
WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

THE PANTANAL CONSERVATION COMPLEX (BRAZIL)

1. DOCUMENTATION

- i) **IUCN/WCMC Data sheets** (8 references).
- ii) **Additional literature consulted:** Bibby *et. al.*, 1992. **Putting Biodiversity on the Map. Priority Areas for Global Conservation.** Cambridge, UK; Biodiversity Support Program, Conservation International *et. al.*, 1995. **A Regional Analysis of Geographic Priorities for Biodiversity Conservation in Latin America and the Caribbean.** Washington, DC; Dinerstein, E. *et. al.*, 1995. **A conservation assessment of the terrestrial ecoregions of Latin America and the Caribbean.** Washington, DC; Davis, S.D. *et. al.*, **Centres of Plant Diversity.** Vol. 3. IUCN; Thorsell, J., Fersters, R. and T. Sigaty, 1997. **A global overview of wetland and marine protected areas on the World Heritage List (Draft).** IUCN; Gillet, H. *et. al.*, 1998. **A global overview of protected areas on the World Heritage List of particular importance for biodiversity.** UNESCO/WCMC/IUCN; Swarts, H., 2000. **The Pantanal of Brazil, Bolivia and Paraguay: Proceedings of the World Conference on Preservation and Sustainable Development in the Pantanal.** Canada; Frazier, S. **Directory of Wetlands of International Importance: An Update.** Cambridge, UK; Ponce, V. M., 1995. **Hydrologic and Environmental Impact of the Paraná-Paraguay Waterway on the Pantanal of Matto Grosso, Brazil: A Reference Study.** San Diego State University, California, USA; MMA/Funatura/CI, 1999. **Priority areas for the Conservation of Biodiversity of Pantanal and Cerrado regions.** Brasilia.
- iii) **Consultations:** 4 external reviewers, local park staff; staff of IBAMA-Brasilia and IBAMA-Cuiabá, EcoTrópica Foundation, Municipal Secretary for Environment and Development/ Cuiabá, Municipal Secretary for Environment and Development/Mato Grosso do Sul, University of Cuiabá, Wildlife Conservation Society.
- iv) **Field visit:** Pedro Rosabal. February, 2000.

2. SUMMARY OF NATURAL VALUES

The Pantanal Conservation Complex (PCC) consists of a cluster of four (4) protected areas: Pantanal Matogrossense National Park (Category II, IUCN), Dorochê Private Reserve (Category Ia, IUCN), Acurizal Private Reserve (Category Ia, IUCN), and Penha Private Reserve (Category Ia, IUCN), for a total area of 187,818ha (see Map 1). This complex of protected areas is located in western central Brazil, at the south-western portion of Matto Grosso State, at the international border with Bolivia and Paraguay. It represents 1.3% of Brazil's Pantanal, which is the principal part of one of the world's largest freshwater wetland ecosystems (Eberhard, 1999). Despite its relatively small size the nominated site presents a unique combination of natural ecosystems (wetlands and mountains) that make it unique within Pantanal's region.

The main source of water for the Pantanal is the Cuiabá River, which is the principal tributary of the Paraguay River; these two rivers are functionally among the most important waterways in the Pantanal. The nominated site is located in the headwater basins of these two rivers, thus being critically important from the hydrological point of view, as well as for the role it plays in disseminating nutrients to the whole Pantanal region. The nominated site includes typical ecosystems and natural features of the Pantanal such as river corridors, gallery forests, perennial wetlands and lakes, seasonally inundated grasslands and terrestrial forests. Acurizal and Penha Private Reserves, contains most of the Amolar Mountain range with a maximum altitude of 900m. This creates an abrupt transition between seasonally flooded environments and the mountains, representing a unique ecological gradient for the entire Pantanal region (Eberhard, 1999).

