April 13th, 2017

Dra. Ana Claudia Delciellos

Editor-in-Chief

Oecologia Australis

Please, find enclosed the manuscript entitled **“What are we not seeing? Impacts of a short and narrow road on wildlife”** to be exclusively submitted to Oecologia Australis as a peer-refereed manuscript.

Our study addresses the significant impacts of a short and narrow road on wildlife in southeastern Brazil. Narrow roads are generally overlooked when it comes to assess road impacts on wildlife, but they may cause severe damage on animal populations. We monitored vertebrate roadkills in the Comendador Pedro Morganti road (CPM road) between 2010-2016, aiming to assess the impacts of this short two-lane road (5 km length) on wildlife, and compared our results to an extensive four-lane toll road (154 km length), with high traffic volume, the Bandeirantes road (SP-348), also proposing mitigation measures for species conservation. We analyzed roadkill spatial aggregations to identify hotspot zones in CPM road, while we divided SP-348 into sections of 1, 5 and 10 km to assess roadkill variation across multiple spatial scales. We observed a high roadkill rate in CPM road, with 77 roadkilled animals from 14 taxonomic groups, especially mammals. In SP-348, 609 animals from 21 taxonomic groups were roadkilled, also most mammals. No threatened species were roadkilled in CPM road. Most of the roadkilled species are habitat generalists (~67%) but are the remaining fauna in this highly modified landscape. We identify three roadkill hotspots in CPM road, two of them where the road bisects the riparian forests of two water streams, and one in a road section with water drainage from a pond, also bordering a riparian forest. The road splits the remaining structural connectivity of the landscape – riparian forests – hindering species movement between forest fragments. Spatial scale alone explained the high roadkill rate in CPM road, especially when compared to the large road sections of the SP-348. However, when considering 1 km sections, SP-348 also presented high roadkill rates in some sections, eliminating the dilution effect of the larger sections. In summary, our results showed that even short and narrow roads can cause considerable damage to wildlife in a local scale, highlighting that the impact of these roads should not be neglected. The CPM road is being target of a civil process by the São Paulo Public Ministry, and the results of our work may help to reduce its impacts. As mitigation measures, we propose the creation of safe crossing passages for wildlife in the hotspot zones (underpasses and overpasses) and fencing along the CPM road, which may reduce roadkills and wildlife-vehicle collisions.

Here is a list of five independent referees:

Simone R. Freitas, Universidade Federal do ABC, simonerfreitas.ufabc@gmail.com

Hélio Seco, Universidade Federal do Rio de Janeiro, hkcsecco@gmail.com

Fernanda Zimmermann Teixeira, Universidade Federal de Minas Gerais, fernandazteixeira@gmail.com

Fernando Ascensão, Universidade Federal de Lavras, fernandoascensao@gmail.com

Kylie Soanes, University of Melbourne, ksoanes@unimelb.edu.au

I hope it fulfil the requirements for publication.

Best regards,

Marcelo Magioli (on behalf of all authors)

PhD candidate in Applied Ecology

University of São Paulo

Brazil