



Dynamic traffic signs at Jasnica along the main road Ljubljana-Kočevje.

Acoustic deterrents

Installation of acoustic deterrents into the roadside pillars can effectively reduce deer-vehicle collisions. Acoustic deterrents are equipped with sensors which are activated by vehicles' flashlights and vibrations. Then they start emitting ultra- and infrasound for a few seconds, scaring wildlife. Conversely, when there is no danger (i.e. a light and vibration source) on the road, deterrents are not active and wildlife crossing over roads is possible.



Acoustic deterrents are placed directly into roadside pillars.

In Slovenia, acoustic deterrents were installed along many sections of state roads. Additionally, in the framework of the LIFE DINALP BEAR project we installed them along several sections of the state road Ljubljana - Kočevje and along railway sections Rakek - Postojna and Postojna - Prestranek.



Brown bear and red deer (male and female) filmed near dynamic traffic signs at Jasnica.

REFERENCE

Al Sayegh Petkovšek S., Pokorny B., Pavšek Z., Jerina K., Krofel M., Ličina T., 2015. Action plan for the implementation of mitigation measures for reducing road mortality of brown bear in Slovenia. ERICo Velenje, Inštitut za ekološke raziskave.

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REDUCTION OF BROWN BEAR VEHICLE COLLISIONS IN SLOVENIA



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Population level management and conservation of brown bears in northern Dinaric Mountains and the Alps



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INTRODUCTION

Mitigation measures for reducing traffic-caused bear mortality on state roads, railways and highways are important from two aspects: decreasing bear injury or mortality and traffic accident related risks for drivers and passengers.

In Slovenia 180 bears were killed in vehicle collisions in the period from 2005 to 2016. This represents on average 15 bears per year or 15% of all detected bear mortality in this country.

Two seasonal peaks of vehicle collisions with bears were observed: in late spring (May-June) and early autumn (August-October). Spring is the period when movement of bears is most intensive due to mating season.

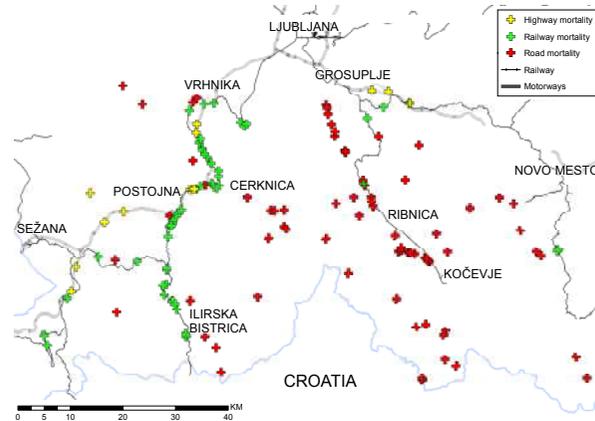
Second most pronounced peak of traffic collisions is most likely associated with searching for food. Due to preparations for winter season, bears intensively eat in autumn. Field experience suggest that bears regularly visit garbage bins on the highways and other roads and often feed on different anthropogenic organic waste.



In Slovenia on average 15 bears are killed in vehicle collisions per year.

SPATIAL DISTRIBUTION OF TRAFFIC RELATED BEAR MORTALITY

Considering past ten years, traffic related bear mortality was observed mostly on railways (45%) and roads (37%), and to a lesser degree on highways (18%).



Map of registered cases of the mortality of brown bear in the period between 2005 and 2014.

The highest bear mortality was detected on: (i) railway section between Logatec and Pivka; (ii) state road between Turjak and Kočevje; (iii) Primorska highway between Logatec and Postojna; between Divača and Kozina; and (iv) on Dolenjska highway between Grosuplje and Ivančna Gorica.

MITIGATION MEASURES FOR REDUCING TRAFFIC RELATED BEAR MORTALITY

Mitigation measures were implemented along the main road Ljubljana – Kočevje (installation of dynamic signs and acoustic deterrents), along the railways Rakek – Postojna and Postojna – Prestranek (installation of acoustic deterrents) and along highway Logatec – Ravbarkomanda (installation of electric fence) to reduce traffic related bear mortality in Slovenia.



Installation of acoustic deterrents on electric poles along railway section.

Dynamic traffic signs

Dynamic traffic signs are a fairly new way to alert and slow down drivers in order to avoid potential collisions with wildlife, including bears. They are called »dynamic« because they are activated by large animals that go into the dangerous area of the road and intersect the sensor beam. This activates a game warning sign flashing. Otherwise these signs do not flash. They have already been proven worldwide; drivers consider them more than classic traffic signs and reduce the speed of vehicles accordingly. So far, we have placed such traffic signs in Slovenia in forest landscape near the settlements Dolenja vas, Ortnek and Turjak.



Sensors are placed inside wooden pillars.