

LEGADO DAS ÁGUAS

RESERVA VOTORANTIM



16
The good
results of the
new economy

20
The potential for
biotechnology



28
Sustainable
tourism in the
waters of the
Juquía River

30
Rescuing rare
orchids

SOUNDS OF LEGADO

Would you like to hear the
sounds of Legado das Águas?
Well, put on your earphones,
scan the QR Code using your
smartphone, and enjoy.



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4

Editorial

5

What's the best word to define the reserve?

6 7

Events that marked 2016

8 9

Underwater life

10 11

Legado das Águas in the main forums
on climate in 2016

12 13

Outlook

14 15

Awarded waterfall

16 17

The good results of the new economy

18 19

An inside look at the largest private
Conservation Unit in the Atlantic Rainforest

20 21

The potential for biotechnology

22 23

Social initiatives, support to public
administration, appreciation of local
communities, and entrepreneurship

24 25

26 27

Considerations by Fábio Scarano,
President of the Advisory Board of Legado das Águas

28 29

Sustainable tourism, birdwatching and
fishing potential

30 31

Research with animals and plants of the Atlantic Rainforest

32 33

Opinion: What is the importance of Legado das Águas?

34

Canopy of the Atlantic Rainforest

35

What's to come

OPEN DOORS

It is with pride and joy that, in 2016, we prepared ourselves to achieve one of the most expected objectives since Legado das Águas was created, in 2012. We structured ourselves so that, in 2017, we could offer ecotourism activities and courses to the public at large, including elementary, middle and high school students, researchers, scientists, nature enthusiasts, among others interested in learning and exploring one of the few places in Brazil where the Atlantic Rainforest remains practically untouched.

In 2016, on a pilot scale, the area received approximately 180 visitors, all employees of the various Votorantim units in the states of São Paulo and Paraná. This was done so that in the first half of 2017 we could have the so-called soft opening, through a partnership with ecotourism agencies that will conduct the activities. Those interested - who should contact one of these agencies in order to schedule a visit - will have an opportunity, aside from observing several animals and plants rarely encountered in other locations, to follow and learn about the several lines of work and research being conducted at Legado. One such front is the Seedling Nursery, created to produce seedlings for, among other purposes, the landscaping market of native species of the Atlantic Rainforest.

Other fronts involve the rescue of rare orchids and research in biotechnology. There is also research with the Muriquis (the woolly spider monkey, the largest primate in the Americas) and the pumas, a feline listed as a vulnerable species on the list of endangered animals. Visitors will also have the opportunity for environmental education and leisure in ecotourism activities, such as hiking through beautiful trails in the forest, birdwatching, bike trails and kayaking in the calm waters of the reservoirs of the Juquiã River.

As shown in the following pages, there is other important work being conducted with tapirs, birds, butterflies, and fish, in addition to Votorantim's concerns with involving local communities in the activities and promoting improvement in public administration in the cities of Juquiã, Miracatu and Tapirai. Through all this, we intend to show that we believe in sustainable development based on the main assumptions that drive the new economy. In other words, it's possible to generate wealth without destroying native forests.

Enjoy your reading. And, as of now, you are invited to visit Legado das Águas, the largest private Atlantic Rainforest reserve in Brazil. ■

David Canassa, João Schmidt and Luiz Marcelo Pinheiro Fins,
Executive Board of Reservas Votorantim

NATURE
BIODIVERSITY
SCIENCE
INVESTMENT
DEVELOPMENT
LEGADO
CONSERVATION
RESEARCH
GENETIC
HERITAGE
WEALTH

How to define Legado das Águas with only one word? Impossible. That's why we listed these ten words that summarize a little of what it represents.

EVENTS THAT MARKED 2016

THROUGHOUT 2016, LEGADO DAS ÁGUAS STOOD OUT FOR SEVERAL INITIATIVES, ARTICLES, EXHIBITS, AND TOPICS WITH GREAT REPERCUSSION.

An immense natural area covered by the Atlantic Rainforest, totaling 31,000 ha with good conservation status is a feast for the eyes. Beautiful birds and insects crossing the skies, endemic plants in a wide variety of shapes and colors sprouting everywhere, animals that are rarely seen in other locations passing through the trails, secular canopy of trees and... snakes of various species. Although many people would prefer not to see them there, they are an integral part of this biome, and better than ignoring them, it's critical to understand and know how to deal with them.

More than **80** species of snakes have been recorded in the region of Legado das Águas

KNOWLEDGE ABOUT SNAKES

So, in April 2016, Giuseppe Puerto and Marcelo Bellini Lucas, both biologists of Instituto Butantan, in São Paulo, went there to answer questions, eliminate old myths, and convey knowledge about the snakes found in the region. First, they gave a theoretical and practical lecture to nearly 50 professionals who work at Legado, including those professionals responsible for environmental safety and the technical staff who will accompany visitors. On the following day, they spoke to approximately 100 residents of Tapiraí who were interested in the subject. "I was really happy to be called on by Legado to talk about biology and the behavior of

these animals. People managing this area need to know these details," explains biologist Giuseppe Puerto, Director of the Butantan Biological Museum.

According to the specialist, the Atlantic Rainforest has a high rate of endemic reptiles. In the Carlos Botelho State Park, for example, located in the same region as Legado, more than 80 species have been observed. Three of them venomous: jararaca, jararacuçu and coral-snake, all of which were also captured in Legado by the lenses of Luciano Candisani. The lectures also provided information on what to do if a resident or visitor is bitten by one of these species.

Throughout 2017, the biologists from Butantan will return to Legado to determine the composition, structure, and distribution standard of the herpetofauna in the region, among other studies. ■

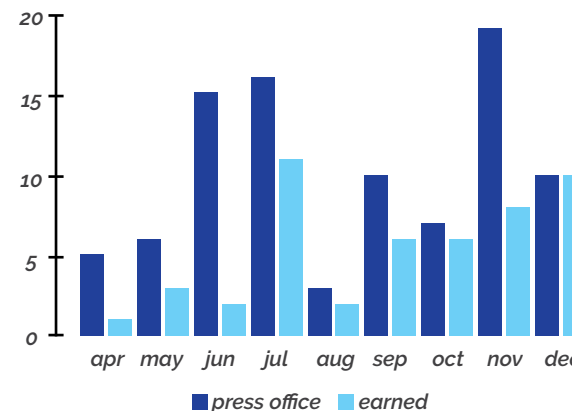


credit: Communication Legado das Águas/Pipo Gialluisi

HIGHLIGHT IN THE MEDIA

In 2016, Legado das Águas was subject of several news stories in both printed and electronic media. In local media, researchers of Legado are now more sought after by the media outlets of neighboring cities as a result of the work conducted by the press office that took over in April. "We are now in constant contact with the main media outlets in the region. Today, they also come to us for news stories about Legado," says journalist Fernanda Turco. Consequently, the results appeared. Check the chart:

