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ARE TOAD RAILROAD-KILLS SEASONALLY DISTRIBUTED? A BRAZILIAN AMAZON CASE STUDY

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Billions of vertebrates die each year as a result of direct impacts from various modes of transportation. Additionally, linear infrastructure, such as roads, have become increasingly common across wilderness and protected areas in tropical countries, resulting in adverse consequences to diverse native biodiversity. In this context, the Amazon, one of the last wildlife refuges in the world, has become ever more threatened by road penetration. Although there are several studies addressing the impacts of roads on fauna, notably roadkills, few studies have investigated the effects of railroads on wildlife, with only one relevant published work in Brazil. In the present study, we aimed to investigate the influence of seasonality on the fatalities of toads (*Rhinella gr. marina*) killed along a 892 km-long railroad (Estrada de Ferro Carajás) which crosses two Brazilian states, Maranhão and Pará, in the Amazon biome. A total of 9,550 records were collected over four years of quarterly surveys which correspond to the four seasonal rainfall regimes of the region: dry, dry-wet transition, wet, wet-dry transition. Since the data obeyed the assumptions, an Anova test was performed followed by Tukey's-HSD post-hoc test to determine differences between seasons. For all analyses, R software was used. The results suggested statistically significant differences ($F_{(0,05; 3, 12)} = 7,56$; $p = 0,004$). Analyzing the data, we concluded that there is a greater fatality in the dry-wet transition season, with statistically significant values in relation to dry and wet-dry seasons. This result is consistent with the period of greatest movement of this group of species, which have long locomotion behavior during the first rains, searching for mating sites and partners. These results are unprecedented for research on railways and indicate a possible way to implement seasonal mitigation measures and reinforce the maintenance of crossings before the beginning of dry-wet transition.

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