ENVEROS
ENVIRONMENTAL EDUCATION THROUGH ROADKILL OBSERVATION SYSTEMS

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Enviromental Education through Roadkills Observation Systems - EnVeROS

08. Evaluation of Mitigation Methods

Erasmus+ OPEN UNIVERSITY OF CYPRUS eurac research TRANSPORT RESEARCH CENTRE TERRA CYPRIA

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LEARNING OBJECTIVES

At the end of this topic students should be able to:

- Summarize mitigation methods that have been successfully applied in several areas.
- Explain the factors that might lead to successful implementation of a measure.
- Critically assess the effectiveness of several WVC mitigation methods.
- Design measures to promote mitigation of WVCs in their area/ country.

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Mitigation methods evaluated

From the various methods presented in the previous module, here we evaluate (based on data availability) the following:

- **Public campaigns**
- **Reflectors and mirrors**
- **Olfactory repellents**
- **Overpasses**
- **Fencing**
- **Barriers**

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1. Public campaigns

Example 1: "Drivers for Wildlife" program in Jasper National Park

- Combined public campaigns (e.g. distributing **bumper stickers; dissemination; public education)** as well as **roadway billboards** that record speed and advise drivers to slow down in the high-risk wildlife zone.

- The number of road-killed animals along park highways **decreased by about 15 %** after the first 10 months of the program.

(Source photos: Parks Canada)

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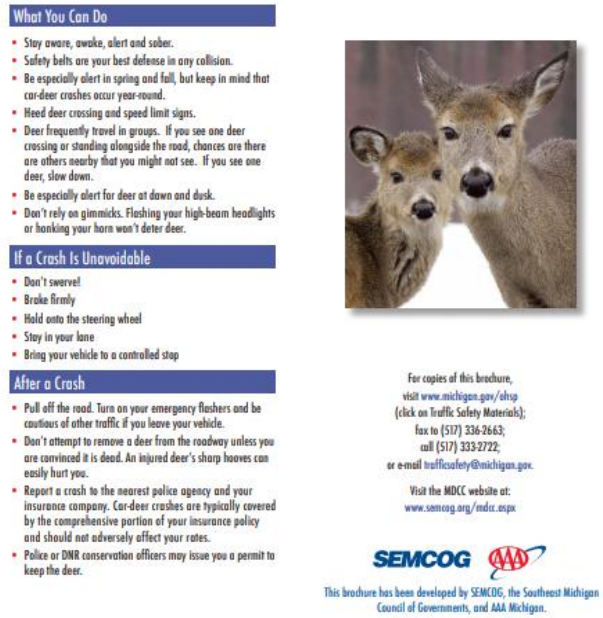
1. Public campaigns

Example 2. "Don't Veer for Deer" campaign (IOWA USA)

- In this state a sharp increase in deer population was observed during the last decades, increasing the risk of WVCs.
- In 2016, there were 7,163 crashes reported to law enforcement.
- A campaign was launched, informing drivers about the risks for WVCs and what they should do when coming across with the animal while driving.
- The campaign was considered successful by the state authorities, but relevant data are not available.



What You Can Do

- Stay aware, awake, alert and sober.
- Safety belts are your best defense in any collision.
- Be especially alert in spring and fall, but keep in mind that car-deer crashes occur year-round.
- Heed deer crossing and speed limit signs.
- Deer frequently travel in groups. If you see one deer crossing or standing alongside the road, chances are there are others nearby that you might not see. If you see one deer, slow down.
- Be especially alert for deer at dawn and dusk.
- Don't rely on gimmicks. Flashing your high-beam headlights or honking your horn won't deter deer.

If a Crash Is Unavoidable

- Don't swerve!
- Brake firmly
- Hold onto the steering wheel
- Stay in your lane
- Bring your vehicle to a controlled stop

After a Crash

- Pull off the road. Turn on your emergency flashers and be cautious of other traffic if you leave your vehicle.
- Don't attempt to remove a deer from the roadway unless you are convinced it is dead. An injured deer's sharp hooves can easily hurt you.
- Report a crash to the nearest police agency and your insurance company. Car-deer crashes are typically covered by the comprehensive portion of your insurance policy and should not adversely affect your rates.
- Police or DNR conservation officers may issue you a permit to keep the deer.