LEGADO IN REGIONAL MEDIA



In the media at national level, Legado also featured in newspapers, magazines, websites, and TV programs nationwide. ■



FLORESTA VIVA EXHIBIT

Comprised of 10 panels (52,3 cm x 77,5 cm) with images captured by photographer Luciano Candisani, the "Floresta Viva" exhibit was held in the months of:

- May: 11th Avistar (Brazilian Meeting of Bird Watchers), SP
- June: Sustainable Brands, RJ
- July: Sé subway station, SP
- August: Sta. Cecilia and Clínicas subway stations, SP
- October: 9th Sustentar (International Forum for Sustainable Development), BH

From May to October, nearly **3.000** people had the chance to see the exhibit.

SPECIAL MEDIA HYPE

In September 2016, a new team took over coordination of social media. "Since then, we've managed to significantly increase views of our posts on Facebook. Today, we can safely say that everything that goes on in Legado das Águas, shown through photographs and videos, is broadly viewed by a large audience. This way, we want to share knowledge, promote environmental education, and increasingly engage with our followers," says journalist Paulina Chamorro, responsible for the work that will certainly expand, even more, the audience in 2017. In addition to Facebook, there are posts on Instagram and Twitter. ■

114.000
64.176 people impacted by one video
17.531 interactions

/legadodasaguas

*data referring to December 2016

UNDERWATER LIFE



In 2016, renowned photographer Luciano Candisani (below) continued with the work to photographically record Legado das Águas, where he captured most of the images that illustrate this publication. In addition to teaching two courses on photography, Candisani dove in rivers and streams that cross the reserve to record the existing wildlife.

"I started a new line of research that aims to investigate, through a totally new approach, the underwater life in the Atlantic Rainforest," explains Luciano.

One of the most relevant results of this work was the recording of the South American snake-necked turtle (*Hydromedusa tectifera*), an endangered species of turtle. ■



LEGADO IN THE MAIN SCIENTIFIC FORUMS OF THE WORLD

IN THE SECOND HALF OF 2016, THE RESERVE PARTICIPATED IN THREE IMPORTANT EVENTS THAT GATHERED PROMINENT NAMES AMONG CONSERVATIONISTS, RESEARCHERS, AND SCIENTISTS WHO STUDY BIODIVERSITY AND CLIMATE.

Between September and December 2016, David Canassa, Director of Reservas Votorantim, and Frineia Rezende, Manager of Reservas Votorantim, participated in three major global congresses to closely monitor the main debates about some of the most sensitive topics today, such as conservation, effects of global warming on climate, and biodiversity. Additionally, they had the opportunity to present to a select audience formed by governments of other countries, scientists, conservationists, and nongovernmental organizations the main concepts that support the management model developed at Legado das Águas, both in terms of lines of research and generation of resources through sustainable activities, including initiatives together with municipalities and traditional populations that reside in the area of the reserve. See below a summary of the events in each of these forums.



**IUCN
World
Conservation
Congress**
Hawai'i 2016

IUCN WORLD CONSERVATION CONGRESS
SEP 1-10, 2016, HAWAII, USA

This congress, which was attended by approximately 9,000 participants, gathered the most renowned scientists, conservationists, and environmentalists in the world. Among them, important names such as Jane Goodall (British primatologist, ethologist, anthropologist who, for 40 years in Gombe, Tanzania, studied the social and family life of chimpanzees) and Edward Wilson (renowned North American biologist known for his work in ecology, evolution, and social biology), regarded as one of the most important conservationists of our time. During the 10 days of the event, several topics were debated.

"One of the most critical topics had to do with food safety. After all, how can we address conservation while having in mind that, over the next decades, there will be 9 billion people in the world to feed? How to put into practice sustainable forms of agricultural production to feed so many people, maintaining the conservation of the landscape, of ecosystems, and the variability of species?," inquires Frineia Rezende.



COP Climate Change Conference, in Marrakech.
From left to right: Mário Mantovani (SOS Mata Atlântica), Russell Mittermeier (Conservation International Brazil), Rodrigo Medeiros (Conservation International Brazil), and David Canassa (Director of Reservas Votorantim)

Another greatly debated topic involved the importance of ecosystemic services offered by conservation units. "In a separate panel, we demonstrated how, after a few years, we have put into practice at Legado das Águas a new management model for environmental assets in a private protected area," adds Frineia.



COP CLIMATE
NOV 7-18, 2016, MARRAKECH, MOROCCO

Nearly 15,000 people were present in Marrakech, Morocco during the United Nations Conference on Climate Change (COP22), which gathered politicians, scientists, NGOs, and companies. The main objective of the event was to discuss, and subsequently, put into place actions to curb global warming.

In this sense, Legado das Águas was very important, given that its 31,000 ha are responsible for the sequestration of 6.23 million tons of greenhouse gases and for dispersion of pollutants in the atmosphere. All this stemming from the enormous benefits obtained from the standing forest "It should be noted that the carbon sequestration promoted by private conservation areas does not enter government calculations," explains Frineia Rezende.

These events also provide excellent opportunities to share experiences and expand relationship networks. "It was very interesting to witness how surprised people were when they saw that Votorantim, a company that typically works with extraction of nonrenewable natural resources, had the initiative to create a project in which environmental and social issues were the main drivers of the business," said David Canassa.

COP13-COPMOP8-COPMOP2
CANCUN, MEXICO 2016



COP BIODIVERSITY
DEC. 4-17, 2016, CANCUN, MEXICO

13th Conference of the Parties (COP 13) of the United Nations Conventions on Biological Diversity gathered researchers, scientists, diplomats, and ministers from almost 200 countries to debate aspects associated with public policies to protect biodiversity on the planet.

The largest companies in the world concerned with the topic of biodiversity and ecosystemic services took part in the Business Forum, which is held just before the main event. "Among other good initiatives by the private sector, the representative of National Confederation of Industry cited the case of Legado das Águas. Furthermore, I had the opportunity to talk to CEOs and R&D Directors from several companies to show how Votorantim has been dealing with the issue of biotechnology and bioprospecting, one of the most promising research fronts," says Frineia Rezende. ■



Frineia Rezende, Manager of Reservas Votorantim, in COP 13

BIODIVERSITY IS ALSO BUSINESS

TWO YEARS BEFORE PLAN, LEGADO DAS ÁGUAS STARTED TO YIELD THE FIRST FINANCIAL RETURNS. MORE THAN JUST NUMBERS, THESE RESULTS DEMONSTRATED THAT MANAGEMENT OF ENVIRONMENTAL ASSETS IS A GOOD BUSINESS.

