

Road avoidance and barrier effects of roads on medium-sized, ground-dwelling rainforest mammals.

Peter Byrnes¹ and Miriam Goosem¹

¹ *School of Earth and Environmental Sciences, James Cook University, Cairns, Queensland, Australia.*

As populations continue to grow and urban centres expand there is an increased need for transport networks that link urbanised areas and allow movement of people and goods. Roads are a rapidly expanding component of this network across the landscape. Therefore, it is important to fully understand the impacts they represent on adjacent environments. This study examined the extent of road avoidance exhibited by medium-sized, ground-dwelling rainforest mammals, and whether roads were acting as a barrier to crossing movements of these species. Road avoidance and barrier effects cause habitat restriction and contraction, limiting the core habitat available for resource acquisition and potentially leading to population isolation. This may result in localised extinctions.

Animals representing the target group were trapped using a series of drift fences perpendicular to a busy two-lane bitumen highway, a single-lane dirt road and an interior control site in Wooroonooran National Park in far north Queensland, Australia. Captured animals were fitted with line-and-spool tracking equipment and released. The resulting cotton trail was followed the next day to examine habitat utilisation by the species. A broad scale analysis found no landscape-level avoidance of the busier highway by the target species; however some non-target species showed a preference for less disturbed areas while some were more abundant near the highway. The results also showed no habitat partitioning at the different road types. Use of areas close to the road was not significantly different from use of habitat at a greater distance from the road, with all species utilising all areas of edge habitat including the grassy verge at the highway's edge. Results also suggested that the busy highway may represent a barrier reducing crossing movements, however a study of this barrier effect on a less busy and narrower two-lane bitumen road found no similar effect.