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A Pole Bridge to Avoid Primate Road Kills

Introduction

Habitat fragmentation has become one of the most serious problems for wildlife conservation. In many parts of the world where human activities have been intense, a good example being the state of São Paulo, Brazil, natural habitats such as forests have become scarce and are mainly comprised of small, isolated patches, with animals lacking the possibility of migrating from one fragment to another. The population viability of a species is not solely dependent on its size, but also on the patchiness of the existing habitats where it occurs and on the movement of individuals between habitable patches. In the extreme case, discontinuous habitats may result in the total impossibility of natural migration among local populations (Valladares-Padua, 1993). Habitat or population fragmentation creates small, isolated sub-populations, which enhances the probability of their extinction due to genetic, demographic and environmental forces acting within patches (Soulé, 1980; Ralls and Ballou, 1983). Even if the sub-populations survive, isolation itself can cause genetic drift, leading to genetic divergence and consequent speciation (Franklin, 1980; Otte and Endler, 1989).

Among many proposed solutions to fragmentation, the most widely discussed has been the creation of forest corridors (Harris, 1984). Although very appealing, there are situations where corridors are no longer entirely feasible due to the distance between the fragments. In many cases, they would need to cross properties belonging to several owners, who may not always be willing to collaborate. They would also fail to solve the problems of roads, nowadays a huge threat to wildlife.

Threats of Roads to Wildlife

The negative effect of roads on wildlife has been widely discussed in the literature (Adams and Geis, 1983; Day, 1990). A road is not simply an obstacle which animals have to cross every so often, it is part of their habitat, to be used whenever necessary. The consequence is a massive quantity of traffic road kills. To illustrate the size of the problem, the estimated number of vertebrates run over by vehicles in the United States is one million each day (Lalo, 1987). In the Netherlands alone, 800,000 birds and mammals are killed per year on highways (Van der Zande *et al.*, 1980).

Although there are no statistics for this important wildlife threat in Brazil, it is evident that roads have a considerable negative impact on local faunas. During 89 days of field work at the Morro do Diabo State Park in the west of the state of São Paulo, we collected 24 vertebrates killed on the highway that crosses this Park from east to west. The average is thus of approximately one road death every four days. Among the victims, we observed marsupials, ungulates, rodents, felids, and primates such as capuchins and howler monkeys, and, in September 1994, a black lion tamarin..

Primates, being territorial and canopy forest dwellers, are significantly affected by roads. Evidently, the problem becomes even more serious when it affects endangered species. We observed black lion tamarins (*Leontopithecus chrysopygus*), one of the world's most endangered species of primates, crossing roads both at the Morro do Diabo State Park and at the Fazenda Rio Claro (Duratex S.A.), Lençois Paulista, also in the state of São Paulo. J.Dietz has observed golden lion tamarins (*Leontopithecus rosalia*) crossing a dirt road at the Poço das Antas Biological Reserve, Rio de Janeiro (J.Dietz, pers. comm.). Likewise, Brazilian bare-faced tamarins (*Saguinus bicolor bicolor*) have been seen crossing a road on numerous ocassions in the university campus in Manaus, Amazonas (J.S.Rêgo, pers. comm.).

A Simple and Effective Solution

We have been conducting a long term study of the primate community of the Fazenda Rio Claro. During the first seven days of field research at this site, we observed one of our *L.chrysopygus* study groups crossing a service road three times. Because this was a road used mainly by the company's vehicles, we were able to discuss the matter with the farm's administrators and explain our concerns of possible road kills and what this would represent to such a critically endangered species. We proposed the construction of a pole bridge placed exactly over the locale the animals were crossing. The bridge was immediately built using round wooden poles, stretched above the road at a height of 6 m (Fig. 1). As soon as it was assembled, black lion tamarins and capuchins (*Cebus apella*) began crossing the bridge, travelling back and forth, reintegrating their home range once again. This simple alternative has undoubtedly reduced quite considerably the possibilities of these animals being run over, and in the case of the lion tamarins, contributing to the protection of one of the most endangered species in the world. From its installation, in the middle of August 1991, to the end of 1994, two groups of black lion tamarins and a large group of capuchins have been recorded (incidentally) using the bridge on at least 40 ocassions. We believe that these primate groups use the bridge constantly, probably daily.

Our conclusion is that if other options are available, primates will avoid using the ground as a way to pass from one area to another within their fragmented range. Simple and creative solutions such as the construction of pole bridges or even rope bridges (which still need to be tested on a long term basis) should be sought whenever a situation of threat is found in the field.

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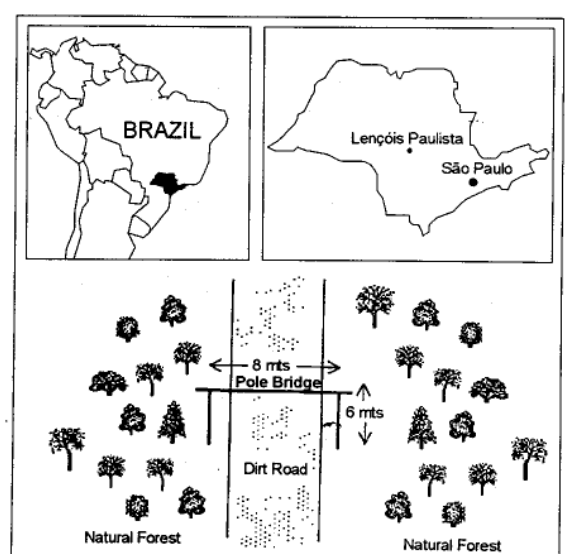

Figure 1. A simplified illustration of the pole bridge at the Rio Claro farm of Duratex S.A., Lençóis Paulista, São Paulo.

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News

Captive Management Programs for New World Primates

Primates are among the most popular species exhibited in zoological parks worldwide. Some species are hardy and have long histories in captivity. Others are more difficult to obtain or maintain, and, as a result, rarely seen in zoos. Properly exhibited, the educational value of many species is very significant and is often the sole opportunity for people living in North America, Europe, and elsewhere to observe these animals in naturalistic settings.

Regardless of their abundance in nature or the species' ease of husbandry, many species are declining in numbers within their natural range while simultaneously becoming more difficult to export from the wild. Given this growing situation, zoos and zoo associations in many regions outside Central and South America are developing programs to manage better those species already present in their collections. These programs frequently have several levels of management, depending on the conservation needs of the species, number of original wild born ancestors (founders) present in the current population, the number and size of captive populations, and the amount of cage "space" available to maintain the species. In order to minimize competition for space with less needy species, several zoo organizations have developed Taxon Advisory Groups or TAGs to evaluate better which species of New World primates should be maintained within their region. Other species with lesser conservation needs and extant captive populations are reduced or eliminated following the decision that captive breeding programs are less urgent.