

Atlantic Forest Southeast Reserves

2020 Conservation Outlook Assessment

SITE INFORMATION

Country: Brazil

Inscribed in: 1999

Criteria: (vii) (ix) (x)



The Atlantic Forest South-East Reserves, in the states of Paraná and São Paulo, contain some of the best and most extensive examples of Atlantic forest in Brazil. The 25 protected areas that make up the site (some 470,000 ha in total) display the biological wealth and evolutionary history of the last remaining Atlantic forests. From mountains covered by dense forests, down to wetlands, coastal islands with isolated mountains and dunes, the area comprises a rich natural environment of great scenic beauty.

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SUMMARY

2020 Conservation Outlook

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SIGNIFICANT CONCERN

Along with two other World Heritage sites encompassing the most valuable remnants of the Interior Atlantic Forest (Iguaçu National Park) and a cluster of the key fragments of the North-eastern Atlantic Forest (Discovery Coast Atlantic Forest Reserves), respectively, this serial site is the most encouraging response to the fate of the biome and recognition of its global importance. The establishment of protected areas within the remaining Atlantic Forest was an important step to prevent the irreversible loss of a unique and exceptionally diverse forest ecosystem altogether. However, many of the conservation units that make up the site are very small and vulnerable to outside influences. However, there are important continuous blocks including Carlos Botelho and Intervales State Park, which require increased protection to ensure long-term conservation of the area and remaining connectivity. Much of the implementation, in particular as regards coordination of efforts between actors and stakeholders, remains to be consolidated. Urgent action seems needed to improve integrity and mitigate the existing threats, including ongoing illegal resource extraction and land use. If predicted climate change is added to the factors, considerable degradation of important conservation values seems highly likely in the absence of major responses. At the same time, further declining budgets for protected areas across the country, raise serious concerns over the already limited resources to address these issues.

FULL ASSESSMENT

Assessment information

Threats

Current Threats

High Threat

Ecological and biological isolation of the various components comprising this World Heritage site remains the most significant threat to its values. However, this simply reflects the realities of the Atlantic Forest biome, which has seen dramatic reduction of its original distribution. While no analysis has been undertaken specifically for the World Heritage site, it will be important to assess the degree to which it continued being affected by fragmentation in the years following its inscription on the World Heritage List. In the buffer zones of several components, agriculture, ranching, plantation forestry and infrastructure development have been noted as pressures in the past; however, no systematic assessment of these threats exists across the entire World Heritage site.

► **Residential Areas, Recreation & Tourism Areas**

High Threat

(Infrastructure in the buffer zones)

Inside site, extent of threat not known
Outside site

Infrastructure in the buffer zones of different components of the site, such as settlements, mining, roads, tourism facilities, water impoundment, and drainages degrade and fragment natural habitats, impede habitat restoration, contribute to pollution and sedimentation, and impact wildlife (BirdLife International, 2012; UNEP-WCMC, 2011). However, no systematic assessment is available across all the components of this serial World Heritage site.

► **Other Ecosystem Modifications**

Very High Threat

(Biological isolation and fragmentation)

Inside site, widespread(15-50%)
Outside site

This World Heritage site encompasses the biggest Atlantic Forest remnants in Brazil and is the biggest remaining block of the biome. Nonetheless, some of the protected areas, mostly the private ones, that make up the site are very small and vulnerable to outside influences. The isolation is being exacerbated by human interventions that further degrade and fragment habitats, and by climate change and will result in the loss of biodiversity over time (Birdlife International, 2012; UNEP-WCMC, 2011; WWF, n.d., Perry, 2011). Such anthropogenic pressures also have indirect effects in reducing biodiversity, as spatial species richness has been shown to decrease dramatically in landscapes where forest cover has fallen below 30% (Estavillo et al., 2013). It is important to note that since the inscription of the site on the World Heritage List, two state protected areas mosaics were declared by the State of Sao Paulo within the region and other Federal protected areas were created in the Parana state (IUCN Consultation, 2017). Nonetheless, fragmentation and biological isolation remain the most serious threats to the remnants of Atlantic Forest. Creation of ecological corridors is considered essential, as conservation units created across the Atlantic Forest are considered insufficient to preserve the remaining biodiversity of this fragmented biome (Santos et al., 2018). While no analysis has been undertaken specifically for the World Heritage site, it will be important to assess the degree to which it continued being affected by fragmentation in the years following its inscription on the World Heritage List.

