

## **Border fences: new threat for large carnivore populations**

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Among all mammalian terrestrial wildlife the large carnivores need the largest ranges; both as individuals as well as populations. Brown bears presently occur permanently in 22 countries (485,400 km<sup>2</sup>). Only three of 10 brown bear populations in Europe reside in a single country, other 7 are shared with up to 9 countries. Eurasian lynx presently occur permanently in 23 countries (813,400 km<sup>2</sup>) and can be clustered into 11 populations. Wolves currently occur permanently in 28 countries (798,300 km<sup>2</sup>) and can be clustered into 10 populations. This means that animals need to move across borders in order to satisfy the survival needs like finding seasonal food sources, sexual partners and preferred denning sites. European Commission is encouraging states to manage the bears and other large carnivores in the trans-boundary manner, on the population level. The migrant crises that started in 2015 with the flow of immigrants prompted the governments of various states to regulate and prevent those entering respective countries by erecting fences on borders. The new barriers are designed to make the passage for humans practically impossible, but at the same time they prevent the movements for most of medium and large sized land dwelling vertebrates. Some fences (razor wire) even have an effect of a trap that kills or severely wounds the animal (mostly seen with red and roe deer). The fragmentation of habitat is clearly very unwanted environmental change. Majority of developed countries cannot have bear populations any more due to severe fragmentation existing all over the country. Many countries are recently investing increasing amounts of funds in mitigating the transport routes by constructing the wildlife overpasses (green bridges). After the "Iron curtain" has been removed in Europe in the late past century, now more serious barriers are being raised. The same "development" is present in other continents where bears live, namely in North America and Asia. We alert European officials to consider giving extra attention to this raising problem. Close monitoring like satellite tracking and genetic surveys may help to track the situation and warn on problems before they become unrecoverable.