserve. In addition to lectures at the Reserve's headquarters and the nursery, children had the opportunity to relocate several orchids in their natural environment along the trails.

We also held an orchid reintroduction workshop at Avistar Brasil 2018. Approximately 100 seedlings donated by Legado das Águas and the Colibri Orchid Greenhouse were reintroduced in an Atlantic Forest trail at the Butantan Institute, in São Paulo. This initiative gave birth to an outdoor gene bank of native orchids. These plants not only play a remarkable ecological role, but are also key to conservation education activities. ✿



# NOT ONE, BUT TWO ALBINO tapirs

ONE OF THE MOST AMAZING SCIENTIFIC DISCOVERIES AT LEGADO DAS ÁGUAS

What seemed impossible happened at Legado das Águas in 2018. Earlier this year, a video recorded by Reserve's field technician Miguel Flores drew the attention of us all. It was another record of the albino tapir affectionately called Gasparzinho (Casper). However, something was different... the animal seemed bigger and had a spot different from what we had seen in previous records. Then came the suspicion: will there be two albino individuals?

Researchers, the photographer, the Reserve's team... everyone was intrigued. We created a group to discuss the possibility – one in a million – that there might be not one, but two albino individuals at Legado das Águas. It seemed unlikely.

To clarify that suspicion, Mariana Landis (from the Manacá Institute) and Luciano Candisani (National Geographic photographer) joined efforts and began surveying all images of albino individuals captured in the Reserve. In total, they found 190 records.



*The first albino tapir records were made in March and April 2014, in the scope of the Floresta Viva (Living Forest) project, created by photographer Luciano Candisani. As of August 2016, the Manacá Institute comes into play and begins its research with a focus on monitoring tapirs at the Reserve.*

## CUT ON THE EAR

Manacá Institute's team noticed the appearance of an individual with a cut on its right ear on several images. Nevertheless, how could we know if it was Casper who had recently lost part of its ear, or if that record was of another individual? In addition, the images were records of infrared photographic traps that produce only black and white images, making it impossible to attest that it was really an albino individual.

However, when reviewing the professional photo records obtained in Luciano Candisani's project, which gathers high-resolution color images, a photograph clearly showed the cut on the right ear of an albino individual. Yet, one doubt remained: was it really another individual or was that Casper himself who, at some point, lost a piece of cartilage from its ear?

The images were then reorganized by date, yielding a database with four years of records. As the cartilage is not a tissue that regenerates in mammals, if there was any record of an albino individual with an intact ear (Casper) that was more recent than the first images of the individual with the cut on the ear, that would prove the existence of two albino individuals.

Finally, on May 4, we arrived at a valuable conclusion. Image analyses showed that there were recent records (03/29/2018) of an individual with the right ear intact, while the other individual was first recorded in April 2015, as we could verify from the dates on the two images. Therefore, we arrived at the conclusion that Legado das Águas is home to two albino males. This is rare and unheard of in the world!

To celebrate this overwhelming discovery, Legado das Águas will launch a campaign to choose the name of the second albino individual in 2019. ✿

# biotechnology IN SERVICE OF VALUE GENERATION

## THE GENETIC MAPPING OF BIODIVERSITY GOES BEYOND STUDYING DNA

One of the most innovative and promising development lines at Legado das Águas bets on biotechnology as one of the paths to create new products inspired on native biodiversity.

Named Floresta Digital (Digital Forest), this business line is run by Frineia Rezende, executive manager at Reservas Votorantim, and Mauro Rebelo, scientific director at Bio Bureau, a Rio de Janeiro startup and partner company of Legado das Águas.

"This project currently gathers the most comprehensive tropical forest database", explained Rebelo. In the past three years, the project has been growing and overcoming challenges. What is most important is that the project is now a business area. Thanks to the development of a new bioprospecting tool, the Digital Forest allowed the creation of a library with valuable information and our goal is to double the number of mapped species in 2019. In other words, we want to reach the milestone of 100 Atlantic Forest species mapped.

