

Management of Tijuca National Park



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March 2017

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The Atlantic Forest located on the Southeastern coast of South America is home to Tijuca National Park. Tijuca National Park is located in Rio de Janeiro Brazil, one of the largest urban forest. 3,200 hectares contribute to biodiversity, recreation and most importantly a well balanced biome. Considering these important factors management practices and activities are vital. Managing the park efficiently and sustainably may hold a promising future for Tijuca Park.

Pre-colonial times Tijuca was a densely covered forest that provided many ecological benefits. These lands were later exploited for the use of harvesting sugarcane and later coffee beans. In 1844, after experiencing a great drought due to deforestation and erosion the government proposed an expropriation. In 1856, the Brazilian empire expropriated high altitude lands closer to the springs and streams in effort to preserve them. In 1861, Emperor D. Pedro II appointed Mayor Manuel Gomes Archer to administer the Tijuca Forest. During Major Archer's thirteen-year term approximately 100 thousand seedlings of new plants of native species of the Atlantic Forest were replanted. This project continued on 1874 under the administration of Baron D'Escragnolle and his landscape artist Auguste François Glaziou. Over the course of a few years' bridges, lakes and new infrastructure made Tijuca Forest into a place appropriate for public recreation. After the Republican Proclamation in 1889 the park was forgotten for about half a century.

After centuries of exploitation, natural regeneration of the Tijuca forest was recovered. A wide range of trees now display their heights, thickness and beautiful leaves. *Eucalyptus*, jack fruit, bamboo, cedar, palms, mahogany and many more cover the lands of Tijuca Forest. Standing tall, some at thirty meters while others on high mountains are 800-1700 meters in height. The entire forest structure contains multiple canopies providing a variation in diversity. Approximately 20,000 species of plants occupy the forest floor providing many ecological benefits. Small plants like orchids, lianas and bromeliads dress the ground cover with its vivid colors. Due to the dense vegetation of the forest, it makes Rio de Janeiro one of the lowest-air pollution in comparison to other places.

The remaining of Tijuca Forest plays a major role for the biological importance

of the Atlantic Forest. It is considered to be one of the five biomes recognized on the planet as a biodiversity hotspot. Tijuca is home to insects, mammals, amphibians, reptiles, and birds. This is largely credited to Antonio Aldrichi and Ademar CoimbraFilho and their group. During 1969 – 1973 they reintroduced 916 animals and twenty-five species. Currently now, Tijuca is home to a wide range of invertebrates. Forty species of butterflies, forty species of insects in the Odonata order and 358 species of the Arachnid group. The diversity of fish is very small but the population of mammals is large. Common mammals are armadillo, capuchin monkey, squirrels, coati and many more. Tijuca Forest holds forty-seven out of seventy-one bat species found in the State of Rio de Janeiro. Tijuca not only contributes greatly in bats species, but it also holds thirty-four of endemic bird species from the Atlantic Forest. 226 bird species roam the skies of forest with ten of those species being considered endangered.

Aside from the beautiful scenes and panoramic views, Tijuca offers many activities within the park. Approximately three million people visit the park yearly, in particularly to see Cristo the Redeemer. The park offers many tracks whether its for bike riding, jogging, hiking or walking. Playgrounds are also available for children and family activities. For the people that love the outdoors camping site are available as well.

In joint effort ICMBio (The Chico Mendes Institute for Biodiversity Conservation) and IBAMA (Brazilian Institute of Environment and Renewable Natural Resources) ensure the preservation and maintenance of Tijuca Forest. In hope of preserving the remains of Tijuca Park six main components make their regulatory framework.

- **Management of Archeology, Historical and Cultural Preservation.** Aims to protect Tijuca National Park irreplaceable historic and cultural resources like significant buildings, structures, sites, objects, and districts - as assets for the future.
- **Management of Border Protection.** Aims to protect the border from real-estate expansion, deforestation, illegal poaching or activities. The

park also provides environmental education classes on how to live eco-friendlier and preserve the forest. Some classes also have reforestation activities in efforts to reduce invasions.

- **Management of Wildlife.** This department does research and inventory of all wildlife. Growing and decreasing populations are carefully observed and maintained to safe levels. Control of invading species to limit death or preventing imbalance of wildlife is also monitored.
- **Management of Vegetation.** The department focuses on two areas, one to manage exotic species and reforestation. Second, to help exotic species be reintroduced into the already existing forest.
- **Management of Fires.** During high risk fire season, the park works alongside fire brigades. Support from the government with helicopters and fireman control and prevent fire outbreaks in the forest.
- **Management of Data and Mapping.** This department focuses on the geographic information systems, cartographic images and geoprocessing of the park. It provides inspection of the land and management activities.

Tijuca National Park also incorporated management activities to help preserve and promote the future of the park. Some of the activities and procedures are but not limited to:

- Slope containment
- Closure of shortcuts
- Scientific research
- Restore hanging bridges
- Selective waste collection
- Removal of waste from slopes & tracks
- Track maintenance
- Cleansing of storm drains
- Voluntary work
- Hydraulic cleaning of monuments
- Removing illegal camping sites

Management plans and activities were carefully developed and enforced every year. These plans are a great start, but in some cases it faces challenges that

affect those same plans aimed to protect the forest. An obstacle of great concern directly within the park is short staff. Not having sufficient personnel directly impacts each of the six management plans and activities as well. Lack of security at the border puts at risk wildlife, vegetation, archeology, historical and cultural preservation. Lack of scientists and researchers to conserve and reintroduce wildlife and vegetation can result in extinction of many plant and animal species. Reduction of fire personnel will only contribute to the spreading of fire faster. Sufficient fire personnel are crucial to control the fire as quickly with minimal devastation to the forest.

Plant extraction and animal poaching still continues to be an ongoing battle. When scientist or researchers study the area or border control patrols the area cages are sometimes found. Smugglers, usually with low-income capture highly requested plants or animals in exchange for monetary profit. For some its their only source of income and they become masters in perfecting their skills.

Urban pressure poses a threat to the forest. With growing population each year, rural landscapes, new economic activities and new transport infrastructure push the limits even closer. Also small-scale clearings for peri-urban, extraction of forest products (timber and non-timber), waste deposits, and release of untreated sewage add significant challenges. Often times without any legal authorization more houses are added to favelas contributing to the overall problem.

Inappropriate public use is another challenge Tijuca National Park faces. Graffiti is sometimes painted on rocks and walls ruining them. Visitors carve names or figures into the bark of trees causing potential damage. Some people also use the park for religious practices, leaving candles and instruments used for their rituals behind. The inhabitants within the park also use resources from the forest and create waste as well.

The future of Tijuca National Park, the largest urban forest remains at stake. A biodiversity hotspot and home to the cities greatest attraction, Christo the

Redeemer has to incorporate new ideas. The regulatory framework and activities should be revised and continuously updated to preserve these lands. Continual financial aid from government resources and educating the public about the importance of Tijuca National Park, may hold a promising future.

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