



Part 1

Corridors to the Future: Conservation of the Atlantic Forest

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Report 1

The Atlantic forest is one of the most biodiverse and threatened areas in the world (Marques et al., 2021). It houses over 20.000 species of plants, 2200 species of birds, and over 320 mammal species and supports a high degree of endemism (The Nature Conservancy, n.d.). Not only is this biome of vital importance for biodiversity conservation, it also contributes significantly to local economic welfare. The Atlantic forest provides a home to more than 125 million Brazilians and all-together generates approximately 70%-80% of the country's gross domestic product (Joly et al., 2014, Martinelli and Moraes, 2013, Scarano and Ceotto, 2015; SOS Mata Atlantica, n.d.). While also being one of the most profitable regions on Earth, it is simultaneously one of the most threatened. Over 80% of the total forest cover has been lost following threats including illegal logging, land conversion and urban sprawl (Marques and Grelle, 2021).

Charles Darwin first set foot in the Atlantic forest in 1832, and spent three months researching local flora and fauna (WWF, 2009). The Atlantic forest was the first continental rainforest that Darwin gazed upon, and left a great impression on him. One of his famous quotes referring to the Atlantic forest reads:

“Among the scenes which are deeply impressed on my mind, none exceed in sublimity the primeval forests undefaced by the hand of man; whether those of Brazil, where the powers of Life are predominant, or those of Tierra del Fuego, where Death and decay prevail. Both are temples filled with the varied productions of the God of Nature: -- no one can stand in these solitudes unmoved, and not feel that there is more in man than the mere breath of his body.” - Charles Darwin, 1832 aboard the HMS Beagle.

Compared to when Darwin first set foot in this area, only a fraction of the forest's original range remains- with different sources citing that the forest is only ~7-12.4% of its original size (WWF, 2009; Fernando Guedes Pinto, 2021). The forest that still remains is highly fragmented, cut-up by roads, oil pipelines and pasture. While much of this unique landscape has been destroyed, it is not too late to reverse biodiversity loss in this area. There is hope of conserving and restoring the forest for both people and nature. In November 2023, we travelled to the Atlantic forest to tell the story of the people who are currently working hard to make a change and reconnect the forest. This is the story of the Associação Mico-Leão-Dourado (AMLD), or the Association of the Golden Lion Tamarin.



One of the major threats to the Atlantic forest is habitat fragmentation caused by deforestation- for example to make way for roads and pipelines. Both of these examples can also be found at the AMLD. Over the past 200 years, much of the Atlantic Forest has disappeared- creating an archipelago of small forest patches divided by impenetrable roads, a 187 kilometre pipeline for oil and petrol, as well as pasture and agriculture.

A habitat of adequate size, in this case a landscape where the individual pieces of forest are connected, is vital to support wildlife access to food, water and shelter. Habitat fragmentation causes a significant issue to many species- many of them will not cross from one fragment of the forest to another as soon as the opening is too great. This divide can be visualised as a great river or ocean for humans. Theoretically we could attempt to swim across, though that would leave us vulnerable to threats. One example of a mammal that is affected by fragmentation is the maned sloth (*Bradypus torquatus*). With a head not too dissimilar to a coconut, the maned sloth is an iconic species of the Atlantic forest. It is endemic to the area, meaning that it cannot be found elsewhere in the world. They spend most of their time in trees, and will only come down to relieve themselves or to move between areas that cannot be reached by using branches alone. Deforestation can create a gap within the landscape that is too large for an individual to cross. As follows, maned sloths can become isolated from other groups and individuals, endangering their genetic diversity, and ultimately the resilience of the population. When an individual does attempt to cross the gap between two habitats, they are more vulnerable to threats, for example when they attempt to cross a busy road, or when an empty patch leaves them vulnerable to predators. They may also lose their way. As if to illustrate this point, a maned sloth was recently found stranded between two patches of forest trying to cross from one to another.

In all, habitat fragmentation significantly affects local biodiversity by increasing predation risk, species not finding a way to meet their basic needs in their patch of forest, and by increasing isolation and thus endangering the genetic diversity of local populations.

Deforestation continues to threaten this ecosystem, and it is vital that biodiversity is protected, for both people and nature. As part of this effort, several biodiversity corridors have been installed to connect patches of forest and create a connected landscape within which the local fauna can freely move. In the next written report, some of these efforts undertaken specifically by the AMLD will be outlined.

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