According to Frineia, "the value of the Digital Forest is virtually immeasurable, as we have technical capacity to map the entire forest. Thousands of DNA fragments generate a huge volume of information that can be studied and transformed, not only into scientific information, but also into development findings with potential to create products. Thus, considering that it is not necessary to remove large volumes of material to extract DNA from specimens, the Digital Forest is a transforming business line that contributes to maintain the standing forest. It also works as a library.

To learn more about this project, read the article published on pages 14 and 15. ✿



# HELPING DEVELOP AND STRENGTHEN communities

FOR SIX YEARS AND WITH THE SUPPORT OF THE VOTORANTIM INSTITUTE, LEGADO DAS ÁGUAS HAS ENDEAVORED TO CREATE AND ENCOURAGE SOCIAL AND ECONOMIC INITIATIVES THAT CONTRIBUTE TO IMPROVE THE LIVES OF RESIDENTS FROM THE MUNICIPALITIES NEAR THE RESERVE

**INTEGRATION**  
Legado das Águas and local and regional communities

**PROMOTION**  
of economic activities linked to social and environmental development

**STRENGTHENING**  
of infrastructure and public services

In accordance with the article written by B. Lorraine Smith, the main concepts of regenerative economy include value generation through the strengthening of local communities. This is exactly what Legado das Águas has done since it began its entrepreneurial journey in 2012, in Vale do Ribeira, an innovative business model aimed at environmental asset management.

Legado das Águas' strategy to promote social initiatives was designed in a harmonic endeavor, such as the effect of a pebble thrown in a lake. At the beginning – the first wave, initiatives were concentrated in the three cities where the Reserve is inserted: Juquiá, Miracatu and Tapirai. More recently – the second wave, we launched other initiatives in neighboring municipalities, such as Piedade and São Lourenço da Serra. "In 2018, eleven projects were developed in these five cities, in addition to initiatives undertaken to integrate and create leaders in various sectors of operation of Legado das Águas to act in social efforts," explained Simone Conte, social responsibility consultant of Legado das Águas.

## RESPONSIBLE COMMUNITIES

These initiatives particularly focused on public management, education, tourism fostering, leadership training, and entrepreneurship and income generation encouraging also had the support of the Votorantim Institute and various technical and financial partners who contribute to the execution of Legado das Águas' social projects in Vale do Ribeira. "One of the goals of our work is to promote the development of these communities, helping them become self-sustainable and enabling them to transform the environment where they live," explained Michelle de Oliveira, senior sustainability analyst at the Votorantim Institute.

The following pages present the initiatives conducted in 2018.

## integration LEGADO DAS ÁGUAS AND LOCAL AND REGIONAL COMMUNITIES

### COMMUNITY ENGAGEMENT PROGRAM - JUQUIÁ, MIRACATU AND TAPIRAÍ

In 2018, the Community Engagement Project, held in partnership with the Votorantim Institute and executed by the Elos Institute, engaged five community groups from the cities of Juquiá, Miracatu and Tapirai on developing six training modules through 16 workshops aimed at strengthening community leaderships. The highlights included the "Trilhando Sonhos" (Trailing Dreams) group, which revitalized the Beira Rio area in Juquiá; the "Líderes Miracatu" (Miracatu Leaders) group, which began structuring a School Nursery in the Mono neighborhood and implemented a vegetable garden at the elderly home Lar do Idoso, in the central area of Miracatu; and the "Sonhalizadores" group, which held an ornamental planting initiative at the Tapirai portal.



### FIRST ENVIRONMENT SYMPOSIUM OF TAPIRAÍ

The First Environment Symposium of Tapirai was aimed at encouraging the integration between the city and Legado das Águas through the dissemination of good conservation practices to protect the Atlantic Forest, implemented at the Reserve. The event coordinated by the environmental education department engaged 2,000 students and nine schools, involving technical presentations and visits to Exposição Floresta Viva (Living Forest Exhibition), by photographer Luciano Candisani. The initiative was the result of a partnership between Legado das Águas, the Tapirai Municipal Department of Education, Ribeirão da Anta Neighborhood Caboclo Association, Tapirai's Municipal Tourism Council (COMTUR), Manacá Institute, Butantan Institute and Companhia Brasileira de Alumínio (CBA).