For copies of this brochure,
visit www.michigan.gov/ohsp
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call (517) 333-2722;
or e-mail trafficsafety@michigan.gov.

Visit the MDCC website at:
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SEMCOG AAA

This brochure has been developed by SEMCOG, the Southeast Michigan Council of Governments, and AAA Michigan.

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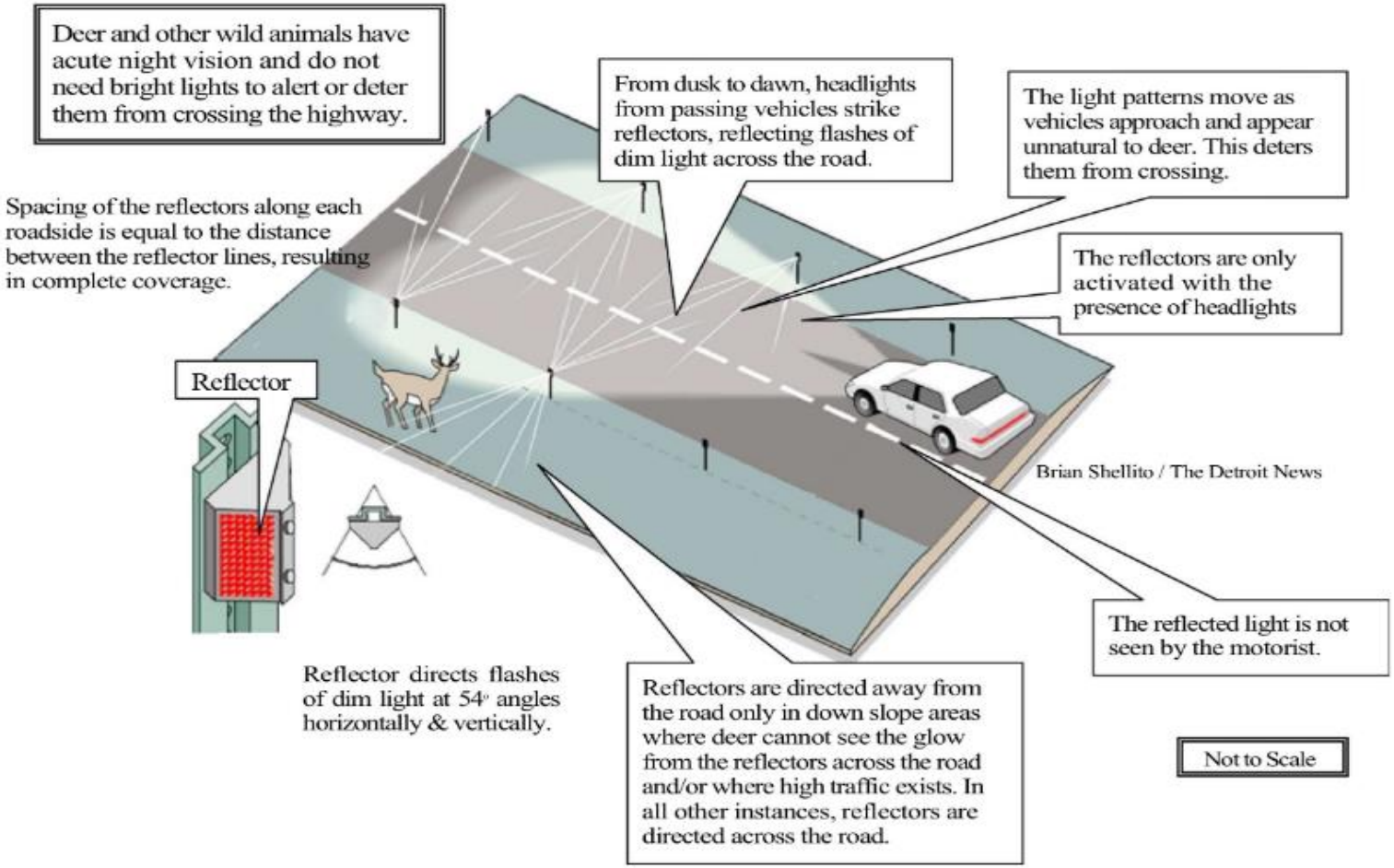
2. Reflectors and mirrors



