Traffic mammals attraction of the highway MT-358.

J. L. Santos & I. A. Calvo

Universidade do Estado de Mato Grosso

Author for correspondence: jeison18lisboa@gmail.com

Abstract: The main ecological impacts caused by roads are: changes in behavior; stress and / or removal of native species; modification in the food chain; fragmentation and alteration of habitats by edge effect; population isolation and loss of individuals due to vehicle collision. This work was carried out on the highway MT-358, which connects the city of Nova Olímpia to the State University of Mato Grosso campus of Tangará da Serra, with approximately 40 km of route. The records of the trampled animals were carried out between December 2016 and December 2017. A total of 21 monthly samplings were recorded during the study period. Thirty-eight mammals were recorded on the MT-358 highway during the study period, totaling 13 species of mammals distributed in 08 families. The most abundant species were Tamandua tetradactyla (23.7%), Euphractus sexcinctus (15.8%) and Cerdocyon thous (15.8%). These three most abundant species account for 55.3% of occurrences. Therefore, we suggest that road management institutions use methods that will help ensure adequate migration to the fauna and reduce the risk of impact of running over fauna on already paved roads.

Key words: Run-off, Tamanduá-mirim, Highway.

Introduction

In Brazil, mammals are represented in 720 species distributed in 246 genres (PERCEQUILLO & GREGORIN, 2018). This represents about 13% of the world’s mastofauna. These numbers mean that Brazil has the greatest mammal wealth of the entire neotropical region (FONSECA et al., 1996). Mammals occurring in the Cerrado total about 195 species, of which 18 are endemic and 17 are included in the national list of Brazilian endangered species (MMA, 2003).

In a study carried out by Vieira (1996), an annual estimate of 2,700 wild mammals hit annually on the main federal highways that cut the threatened Cerrado biome is reported, and certainly the numbers verified by him were an underestimate and the present figures are even higher.

The main ecological impacts caused by roads are: changes in behavior; stress and / or removal of native species; modification in the food chain; fragmentation and alteration of habitats by edge effect; population isolation and loss of individuals due to collision with vehicles (TROMBULAK & FRISSEL, 2000).

Three types of direct effects of highways on vertebrates are considered. The first is the "barrier effect," since roads block or restrict movements of certain populations. The second is the "avoidance effect" of highways. Several species of large mammals have very low population density in areas distant of 100 m. to 200 m. of highways. The third type of effect is the loss of individuals by trampling (ROMANINI, 2000).

In a survey carried out by the Brazilian Center for Studies on Road Ecology (CBEE) with an application, the Urubu, through statistics can show how high is the number of road accidents, estimated to be hit 470 million animals on Brazilian roads, being the small vertebrates 90% of these, 9% birds and 1% large mammals (ECOLOGY OF ROADS).

This work aims to evaluate the richness of species of mammals hit by the MT-358 highway between the municipality of Nova Olímpia and the State University of Mato Grosso, Tangará da Serra-MT campus.

Methods

This work was carried out on the MT-358 highway, which connects the city of Nova Olímpia to the State University of Mato Grosso campus of Tangará da Serra, with approximately 40 km of route (Google Earth).

The climate is of type Aw of Köppen, that is, semi-humid tropical, the region presents two defined
seasons, a dry season of May to September and another rainy of October to April (DALLACORT et al., 2011).

The records of the trampled animals were carried out between December 2016 and December 2017. A total of 21 monthly samplings were recorded during the study period.

The routes on the highway were carried out with an average duration of 2 hours on each day of sampling. Being 1 hour in the morning period and 1 hour in the afternoon period. It should be noted, however, that obtaining such records was not the main objective of travel. Therefore, many trampled mammals, particularly in the case of opossums (Didelphis sp.), were not recorded. Only the mammals found dead on the shoulder or lane were recorded.

In the analysis of the data, the relative abundance of each species was estimated through the percentage of records of the species in relation to the total number of individuals of the trampled species.

**Results and discussion**

Thirty-eight mammals were recorded on the MT-358 highway during the study period, totaling 13 mammal species distributed in 08 families (Table 1).

The most abundant species were Tamandua tetradactyla (23.7%), Euphractus sexcinctus (15.8%) and Cerdocyon thous (15.8%). These three most abundant species account for 55.3% of occurrences.

The species Tamandua tetradactyla accounted for 23.7% of the occurrences, in contrast to a study carried out by Rezini (2010), surveying the mammals struck on the highways of Paraná and Santa Catarina. T. tetradactyla represented 1.02% of the occurrences.