### LEGADO DAS ÁGUAS BIOCONSTRUCTION WORKSHOP

Workshop to promote the construction and use of dry toilets in the facilities installed and operating at Legado das Águas. The activity, organized by the Reserve's Works and Maintenance team, was attended by 12 people, including entrepreneurs, public authorities and local leaders from the cities of Juquiá, Miracatu, Piedade and Tapirai, as well as representatives of other Legado das Águas' areas of operation.



### DIALOGUE WITH PUBLIC AUTHORITIES

Event organized by Legado das Águas, in partnership with Votorantim S.A., the Votorantim Institute and Sebrae, to present some of the initiatives developed by the Reserve at Vale do Ribeira. During the event, we strengthened the ties with representatives of the cities of Juquiá, Miracatu, Piedade, Registro and Tapirai.

# Promotion of Social and Environmental Development Economic Activities

total investment in social projects

**R\$ 1.5 million**

THE MAIN GOAL OF LEGADO DAS ÁGUAS' SOCIAL INITIATIVES IS TO PROMOTE THE ENGAGEMENT OF INTERNAL, LOCAL AND REGIONAL STAKEHOLDERS WITH SOCIAL PROJECTS INSPIRED BY THE STANDING FOREST. AND, THEREFORE, CREATE A POSITIVE INTERACTION BETWEEN SOCIETY, THE ENVIRONMENT AND BUSINESSES TO CONSERVE THE ATLANTIC FOREST AS AN OPPORTUNITY FOR SUSTAINABLE DEVELOPMENT AND SHARED VALUE GENERATION

### ReDes PROGRAM - JUQUIÁ AND TAPIRAÍ

In order to promote economic activities focused on social and environmental development, Legado das Águas supported for the third consecutive year the Casa do Mel (Honey Home) project, promoted by the Regional Beekeepers' Association (APIVALE), from Juquiá; and the Family Farming project, promoted by the Rural Family Producers Association (ARCPHPN), from Tapiraí, in the scope of the ReDes Program, a partnership between Legado das Águas, the Votorantim Institute, the Brazilian Development Bank (BNDES) and the Multilateral Investment Fund of the Inter-American Development Bank (IDB – Fumin), implemented by Instituto Meio. The initiative aims to foster sustainable development by providing technical and financial support to strengthen inclusive production chains capable of generating income.



### ReDes PROGRAM IN JUQUIÁ - CASA DO MEL PROJECT (APIVALE)

APIVALE held several activities through the ReDes Program, highlighting the remodeling of Casa do Mel's physical infrastructure, the delivery of honey boxes with commitment terms and rules of use, and the partnership with the Juquiá City Government to issue the Municipal Inspection Service (SIM) seal, which will allow the association to regulate beekeepers' formal sale. The project generated revenue of R\$187,025.00 and income of R\$105,922.00, directly impacting 30 beneficiaries in 2018.



### VOLUNTEER CHALLENGE: MIRACATU

In 2018, we held another edition of the Volunteer Challenge, an initiative promoted by Votorantim to encourage volunteer work among investee companies' employees. Legado das Águas chose Escola Alvorada, a school in Miracatu (São Paulo). The initiative to renovate the school included painting the sports court, electrical repairs, installing swings, volleyball and soccer nets, painting library lockers, cleaning gutters at the sports court and installing wooden partitions at the library. The initiative engaged 35 people, including representatives of the community, the city hall (including the mayor) and Legado das Águas.