(Source: Brian Shellito, The Detroit News)

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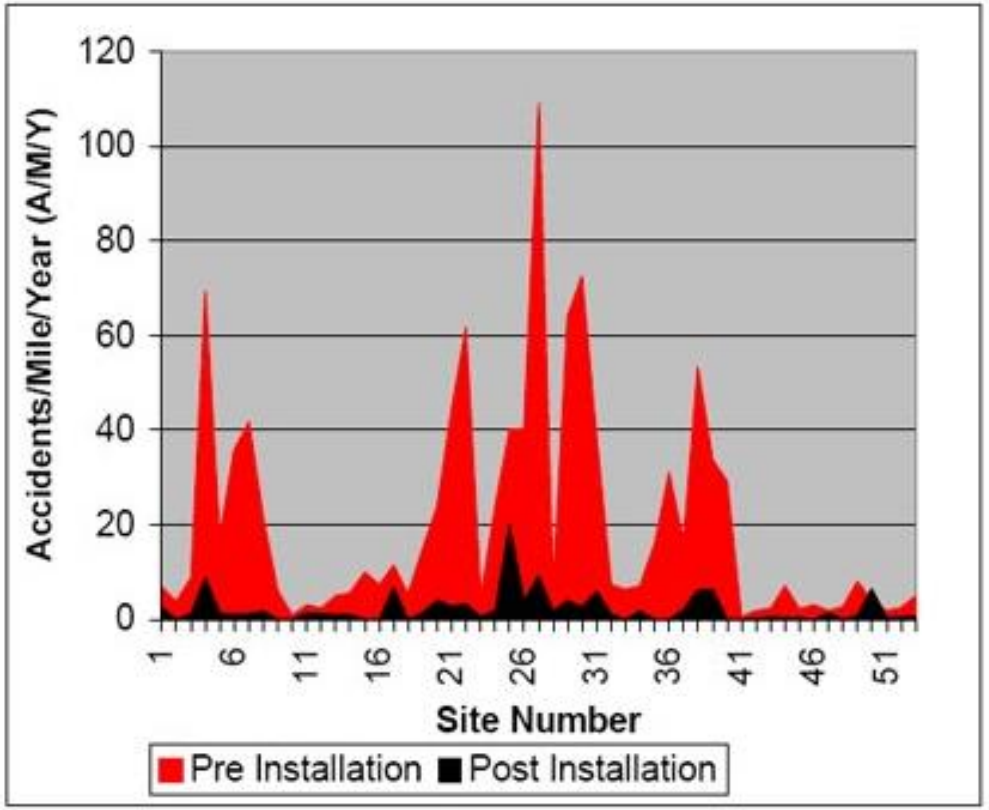
Reflectors and mirrors mitigation success evaluation

- Research done in Canada (Grenier, R. H., 2002; *Commissioned report for Strieter Corporation*) - data from 13 states and 1 province.
- Strieter-Lite reflectors are **78% to 90% effective** in reducing deer-vehicle accidents.



(Source: Grenier, R. H., 2002; *Commissioned report for Strieter Corporation*)

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3. Olfactory Repellents - Czech Republic

Study on selected roads and railways in Czech Republic during the years 2011–2013 (Kušta, T., et al, 2015; *Transport and Environment)*:

- The odor repellents are an **effective tool** to reduce wildlife–vehicle collision (WVC), their application it was possible to reduce the cost of damage to property and reduce the number of killed animals by comparing the years 2011 (without measure) and 2013 (2 years of repellent application) by **37%** of the initial loss (Kušta, T., et al, 2015; *Transport and Environment).*

- By using repellents it is possible to **reduce** the number of animals killed and evaluate the return of financial costs that are associated with the application of the repellents.

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3. Olfactory Repellents

- Potential negative effects may include **attracting predators** to the roadside and causing a panic reaction (instead of avoidance) in ungulates resulting in erratic movements toward the roadway.
- Costs should take into consideration **maintenance requirements**, **time intervals for reapplications**, **the area to be treated**, and **ecological impacts**.
- If olfactory repellents are used, it is important to ensure that the repellent works to deter animal movement and that animals do not become habituated to them.

