

# 1 INTRODUCTION

Increasing recognition of the impacts that roads have on fauna populations has led to the development of modifications to road designs that assist in facilitating natural fauna movement. Direct impacts on fauna, especially road-kills, have been evident since the invention of motorised vehicles. However, the effects that road-kills and other impacts have on fauna populations (or groups of individuals from the same species) have been investigated only in the past twenty to thirty years.

This book is the first in a two-volume series that provides information to assist practitioners to design, construct and maintain roads that better accommodate the needs of fauna. By doing so, road authorities can more readily achieve environmental legislative compliance in addition to conserving biodiversity. This volume is designed to provide background information relating to the effect that roads have on individuals, populations and the habitat of fauna species. Included in this volume is a discussion of the theoretical issues of habitat fragmentation, island biogeography, genetic isolation, and some aspects of animal behaviour that influence the degree of impact incurred by various fauna species. It discusses the direct and indirect impacts of roads on fauna, and identifies practices currently used during road construction to help facilitate fauna movement or prevent road mortalities. It also includes a review of field data, both published and unpublished, compiled from investigations of fauna use of underpasses and culverts.

The second volume of this series (Preferred Practices) will consolidate the preferred designs to accommodate fauna. This will occur by documenting the findings from field surveys and research currently being undertaken by the Queensland Department of Main Roads (Main Roads), other State government departments, other national road authorities and internationally.

In producing these two volumes, Main Roads is aiming to provide the most recent information relating to fauna and roads to those planning, designing, constructing and maintaining roads.