### ReDes PROGRAM IN TAPIRAÍ - FAMILY FARMING PROJECT (ARCPHPN)

ARCPHPN made important progress to promote its development and autonomy through the Family Farming project: the association used the project's direct financing line to hire an internal manager and an agricultural engineer to provide technical assistance to its farmers; implemented administrative and financial management processes; entered into a commercial proposal with the Sorocaba CEAGESP to sell its members' products; and acquired crates to transport their production. The project generated revenue of R\$215,680.80 and income of R\$83,052.52, directly impacting 15 beneficiaries in 2018.

### FIRST SEEDLING AND SEED TRADING FAIR: TAPIRAÍ

Legado das Águas participated as guest speaker at the First Seedling and Seed Trading Fair of Tapiraí. The initiative engaged the Reserve's environmental education and nursery areas, which spoke about the production of Atlantic Forest plants. The event was one of the highlights of Feira de Profissões (Careers Fair), promoted by Escola Cel. João Rosa, with the support of Tapiraí City Government and participation of Ribeirão da Anta Neighborhood Caboclo Association, among other organizations and local leaders.



# strengthening THE OFFER OF INFRASTRUCTURE AND PUBLIC SERVICES

## PUBLIC MANAGEMENT SUPPORT (AGP) PROGRAM - DEVELOPING THE TOURISM PLAN IN JUQUIÁ, MIRACATU AND TAPIRAÍ

Moving ahead with the activities to promote sustainable tourism in Vale do Ribeira, Legado das Águas held Plano de Turismo Ano II (Year II Tourism Plan), under the AGP Program, a partnership between the Reserve, the Votorantim Institute and the Brazilian Development Bank (BNDES), implemented by Consultoria Turismo 360°, in partnership with Miracatu and Juquiá city governments, and COMTUR of Tapiraí.

The projects' goal was to implement the initiatives defined in a joint effort with the players involved in drawing up the Regional Integrated Tourism Plan, conducted with industry entrepreneurs and public authorities in 2017.

We executed technical assistance activities to register enterprises in Cadastur, a system for the record of individuals and corporations who work in the tourism sector; as well as activities related to the engagement and strengthening of Municipal Tourism Councils (COMTURS); training workshops on topics such as legislation, safety standards, indicators, development and financing in tourism projects and the diagnosis by the Tapiraí Municipal Tourism Council to subsidize initiatives to empower its members.

The project's highlights also included an exchange between the Tapiraí City Council and the Socorro COMTUR – a reference in the state of São Paulo for its performance, development and results – and the Familiarization Famtour – an interaction and learning experience between tourism operators and the tourist trade of Juquiá, Miracatu and Tapiraí.

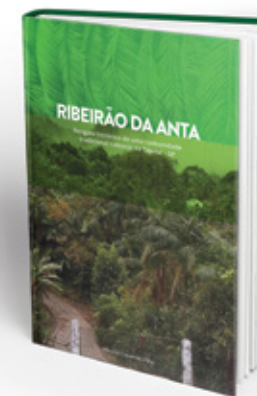


## PUBLIC MANAGEMENT SUPPORT (AGP) PROGRAM - MIRACATU MASTER PLAN

In order to strengthen the provision of infrastructure and public services through its social efforts, in 2018, Legado das Águas implemented another project under the umbrella of the Public Management Support (AGP) Program in partnership with the Votorantim Institute and Miracatu City Government, establishing the city's Master Plan with the participation of the players involved. The Miracatu Master Plan, which will be implemented by Risco Consultoria, was presented in a public hearing and filed for approval by the City Council. The Plan, which addresses an old structural need of the municipality, counted with the important engagement of the population and public authorities to hold 11 local workshops in rural and urban strategic areas. The workshops were attended by 220 representatives of the civil society, with an average of 20 people per workshop.

## REVITALIZING URBAN PUBLIC AREAS IN TAPIRAÍ

Following one of Legado das Águas' operational goals, i.e., restore the Atlantic Forest in urban centers, the Reserve revitalized a square in Tapiraí (São Paulo). Thanks to this project, the city gained several native plants from this biome! The initiative engaged 30 people, including representatives from Legado das Águas, the city's Environment Secretariat, the City Council and Vale Vivo.