Due to the combination of wetlands and the Amolar Mountains, the vegetation of the site is one of the most diverse compared to other areas of the Pantanal. It contains the vegetation of the dry-savannah (Cerrado) and the semi-deciduous forest of the south and south-east Brazil (Paiva Scardua, 1997). There is an area of semi-deciduous alluvial forest with small trees (10-15m in height) and bushes. In permanent bays, floating island masses of riverine vegetation are found. For the whole Pantanal region 250 species of aquatic plants have been reported, from which 100 of them (40%) are found in the nominated site. Typical of swamps, near the rivers and on waterlogged patches of earth, are clumps of acuri palm trees, forming the palm-tree groves and palm woodlands for which the region is famous. The slopes of the Amolar Mountains are covered by several vegetation types, including savannahs and the endangered Bolivian lowland dry forests (Eberhard, 1999). Also associated with the Amolar Mountains is the only semi-deciduous forest area that can be found in the whole Pantanal region (The Nature Conservancy, 1999), which still remains in pristine state.

The abundance and diversity of wildlife is the most spectacular feature of the site. During the field mission to the nominated site it was possible to see large groups of animals every 8-10 seconds, a remarkable example of wildlife diversity. The fauna of the Pantanal region is extremely diverse and includes 80 species of mammals, 650 birds and 50 reptiles and over 300 species of fish. The nominated site preserves 65 mammals (81% of the total for Pantanal), 212 birds (33%), and 22 reptiles (44%). These numbers reflect the present level of knowledge and will most likely increase following a systematic research programme in the nominated site, which is just beginning using.. This is particularly important for the biodiversity of the Amolar Mountains, where most forests have been insufficiently studied.

Populations of species of conservation concern such as jaguar, marsh deer, giant anteater and giant otter live in the nominated site. The population of jaguar associated with the Acurizal Private Reserve is probably the largest of the whole Pantanal region (The Nature Conservancy, 1999). It is worth noting that this was the site where George B. Schaller, a scientist of the New York Zoological Society, once conducted his influential research on large mammals and their habitats.

The site is one of the most important breeding grounds for typical wetland birds such as Jabiru stork, as well as several other species of herons, ibis and ducks. Parrots are also very diverse, with 26 species recorded in the area including hyacinth macaw, the world's largest parrot. A large proportion of the remnant wild population of this species inhabits the nominated site. This was a key value that justified the inscription of Pantanal Matogrossense National Park as a Ramsar site.

3. COMPARISON WITH OTHER AREAS

There are no other World Heritage sites in the Biogeographical Province of Campos Cerrados (Udvardy, 1975). There are 44 sites on the World Heritage List with major wetlands values and 23 of them contain major freshwater ecosystems. However, they are in different biogeographic regions and represent different ecological characteristics. The nomination document refers to the World Heritage site of the Everglades National Park (USA). There are major differences between these two sites: the Everglades, with an average altitude of 1m lacks the altitudinal and ecological gradient of the nominated site that reaches 900m in the Amolar Mountains. While mangroves are the predominant type of vegetation in the Everglades, the vegetation is more diverse in the nominated site. The number of reported birds in the nominated site (212) is lower than that of the Everglades (400) but it is likely that this number will increase with further research. The number of mammals in the nominated site (65) is more than double that for the Everglades (25). However, Everglades is much larger and comprises all of the wetland area.

The key question, raised by reviewers, is how representative the nominated site is with respect to the whole Pantanal region. In fact, as pointed out in the nomination document, and recognised by all reviewers, there are a number of "Pantanals" within the vast Pantanal region. According to the degree and duration of flooding it can be divided into three sub-regions (Henebry and Kux, 1999); with regard to phytosociology, water level permanence and biological pathways it can be divided into 10 sub-regions (EMBRAPA, 1995); and according to the distribution and number of species (flora and fauna), degree of endemism, threatened species, and level of environmental pressures, it can be divided into 19 sub-regions (MMA, Funatura, CI, 1999). The obvious conclusion is that it is impossible to define a single area that is representative of the whole Pantanal.

