

UPPER PARAGUAY RIVER BASIN NATURAL VEGETATION COVER

*Monitoring change in vegetation cover
and soil use in the Brazilian portion of the
Upper Paraguay Hydrographic Basin
Period of Analysis: 2008 to 2010*



1. Foreword

This publication presents the results from the second edition of *Monitoring change in vegetation cover and soil use in the Brazilian portion of the Upper Paraguay Hydrographic Basin (2008-2010)*.

The goal of this study is to provide a monitoring tool to assess change in soil use and occupation dynamics, and in vegetation cover, in this hydrographic basin encompassing the Pantanal, which is the largest flooded plain on Earth and shelters one of the greatest biological diversity in the world.

The work was carried out by Conservation International, Avina Foundation, SOS Pantanal Institute, WWF-Brazil, and Embrapa Pantanal (national agricultural research agency), with the support of Ecoa and SOS Atlantic Forest, and technical implementation by Arc Plan.

The analysis covers the Brazilian portion of the Upper Paraguay Hydrographic Basin, from the headwaters down to the confluence of the Paraguay River and the Apa River, at the border between Brazil and Paraguay (see map on page 3). This is a cross border hydrographic basin occupying a total area of 620,000 square kilometers, out of which 60% (372 sq. km) are located within the Brazilian territory. The rest of the basin is equally divided between Bolivia and Paraguay (20% of the basin are located within each country).



WWF-BRASIL/ADRIANO GAMBARINI

The Upper Paraguay Hydrographic Basin shelters the largest floodplain on Earth, the Pantanal (photo), and its rich biological diversity.

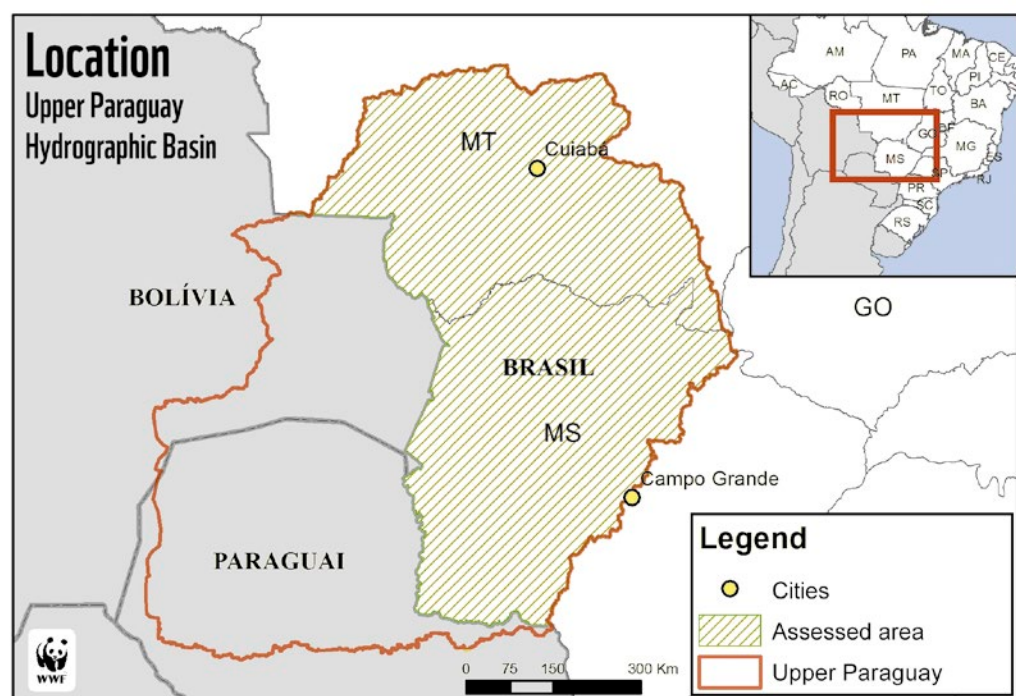
2. Results

Based on technical information and scientific methodology, this second edition of monitoring vegetation cover in the Upper Paraguay Hydrographic Basin (BAP in the Portuguese acronym) presents an x-ray of the soil use and occupation in 2010 and an objective analysis of the change in vegetation cover in 2008-2010.