## VOTORANTIM PARTNERSHIP FOR EDUCATION\* (PVE): JUQUIÁ, SÃO LOURENÇO DA SERRA AND TAPIRAÍ

In the wake of the initiatives in celebration of the 100 years of Votorantim, which chose education as symbol to celebrate this milestone and expanded social investments in the area to one hundred Brazilian cities, in 2018, Legado das Águas increased its reach through the Votorantim Partnership for Education Program from one to four municipalities: Juquiá, São Lourenço da Serra, Tapiraí and Piedade (which remained until the completion of Cycle 1). The Votorantim Partnership for Education Program (PVE) contributes to improve public education by developing four annual on-site cycles and distance-learning inter cycle activities. These efforts focus not only on training school managers (principals and pedagogical coordinators) and technical managers from the Departments of Education, but also on engaging civil society members and several local players with educational activities.

Most notably, the theater group of the Tapiraí Social Assistance Reference Center (CRAS) developed the project "Você é mais que uma estatística" (you are more than statistics), which promotes leadership initiatives focused on local children and adolescents. The project was among Brazil's top 11 finalists in PVE's national ranking, and one of the 40 finalists in Prêmio Criativos da Escola (Creative People in School Award), an initiative between the Alana and Votorantim institutes.



\*as of January 2019, the program was renamed to *Parceria pela Valorização da Educação (Partnership for the Appreciation of Education)*

## RIBEIRÃO DA ANTA CABOCLO COMMUNITY

Consolidating the relationship built since 2014 between Legado das Águas and the Ribeirão da Anta Caboclo Community, one of the 2018 highlights was the publication of the book *Ribeirão da Anta - Resgate Histórico de Uma Comunidade Tradicional Cabocla de Tapiraí - SP (Ribeirão da Anta - the Historical Rescue of a Traditional Caboclo Community in Tapiraí - SP)* held at Legado das Águas to give greater visibility to the community. They signed a partnership and services agreement that enabled the acquisition of baskets; visits by environmental education and ecotourism groups at Legado das Águas, promoting integration with the community; and the installation of an acclimatization yard for Atlantic Forest plants that are supplied to the Association in pots for consignment sale.

It is also worth mentioning the participation of a representative of the Association as guest speaker in two events, the First Environment Symposium of Tapiraí and the Legado das Águas' Technical Meeting. The latter is held annually to offer the Reserve's research and operation areas an opportunity to share experiences.

## OUTDOOR ENVIRONMENTAL EDUCATION WORKSHOPS

In partnership with the Municipal Departments of Education of Juquiá, Miracatu and Tapiraí, and the Butantan Institute, Legado das Águas' environmental education department held 16 outdoor workshops on topics such as Water, Biodiversity and Atlantic Forest, Energy and Solid Waste, which were attended by 630 basic education students from Tapiraí, Escola Alvorada, in Miracatu, and Escola da Serraria, in Juquiá. ✿





# What's to come!

We closed 2018 with many achievements, awards, and accomplishments on several fronts, as well as improving our structure for ecotourism and adventure tourism activities. The year of 2019 will be no different. Check out the novelties to come:

- Partnership with the Jurupará State Park to increase the synergy between private and public areas;
- Production of large plants at the nursery for landscaping projects;
- Supplying of the Pomar (Orchard) project with plants produced at Legado das Águas' nursery. The project will revamp Marginal Pinheiros, a major express way in São Paulo city;
- Expansion of the new business area;
- Further development of new partnerships to expand the Digital Forest project;
- Expansion of scientific research partnerships to new areas of knowledge, such as "health and the environment."

#### CAMOUFLAGED BIRD

The urutau or Potoo (*Nyctibius griseus*), also known as *mãe-da-lua* or *poor-me-ones*, has one of the most elaborate examples of camouflage in the animal world. It has the habit of standing still on trunks, dry branches or even fence posts, lying unnoticed most of the time even for birdwatchers' well-trained eyes

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