Therefore, it is essential to define how important the nominated site is in relation to the whole Pantanal. As proposed in the nomination document, and acknowledged by one reviewer, the argument that the nominated site is a "summary of the Pantanal at small scale" is valid. This is due to the combination of the Amolar Mountain

range with the main draining system of the Paraguay and Cuiabá rivers, offering a synthesis of the biological and physical processes of the entire Pantanal region. In addition, the site is representative of 4 sub-regions (Eberhard, 1999) with regard to the 10 sub-regions defined by phytosociology, water level permanence and biological pathways (EMBRAPA, 1995). Most importantly, there are other particular features that makes the nominated site outstanding:

- due to its geographical location and hydrographic regime it is the only area that remains partially inundated during the dry season so wildlife, and particularly mammals, migrate to this area searching for water and other resources;
- in the rainy season it is one of the first areas to be flooded and from it the water flows to the rest of Pantanal, thus its contribution in dispersing nutrients and larvae is particularly high;
- in the beginning of the rainy season, where anaerobic conditions prevail in most channels and streams, there occurs a phenomena of upstream migration of a number of fishes to the small rivers and streams flowing from the Amolar mountains that have a greater concentration of oxygen. This is a rare natural phenomena for the entire Pantanal that can be easily seen in the nominated site;
- because the area is strictly protected it plays a significant role in maintaining fisheries stock as it functions as a no-take reserve (Ferraz de Lima, J.A., 1999). This is particularly important as over-fishing is a critical problem for the entire Pantanal, and;
- the nominated site, which is contiguous to another protected area on the Bolivian border, can play a catalytic role for promoting transboundary cooperation between Brazil, Bolivia and Paraguay on Pantanal's protection and management.

4. INTEGRITY

4.1 Boundaries

The boundaries of the Pantanal Matogrossense National Park are clearly demarcated by a system of buoys in the aquatic areas, and posters and other signals in the terrestrial areas, as part of the implementation of the management plan of this area. The boundaries of the 3 Private Reserves are in the process of being demarcated in the field. However, they are easy to identify because they relate to more clearly defined geographic features, such as rivers and borders of the mountain range.

It is important to note that around the nominated site there are two abandoned private properties that provide additional protection to the nominated site. At present IBAMA is evaluating the possibility to legally obtain control over these areas so as to expand the National Park. On the other hand, the Ecotrópica Foundation is working with a family that owns another property to the North of the nominated site in order to establish another private reserve. It seems likely that the establishment of this new private reserve might occur shortly. If all these efforts are successful an extension close to half a million hectares may be possible to the nominated site.

4.2 Management

The Pantanal Matogrossense National Park (PMNP) was designated as such by Federal Decree No. 86,392 of 24 September 1981; the three Private Reserves were designated by Federal Decree No. 1,922 of 6 June 1996. PMNP was declared as a Wetland of International Importance (Ramsar Site) in 1993. It is important to note that a Federal Decree allowing the establishment of privately-owned reserves recognises that they be managed for conservation purposes in perpetuity.

PMNP has an Emergency Management Plan (Campello, 1994) that it is in the process of implementation. All the other three Private Reserves have a management plan that is under implementation since 1998 by the Ecotrópica Foundation. IBAMA dedicates, from the Federal Budget, a total of USD\$80,000 for managing PMNP. In addition, close to USD\$45,000 is assigned to the National Park from the State budget. The Ecotrópica Foundation has a budget of USD\$120,000 for managing the Private Reserves. Under the IDB's Pantanal Programme, which will invest USD\$400 million for the whole Pantanal region, probably around USD\$1 million will be injected into the National Park to facilitate public use.

PMNP has good, newly built facilities for visitors and researchers. The headquarters had major improvements and renovations during 1995 and 1996, with resources from the National Environment Programme (PNA). A Park Visitor Centre will shortly be operational as part of the new facilities, which can also accommodate groups of up to 15 people, with meeting rooms, bedrooms and a laboratory. Research plans for PMNP are being discussed with a variety of stakeholders. The Ecotrópica Foundation headquarters, located in Acurizal Private Reserve, also has excellent facilities for visitors and researchers.

