

The potential importance of road deaths as a cause of mortality for large forest owls in southern Brazil

Glayson Ariel Bencke and Cinara S. Curra Bencke

Cotinga 11 (1999): 79–80

Dois indivíduos de *Pulsatrix koeniswaldiana* mortos por atropelamento foram encontrados em um mesmo dia ao longo de um trecho relativamente curto da rodovia BR-470, próximo a São Cristóvão do Sul, Santa Catarina, Brasil. Este fato sugere que o atropelamento pode ser uma importante causa de mortalidade para corujas florestais de grande porte que apresentam baixa densidade populacional. Recomenda-se que seja evitada a construção de estradas em áreas de preservação onde ocorram espécies de corujas raras em escala regional. No caso de estradas em construção atravessarem áreas de floresta (mesmo que plantadas), recomenda-se a implementação de um programa de monitoramento de modo que medidas que reduzam a probabilidade de mortes de corujas por atropelamento possam ser adotadas, se necessário.

Collision with vehicles is a common cause of death for owl species in many regions of the world^{2,3,5,8,9}. Road accidents are considered the major cause of Barn Owl *Tyto alba* mortality in Europe^{7,13}. Similarly, Burrowing Owl *Speotyto cunicularia* was among the species most commonly found dead in a study of road-killed birds along a section of the BR-471 highway in southern Brazil⁸. The purpose of this note is to report the finding of two road-killed individuals of a large forest owl in south Brazil and draw further attention to road accidents as a potentially important cause of mortality for this and other owl species.

On 7 August 1998, while driving between the BR-116 and BR-101 along the BR-470 highway near São Cristóvão do Sul, Santa Catarina state, we found a freshly dead Tawny-browed Owl *Pulsatrix koeniswaldiana* at km 228. At this point the road passes through extensive stands of mature *Pinus* plantations interspersed with small patches of native forest, clearings and cut-over country. The bird was collected (specimen deposited at the collection of the Laboratório de Ornitologia, Museu de Ciências e Tecnologia, PUCRS, at Porto Alegre, Rio Grande do Sul state). It was an adult male with small testes (5.9 x 3.6 mm) and heavy abdominal fat deposits. Measurements taken were (mm): exposed culmen—21.7; tarsus—58.8; wing (chord)—322.0; wing (span)—880.0; tail—210.0; weight—527 g. Stomach contents comprised remains of one small spider (body length c.12 mm) and two insect larvae, one of Coleoptera (c.25 mm) and one Lepidoptera (c. 45 mm).

Further, we were surprised to find a second road-killed *P. koeniswaldiana* at km 205. At this point, the highway passes for several kilometres through continuous primary forest on hilly terrain. This second bird was not collected and only a rapid external examination was possible. It showed light injuries and was in worse condition than the individual described above. The only measurement taken was wing chord (323.0 mm).

Most large birds of prey, including forest owls, occur at low densities and are thus intrinsically rare or uncommon because they require extensive home ranges for survival^{1,10,15}. Estimates of Spectacled Owl *Pulsatrix perspicillata* density in areas of continuous forest in Amazonia were c.0.50 and 0.75 pairs per 100 ha^{14,16}. No density estimates appear to exist for *P. koeniswaldiana* in south-east Brazil and adjacent Argentina and Paraguay, but the species is considered rare in some parts of its range, including Santa Catarina^{4,6,11}. Our finding suggests that road accidents may be an important cause of mortality for large, low-density forest owls such as *Pulsatrix* spp., as two birds were found dead only 23 km apart on a single day along a highway with moderate traffic. The impact of road deaths on these species may be more serious in forest fragments where only small and almost isolated populations exist, making the probability of local extinction considerably higher.

Pulsatrix owls have been reported to frequently hunt at forest edges¹², including roadsides (E. O. Willis pers. comm.). Individuals may be attracted to highway verges because these may favour high densities of prey or constitute the predominant edge habitats in extensively forested areas. This factor might render the *Pulsatrix* spp. and other owls with similar habits more susceptible to road accidents.