In December 2016, in Cancun, Mexico, the 13th Conference of the Parties (COP 13) of the United Nations Conventions on Biological Diversity was held. The Conference is an important scientific forum that gathered over 200 ministers, researchers, and scientists to discuss strategies and policies associated with conservation of biodiversity on the planet. The event, which was already relevant, became even more so for hosting the Forum on Biodiversity and Businesses, which was considered the most important venue for the private sector to debate environmental conservation.

SUSTAINABLE AGENDA

The fact is that both concepts have been gaining importance in the agenda of executives and of those responsible for the sustainability area. "Another significant point was the presence of representatives from international NGOs, such as Conservation International (CI) and International Union for Conservation of Nature, with several programs geared toward companies with a focus on biodiversity," commented Frineia. Despite significant advances we are, nonetheless, far from an ideal world. So much so that Peter Seligmann, Executive Director of CI, stated that one of the greatest challenges for conservation today continues to be communication. According to Peter, "it is necessary to develop more efficient content and tools to raise awareness among people and transform their habits, including in the private sector." In any way, it seems that several companies have received the message and began trailing this path. One such company is Votorantim.

►These first resources came from two lines of work put into practice in 2016. One of them was the nursery, which, in just a few months after inauguration, reached a production of 48,000 seedlings. The other was a result of the first leasing operations of the legal reserve, which is an activity with large potential for growth in the coming years given the demand generated by the new Brazilian Forestry Code.

In addition, there are many other fronts involving several lines of research. Among them are the studies associated with the wealth of the wildlife and flora of the Atlantic Rainforest (which is home to several endangered species), with biotechnology to create new products with potential for marketing in the industry, and with support to the municipalities of Juquiá, Miracatu and Tapiraí. In addition to these efforts is the recognition of traditional populations residing there and the development of numerous activities associated with sustainable tourism. "Our objective is to turn Legado into an important center for education, training, and dissemination of

Our objective is to turn Legado into an important center for education, knowledge, training, and dissemination of best practices associated with the new economy.

David Canassa,
Director of Reservas Votorantim

CREATE VALUE IN NATURAL AREAS

Created in 2012, Legado das Águas, with its 31,000 ha, an area equivalent to the city of Curitiba, is located nearly 200 km to the south of the capital city of São Paulo and is becoming one of the best examples in Brazil. "In the last five years we have been fortunate to carry out our business plan, since we have successfully implemented everything we had imagined. In 2016, we began to see the first results of the production activities, which were initially expected only for 2018," says David Canassa, Director of Reservas Votorantim.►

best practices associated with the new economy", explains David Canassa. Obviously, all this requires a constant flow of investments, which in 2016, despite Brazil's political and economic turmoil, was never reduced.

Votorantim, created in 1918, has managed to overcome several moments of crisis and never ceased to work with courage and innovation. This time it will not be any different. The coming years will certainly prove that maintaining the forest standing is good business and that biodiversity is also a business. ■



The event in Cancun reinforced the idea that biodiversity is a significant concept in defining long-term business strategies for major companies. "Aside from biodiversity, understanding the concept of ecosystemic services has also been gaining strength thanks to international meetings," says Frineia Rezende, Manager of Reservas Votorantim, present at the event.





AWARDED WATERFALL

In May 2016, software developer and resident of São José dos Campos (SP) Jêsus Tadeu Lopes, 31, participated in the 4-day workshop "Photography in the Forest," conducted by Luciano Candisani at Legado das Águas.

A few months later, he submitted the photograph on the side to the International Photography Festival Brasília Photo Show 2016, a contest involving thousands of other photographers.

A total of 8,000 photographs were entered. Result: "My photograph, taken at Cachoeira do Dezembro, at Legado das Águas, was shortlisted among the 306 photos chosen to compose a book," says Lopes. ■

THE GOOD RESULTS OF THE NEW ECONOMY

GENERATING RESOURCES FROM A STANDING FOREST IS NOT A DREAM. IT'S ALREADY HAPPENING AT LEGADO DAS ÁGUAS.

The reserve is beginning its fifth year with two very promising lines of work: marketing of seedlings produced by the nursery and environmental compensation through legal reserve.

The nursery, with a built-up area of approximately 1,500 sqm, works in two production fronts. One is the development of seedlings of tree species geared toward forest recovery in degraded areas. The other is the production of seedlings for ornamental and genetic enrichment purposes. The nursery can be considered the first step for building the new business model that could be put into practice in other regions of the Atlantic Rainforest, acting as an interesting option to generate employment and retain rural populations in the field.

These are the first results of the new economy put into place at Legado das Águas.

SEEDLINGS FOR FOREST RECOVERY

The idea to build a nursery at Legado isn't new. The idea first came up between 2010 and 2011, even before the reserve had been officially created. Nevertheless, before it could take shape, several years of study and research were necessary. After all, first, it was necessary to conduct a complete study of the type of existing vegetation and understand the conservation status of the area. "We began working in 2011 and decided that 75% of the area had good conservation status," recalls Ricardo Rodrigues, full professor of the Department of Biological Sciences of the Luiz de Queiroz School of Agriculture (Esalq - USP). From there, in association with Bioflora, a partner company, a process to study and select the tree species that could be developed in the nursery was initiated. And this obviously demanded time, patience, in addition to a great deal of study and research.



Botanist Ricardo Cardim in one of the greenhouses in the seedling nursery of Legado



NURSERY IN NUMBERS

48.000 seedlings produced in less than five months

11.700 seedlings ready for planting

"The focus of this production is to cater to companies and rural producers who, as a result of the Forestry Code, need to recover degraded areas in their properties," explains Ricardo Rodrigues. The good news is that this market has enormous growth potential, which could help the experience at Legado to be shared with other stakeholders.

ORNAMENTAL NATIVE SPECIES

The other work front focuses on the production of ornamental seedlings of native species. "Strange as it may seem, 90% of the ornamental plants used in Brazilian homes are exotic species. In other words, they are not native to Brazil. This is a paradox, since Brazil is a country with the richest biodiversity on the planet. We have over 50,000 species in all biomes. And 20,000 of these are in the Atlantic Rainforest alone," says botanist Ricardo Cardim, who specializes in the use of native species in landscaping projects.