PMNP has a staff of eight, including a general director, one permanent ranger and six temporary rangers that live in Cuiabá. Two small boats and one speedboat are used for patrolling. The Ecotrópica Foundation has one person in Cuiabá who is responsible for the three Private Reserves and three field-workers permanently based in the reserves. Two speedboats are used for patrolling the private reserves. Staff of PMNP and the Private Reserves co-ordinate their patrolling activities and they are in permanent communication by radio. Control of the site is relatively easy as the only access is by boat, necessitating passing through the existing facilities and control post in PMNP. The other way to get into the nominated area is by air, hiring small private planes in Cuiabá. This is also easily controlled, however, as the only landing strip within the nominated site is located in Acurizal Private Reserve, where The Ecotrópica Foundation has its headquarters.

To enhance the management of the nominated site an Integrated Management Plan for the National Park and the 3 Private Reserves is in the process of preparation. IBAMA and The Ecotrópica Foundation are coordinating this activity, which will also involve participation by the Ministry of the Environment, TNC, the University of Mato Grosso, the University of Mato Grosso do Sul, and experts from Everglades National Park (which has a sister park scheme with PMNP). The participation of experts from the Ministry of the Environment of Bolivia and Paraguay is also envisaged. The Ministry of the Environment of Brazil, through the GEF funded project "Watershed management of Alto Paraguay", has allocated close to USD\$140,000 for the preparation and first phase of implementation of this integrated management plan. The Ecotrópica Foundation is also raising funds through TNC and a number of US Foundations to support preparation and implementation of this plan, with a first draft expected to be ready by December 2000.

4.3 Threats

The nominated site is not facing immediate threats to its integrity and there are no local people living within the site. However, the long-term integrity of this site depends on the maintenance of Pantanal's complex hydrologic regime. In this regard a major threat is posed by the proposed Hidrovia project, a massive navigational waterway project currently being considered in the region. This project intends to build an inland waterway more than 3,400km long in the Paraguay and Paraná rivers, linking Cáceres in the State of Mato Grosso and Nueva Palmira, in Uruguay. The idea is to straighten and dredge the rivers in order to facilitate large ship navigation and, consequently, the transportation of Brazilian soybean harvests overseas. The works will affect the natural dynamic of water flow patterns in the basin principally the Pantanal's massive absorption of flood water followed by slow release (Gottgens *et al.*, 1998; Silveira, 1997).

Mineral extraction is also a cause for concern in the region. Principally, the use of mercury to extract gold from the soils is posing a major threat to the health of the whole Pantanal ecosystem. This removal process releases large amounts of this highly toxic substance into the soils and rivers, which eventually flow into the waters of the Pantanal. The nominated site, due to its location upstream of the Pantanal basin, is in a relatively better position in relation to this threat and there are no reports of pollution-related impacts on the site (The Nature Conservancy, 1999).

Illegal wildlife poaching and the live animal trade have been controlled within the boundaries of the nominated site. In fact there is a clear recovery in the population of a number of species, particularly caimans, jaguars and parrots, within the nominated site (Eberhard, 1999). However, this continues to be a major problem for the Pantanal region.

Programmes that attract tourists to the Pantanal have been developed without proper planning. The programmes, which are growing rapidly in the northern Pantanal region, have caused an increase in illegal sport fishing, creating disturbances in bird nesting areas, and a demand for pollution-causing luxury items (The Nature Conservancy & Ecotrópica Foundation, 1999).

To support the Brazilian government in addressing Pantanal's environmental problems, huge investments will be provided for its preservation. The International Development Bank (IDB) will invest USD\$400 million designated to: (a) watershed management and erosion control; (b) control of urban, agriculture and mining pollution; (c)

development of environmentally sustainable economic activities; (d) better management of fisheries and wildlife, and; (e) development of a larger and better managed system of protected areas. It is likely there will be other investments targeting Pantanal's conservation from GEF, WWF, CI TNC and GEF-France.

5. ADDITIONAL COMMENTS

There are a high number of archaeological sites and ancient stone inscriptions within the nominated site that have not been properly documented nor studied. The preservation of the site will ensure the maintenance of these cultural values.