Melo and Santos-Filho (2007), recorded the same species with greater abundance in the occurrences, Cerdocyon thous with 28.35%, Euphractus sexcinctus with 21.26% and Tamandua tetradactyla with 18.90%.

The Cachorro-do-mato and Tatu-peba species were also the most frequent in a study by Casella et al. (2006), registering the most frequent species of fauna trampling between Campo Grande and Aquidauana–MS, the cachorro-do-mato (Cerdocyon thous) with 26.9% of the records, Tatu-peba (Euphractus sexcinctus) with 21.3%.

The high number of trampling of these three species can be attributed to the fact that the species of carnivorous mammals, anteaters and armadillos, are species of wide territorial distribution (Caceres et al., 2012), thus necessitating crossing the highways during foraging.

The species T. tetradactyla and E. sexcinctus, in addition to having a slow movement, have poorly developed vision that can be overshadowed by the headlights of the cars when crossing the highways during the nocturnal period (MELO & SANTOS-FILHO, 2007). According to Emmons & Feer (1997), E. sexcinctus is an omnivorous species that feeds even from dead animals and can be attracted to the remains of other animals run over.

Another species with a high mortality rate in this work is Cerdocyon thous, which according to Barros et al. (2016), the high mortality rate found on C. thous roads may be related to habitat changes, such as the use of roads for nocturnal foraging and dispersal. And allied to this is the massive increase in the fleet of vehicles every year.

Among the threatened fauna, three species were found in the vulnerable category by ICMBIO, with a record for each species: Lycalopex vetulus, Myrmecophaga tridactyla and Puma yagouaroundi according to Ordinance No. 444/2014 (IBAMA, 2014).

The highest number of individuals hit by a continuous track will present an intermediate value in the continuous - dotted range presenting a smaller number of trampling in a dotted range, which may indicate that the driver’s visibility interferes directly with the number of individuals hit.

**Table 1 - Number of individuals and percentage by mammal species run over in the MT-358, from December 2016 to December 2017, in the State of Mato Grosso.**

<table>
<thead>
<tr>
<th>Family</th>
<th>Species</th>
<th>Common name</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canidae</td>
<td>Canis familiaris</td>
<td>Cão-doméstico</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Cerdocyon thous</td>
<td>Cachorro-do-mato</td>
<td>6</td>
<td>15.8</td>
</tr>
<tr>
<td></td>
<td>Lycalopex vetulus</td>
<td>Raposa-do-campo</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>Caviida</td>
<td>Hydrochoerus hydrochaeris</td>
<td></td>
<td>2</td>
<td>5.3</td>
</tr>
<tr>
<td>Cebidae</td>
<td>Sapajus sp.</td>
<td>Macaco-prego</td>
<td>2</td>
<td>5.3</td>
</tr>
<tr>
<td>Dasypodidae</td>
<td>Dasyops novemcinctus</td>
<td>Tatu-galinha</td>
<td>2</td>
<td>5.3</td>
</tr>
<tr>
<td></td>
<td>Euphractus sexcinctus</td>
<td>Tatu-peba</td>
<td>6</td>
<td>15.8</td>
</tr>
<tr>
<td>Erethizontida</td>
<td>Coendou sp.</td>
<td>Ouriço-cacheiro</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>Felidae</td>
<td>Felis domesticus</td>
<td>Gato-doméstico</td>
<td>3</td>
<td>7.9</td>
</tr>
<tr>
<td></td>
<td>Puma yagouaroundi</td>
<td>Gato-mourisco</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>Myrmecophagida</td>
<td>Myrmecophaga tridactyla</td>
<td>Tamanduá-bandiera</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Tamandua tetradactyla</td>
<td>Tamanduá-mirim</td>
<td>9</td>
<td>23.7</td>
</tr>
<tr>
<td>Procyonidae</td>
<td>Nasua nasua</td>
<td>Quati</td>
<td>3</td>
<td>7.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>38</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Final considerations

The road in the Serra de Tapirápuã region presents a negative impact factor for the conservation of the fauna, including endemic species of the Cerrado and/or endangered species, according to IUCN data. The direct impact caused by roads that cut through mountains and reserves affects both day and night animal behavior.

Therefore, we suggest that road management institutions use methods that will help ensure adequate migration to the fauna and reduce the risk of impact of trampling of fauna on already paved roads and, above all, during the licensing process and paving of the MT-358 the installation of passage of fauna, mainly in the buffer zone of the Serra de Tapirápuã.

References