Since then, in partnership with André Nave and Guilherme Faganello, both of Bioflora, Cardim makes various expeditions into the forest. "Legado has enormous stretches of pre-Colombian forests, which survived the cycles of the Brazilian redwood, sugarcane, gold, and coffee," says Cardim.

Amidst this exuberant sanctuary, Cardim looks for species, whose samples, after development in the nursery, will give origin to seedlings that will be marketed, reaching thousands of Brazilian

households. "There is a huge market that we need to occupy. After all, who doesn't dream of having a little bit of the Atlantic Rainforest in their backyard?", he asks. The path, however, isn't easy. It is necessary to know which of these species adapt to the nursery, germinate in sufficient quantity, have good flowering with fertilizers, have standardization, and resist transportation. "We started from scratch, since there was nothing like it in Brazil. We are learning a lot as we go and I'm confident that we will open a new market with premium seedlings, high standard of quality, perfect rooting system, and excellent genetic variability," concludes Ricardo Cardim.

ENVIRONMENTAL COMPENSATION

Another interesting business model that has huge potential for growth is environmental compensation through legal reserve. This is something new from the Brazilian Forestry Code, which allows for rural producers to "compensate" for the fact they did not maintain 20% of their property in its original vegetation. "In this case, they can lease a private area from another landowner, equivalent to the total required to comply with legislation," explains David Canassa, Director of Reservas Votorantim. "We have approximately 28,000 ha of pristine forests set aside for those interested in leasing. This is one way of making the forest generate resources, without risk of degrading it," adds David Canassa. ■

A RARE GEM

Located in the region called Vale do Ribeira (Ribeira River Valley) and crossed by the Juquiá River, approximately 200 km from the capital city of the state of São Paulo, Legado das Águas is one of the largest continuous remnants of the Atlantic Rainforest in the Brazilian Southeast. Stretching across three municipalities - Juquiá, Tapiraí and Miracatu - the reserve is adjacent to other Conservation Units, such as the Jurupará State Park and the Serra do Mar Environmental Protection Area. Its 31.000 ha, with a high rate of conservation, represent 1,5% of the remaining Atlantic Rainforest in the state of São Paulo, which makes Legado a rare gem of nature, not only for researchers and scientists, but also for the important environmental purpose it represents.

See on the map on the side the entire extension of the reserve. ■



CUTTING-EDGE BIOTECHNOLOGY

Por Mauro Rebelo*



Biologist Mauro Rebelo, a partner of Legado das Águas, after collecting samples of a rare orchid from the canopy of a 30-meter tall ficus tree

We know little of the biodiversity of the planet. In the last 250 years we have managed to identify less than 2 million species. Estimates are that the total number of species on the planet are anywhere between 10 and 100 million, albeit based on questionable collection and sampling techniques. In anyway, at best we know 20% of the biodiversity, and 2% in the worst case scenario. Aren't these impressive numbers? Especially if we consider species that have become extinct even before they were identified. The situation is critical, but also represents a huge opportunity.

The estimated cost for protecting, monitoring and managing conservation areas for a single animal group, such as birds, for example, exceeds USD 65 billion per year. As a "cost", this amount is staggering. Nevertheless, seen as a market opportunity, it becomes interesting. Sustainability

can be an opportunity to create competitive differentiators, new businesses, and new markets. And in order to regard conservation of biodiversity as a business, new tools are required to allow for a more proactive approach. One such tool is synthetic biology, a merger between engineering and biology, which works in two fronts: redesigning the genome to create new characteristics of interest and the faster and more efficient production of biological systems that do not exist in the natural world.

More than 40 years have passed since we began to genetically modify organisms, and synthetic biology is a part of this movement. The ease in application, nevertheless, is new. There are currently 115 different products and applications. Approximately 50 modified organisms are on the market or close to commercial application.

"SYNTHETIC BIOLOGY IS CHARACTERIZED BY THE EXTREMELY FAST TECHNOLOGICAL DEVELOPMENT AND A BELIEF THAT THE FUTURE DOESN'T NECESSARILY NEED TO RESEMBLE THE PAST, INCLUDING FUTURE BIOLOGICAL SYSTEMS."

Antoinette J. Piaggio, biologist of the US Department of Agriculture

VOTORANTIM AT THE FOREFRONT

Brazil has an outstanding position to create these new markets for a number of reasons: strong industry, largest biodiversity on Earth, scientific infrastructure within public universities, and 50,000 masters and doctors formed each year. Furthermore, in the last 20 years, the country has enacted laws that promote innovation and entrepreneurship. Starting with the Law of Patents (1997), Law of Innovation (2004), Law of Technological Innovation (2007), Law of Biodiversity (2015), Legal Framework for Research and Development (2016), and Law of Angel Investors (January 2017).

A community of risk-tolerant investors is still lacking. But even here we have made progress. Given the challenges posed by the recent economic downturn, Brazilian scientists are increasingly considering entrepreneurship as an alternative. The success of Brazilian teams in international competition for innovation on biotech, such as iGem and XPrize, in addition to new innovation centers in Recife, Florianópolis, São Paulo, Campinas, Belo Horizonte and Rio de Janeiro, confirm this trend. In this scenario, Votorantim is at the forefront, since Alellyx, the largest success benchmark in the development of biotechnology in Brazil, was created by the company.

In order to be successful, every initiative requires two components: excellence and a competitive differentiator. Brazil has islands of excellence for the development of biotechnology and its biodiversity is the competitive differentiator. Legado das Águas is investing in research in biotechnology by taking advantage of the immense untapped potential of the Atlantic Rainforest. ■

DIGITAL FOREST

Legado das Águas, the largest private reserve of the Atlantic Rainforest in Brazil, isn't a valuable heritage of nature simply for what it has to offer visitors in terms of wealth and biodiversity. Legado also represents a fantastic opportunity to develop new products based on the DNA of species found in the reserve. Mauro Rebelo, professor at the Federal University of Rio de Janeiro (UFRJ) and researcher at Bio Bureau Tecnologia, a partner start-up, has worked on studying the most promising species.

"After working for two years, we have managed to sequence the DNA of 57 native plant species. With this, we are putting together the largest digital database for the Atlantic Rainforest. It's a pioneer work in applied research, which should soon yield several applications," he explains.

