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Save El Choré

In 2007, Fundación Natura Bolivia assisted the Santa Cruz prefectural government with the elaboration of public policies dealing with mitigation and adaptation to climate change, and the recognition of the environmental services provided by forests. Together these policies provide a reference point and pave the way for establishing mechanisms to promote sustainable development in the Department of Santa Cruz. In 2008, we have entered into a second stage: considering how to implement these policies and what to prioritize. In this context Natura is once again supporting the Prefecture, through the contracting of a professional whose task consists of helping the departmental government to implement the new policies and define priorities.

As a result of the combined efforts, the Prefecture has defined three strategic areas: 1) the consolidation and effective protection of the environmental services of the Amboró National Park; 2) the protection of the remaining forests of the Río Grande-Valles Cruceños reserve; and 3) the defense of the El Choré Forest

Production Reserve. In each case, key actors such as the Environment and Natural Resources Secretary, Dr. Erwin Aguilera, have recognized that "command and control" policies have been unable to ensure the sustainable management of our natural resources, and have opened the doors to explore sustainable economic incentives.

Within this framework, the El Choré forest reserve is a priority area for the goods (both timber and non-timber) and environmental services it provides to the region's productive sector. However, this reserve is seriously threatened by a process of illegal conversion from forest to agricultural lands. It is not an easy task, but the Prefecture is committed to an economic model based on the goods and services provided by the reserve. To further this aim, Natura is supporting the establishment of two opportunities for dialogue and consensus building: a political committee comprised of various institutions with this role, and a technical committee which will support multi-sector technical proposals. In relation to the financial aspects, the proposal is to



Colonizers in the El Choré forest reserve

generate a scheme of co-responsibility between public institutions and the private sector—especially producers of sugarcane, rice, soy and other products which benefit from the distribution of water which the El Choré forests facilitate. The goal is to generate financial resources which assist the growth of a development model based on sustainable forest management.

Meanwhile, efforts are being made to determine whether this area could become part of the emerging market for carbon sequestration through avoided deforestation (or REDD: Reduced Emissions from Deforestation and Degradation). This route is still a long one and will require strong coordination with the central government. But between local, private and public resources, and a contribution from the global carbon market, it would be possible to save the El Choré forest reserve and generate sufficient financial resources to improve the livelihoods of hundreds of families which live in the area.

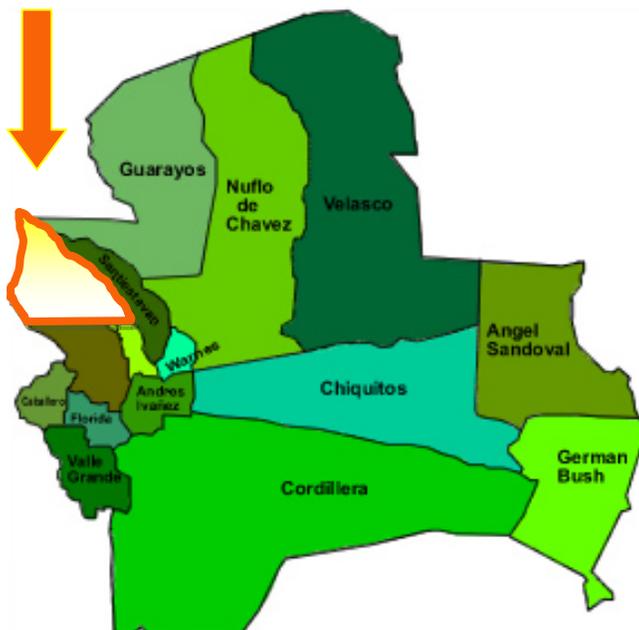
What is El Choré?

The El Choré Forest Production Reserve, created by Supreme Decree No. 7779 on 3 August 1996, has an 800,000 hectare (ha) surface area and is located to the north of the Sara and Ichilo provinces of the Santa Cruz Department. The reserve has great potential for the sustainable use of timber, it has an impressive diversity of flora and fauna, and it plays a key role in the regulation of winds and the hydrological system for the most productive area in Santa Cruz.

Timber

The forest has a total volume of 16 million cubic meters of usable timber, equivalent to 175 square feet of timber annually, with an annual value equivalent to US\$ 35 million. With 231 forest species, an average of 119 trees per hectare and a timber offering of 88.52 m³/ha, it is the most productive forest reserve in Santa Cruz. Being regulated, it requires a forest management plan which ensures an economical and sustainable yield from silvicultural

El Choré forest reserve



Source for base map: www.pizarra.edu.bo

practices to avoid the destruction of forest mass and conserve its productive potential.

