Summary

Sustainable design of wildlife friendly overpass crossings

In the present age of remarkable economic growth and the resultant construction of the networks of expressways environmental problems are bound to occur. The existing landscape is undergoing significant changes and natural habitats are divided into ever smaller areas. Fragmented natural environment poses a significant ecological barrier to the movement of wildlife and migration routes severed with roads may have a barrier-like effect on the wildlife habitation conditions in a given area. Since the second half of the 20th century scientists have been devoting a lot of attention to the problem of sustainable protection of biodiversity and to developing environmental protection strategies. In many countries natural environment is protected by constructing habitat structures that underpassing or overpassing the roads function as environmental compensation measures and ensure favourable conditions for migration to wildlife.

This monograph presents the problems of sustainable design of wildlife friendly overpass crossings. In chapters 2, 3 and 4 the main ecological, construction and environmental factors related to the design of new structures and to provision of enhancements in the approach, entry and deck areas of the existing structures are discussed. In order to convey its contents to the readers in the most effective way the monograph is illustrated with numerous examples of the existing structures. In chapter 5 the problem of planting overpass crossing areas with greenery, taking into consideration a variety of animal species migrating through the overpasess is presented. Recommendations as to the plantings have been formulated based on the query regarding the guidelines in this respect from many countries, on the review of the latest publications on ecological topics and on the analysis of the results of the author's own research conducted over a number of years on various habitat structures with confirmed effectiveness. Chapter 6 contains the results of research on the noise and noise climate which can be used to implement proper enhancements in the habitat crossing and in its surroundings, thus contributing to mitigating the adverse impacts of infrastructure on the natural environment.

Ensuring the permeability of landscape features to animal movements (that is ability of species to migrate freely) is the leading principle and the basis of effective mitigation of habitat fragmentation. The study results and the recommendations contained in the guidelines from many countries can be used to design more wildlife friendly crossings. Both very good designs, resulting in confirmed crossing effectiveness and bad examples to be discouraged are presented herein.