One of the main objectives of this study is to find, among the species investigated, commercially interesting proteins for application in the industry. "Biotechnology is a very promising field. After we have genetically mapped more species, there will be new innovative lines of research, which should lead to another business model for the reserve," says Rebelo. ■

*Mauro Rebelo is an associate professor at the Biophysics Institute of UFRJ, head of the Environmental Molecular Biology Laboratory (BioMA). Text based on the article "Is It Time for Synthetic Biodiversity Conservation?", by Piaggio et al, published in 2016 in Trends in Ecology and Evolution, Nº 2184.

APPRECIATION OF TRADITIONAL POPULATIONS

RECOGNITION OF LOCAL COMMUNITIES IS ALSO ONE OF THE MAIN CONCERNS OF LEGADO DAS ÁGUAS.

One of the phrases most often heard from those who visit the reserve is: "Legado das Águas isn't an island." True. The largest private Conservation Unit of Atlantic Rainforest which stretches along the banks of the Juquiá River, cannot be analyzed apart from its ample territory, or from its history built by those who already inhabited the region. This is the case of the traditional community of Ribeirão da Anta, located in the reserve for over 80 years.

"Approximately 20 people live there, at most. However, on weekends the population increases, since the children and grandchildren come to visit the elders who live there," says Maurilo Casemiro Filho, lawyer, social worker, and master in social services, hired by Legado das Águas to study the community.

According to Maurilo, the history of the community of Ribeirão da Anta began in the 1930s, when Gumerindo Alves left the city of Ibiúna and entered the forest to settle down next to a creek, which was frequently visited by the tapirs (anta, in Portuguese) to quench their thirst. "Afterwards, he brought his wife Mariana. The couple had nine children. Eight of them are still alive. In turn, these children had children and grandchildren", says Maurilo. Today, the family has approximately 150 descendants - most of whom live and work in Tapirai.

"One of the objectives of our work in the last two years has been to produce a historic survey and try to make the Legislative, the Department of Tourism, and the Tapirai City Authorities to recognize them

as a traditional community," explains Maurilo. It worked. Since 2015, on October 5, the Ribeirão da Anta Day is celebrated.

And better: throughout 2016, several advances were made. "One of them was the recovery of an area that allowed for residents of Ribeirão da Anta to regain access to water. The other was the renovation, in a partnership with the Tapirai City Authorities, of the former school building to rebuild the Ribeirão da Anta Traditions Center. Legado provided the materials and the city contributed with labor," added Maurilo. After March 2017, the center will be open to the public. With this, more people will have the opportunity to learn more about the history of the region and take home baskets, sieves and mats made by the talented hands of the population.



Eliza Maria de Jesus working with handicrafts, one of the attractions of Ribeirão da Anta



Occupation began in the 1930s. Currently, only the elders live in the community. In the picture, José Alves and wife, Odila Batista

The community of Ribeirão da Anta coexists with Legado das Águas, and is not only the part of our area, but also of our history. We want to contribute to the respect and preservation of this culture for many centuries; its title as a Cultural Heritage confers them important rights. We are very happy for this achievement.

Frineia Rezende,
Manager of Reservas Votorantim

TOURIST POTENTIAL

The work conducted with the community of Ribeirão da Anta is not a stand-alone initiative to value the local culture and allow for people to learn about the wealth of the region. Another initiative of Legado das Águas, in partnership with Instituto Votorantim, the program to support Public Administration aims to strengthen the tourist potential of the region, bringing together several attractions and consequently creating an integrated visitation circuit. "The region is suited for sustainable tourism. For this reason, it's instrumental to create a permanent coordination between them," explains Maurilo Casemiro.

Indeed. The region called Vale do Ribeira, where Legado das Águas is located, has many alternatives for visitors, such as dozens of waterfalls, rivers for water activities, zip lines, fishing, trekking, visits to caves and a rich production of handicrafts. There are many Quilombola communities and, on the coast, the region of Lagamar (saltwater lagoon), formed by an immense estuary, considered the largest continuous stretch of Atlantic Rainforest in Brazil. ■

INVESTMENT FOR LAND DEVELOPMENT

SUPPORT TO THE PUBLIC ADMINISTRATION OF CITIES, BASIC EDUCATION, AND ENTREPRENEURSHIP ARE ALSO SOME OF THE CONCERNS OF LEGADO DAS ÁGUAS IN THE REGION.

Aside from the investments to turn Legado das Águas into a reference center for study and research associated with the Atlantic Rainforest, as seen in the previous pages, the reserve strives to make the region, especially the cities of Juquiá, Miracatu and Tapirai, prosper, develop and grow. To this end, throughout 2016, several investments were made focusing on land development.

"Our work is grounded on three pillars: integrate Legado to the local community, promote economic activities geared toward the social and environmental development, and strengthen the supply of infrastructure and public services," explains Daniela Gerdenits, Social Responsibility Consultant for Legado das Águas. See below the main initiatives in this area.

SOME PRACTICAL RESULTS OF THE AGP

- Registration of the license plates of all city government vehicles in Tapirai at Artesp in order to obtain exemption from toll charges. Savings of approximately BRL 15.000 per year;
- In Juquiá, reduction by 25% in the cost of meals at school cafeterias, per student, by reviewing the menu and reducing waste (diversifying the source of protein and favoring fruits of the season);
- In Tapirai, Municipalization of the Rural Property Tax (ITR). Gains of approximately BRL 40.000 per year;

SUPPORT TO PUBLIC ADMINISTRATION (AGP)

Since 2014, Legado das Águas has developed in Juquiá, Miracatu and Tapirai the Support to Public Administration (AGP) program, resulting from the partnership between Instituto Votorantim and the National Social and Economic Development Bank (BNDES).

The program was divided into three phases: diagnostic, financial and fiscal balance, and territorial planning. In the first phase, administration status and financial and fiscal vision of city government, for each city, were evaluated. Then, an action plan was prepared to increase revenue and reduce expenses, as well as the development of funding projects. After that came the financial and fiscal balance phase, in which civil servants of the three municipalities were trained and monitored by a team from Instituto Águila to help in the implementation of the suggestions made in the first phase. In the land planning phase, a master plan was prepared for Tapirai, while for Juquiá and Miracatu, a basic sanitation plan was developed.

"Our greatest drive is having a positive impact upon the population," says Frineia Rezende, Manager of Reservas Votorantim.

VOTORANTIM PARTNERSHIP FOR EDUCATION (PVE)

In 2016, the program Votorantim Partnership for Education (PVE) was present in 17 cities, of 11 states in Brazil, including the city of Juquiá. Using the methodology of Playful Consultation, children and adolescents between 9 and 17 years of age were led to reflect on the question "What kind of school can we build together?" In addition to debating the future of education, debates were held concerning the importance of Solidarity initiatives and reuse of waste in revitalizing the school grounds.