The information above should be taken into account by biologists and other professionals involved in the planning and assessment of environmental impacts of new roads. If roads are to be constructed across forest areas (even exotic tree plantations), a monitoring programme should be implemented so that measures to reduce the probability of road deaths of rare owls (such as speed bumps at the most critical portions) can be adopted if necessary. The construction of roads through natural parks or reserves where an owl species identified as rare/threatened at a regional scale occurs should be avoided.



Figures 1 & 2. Road-killed Tawny-browed Owl *Pulsatrix koeniswaldiana*. (G. A. Bencke)

References

- Fuller, M. R. & Mosher, J. A. (1981) Methods of detecting and counting raptors: our view. In Ralph, C. J. & Scott, J. M. (eds.) *Estimating numbers of terrestrial birds*. Studies in Avian Biology No. 6.
- Glue, D. E. (1973) Seasonal mortality in four small birds of prey. *Ornis Scand.* 4: 97–102.
- Kerlinger, P. & Lein, M. R. (1988) Causes of mortality, fat condition, and weights of wintering Snowy Owls. *J. Field Orn.* 59: 7–12.
- Madroño N., A., Clay, R. P., Robbins, M. B., Rice, N. H., Faucett, R. C. & Lowen, J. C. (1997) An avifaunal survey of the vanishing interior Atlantic forest of San Rafael National Park, Departments Itapúa/Caazapá, Paraguay. *Cotinga* 7: 45–53.
- Massemin, S., Maho, Y. L. & Handrich, Y. (1998) Seasonal pattern in age, sex and body condition of Barn Owls *Tyto alba* killed on motorways. *Ibis* 140: 70–75.
- Narosky, T. & Yzurieta, D. (1993) *Guia para la identificación de las aves de la Argentina y Uruguay*. Buenos Aires: Vazquez Mazzini.
- Newton, I., Wyllie, I. & Asher, A. (1991) Mortality causes in British Barn Owls *Tyto alba*, with a discussion of aldrin-dieldrin poisoning. *Ibis* 133: 162–169.
- Novelli, R., Takase, E. & Castro, V. (1988) Estudo das aves mortas por atropelamento em um trecho da Rodovia BR-471, entre os distritos da Quinta e Taim, Rio Grande do Sul, Brasil. *Revta Bras. Zool.* 5: 441–454.
- Oniki, Y. & Willis, E. O. (1996) Morte acidental em aves comuns por fatores humanos. *R. Cent. Ci. Bioméd. Univ. Fed. Uberlândia* 12: 33–37.
- Robinson, S. K. (1994) Habitat selection and foraging ecology of raptors in Amazonian Peru. *Biotropica* 26: 443–458.
- do Rosário, L. A. (1996) *As aves em Santa Catarina. Distribuição geográfica e meio ambiente*. Florianópolis: FATMA.
- Stiles, F. G. & Skutch, A. F. (1990) *A guide to the birds of Costa Rica*. Ithaca, NY: Cornell University Press.
- Taylor, I. (1994) *Barn Owls: predator-prey relationships and conservation*. Cambridge, UK: Cambridge University Press.
- Terborgh, J., Robinson, S. K., Parker, T. A., Munn, C. A. & Pierpont, N. (1990) Structure and organization of an Amazonian forest bird community. *Ecol. Monog.* 60: 213–238.
- Thiollay, J. M. (1989) Area requirements for the conservation of rain forest raptors and game birds in French Guiana. *Conserv. Biol.* 3: 128–137.
- Thiollay, J. M. (1994) Structure, density and rarity in an Amazonian rainforest bird community. *J. Trop. Ecol.* 10: 449–481.

Glayson Ariel Bencke and Cinara S. Curra Bencke

Rua Balduino P. Vier, 413, Estrela - RS - Brazil - 95880-000. E-mail: cibencke@zipmail.com.br.