

# **A.P.E. Project** **(Assess. Protect. Evaluate.)**

**Construction of a Wildlife Overpass for Golden Lion Tamarin in  
the Brazilian Atlantic Forest**

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## Introduction

Reconnecting forest habitats severed by linear infrastructure (LI) development for primates and other arboreal species is often done through reforestation or installing artificial canopy bridges. In addition, larger crossing structures, such as road overpasses, have been recommended as a mitigation option for apes.<sup>1</sup> However, overpasses' efficacy for mitigating LI's impacts on apes has yet to be evaluated. Nevertheless, looking across the globe to a recent success story in Brazil may offer a roadmap to the successful construction of larger crossing structures that benefit a variety of terrestrial and arboreal species.



Figure 1. Location of the BR-101 Overpass

## The Golden Lion Tamarin

The Golden Lion Tamarin (*Leontopithecus rosalia*) is a small, new-world primate, easily identifiable by its shockingly red-gold fur and lion-like mane. Golden Lion Tamarin (GLT) are endemic to the Brazilian Atlantic Forest, one of the most biodiverse places on the planet. GLTs are primarily arboreal species occupying the forest canopy's middle level. In the early 1970s, GLT populations plummeted due to habitat destruction and collection for the pet trade. It was estimated that only 200 individuals remained in the wild. Through a concerted effort by local NGOs, the government and private citizens, programs were implemented to raise GLT conservation awareness in the region. Together with captive breeding efforts, these initiatives resulted in GLT being upgraded from Critically Endangered to Endangered in 2003.<sup>2</sup>

## Bridging the BR-101

Unfortunately, the GLT is still threatened by habitat loss and fragmentation from linear infrastructure.<sup>3</sup> The entirety of the GLT range is located within a transportation corridor between the cities of Rio de Janeiro and Brazil's most important areas for oil exploration. Gas and oil pipelines, power lines, and roadways traverse this area, creating a highly fragmented patchwork of forest.<sup>4</sup> The predominant threat to the GLT is the BR-101, a major highway recently widened to four lanes, increasing the volume and speed of traffic. Before the widening of BR-101, it was already recognized as a significant barrier to the movement of GLT, and the addition of new road lanes has only exacerbated the issue.<sup>5</sup>

Established in 1992 to centralize and consolidate golden lion tamarin conservation efforts, the Golden Lion Tamarin Association (Associação Mico-Leão-Dourado, AMLD) has been working to ensure GLT habitat is sufficiently connected. For nearly a decade, AMLD has been engaged in discussions with key stakeholders



across the region, including the highway construction company (Autopista Fluminense), the national agency for infrastructure and transportation (ANTT), national environmental agencies, including Chico Mendes Institute for Biodiversity Conservation (ICMBio) and Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), the other local NGOs and universities. As a result, the stakeholders identified the need to reconnect GLT habitat through artificial structures to better facilitate movement as well as key forest restoration areas.

In 2020, AMLD assisted in completing a forested overpass that connects the Poço das Antas Reserve on one side of the BR-101 highway to the Mico-Leão-Dourado Ecological Park on the other side. In 2021 AMLD planted native vegetation on the overpass and set up 25 camera traps along the overpass and adjacent corridors to monitor wildlife usage of the structure. Completion of the overpass was a huge step forward for GLT connectivity. However, the seedlings planted along the structure will need years to reach maturity for use by GLT, and thus connectivity for this endangered species still required a more immediate mitigation measure.



Figure 2. Photo of the Golden Lion Tamarin Overpass spanning the BR-101 in Silva Jardim, Rio de Janeiro, Brazil. AP Photo/Mario Labao.

In addition to the overpass, Arteris Fluminense, the company responsible for the highway, constructed ten artificial canopy bridges and 17 underpasses along the 4-lane stretch of the BR-101. These additional mitigation measures were required by the government agency ICMBio to mitigate the negative impact of the widened highway on the São João River Basin and the Mico-Leão Dourado Environmental Protection Area.

## Conclusion

Construction of the BR-101 overpass specifically for the conservation of the arboreal GLT is an incredible feat. Monitoring and evaluating its efficacy in the coming years will significantly inform the design and approach to deploying these structures in other forested habitats worldwide. A recent comprehensive systematic review revealed that empirical evidence regarding wildlife crossing structures, such as overpasses, is sparse, with data for overpasses limited to only large carnivores and ungulates.<sup>6</sup> This review highlights the need for additional projects to be implemented to further inform the efficacy of these structures for a variety of species.

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