(Source: Wikipedia)

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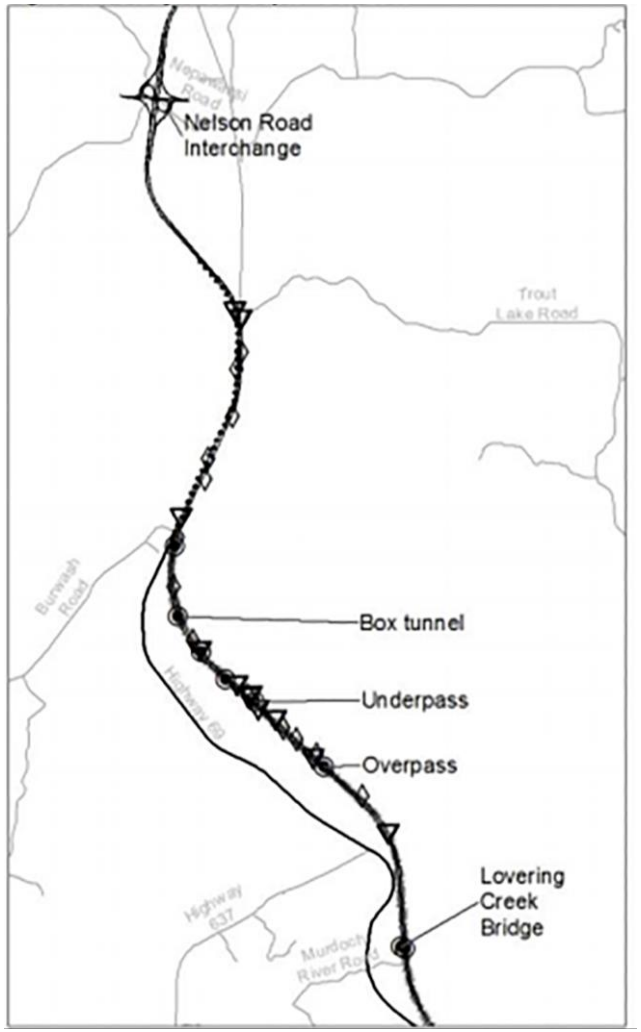
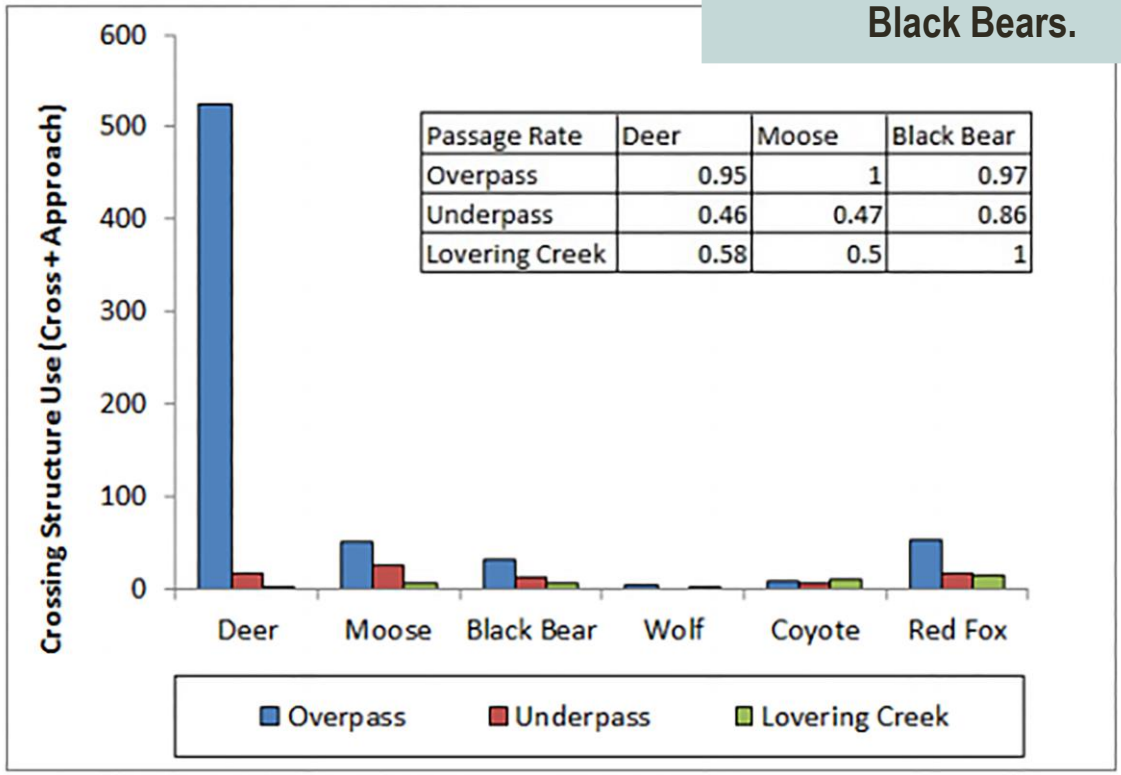
4. Wildlife Underpasses / Overpasses
Case study: Ontario