"For a school with more respect, equality, quality education, accessibility, extracurricular activities, and participation of families in the school."

Open letter "The School We Want",
Juquiá, June/2016



Activity conducted by students of the public education network in Juquiá involved with the program Votorantim Partnership for Education.

NETWORKS FOR SUSTAINABLE DEVELOPMENT (ReDes)

In yet another partnership with BNDES (which funded 50% of the projects), a program was created in Tapirai and Juquiá to foster economic activities and promote sustainable rural development through the incentive of local production chains and strengthening of family agriculture.

Throughout 2016, the work was developed through training and technical supervision by the Vale do Ribeira Beekeepers Association (Apivale) and the Tapirai Producers Association. In 2017, the program will continue through monitoring of these two groups.

EMPREENDE TAPIRAÍ

The purpose of this project is to promote among young adults in Tapirai the entrepreneurial culture through training, experience and support to the implementation of business opportunities in economic segments of local or regional relevance. In 2016, a total of 30 people participated in the training courses. In 2017, three projects were selected to receive financial resources:

- Organic Banana Meal;
- Processed Vegetables;
- Ginger & Company. ■

NEW BUSINESS OPPORTUNITIES

FÁBIO SCARANO* ANALYZES THE CURRENT WORLD SCENARIO IN TERMS OF GLOBAL WARMING AND HOW THE PRIVATE SECTOR CAN GENERATE FINANCIAL RESULTS FROM SUSTAINABLE PRACTICES IN CONSERVATION AREAS.

HOW DO YOU EVALUATE THE CURRENT MOMENT OF THE PLANET IN TERMS OF GLOBAL WARMING?

Scarano: We are experiencing an unprecedented crisis on a global scale. The consequences of global warming are more and more present and we are entering a so-called adaptive era. In other words, we are forcibly having to adapt to the changes in climate on the planet. As a result, we need to coexist with extreme situations, such as more concentrated rainfall and longer drought periods. Not to make things worse and increase the vulnerability of the least fortunate population directly affected by this phenomena, we need to increasingly think about sustainable development, taking into account three pillars: social, economic, and environmental pillars.

HOW WOULD YOU ANALYZE THE STATEMENT BY ECONOMIST PAVAN SUKHDEV THAT IN ORDER TO REACH A SOLUTION TO CERTAIN CRISIS, SUCH AS THE ONE CONCERNING BIODIVERSITY AND CLIMATE, GLOBAL CORPORATE PLAYERS SHOULD MIGRATE FROM "EXPLORERS OF COMMON GOODS IN OWN INTEREST" TO "ETHICAL GUARDIANS OF SHARED PLANETARY RESOURCES?"

Pavan has a very realistic vision of the phase we are experiencing and how the private sector should go in the same direction. Many people already have the notion that natural resources are not finite. Consequently, they cannot be used in the long-term. Furthermore, the private sector has been more present in the debates and meetings in which topics associated with global warming are discussed.

Just like science, demand for a more interdisciplinary approach integrating men and nature generates new opportunities for advances in knowledge and in resolving problems. In the private sector, the incorporation of values associated with best environmental practices generates new opportunities for businesses and to reduce risks.

Fábio Scarano and Paula Ceotto (from Conservation International), in The importance of Brazilian biodiversity and the challenges for conservation, for science, and for the private sector (October 2016)



IN THIS SENSE, HOW WOULD YOU EVALUATE VOTORANTIM'S INITIATIVE TO CREATE LEGADO DAS ÁGUAS, WHICH IN 2017 WILL CELEBRATE ITS FIFTH ANNIVERSARY?

It's certainly an excellent initiative. Although everything is still very new, this model involving companies in the private sector with conservation of nature is very welcome. We can't expect governments to do everything. Everyone needs to get involved in this huge challenge to try to reduce greenhouse gas emissions for a better planet. It's an important work that, albeit in the beginning, is going in the right path, since, through Legado, Votorantim is not only concerned with the conservation of the Atlantic Rainforest, which is an ecosystem rich in biodiversity, but also with providing benefits to the population surrounding the reserve by improving education, agriculture, and fostering local tourism.

DO YOU BELIEVE THAT THE EXAMPLE SET BY LEGADO DAS ÁGUAS CAN INSPIRE OTHER COMPANIES IN THE PRIVATE SECTOR TO DO THE SAME?

Certainly. It would be great if this were to happen, since there are few companies adopting these practices. The example set by Votorantim demonstrates that within a private Conservation Unit there can be several production activities in a sustainable generation chain, which is very important for its balance, from a financial standpoint. One good example, among the several other activities that can create value, are the new demands set out by the Brazilian Forestry Code, which will generate a large demand for native species of the Atlantic Rainforest to be used for reforestation. This scenario could make other companies understand that these Conservation Units can create several interesting business opportunities, always geared toward sustainable development, which could add value to the brand, in addition to new forms of relationship with local communities. ■

*Fábio Scarano, President of the Advisory Board of Legado das Águas, has also, since May 2015, been the executive Director of the Brazilian Foundation for Sustainable Development (FBDS), where he coordinates the technical and scientific components of the projects developed by the foundation, especially those associated with aspects of biodiversity, environmental services, adjustment to climate change, and sustainable agriculture. In addition, he is an associate professor of Ecology at the Federal University of Rio de Janeiro, member of the Linnean Society in London, and was visiting professor at the universities of Darmstadt (Germany) and Minnesota (USA). Mr. Scarano already worked for the Ministry of the Environment and Education, was Scientific Director at the Rio de Janeiro Botanic Gardens and, among other activities, authored the fifth assessment report of the Intergovernmental Panel on Climate Change (IPCC) and the first report of the Brazilian Panel on Climate Change (PBMCC), both in 2014.

SUSTAINABLE TOURISM

BIRDWATCHING, TREKKING, NAVIGATING THE QUIET WATERS OF THE RESERVOIR ALONG THE JUQUIÁ RIVER, AND IN THE FUTURE, FISHING. SEE SOME OF THE ACTIVITIES THAT COMBINE LEISURE, KNOWLEDGE AND CONSERVATION OF NATURE.



The first trials for public use were conducted with employees of Votorantim...



...who explored trails, received important information on environmental education...