The nominated site has great potential to catalyse transboundary co-operation between Brazil, Paraguay and Bolivia. There is a protected area on the Bolivian side – the San Matías Sustainable Development Area – which is contiguous to the nominated site, which shares common ecosystems and species. There have been informal communications between The Ecotrópica Foundation and the Bolivian Protected Areas Agency to explore options for cooperation. In addition, as mentioned, the preparation of the Integrated Management Plan for the nominated site is expected to include the participation of experts from Bolivia and Paraguay to discuss transboundary cooperation. If the World Heritage Committee decides to support inscription of the nominated site, efforts on transboundary cooperation could be enhanced using the Convention as an international framework for this.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

The nominated site has been proposed for inscription under all four natural criteria:

Criterion (i): Earth's history and geological features

While the nominated site is a good example of recent Quaternary processes that led to the formation of the Pantanal basin, it does not rank high in relation to other World Heritage sites that show a much longer and complex sequence of Earth's geological evolution. IUCN does not consider that the nominated site meets this criterion.

Criterion (ii): Ecological processes

The nominated site is, in reduced scale, a model of on-going ecological and biological processes that occur in Pantanal. The association of the Amolar Mountains with the dominant freshwater wetland ecosystems confers to the site a uniquely important ecological gradient in the whole Pantanal region that contributes to important biological processes. The nominated site also plays a key role in the dispersion of nutrients to the entire basin. IUCN considers that the nominated site meets this criterion.

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

The nominated site with its combination of wetland areas bordered by the Amolar Mountains, which have a number of very steep cliffs, produces a dramatic landscape that has been frequently described in a number of international television programmes and magazines as "magical". This landscape is exceptional in Pantanal's region. It is extraordinary to see in one place a big group of Amazon Victoria Regia, an impressive aquatic plant, and not far away an immense cactus from semi-arid regions. This spectacular landscape is enriched by the diversity and abundance of wildlife and by the sound of thousands of birds. IUCN considers that the nominated site meets this criterion.

Criterion (iv): Biodiversity and threatened species

IUCN in its global overview of wetland and marine protected areas on the World Heritage List considers Pantanal as a significant region that should be represented in the World Heritage List. A number of assessments conducted on priorities for conservation in the Pantanal region recognise the particular importance of the nominated site for biodiversity conservation (MMA/Funatura/CI, 1999). The area preserves important habitats representative of Pantanal that contain a number of globally threatened species such as the jaguar, the marsh deer, giant anteater and the hyacinth macaw. Moreover, the nominated site is the most important reserve for maintaining fisheries stock in the Pantanal region. IUCN considers that the nominated site meets this criterion.

The nominated site meets all the conditions of integrity as provided in the Operational Guidelines paragraph 44b.