Flora and fauna

The importance of the reserve is based not only on its timber but also on its climatic role and biological richness. The area is characterized by a great diversity of reptile, fish, bird and mammal species. Among these it is worth mentioning the existence of a large population of lizards, aquatic mammals in danger of extinction such as the endemic dolphin (*Inia boliviensis*), and other species such as agoutis, peccaries and brocket deer, which could generate economic resources based on management plans and sustainable resource use. One factor of concern is indiscriminate hunting, especially of large mammals, lizards, snakes and birds such as turkeys, wild ducks and parrots. The hunting of wild animals is becoming a serious threat to the biodiversity of the area. By the same token, the reserve has important flora and fauna resources which are in danger due to agricultural expansion, unauthorized timber harvesting and illegal settlements. The great variety of flora in the area is characterized by distinct ecosystems and forest types (montane, secondary, mid-height, low, riverbank and savanna).

Environmental services

The El Choré forest reserve provides important environmental services for the Santa Cruz Department. For example, it plays a vital role in the regulation of the mesoclimate through the regulation of the hydrological system and winds for the northern part of Santa Cruz, the most productive region of the department. The El Choré forest is considered the first link in the water cycle; it acts as a green environmental protection wall which guards the area from desertification due to wind and water erosion. If this valuable ecosystem is not looked after, the humid forest will stop producing the cloud which, dragged by northeast winds towards the southeast, generates the necessary climatic conditions for agricultural production.

The environmental services generated by El Choré help protect:

- 63% of soy production in the department—400,000 ha which generate US\$ 116 million annually;
- 27% of corn production—nearly 30,000 ha which generate an annual value of US\$ 18 million;
- 97% of rice production—nearly 90,000 ha which generate US\$ 18 million annually;
- 98% of sugarcane production—nearly 100,000 ha that generate annual income of US\$ 160 million

to the sugar producers and refineries;

- 25% of cattle farming—nearly 500,000 head of cattle which generate annual income for producers of US\$ 10 million; and
- 90% of milk production—nearly 200,000 liter per day, which generate annual income of US\$ 10 million.

In addition, El Choré guarantees the availability of timber for the sawmills, processing plants and carpenters of the northern provinces. According to the diagnostic analysis of the reserve made by Oscar Justiniano en 2006, the reserve protects the alimentary and economic security of the city of Santa Cruz de la Sierra, given that more than 70% of the economic activity of the population is related to the transformation, processing and commercialization of the cattle, agricultural or forest production generated in the north of the department. As a result, the degradation of El Choré implies the loss of the productive capacity of the northern part of the Santa Cruz department.

Threat: deforestation

The expansion of the agricultural frontier is the main trigger of deforestation in El Choré. In recent years there has been a large increase in the number of illegal settlements for land trafficking and agricultural conversion, which has led to tree clearing or burning, with

22,665 deforested hectares registered up to 2006 (Justiniano 2006). These activities constitute acts of blatant environmental crime against the region’s ecosystem, as these areas are classified as lands of sustainable forest use which should be managed through general forest management plans. The lack of regulation and recognition of El Choré as a sustainable forest production reserve and of the important environmental services it provides, puts at risk the timber resources, biodiversity and especially the productive sector and alimentary security of Santa Cruz.

Activities

Considering the growing rate of deforestation in the area, in a period of less than 10 years, the El Choré forest reserve could disappear. Consequently, decisive action is needed to detain this threat. As a response to this problem, in the city of Montero in September 2007 the Save El Choré Committee was formed to find a solution to the deforestation of this important reserve. The committee is an initiative of the people, led by the Santa Cruz Prefecture and backed by various local organizations, universities, non-government organizations, and municipalities, etc. Its objective is gain support and financing from those who benefit from the reserve—from companies in the produce sector and from public

and private institutions at the local, national and international level—in order to ensure that the El Choré forest resources are managed sustainably, avoiding deforestation and degradation, and contributing to the economic development of local communities, the sustainable use of natural resources, the conservation of key environmental services for the productive sector and the protection of food security for Santa Cruz.

Fundación Natura Bolivia, in its continuous effort to ensure the protection of critical ecosystems for the wellbeing of the population, is a founding member of the Save El Choré Committee and a key player given that it is providing technical support for the initiative. Natura is covering part of the salary of the technical coordinator of the committee, in order to develop proposals and solutions to this serious problem. In the future Natura will continue to support the Prefecture in emerging themes related to the sustainable management of natural resources, particularly in relation to the creation of financial mechanisms which guarantee the sustainability of the goods and services provides by the ecosystems of the region.