...and went kayaking on the calm waters of the Juquiá River reservoirs

It is a fortunate coincidence that the beginning of ecotourism activities at Legado das Águas should take place precisely in 2017, the year chosen by the United Nations as the International Year of Sustainable Tourism for Development. This is one of the economic activities that has grown the most in recent years in Brazil and whose main objective is to raise awareness about the importance of tourism in wealth distribution made possible by the traveling experience. Additionally, this activity generates jobs, helping reduce poverty, and creates several production activities for development and social inclusion. All this combined with the fact that this type of activity gives travelers the opportunity to be in touch with nature.

In 2016, the team at Legado conducted several tests. In all, nine groups formed by employees of the companies in the Votorantim Group, in addition to pilot groups of birdwatchers, had the chance to check and assess the activities that will soon be available to the public at large.

Visitors will have the opportunity to visit trails by bike in the forest, birdwatch, and travel the waters in one of the reservoirs of the Juquiá River on kayaks. Everything done with safety and supported by an experienced and trained team. ■

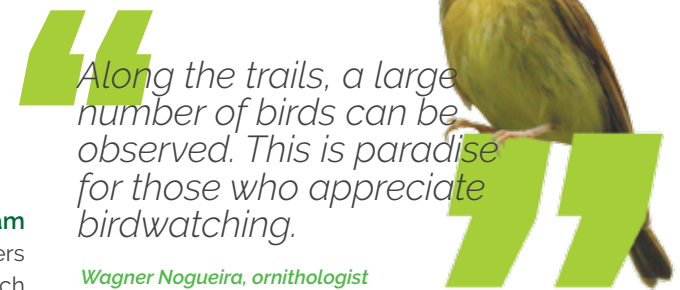
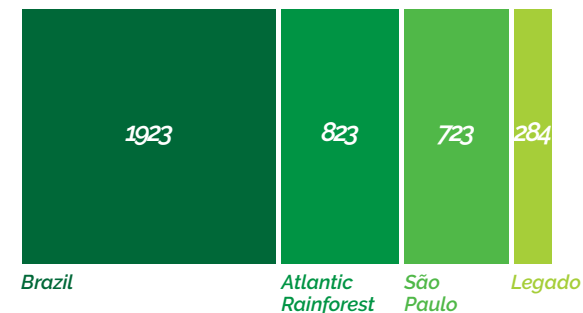


Birdwatching should also be a very popular activity.

BIRDS IN SIGHT

Since August 2016, Legado has hosted a team formed by three ornithologists, researchers specializing in birds. "The purpose of our research is to evaluate the distribution of birds within the reserve and prepare a preliminary inventory of the birdwatching potential," explains ornithologist Wagner Nogueira. In this first survey, he and his colleagues Rafael Bessa and Luciano Lima already recorded 284 different species (see chart), 111 of them endemic to the Atlantic Rainforest, and 27 endangered species.

WEALTH OF SPECIES



Along the trails, a large number of birds can be observed. This is paradise for those who appreciate birdwatching.

Wagner Nogueira, ornithologist

This scenario makes Legado a unique place for birdwatching. "Along the trails at Legado, it is possible to see a large number of birds, especially in the mornings. Birds wake up early and more frequently vocalize in the first hours of the day," explains Wagner. In addition to scientific gains and knowledge, this is one more activity that can bring resources to Legado.

Among the most relevant species for birdwatching are: black-fronted piping-guan (*Aburria jacutinga*), blue bellied parrot (*Triclaria malachitacea*), shrike-like laniisoma (*Laniisoma elegans*), black-headed berryeater (*Carpornis melanocephala*), cinnamon-vented piha (*Lipaugus lanioides*), russet-winged spadebill (*Platyrinchus leucoryphus*), São Paulo tyrannulet (*Phylloscartes paulista*) and bay-ringed tyrannulet (*Phylloscartes sylviolus*). ■

29

FISHING POTENTIAL

The ichthyofauna is also being studied. The research, which is being conducted by Fernanda Tonizza Moraes and two additional collaborators, began in August 2016, and its purpose is to better understand the fish that inhabit the rivers, creeks and reservoirs within Legado. "The Juquiá River watershed is rich in fish. Nonetheless, there are also invasive species, such as the piranha and fish native to the Pantanal and Cerrado regions," she says.

Currently, several studies are being conducted so that in a few months a decision can be made regarding the fishing activities. "Obviously, management will be done in a way as to protect native species," she adds. ■

FISH OF LEGADO

The Ribeira do Iguape River watershed is the **2nd** richest in the state of São Paulo, with **100** native species. At Legado, to date, a total of **54** species, of which **27** have high fishing value, have been recorded.

FOR THE SAKE OF SCIENCE

LEGADO BECAME A LIVING
LABORATORY TO STUDY
SEVERAL SPECIES OF
PLANTS AND ANIMALS.

It encompasses 31,000 ha of natural areas with a high degree of conservation. In this conserved and protected environment, it becomes increasingly clear the importance between plant and animal species, and how they are instrumental for the balance of the forest. For all that, the reserve is becoming an important outdoor laboratory for several researchers to learn more about a variety of species.

One of these researchers is biologist Luciano Zandoná, who spares no efforts to study, learn, photograph, and in some cases, rescue individuals of the various species of orchids found in the forest. For him, it makes no difference whether he is climbing a 30-meter tree to record a new species, or crouching down on a trail to admire mini-orchids.

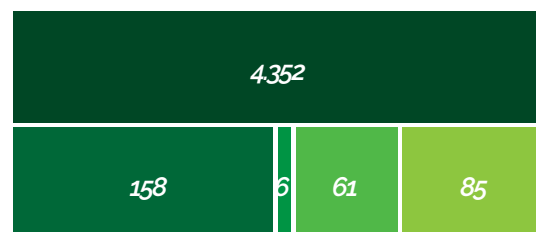
"Legado is rich in epiphytes, which is the name given to plants that live on other plants; however without stealing their nutrients. This is the case of bromeliads and orchids," says Zandoná, a partner researcher since November 2015. "Since then,

I have identified 158 species. Most of them are endemic species to the Atlantic Rainforest, and six of which are endangered," he adds.

When he sees an orchid on a fallen trunk or branch, Zandoná carefully removes it and takes it to the orchid garden, located adjacent to the nursery, where it will be treated against fungus and bacteria, receive liquid fertilizers and daily irrigation. If it were left on the ground of the forest, the plant would die.