(Healy, A., & Gunson, K. E., 2014; Reducing wildlife collisions: what is working in northeastern Ontario. In *Transportation 2014)*



Species-specific use at the **three crossings** with passage rates for **Deer**, **Moose**, and **Black Bears.**



Passage Rate	Deer	Moose	Black Bear
Overpass	0.95	1	0.97
Underpass	0.46	0.47	0.86
Lovering Creek	0.58	0.5	1

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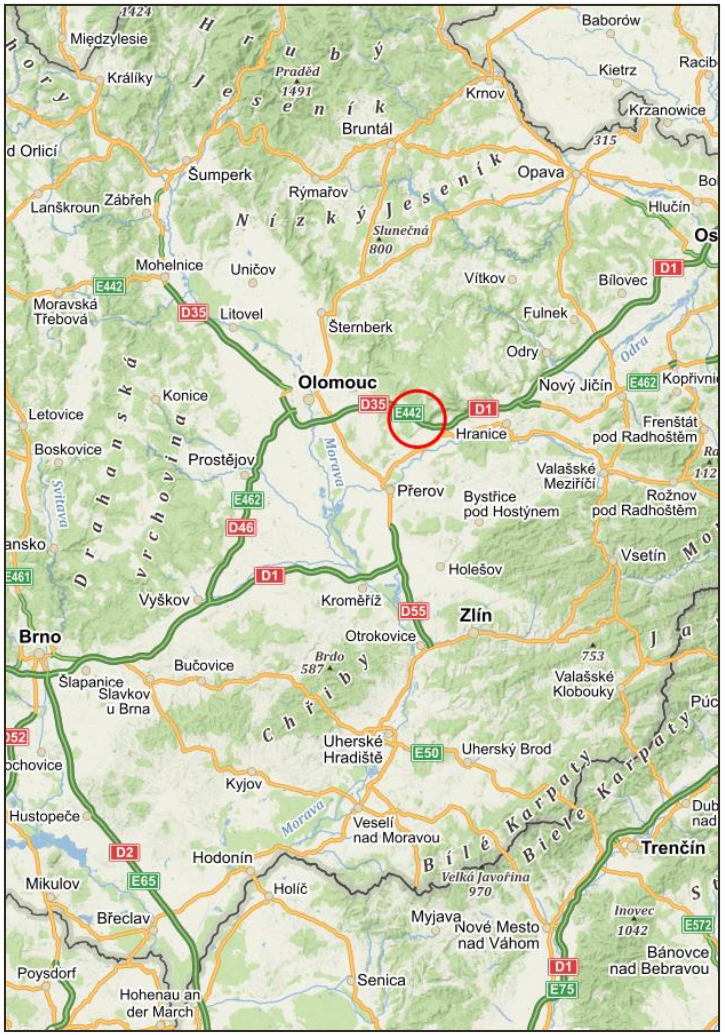
Overpass Dolní Újezd Czech Rep.