For more information about the El Choré defense, please contact Stephan von Borries on (+591 3) 3636372 or email him at svonborries@santacruz.gov.bo.



Intact forest in 2006



Illegal deforestation in 2007

Santa Rosa and Los Negros, together for watershed conservation

In May 2008, farmers who are conserving their forests to protect the watershed in the upstream community of Santa Rosa have met for the first time with those who support and benefit from their efforts in the downstream community of Los Negros. Landowners in Santa Rosa showed up in force, particularly those at the head of the board of the apiculture association, APIASUR. From Los Negros came board members of the public services cooperative, the president of the irrigators association, the president of the Vigilance Committee, and the technical manager from the municipal government. The objective of the meeting was to generate a space to build trust and exchange information about the advance of upstream forest conservation activities and the downstream creation of local funds to secure the sustainability of the initiative. The APIASUR members explained the compensation system—by which they receive one bee box and training for every 10 hectares of forest protected per year—and highlighted the importance of downstream cooperation to continue with these conservation activities. Both the Santa Rosa and Los Negros participants were able to express their thoughts on the project and have established a friendly dialogue.

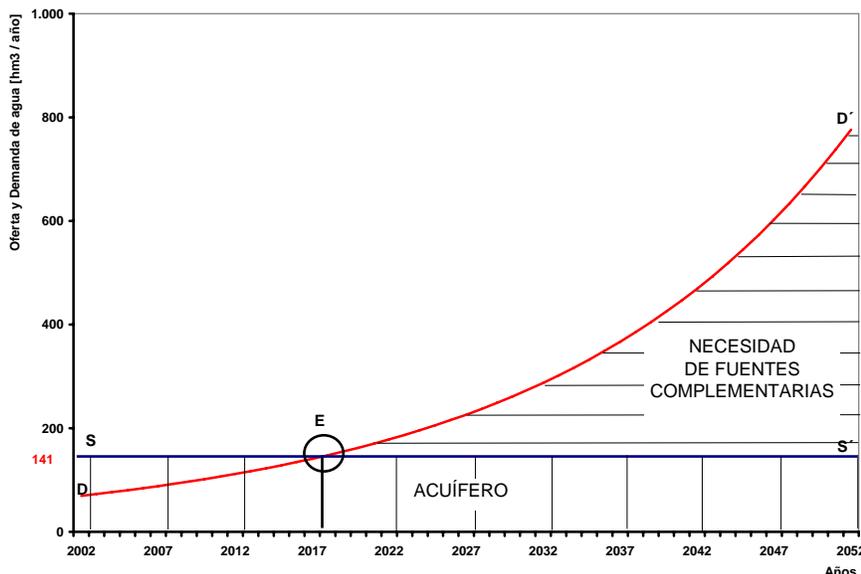
The wax sheet workshop

In May these was also a workshop to teach the apiculturalists of Santa Rosa how to make and roll their own sheets of wax for honey production. Twenty members of APIASUR actively participated and between them produced around 470 sheets of wax.

Photos from above: Diovigildo Ayala and Marcelino making wax sheets; key actors in the Los Negros y Santa Rosa conservation scheme observing monitoring activities; Mrs Guillen selecting wax sheets; Los Negros/Santa Rosa actors together in the conserved forests



Clean water for the city of Santa Cruz, through a compensation scheme for the watershed services of the Amboró National Park