After receiving care, the plant begins to react and becomes healthy once again. "It is important to point out that no plant is removed from its environment. We collect only those that have fallen to the ground as a result of rain and wind, or in dried tree trunks and branches," explains Luciano Zandoná. Afterwards, the orchids are returned to the forest. In the future, these rescued plants, native to the Atlantic Rainforest, can be used to generate fruit and seeds for the production of seedlings and for a cloning process. Their descendants can be marketed and generate resources for Legado.

ORCHIDS OF LEGADO



■ plants rescued
■ species found
■ endangered
■ trees receiving relocated orchids
■ species included in the orchid garden



PUMAS

Another important research is conducted by the Institute for the Conservation of Neotropical Carnivores - Pró-Carnívoros, coordinated by Sandra Cavalcanti, Doctor in Ecology and Conservation of Wildlife. One of the objectives of this work is to better understand the habits and presence of the puma (*Puma concolor*) in Legado, in addition to attempting to make new visual records through camera traps installed in five locations within the forest. "Finding a predator at the top of the food chain indicates the stability of this chain in the area," explains Sandra. Also new in 2017 will be the campaign to capture pumas for the installation of radio collars with GPS to monitor the behavior of these animals.



MURIQUIS

Considered the largest primate in the Americas, the muriqui (woolly spider monkey) is a critically endangered species. Until the 1950s, both species of the muriqui were severely hunted. In addition, with the destruction of the Atlantic Rainforest, these primates lost much of their natural habitat. Since 2013, Maurício Talebi, professor of Environmental Sciences at São Paulo Federal University, has been coordinating the Muriquis Project at Legado. Among the main objectives of this research are the study and geographic monitoring of this animal and assessment of their conservation status.



TAPIRS

In August 2016, Mariana Landis, biologist of Instituto Manacá, together with two other biologists and an intern, initiated the research about the tapir, the largest land mammal in South America and an endangered species. "In these first months in activity we initiated a survey through records made using 20 camera traps placed 3 km one from the other," explains Mariana. Using the data collected, it will be possible to better understand how the availability of water and specificities of the forest, such as slope of the terrain, temperature, and height of trees, interfere in the habits of this animal. Other important data to be investigated are threats, such as poaching, road kills, and diseases transmitted by other animals.



BUTTERFLIES

Biologist Laura Braga, of Sustentar Meio Ambiente, and her team have conducted, since August 2016, a survey of the species of butterfly that inhabit Legado. "In three campaigns, we managed to identify 65 species. Now, we want to find out where they occur, what types of habitats they prefer, if they are species found in the area of the Juquiá River or in the forests on top of the hills," says Laura. ■

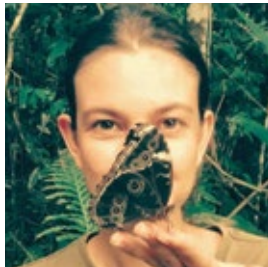


Biologist Laura Braga identified 65 species of butterflies at Legado

WHAT IS YOUR OPINION ABOUT LEGADO DAS ÁGUAS?

Currently, almost 80 people form the team responsible for the initiatives conducted at Legado das Águas. This total includes professionals hired by Votorantim and numerous partners, including photographers, scientists, researchers, and interns, in addition to the support, maintenance, and kitchen teams. See what some of them think, in addition to environmentalists and people impacted by the projects conducted in the region.

32 "It's exciting. It is very hard to find a continuous stretch of the Atlantic Rainforest with a high degree of conservation such as the one we have here."



Laura Braga, biologist

"In terms of amateur fishing activities, Legado has tremendous potential. It can become an attractive location for those residing in the São Paulo Metropolitan Region."

Fernanda Tonizza Moraes, ecologist



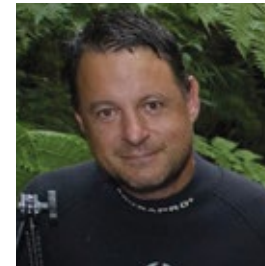
"It is a true gem. And with time, this gem will become even more rare."

Benedito Abbud, architect



Márcia Hirota, Executive Director and Director of Knowledge Management at SOS Mata Atlântica

"It is a praiseworthy work that deserves compliments. It is very good to have heavyweight allies, such as Votorantim, to protect natural areas and conduct conservation projects."



Luciano Candisani, photographer

"Legado das Águas represents the effort of a traditional corporation in the formation of an innovative company, supported by precepts of a green economy, that is more just and sustainable. The outlook is amazing."

"It's an excellent initiative by Votorantim. And the beginning of production of seedlings in the nursery comes in an opportune moment, since demand for forest restoration has a huge growth potential for the coming years."

Fábio Scarano, President of the Advisory Board of Legado das Águas, and executive Director of the Brazilian Foundation for Sustainable Development (FBDS)



33 "It provides the possibility of traveling in a time machine and returning to Brazil's ancestral landscape. What we see today at Legado is a pre-Colombian landscape."

Ricardo Cardim, botanist

"It represents a vector for development in the region as it generates opportunities for economic development combined with preservation of an environmental asset. Furthermore, it promotes the integration of the communities residing in the region and positively impacts the public administration of cities."

Rafael L.P. Gioielli, General Manager of Instituto Votorantim



"It's the possibility of putting into practice the new perspectives for sustainable use of the area, yielding greater economic return, without damaging the environment."



Ricardo Rodrigues, biologist and professor at Esalq-USP



Thiago Ribeiro, analyst of natural resources and environmental monitoring of Legado das Águas

"With so many ongoing scientific studies, we want to transform it into a national center of reference for research into wildlife and flora of the Atlantic Rainforest."



CANOPY OF THE PRIMARY FOREST

At Legado it is possible to admire the beautiful mosaic formed by the canopy of the tallest trees. This superior stratum of the forest, known as canopy, is formed by several native species of the Atlantic Rainforest, such as *Nectandra megapotamica* (canela), *Anadenanthera colubrina* (angico), Brazilian redwood (jacarandá), *Tecoma stans* (ipê), *Tibouchina mutabilis* (manacá-da-serra), and others, that can reach a height of 30 meters. At the reserve, huge stretches of continuous primary forest can be found, which unfortunately is rare in Brazil. ■

WHAT'S TO COME

As shown in the previous pages, 2016 brought about many achievements, accomplishments, beginning of new projects, and partnerships. But there is still much to be done. For this reason, the coming years also promise to be very special. Check it out:

- Beginning of ecotourism activities;
- Increase in the production of ornamental seedlings;
- Leasing of areas for legal reserve;
- Birdwatching activities;
- Attempt to capture the Puma to attach a radio collar with GPS;
- Continued studies of terrestrial mammals, most notably the tapirs;
- Planning the activities of sports fishing. ■



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