The results reveal that the Upper Paraguay Hydrographic Basin maintains 86.2% of its native vegetation cover in the floodplain. In the plateau, only 40.7% of the native vegetation cover remains. From 2008 to 2010, the records point out to the conversion of 0.80% of native vegetation for entropic use (due to human action) in the floodplain and 1.56% in the plateau.

The 2010 data also show that cattle ranching still is the most representative segment of entropic use in the Upper Paraguay Hydrographic Basin. Records show a slight increase in areas for this use, in comparison to the 2008 survey. In the plain, pastures increased from 11.1% to 11.3%, while in the plateau they went from 43.5% to 43.9%. Agriculture (crops) maintained the same rate in the floodplain (0.3%), while in the plateau it increased from 9% to 10%.

It is important to emphasize that other analyses, besides this one, may help to obtain a better understanding of this decrease in the change dynamics, through the analysis of social and economic factors, and also an improvement in the agriculture and cattle ranching production efficiency in the consolidated areas, particularly in the plateau sheltering the headwaters of the main rivers flowing in the Pantanal.



The analysis was performed in the Brazilian portion of the Upper Paraguay Hydrographic Basin, which is the area highlighted in green.

Vegetation cover map: 2008-2010

2008/2010 study	Total native vegetation cover	Entropic use total area	Entropic use conversion
Floodplain	86.2%	13.8%	0.80%
Plateau	40.7%	59.3%	1.56%

Vegetation Cover Map: 2002-2008

Estudo de 2002/2008	Total de cobertura vegetal natural	Área total de uso antrópico	Conversão para antrópico
Floodplain	86,6%	13,4%	2,4%
Plateau	41,8%	58,2%	4%

Pasture and crop areas

Region	Pastures		Crops	
	2002/2008	2008/2010	2002/2008	2008/2010
Floodplain	11.1%	11.3%	0.3%	0.3%
Plateau	43.5%	43.9%	9%	10

3. Data Analysis

Before its conclusion and aiming at providing a portrait which is closest to the reality, the results of this study were presented to key actors in Mato Grosso do Sul state, i.e. representatives from civil society, research organizations, and the production sector. Consultations were carried out during three meetings taking place in March through May 2012. The contributions, criticisms and suggestions obtained in those meetings are contemplated, at some level, in the final version of the study.

In spite of the results, there is a consensus among the consulted key-actors that, although 86.2% of the Pantanal native areas are conserved, this does not mean that there are no threats. The conversion slowdown observed in the plateau and in the floodplain during the past two years is a positive factor. In 2008 the annual conversion rate in the Plateau was 0.67% and in 2010 it was 0.3%. In the plain, the rate was 0.40% in 2008 and 0.34% in 2010.

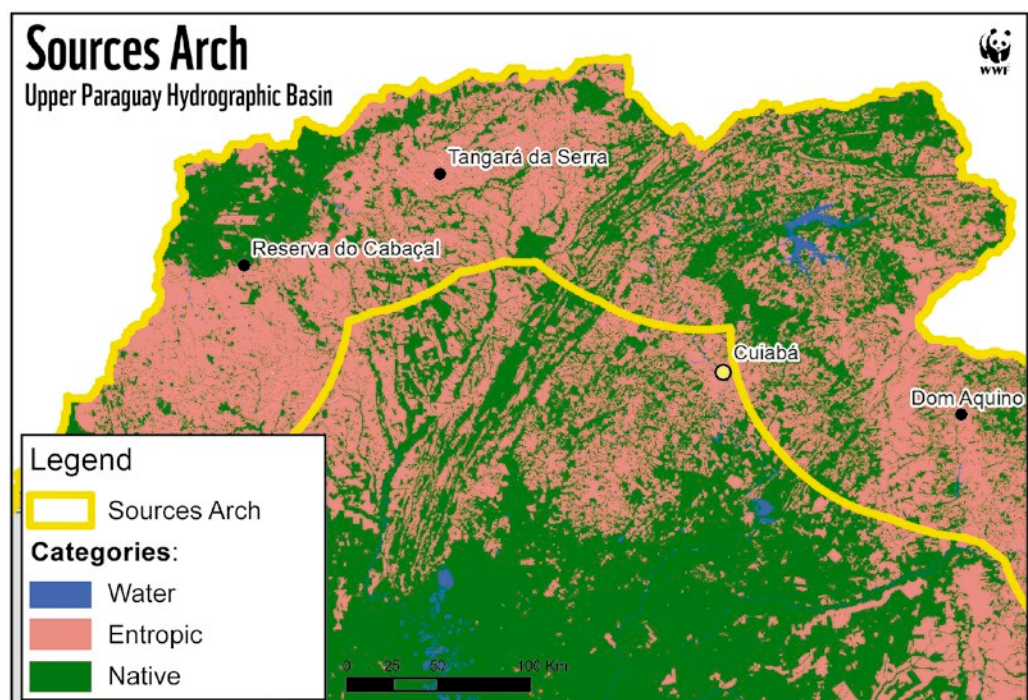
Nevertheless, the conversion of native areas, particularly for agriculture and cattle ranching uses, remains a threat, particularly in the plateau, where the river sources are located. In those plateau areas, the native vegetation cover amounts to 40.7%. Conservation of rivers' sources and riparian forests is vital to maintain freshwater dynamics in the plain. The study also reveals the growth in pasture and farming areas, both in the plain and in the plateau. Most of it occurred in the Savannah with Tree/Cerrado areas.