Projection of the water demand surpassing supply in 2017

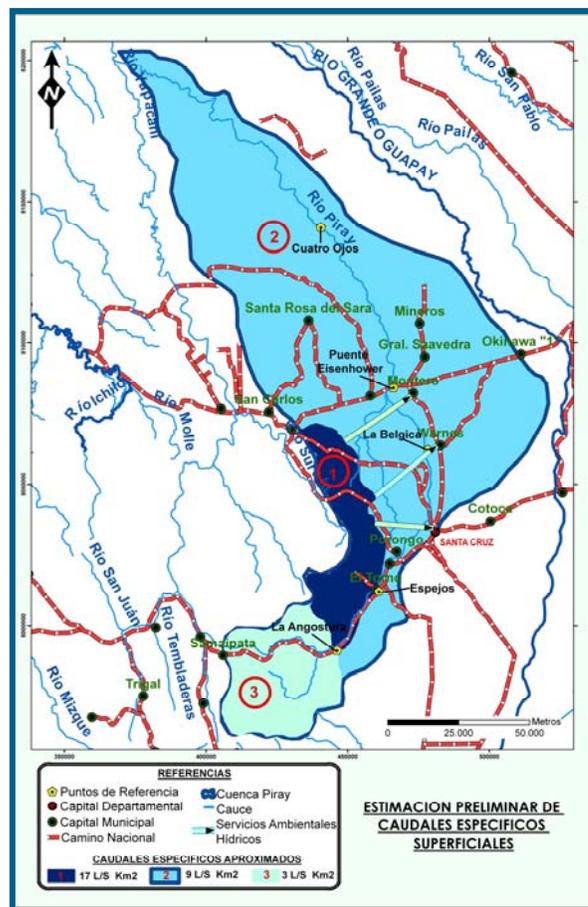
The city of Santa Cruz de la Sierra will need an additional source of water within as little as 10 years. The population of Santa Cruz, already the largest city in Bolivia, continues to grow and will reach 2.9 million inhabitants during the next decade. The subterranean aquifer which currently supplies water to the city is experiencing a growing rate of contamination which obliges the city's main water cooperative, SAGUAPAC, to pump water from a depth of 300 – 400 meters in order to satisfy the demand; a fact which makes even more necessary the identification of a complementary water source. Beyond 2017, the population's demand for water will outstrip the offer. City residents will be forced to pay much higher prices for this essential element or else may be left without it. This is the scenario which led the Fundación Natura Bolivia to seek an alternative, cost-effective source of water provision for the city of Santa Cruz.

We have studied the following technical options, but these have proven problematic for various reasons:

- (1) To continue extracting water from the aquifer through deeper and deeper wells would imply high energy costs which are paid for by the end user. Also, the subterranean aquifer which currently provides water to the city is highly contaminated.
- (2) To extract water from the Río Parabanó or Río Grande watersheds would be expensive. The Parabanó is located a long way from the city and this would make engineering projects very costly. The Río Grande is located well below the city of Santa Cruz de la Sierra, which would imply significant energy expenditure to bring water to the city. This option would also require a treatment plant in order to deal with problems of excessive sediment.

(3) To extract water from the Río Pirai implies similar problems to those already described in the case of Río Grande. It would require a large inversion for dam works, which could impact on the city's aquifer recharge. In addition, the river suffers from excessive sediment and high contamination levels.

Less than 60km from the city of Santa Cruz there is an area which due to its biophysical conditions acts as a factory for water in terms of quality and quantity. Studies of geology, vegetation, soil use and specific water flow have identified a zone of approximately 1000 km² located between the Río Pirai and the Amboró National Park as one of the most important sources of water for the city of Santa Cruz and for the northern part of the



Map which shows the key zone (1) for water production, close to the city of Santa Cruz

department. It is the most competitive option for five key factors:

- ✓ It produces around 20 cubic meters per second. According to technical studies, if we could establish good management of the area's water, the water flow could supply up to five times more than the city's need, even in 2017.
- ✓ Water from the key zone flows into the Pirai watershed and could reach the city of Santa Cruz by simple gravity, given that there is a difference of at least 700 meters between the possible water capitation areas and the Cruceño municipality, which would imply an important energy saving.
- ✓ The geology of the area means that the water flows superficially rather than infiltrating.
- ✓ There would be low potabilization costs: given the lack of intervention in the area, the water sources are still crystalline with low contamination levels.
- ✓ According to case studies in other countries, the cost of extraction from superficial sources is three times lower than that of subterranean extraction.

By capturing this water flow through engineering works, it should be possible to guarantee the provision of water to the city of Santa Cruz for the next 50 years. However, even though the Amboró National Park is one of the most biodiverse parks on earth, a budget increase is needed in order to ensure an adequate management of the protected area. Amboró is slowly being lost as a great water reservoir for Santa Cruz city and its surrounding towns. The time for discussion and analysis is coming to an end: given that there are probably only 10

years left until the demand for water surpasses the offer, we should be taking measures today to ensure the future availability of this resource when we really need it.

Natura has a long-term strategy to conserve the Amboró National Park and adjacent areas in order to ensure its conservation as an additional source of water for Santa Cruz. Once a decision is made to extract water from the forests of the region, there are various financing options, including:

- ◆ Savings made through a change in extraction technology: it may be that the use of this alternative water source would be a "good deal" for SAGUAPAC, considering that it is cheaper to collect water from superficial sources than from subterranean ones
- ◆ Charge the service costs to users through an amount to be incorporated in the monthly bill for the consumption of drinking water
- ◆ Sale of carbon credits for avoided deforestation in the global carbon market

Funds raised through these initiatives to compensate the Amboró National Park and surrounding areas for the provision of environmental services could be destined to:

- ◆ Park management, to contract more park guards, improve the management of the protected area and improve the tourist infrastructure in the water production zone
- ◆ The municipal governments of Porongo and El Torno in the target area, to improve their environmental management
- ◆ Landowners in the water production area, as compensation for the cost of maintaining their forests standing instead of converting

them to agricultural or cattle grazing land

At the workshop run by Natura as part of the EXPOAGUA forum in April, representatives from key institutions such as SAGAUPAC, the Municipal Government of Santa Cruz de la Sierra, the Departmental Government of Santa Cruz and other institutions agreed that this proposal to link the Amboró National Park with the city of Santa Cruz merits more in-depth study.