(Source: Photos from the presentation of Ivo Dostal (TRANSGREEN PROJECT)
in EnVeROS joint training event in Brno, June 2019)

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Species use data (project TransGreen)

- Period: 10. 9. 2017 – 31. 3. 2018
- Nr. of phototraps: 2
- Trap days: 202/193
- Nr. of records: 1396
- Records per day: 7,1

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	SUM	
Cat	33	21	15	29	1	-	2	101	7,2%
Marten	2	10	2	6	-	3	32	55	3,9%
Fox	-	4	2	-	4	1	29	40	2,9%
Wild Boar	84	133	66	21	18	18	133	473	33,9%
Roe deer	4	19	25	157	133	89	103	530	38,0%
Squirrel	-	1	-	-	-	-	-	1	0,1%
Hare	9	44	18	63	9	15	28	186	13,3%
Not determined	-	-	1	1	2	3	3	10	0,7%

Monitoring performed by Mr. Mořic Jurečka on behalf of Nature Conservation Agency of CZ

(Source: Photos from the presentation of Ivo Dostal (TRANSGREEN PROJECT) in EnVeROS joint training event in Brno, June 2019)

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5. Wildlife Fencing

(Source: Amy Bragg / Kennedy)

Depending on the species concerned, the type of fencing, and whether safe crossing opportunities are provided, wildlife fencing may reduce the number of WVCs **80–99%** **(**Huijser et al. 2008; Wildlife-vehicle collision reduction study: best practices manual).

***These reductions were obtained where wildlife fencing was used in combination with wildlife overpasses and/or wildlife underpasses.**

If safe crossing opportunities are not provided or if they are too few, too small or too far apart --> animals are more likely to **break through the wildlife fence**, reducing the effectiveness of the wildlife fencing.

Wildlife underpasses and overpasses are tunnels and vegetated bridges designed for wildlife to allow them to cross the road.

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6. Barriers (see more in the case study in module 10)

Examples of barriers in Czech Republic, for the protection of amphibians and reptiles.

(Photos from the presentation of Antonín Krása in EnVeROS joint training event in Brno, June 2019)

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Permanent barriers (PB) evaluation in Czech Rep.

- **Nature Conservation Agency – Reptiles and amphibians**
- **only** 3 % of the road sections with a permanent barrier
- **12 are well working** (only 1 excellent: Žebětín)
- 5 are bad
- PB building is not enough – **maintenance is strongly needed**
- Regular **evaluation is important First step…**

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Summary

- Public campaigns aim to inform citizens for the WVCs risk especially with large mammals. In some cases (e.g. protected areas) data for their effectiveness are present.
- Reflectors and mirrors have been successfully applied also for large mammals, as well as overpasses (e.g. examples from Canada and Czech Rep.).
- For reptiles and small animals, barriers are usually used but many times with limited success.
- Monitoring is essential for successful application and continuous evaluation of WVC mitigation measures.

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Selected references

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- Huijser, M. P., Fairbank, E. R., Camel-Means, W., Graham, J., Watson, V., Basting, P., & Becker, D. (2016). Effectiveness of short sections of wildlife fencing and crossing structures along highways in reducing wildlife–vehicle collisions and providing safe crossing opportunities for large mammals. *Biological conservation*, *197*, 61-68.
- McCollister, M. F., & Van Manen, F. T. (2010). Effectiveness of wildlife underpasses and fencing to reduce wildlife-vehicle collisions. *The Journal of Wildlife Management*, *74*(8), 1722-1731.

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Activities & Self Assessment Exercises:

- Interview 10-15 people and make the question: Which mitigation methods did you come across and how effective they are based in your beliefs and experiences? Prepare a PPT (max 10 slides).

- Describe the factors influencing the effectiveness of crossing structures in a paragraph, using this article "A review of mitigation measures for reducing wildlife mortality on roadways" (100-150 words).

- Consider this article "Overpasses and underpasses: Effectiveness of crossing structures for migratory ungulates: Crossing Structures and Migratory Ungulates" and prepare a PPT to present the method of evaluation of Overpasses's and Underpasses's effectivenes (max 10 slides).

- Get an interview with a stakeholder of your area to learn which mitigation methods are the most effective in your area and prepare a PPT of it.

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