► **Hunting and trapping, Logging, Harvesting & Controlling Trees**

Very High Threat

(Illegal extraction of natural resources)

Inside site, scattered(5-15%)
Outside site

Poaching, timber extraction, non-timber forest products, palm harvest, commercial and subsistence agriculture, and commercial fishing are significant threats for the protected areas, causing further fragmentation of habitats, and degrading wildlife populations. Within the region of the sites in Sao Paulo State, there is an increase of *Pinus eliotti* plantations, which is also an invasive species that is pressuring the Atlantic Forest remnants outside and inside protected areas (Birdlife International, 2012; UNEP-

WCMC, 2011; Parks watch, 2002; WWF, n.d.; IUCN Consultation, 2017).

► **Recreational Activities**

(Impacts of tourism)

Low Threat

Inside site, localised(<5%)

Some areas experienced a tourism boom in late 1990s that threatened both their environment and their native communities with rapid unregulated development. Restrictions on developments and day limits for visitors have been introduced since then, along with infrastructure for visitor which helped organize the visitors flow. When well-structured, tourism and ecotourism activities are perceived by stakeholders as one of the best ways to support protected areas and to decrease pressures over the Atlantic Forest remnants (IUCN Consultation, 2017).

Potential Threats

High Threat

Climate change represents the most significant potential threat to the World Heritage site. Even though some impacts of climate can already be seen, further significant changes are predicted in the future, with dramatic reduction in the range of some species and overall redistribution of species composition due to a combination of factors, including increasing temperatures and changes in precipitation.

► **Habitat Shifting/ Alteration, Temperature extremes**

(Climate change)

High Threat

Inside site, throughout(>50%)
Outside site

Several studies predict impacts of climate change on different groups of species in the Atlantic Forest. Some show not only a significant reduction in the potential distribution of the species, but also that the Atlantic Forest may be restricted to a more southern position in Brazil (Colombo and Joly, 2010). Other studies project that species in upper elevations in the Atlantic Forest are at risk from climate change as restriction to mobility towards less warm higher elevations will not be possible (Sodhi and Ehrlich, 2010). Predictions also exist for certain groups of species, for example, Lourenço-de-Moraes et al. (2019) conclude that 73.6% of oviparous species and 67.6% of viviparous snakes could lose at least half of their original range across the Atlantic Forest by 2080. The combination of increased temperature, changes in precipitation and soil moisture decline will result in significant changes in and redistribution of plant communities (Follador et al., 2019).

Protection and management

Assessing Protection and Management



Serious Concern

Management of the World Heritage site is divided among federal and the two concerned state protected area authorities, and the administration of the private reserve. The management of each protected area is guided by a management plan, though several are outdated and their implementation is limited by insufficient human and financial resources. (UNEP-WCMC, 2011; IUCN, 1999; de Oliveira, 1998; IUCN Consultation, 2014). The key concern is the coordination of management among the many protected areas that make up the site (UNEP-WCMC, 2011). More recently, progress has been made in the further development of the "conservation mosaic", but this is has not been translated into the formal design of the World Heritage site as of yet. Besides the federal mosaic (Lagamar), other two mosaics were created in the State of Sao Paulo, due to the redesign of Jacupiranga Park and Jureia-Itatins ecological station boundaries (IUCN Consultation, 2017).



Some Concern

The ICMBio applied the RAPPAM method twice for its protected areas (2005-06 and 2010) and the State of Sao Paulo in 2004 for its PAs. Since 2015, besides RAPPAN, ICMBio is annually applying the SAMGE (Monitoring and Evaluation System) while the RAPPAN assessment is undertaken every 5 years. In 2015, ICMBio launched the SIGTerra - Protected Areas Territorial Information Consolidation System, whose goal is to compile land tenure information of the federal protected areas. Independently of the results,

brought about by those evaluation systems, the overall key challenge, continuous to be how to better coordinate management across the entire serial World Heritage site (IUCN Consultation, 2017).

► **Some Concern**

This serial World Heritage site consists of 25 component protected areas and lies entirely within a much larger buffer zone of 1,223,557 ha which is managed as a UNESCO Biosphere Reserve (IUCN, 1999). Nonetheless, many of the conservation units that make up the site are very small and vulnerable to outside influences - of the 25 protected areas comprising the site, 12 cover less than 5,000 hectares each (World Heritage Committee, 2015).

► **Serious Concern**

The establishment of the individual protected areas and their consideration and nomination as one coherent World Heritage site represented an adequate attempt to increase the scale of conservation intervention. The fundamental challenge to promote more sustainable land and resource use in the broader landscape remains. The integration of the PAs planning into other regional and national plans continues to be weak (IUCN Consultation, 2017).

► **Some Concern**

Relationships with local people continue to be strained. The Advisory Councils, set up by the management units, helped to solve many conflicts, but the lack of integrated and long-term plans to maintain the involvement of the stakeholders in the management jeopardize the gains achieved in some areas (IUCN Consultation, 2017).