Payments for watershed services: the Bellagio Conversations

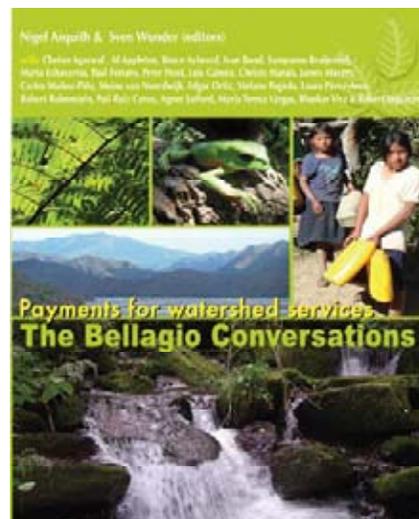
Payments for environmental services (PES), and in particular payments for watershed services (PWS), currently attract considerable interest among academics, donors and practitioners. Few efforts so far have been made to compare and analyze existing initiatives. Last year a conference took place in the Rockefeller Foundation's Bellagio Center, on the banks of Lake Como in Italy, which attempted to do this in an informal setting. From the 12 to the 17 of March 2007, 24 people from 13 countries met to discuss lessons learned from recent global experiences with PWS. Between them, the diverse range of practitioners, investigators and investors had experience of nine PWS schemes and detailed knowledge of 15 more.

The objective of Bellagio was to consider how best to use knowledge and experience to improve the efficiency of watershed management. The result is a publication called "Payments for Watershed Services: the Bellagio Conversations, available in English and soon to be translated into Spanish. These edited conversations are no substitute for a formal comparative analysis and systematic extraction of lessons, but the authors believe that what was lacking in methodical analysis, they made up for in on-the-ground, practical experience. The conversations are focused on currently unresolved PWS issues that are already much discussed globally, and on questions which the participants considered important but are not currently on the global agenda, namely:

- How do laws and policies affect PWS schemes, and how can they best be influenced?
- How much research is needed prior to and during PWS implementation? When and how does it make sense to minimize transaction costs?
- When should services be "bundled" to increase payments?
- How can service users be stimulated to pay?
- How important are PWS initiatives for poverty reduction?
- How can PWS schemes be designed so as to balance efficiency with fairness?
- At what scale are PWS schemes best applied?

The Bellagio Conversations do not pretend to be a "how-to" guide. There is currently no general PWS recipe, and each PWS initiative will need to develop in its own social, economic, and cultural contexts. Throughout the meeting in Bellagio participants found themselves continually repeating phrases such as "preliminary findings show", "this needs empirical testing", or "we're not yet sure of the best way to go". Recognizing our cognitive

limitations in the innovative field of payments for watershed services is perhaps the first necessary condition for eventually making progress. It is the hope of all who participated in the Bellagio Conversations that their experiences will help encourage potential new PWS innovators to get involved, to develop better schemes, and to not repeat their mistakes. Payments for watershed services initiatives can be a powerful conservation tool in the right circumstances. Understanding the opportunities and challenges involved will help us to know when to take the plunge and how to make the most of it.



The Rockefeller Center on Lake Como, Italy

Getting to know the different faces of Natura...

**Israel Vargas Caballero,
Chief of the Science and Investigative Unit**

Israel is an agricultural engineer by profession. Currently he is completing a masters in the management and conservation of phylogenetic resources at the University of San Simón (Cochabamba), and in addition he has a diploma in land-use planning from the University of Gabriel René Moreno. At Natura his main objective is to provide scientific foundations, tools and advice which help improve the team's management in the field. He also supports the development of strategic conservation planning instruments based on modern conservation science concepts.

**Sonia Camargo Salvatierra,
Administrative and Financial Director**

Sonia has a degree in financial auditing from the University of Gabriel René Moreno, with more than 10 years of accounting and taxation experience with commercial businesses and non-government organizations. She ensures management efficiency in relation to Natura's financial activities and human resources, and also checks that the activities of the institution take place in accordance with Bolivia's legal framework.



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