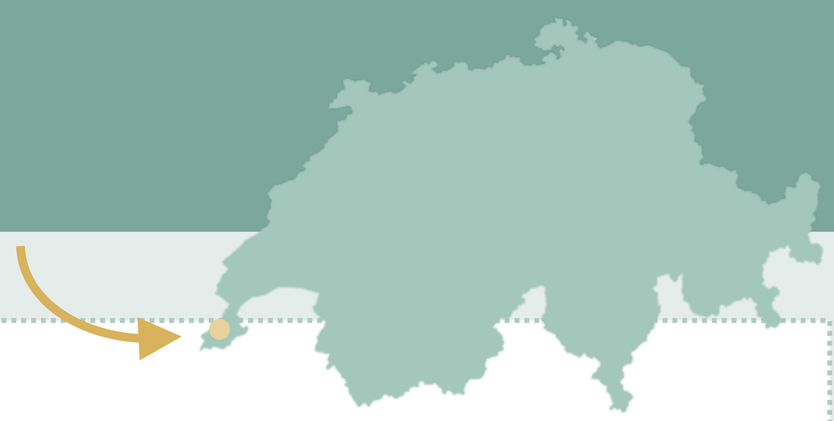
LIGHT MANAGEMENT IN COMBINED ROAD AND RAILWAY UNDERPASSES

Fischer Claude[1] & Lamberechts Arnaud[2]

[1] University of Applied Sciences of Western Switzerland, Geneva
[2] Haute Ecole Condorcet, Ath, Belgium



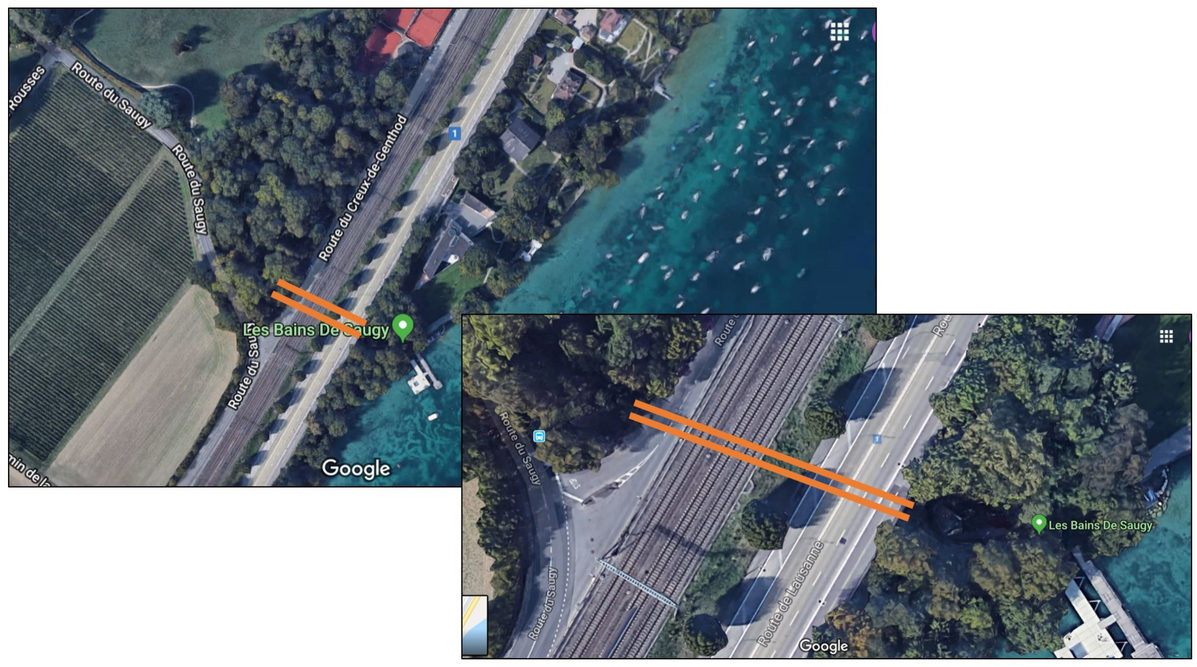
INTRODUCTION

Fragmentation by roads and railways is a threat to the conservation of several bat species, but it is only recently that the design of ecoducts takes this taxa into account. These last years, overpasses have proved to be used by bats, when appropriately designed, but there are very few studies considering underpasses.

In urbanized areas, the latter are furthermore often primarily dedicated to human use or to a combination of anthropogenic and animal use, which is likely to jeopardize use by the latter. In Geneva, Switzerland, we evaluated how bats did use such an underpass dedicated primarily to pedestrians

CONTEXT

The underpass is located along a pedestrian walkway linking an urban park and the lakeshore. It crosses a road of two lanes, 3 lanes of railway tracks, and a road of 4 lanes, totaling a length of approximately 50 meters (Fig. 1). Lights are activated by motion-sensors, only when pedestrians are detected and only until 22h00. Bats, mainly Daubenton's Bat (*Myotis daubentoni*), roost in the old trees of the park and hunt over the lake, and it appears that most of them do use the underpass rather than passing over the roads and rail tracks. A still opened question was if light did influence their crossing behavior.



METHODS & RESULTS

The survey was conducted using acoustic bat-detector, video cameras (Fig. 2), and far-infrared thermal cameras. Number of crossings and behavior were assessed when lights were off or on.

Up to 1200 crossings have been monitored in a single night, and we also observed hunting behaviors within the underpass. However, as soon as the lights go on, bats will leave the underpass and do not cross anymore, which is not astonishing for lucifugeous species like Daubenton's bats.

Figure 1 : Location of the underpass

Figure 2 : Bats in the underpass

CONCLUSION

Bat species are likely to use underpasses and do so more often when these are kept in darkness. If underpasses are also dedicated to be used by humans, a simple way to accommodate for both bat conservation and anthropogenic activities is the use of movement detectors allowing illuminating the passage only when necessary. This strategy also allows reducing the electricity costs.

h e p i a
Haute école du paysage, d'ingénierie et d'architecture de Genève

FORSCHUNGSGESELLSCHAFT FÜR STRASSEN- UND VERKEHRSWESEN
LANDSCHAFTSTAGUNG 2019 IN KOBLENZ