► **Some Concern**

The legal framework for the World Heritage site has been developed by a mosaic of 10 protected areas established by federal decree (1 National Park, 1 Ecological Station, 3 Wildlife Zones, 3 Environmental Protection Areas); as well as protected areas in Sao Paulo State established by state decree (State Parks, Ecological Stations, Wildlife Zone, Environmental Protection Area); and protected areas in the Parana State established by state decree (5 State Parks, 1 Ecological Station, and 1 Environmental Protection Areas); and 1 Private Natural Heritage Reserve. Some protected areas in S. Paulo were divided into other areas (Jacupiranga State Park and Jureia-Itatins Ecological Station), increasing the territory that was strictly protected and adding protected areas which allow sustainable use (UNEP-WCMC, 2011, IUCN Consultation, 2017).

► **Some Concern**

The implementation of the individual protected areas management plans and surveillance of their buffer zones has been becoming weaker. One reason is the shortage of staff and financial resources at all government levels. In the Parana state, the absence of the Environmental Police agreement with the state exacerbated the problem (IUCN Consultation, 2017).

► **Some Concern**

In the inscription decision, the Committee recommended that the State Party "should be encouraged to restore natural conditions in the Serra do Mar State Park, which potentially could be incorporated in the site". No action has been reported to this effect. Although the Serra do Mar State Park received a significant amount of investment since the inscription, and improved its natural conditions, there aren't initiatives or interest aiming at adding this protected area to the World Heritage site (IUCN Consultation, 2017).

► **Some Concern**

Conservation and research are the main uses of the protected areas that make up the World Heritage site, and in some areas, tourism and recreation are encouraged. In general, research activities are being carried out in an adequate and sustainable manner; however, tourism and recreation are not well controlled in some areas and might become a source of new risks (IUCN Consultation, 2014). Infrastructure investments for public use in the PAs helped better organize public visitation and

encouraged the development of local small sustainable businesses in the region. As an example, the Quilombolas, one of the traditional populations living within the site territory, developed community based tourism (IUCN Consultation, 2017).

► **Serious Concern**

Conservation of the Atlantic Forest is considered a very high conservation priority at the state, national, and global level, and over the years a large number of projects have been financed by multilateral and bilateral organizations, national and state governments, and international and national NGOs and foundations over the years to consolidate management (UNEP-WCMC, 2011;; IUCN, 1999; de Oliveira, 1998). From 2010 to 2014, the Ministry of Environment (MMA) coordinated the Atlantic Forest Protection Program. From 2010 to 2015 the Program invested US\$ 16 million, donated by the German government, for sustainable management and recovery activities to mitigate climate change effects. The FUNBIO, a Brazilian conservation trust fund, operated those resources. Significant support was provided by the Brazilian Foundation Boticário both in research and in situ conservation (IUCN Consultation, 2017). In 2017, however, the budget situation has worsened significantly with significant cuts of the Ministry of Environment budget (IUCN Consultation, 2017).

► **Serious Concern**

The severe staff shortages are of serious concern. Much higher levels of staffing are needed to ensure adequate management both of the individual protected areas comprising this serial World Heritage site and integrated management across the entire site (UNEP-WCMC, 2011; IUCN Consultation, 2017).

► **Some Concern**

Past projects have given significant emphasis to environmental education, and a number of programs have been developed (UNEP-WCMC, 2011). However, in 2016 the Sao Paulo state government closed its Environmental Education programme (IUCN Consultation, 2017).

► **Mostly Effective**

Forest conservation is the paramount aim of the reserves, so that visitation to many of the sites is restricted to certain areas or trails, as at the research stations. These latter do encourage ecotourism, ecological researchers and environmental education. The IDB signed two loan agreements with the SP State government. One in 2006 (US\$ 15 million – 9 million from IDB and 6 million from the government) and another one in 2010 (US 165 Million from the bank and other similar amount from the state government). The first agreement helped the State to plan and develop public use infrastructure in 5 State Parks (Carlos Botelho, PETAR, Intervalles, Caverna do Diabo and Ilha do Cardoso). Those PAs are well equipped, have information centres, with visitor facilities and good trails. The other agreement focused on the Serra do Mar mosaic (outside the World Heritage site) but included the Jureia-Itatins Mosaic, which is part of the World Heritage site (IUCN Consultation, 2017). Overall, tourism and its impacts are localized; however, their concentration in some areas might be too high and these areas become over-utilized (IUCN Consultation, 2017).