It must be taken into account that the plateau and the plain are interconnected through one system only (the hydrographic basin), within which the rivers originate and are strengthened in the plateau, before flowing down and out into the floodplain. This dynamics is severely changed in the past years.

Although they are interconnected, the plain and the plateau have quite different dynamics regarding the soil use and occupation, and the social, economic and cultural development. Therefore, they have undergone and will go through different development processes. It is thus necessary that conservation planning and actions be carried out in an integrated way, while taking into account the profiles of each part of the basin.

During the period when the study was made and also during the previous presentation of the study results to key actors, several points of improvement in the methodology of data collection and analysis were identified. These points will also be worked on in the coming monitoring editions. One of the points is the analysis of the permanent preservation areas status in some sample points of the hydrographic basin, in order to start an analysis of the protection degree in sources and rivers which are important for the hydrographic basin freshwater pulse.

One further recommendation is that the good examples from the Pantanal plain and plateau be replicated and valued, so that the conversion rate of native areas can be decreased as much as possible. The improvement in production efficiency, through the adoption of good practices, and social and environmental criteria, was listed as one of the chief strategies to decrease the impact of agriculture and cattle ranching activities on the hydrographic basin native areas.



This plateau region in the Upper Paraguay Hydrographic Basin, which is the origin of the main rivers forming the Pantanal, is where there was the greatest conversion of native areas.

There is also a consensus among the consulted sectors that the environmental legislation must be complied with and perhaps adapted to the Pantanal. They also deem important to strengthen a positive agenda, encouraging, publicizing/disseminating, and somehow rewarding good practices for production and environmental conservation.

4. Final considerations and next steps

For the organizations which carried out the study, this technical document is an efficient analysis and monitoring tool to assess changes in vegetation cover and the soil use and occupation dynamics in the Upper Paraguay Hydrographic Basin. Nevertheless, other analyses regarding the social, economic, political, cultural and other contexts have a complementary role in decision making and action taking in favor of the Pantanal and the Cerrado sustainability.

For partner organizations, this periodical analysis is important to help monitoring this relevant hydrographic basin, in the plain as well as in the plateau areas. It enables the identification of the changes which have occurred and the understanding of the development in soil occupation and use dynamics. The obtained information can be used to influence change in public policies and also to support several organizations in their project and program strategies.

Monitoring will be carried out every two years. The data will be made available to government organizations (federal, state and municipal levels), civil society organizations, universities, research institutions, and other stakeholders who are interested and work in that region.

The previous study, which was carried out by the partner organizations and was launched in 2010, was widely publicized and had excellent use. The data was used by 72 organizations (research institutions, universities, government and non-governmental organizations). These results reinforce the relevance of this information today.

The complete study can be accessed in <http://www.usoeocupacaobap.org>, where it is possible to download the raw data and shapes used in the analysis. A subscription is required to access that information, providing the user name, organization, contact details, and the purpose of the data use. However, note that the information is available only in Portuguese

The first edition of the study is available in the link below:

<http://www.wwf.org.br/informacoes/english/?25201/Study-reveals-greatest-impacts-of-deforestation-in-the-highest-regions-of-the-Brazilian-Upper-Paraguay-River-basin>



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