



Brown bears often cross roads, railways and highways.

REDUCTION OF BROWN BEAR VEHICLE COLLISIONS IN CROATIA



**LIFE
DINALP
BEAR**

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



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DRUŠTVO ZA GRABENJE I GOSPODARENJE AUTOCESTOM

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INTRODUCTION

Mitigation measures for reducing traffic-caused bear mortality on roads, highways and railways are important from two aspects: decreasing bear mortality and also risk to drivers and passengers, respectively.

In Croatia 25 collisions with bears occurred on the highway Rijeka - Zagreb in the period from 2005 to 2017. Total bear mortality in the same period caused by traffic was 200. This represents on average 15,4 bears per year or 13.8% of all detected bear mortality in our country.

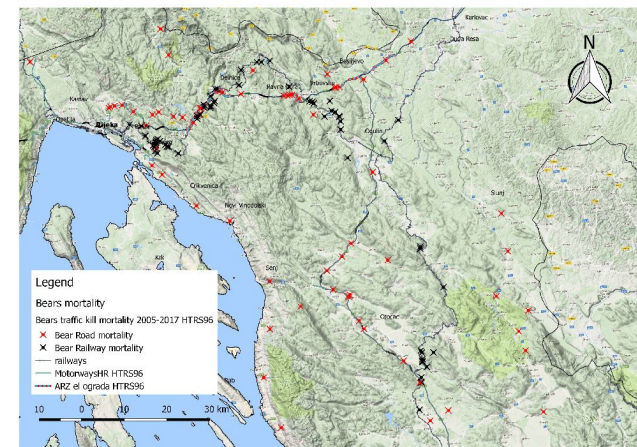
Two seasonal peaks of vehicle collisions with bears were observed: in late spring (May-June) and early autumn (August-October). Spring is the period when movement of bears is the most intensive due to mating season. Second most pronounced peak of traffic collisions is likely associated with foraging for food. Due to preparations for winter season bears intensively eat in autumn. Field experience suggests that bears regularly visit garbage bins on the highways and other roads and often feed on different organic waste.



In Croatia app. 15 bears were killed in vehicle collisions per year.

SPATIAL DISTRIBUTION OF TRAFFIC RELATED BEAR MORTALITY

Traffic related bear mortality in the last thirteen years were observed on railways (53%) and on roads (47%), out of the later 48% was on highways.



Map of registered cases of the brown bear mortality in the period between 2005 and 2017.

MITIGATION MEASURES FOR REDUCING TRAFFIC RELATED BEAR MORTALITY

Mitigation measures were implemented along the highway Rijeka – Zagreb in the part through Gorski Kotar region. The conventional metal mesh fence has been supplemented by the wires of electric fence – like the one used to guard livestock – in the total length of 2x30 km (on both sides of the highway). In addition, measures have been applied to help animals that nevertheless entered the highway corridor, to get out safely. For that purpose installed were 36 one-way exit doors that animals may push to open, as well as 6 jump-out ramps in the level of fence.



Electric fence along the highway Rijeka - Zagreb.
Big one-way exit door on highway Rijeka - Zagreb.



Jump-out ramp for animals to exit the corridor of Rijeka – Zagreb highway.



One-way door for animals to exit the highway corridor. Small door.

PERMEABILITY OF RIJEKA – ZAGREB HIGHWAY FOR ANIMALS

On this highway there is one specially constructed green bridge (100 m wide) where bears and all other animals can safely cross. Additional advantage for wildlife crossings is the fact that 25% of the highway route through the bear range in Gorski kotar is in the tunnels or on viaducts and bridges. Radio-tracking of marked bears showed that they efficiently use all those crossing structures.

After all, in the framework of the LIFE DINALP BEAR project we expect to reduce bear mortality on Rijeka – Zagreb highway for 50%.



Green bridge Dedin near Delnice constructed for wildlife crossings.

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