7. RECOMMENDATION

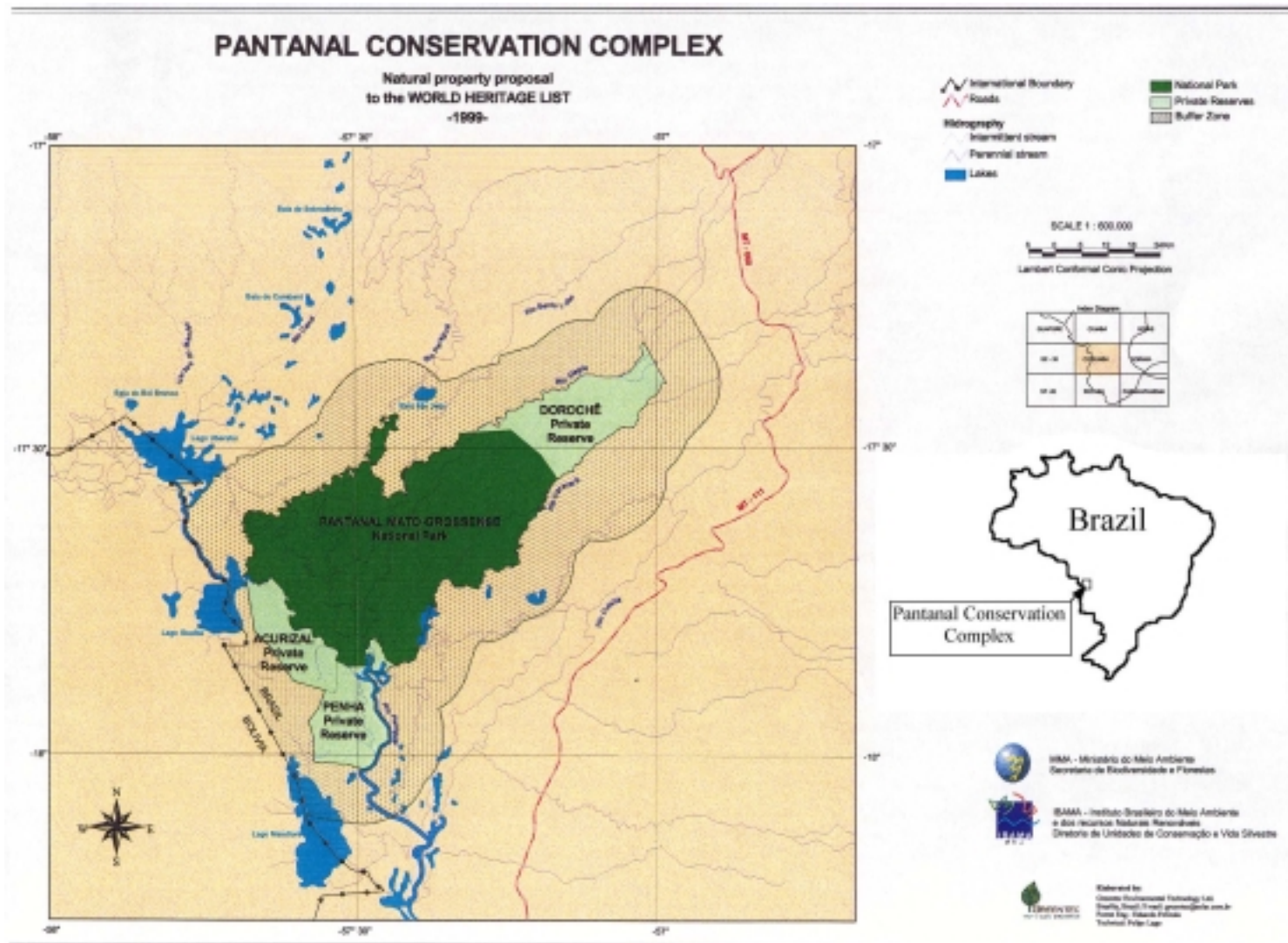
The Bureau recommended to the Committee that the Pantanal Conservation Complex be **inscribed** on the World Heritage List under natural criteria (ii), (iii) and (iv). The Bureau noted that the site is representative of the Greater Pantanal region. It demonstrates the on-going ecological and biological processes that occur in the Pantanal. The association of the Amolar Mountains with the dominant freshwater wetland ecosystems confers to the site a uniquely important ecological gradient as well as a dramatic landscape. The site plays a key role in the dispersion of nutrients to the entire basin and is the most important reserve for maintaining fish stocks in the Pantanal. The area preserves habitats representative of the Pantanal that contain a number of globally threatened species. The area is a refuge for fauna as it is the only area of the Pantanal that remains partially inundated during the dry season.

The Bureau noted:

- the support from by IDB and The Ecotrópica Foundation for the conservation of the Pantanal Conservation Complex; and
- encouraged the State Party to provide technical and financial support to finalise and implement the integrated management plan and enhance the management capacity of this area.

IUCN also noted that the Bureau may wish to:

- encourage the State Party to investigate the World Heritage potential of other protected areas in this diverse and extensive region;
- encourage the State Parties of Brazil, Bolivia and Paraguay to explore ways and means to enhance transboundary cooperation on conservation and sustainable use of Pantanal's region, giving attention to the possibility of establishing a Transboundary World Heritage site associated with the Pantanal Conservation Complex; and
- encourage the State Parties of Brazil, Bolivia and Paraguay to carefully consider the environmental impact that the Hidrovia Project may have on the biodiversity in the Pantanal region.



Map 1: Location and Site Map – The Pantanal Conservation Complex