► **Some Concern**

Despite monitoring being carried out in many of the site's components, an overall monitoring system for the entire World Heritage site remains absent. Since 1985, the SOS Mata Atlantic Foundation and the National Institute for Space Research (INPE) monitor the Atlantic Forest remnants in all 17 states where it occurs. Between 2015 and 2016, 130.973.638 hectares (93%) of the total area under the Atlantic Forest Law were evaluated. The deforestation in that period was 29.075 ha. Compared with the previous period of 2014 and 2015, an increase of 57,7% in the deforestation was registered (IUCN Consultation, 2017).

► **Mostly Effective**

There 6 Ecological Stations in the World Heritage site have research facilities. Their great value is in the preservation of genetic resources and good samples of Atlantic forest biodiversity, for research into speciation and into the future of sustainable exploitation of indigenous species, especially for their medical uses (UNEP-WCMC, 2011). Significant research is funded by a number of foundations, such as

Boticario Foundation, which invested in the Lagamar region (PR and SP states) the amount of US\$ 982.540.09 in the last 5 years. Another example is the Project to conserve the Red Tailed Parrot (*Amazona brasiliensis*) which changed the classification of the species from threatened to almost threatened (IUCN Consultation, 2017).

Overall assessment of protection and management

► Assessment of the effectiveness of protection and management in addressing threats outside the site

Serious Concern

Overall, the components of this serial World Heritage site remain under serious pressure from threats originating from outside their boundaries due to the overall fragmentation of the Atlantic Forest region. Many components are located in close proximity to cities or rural areas and are under particular pressure. Functional buffer zones are therefore considered to be of particular importance for this site.

State and trend of values

Summary of the Values

► Assessment of the current state and trend of World Heritage values

Trend: Deteriorating

Additional information

Benefits

Understanding Benefits

► Outdoor recreation and tourism

The World Heritage site is located in the vicinity of Sao Paulo, South America's largest city and metropolitan area suggesting a touristic potential in attractive areas, in particular near the coast.

► Importance for research

As the last remnants of the southern Atlantic Forest, the site is of great value for researchers as it provides an opportunity to study the great biodiversity of this region in the last unaltered natural expressions of the biome.

► Water provision (importance for water quantity and quality)

All remaining areas of the Atlantic Forest are important for water provision (Joly et al., 2014).

Factors negatively affecting provision of this benefit :

- Climate change Impact level - Moderate, Trend - Increasing
- Habitat change Impact level - High, Trend - Increasing

► Fishing areas and conservation of fish stocks

Although no specific information is available, many areas of Atlantic Forest cover probably affect the productivity of adjacent estuarine areas and coral reefs, therefore supporting subsistence and

commercial fisheries along the Brazilian Atlantic coast (Hanazaki et al., 2009).

Factors negatively affecting provision of this benefit :

- Habitat change Impact level - High, Trend - Increasing

► **Collection of wild plants and mushrooms**

Many wild plant species form an important part of the diet of local and traditional people (Joly et al., 2014).

Factors negatively affecting provision of this benefit :

- Habitat change Impact level - Very High, Trend - Increasing

► **Carbon sequestration**

Even though, only patches of the Atlantic Forest remain, they remain extremely important for carbon sequestration.

Factors negatively affecting provision of this benefit :

- Habitat change Impact level - Very High, Trend - Increasing

Summary of benefits

The benefits of the World Heritage site for conservation and for knowledge generation are highly valued at the state, national, and global levels. Even though only patches of the Atlantic Forest remain, they remain extremely important for carbon sequestration and all remaining areas of the Atlantic Forest are important for water provision.

Projects

Compilation of active conservation projects

Nº	Organization	Brief description of Active Projects	Website
1	FUNBIO	Atlantic Forest Conservation Fund which aims to contribute to the protection, sustainable management and recovery of the Atlantic Forest. The fund seeks to support the identification of stakeholders and the establishment of Conservation Units (CUs) and Private Natural Heritage Reserves (RPPNs); stimulate projects on Payments for Environmental Services (PES) and the creation of a system of monitoring for the biome. The Project is part of the International Initiative for Climate Protection (ICI) of the Ministry of Environment, Nature Conservation and Nuclear Safety of Germany (BMU), which provides financial support through KfW Entwicklungsbank (Development Branch of the German Reconstruction Bank), through FUNBIO.	www.funbio.org.br
2	Fundação Grupo O Boticário	Boticário Foundation continuously invest in many research projects the Lagamar region (PR e SP), including the management of the Salto Morato Private Reserve.	http://www.fundacaogrupoboticario.org.br
3	Sociedade Pesquisa da Vida Selvagem e Educação	Project to conserve the Red Tailed Parrot (Papagaio da Cara Roxa) - Amazona brasiliensis.	http://www.spbs.org.br

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