



JOINT CONCLUSIONS

Of the participants in the Kresna Technical Workshop in line with Bern Convention [Recommendation no.212 \(2021\)](#): “Challenges & opportunities for the conservation of reptiles and large carnivores during linear infrastructure development in South-East Europe: a case study for the Kresna Area, Bulgaria”.

Connectivity is essential for both human society and natural systems. The transport sector is crucial for the development of human society but it should not become a barrier for wildlife movement. The development of sustainable, resilient and biodiversity-friendly transport networks requires that a holistic and inter-disciplinary approach is taken during the design, building and operation of infrastructure.

Acknowledging that the case is complex and challenging because:

- Technically difficult terrain with complex features (landslides and collapses, narrow gorge) located on a major fault zone with a high seismic risk;
- The route is situated on a major Trans-European Transport Network corridor and is the busiest international road going through Bulgaria in the North-South direction with increasing strategic importance;
- Unique biodiversity is concentrated in the narrow Kresna gorge with habitats and species with importance to Bulgaria and Europe;
- The gorge is an important bio-corridor for dispersal of a number of different species both in the north-south direction and in the east-west direction including, but not limited to *Testudo graeca*, *Testudo hermanni*, *Elaphe quatorlineata*, *Elaphe situla*, *Ursus arctos*, *Canis lupus*;
- Traffic in the gorge poses increasing pressure on wildlife in the gorge and damages the populations of reptiles including *Testudo graeca*, *Testudo hermanni*, *Elaphe quatorlineata*, and *Elaphe situla*. All 4 species have linear habitats in the area, and individual home ranges are structured along valleys with seasonal/daily movements from slopes to valleys and key seasonal (mid-summer) habitats situated in the bottom of valleys (thermal and water regime);
- The gorge functions as an important ecological connection between the Rhodope Mountains and mountains on the border between Bulgaria and North Macedonia for both priority species of large carnivores *Canis lupus* and *Ursus arctos* (the whole length of the gorge is a connectivity habitat). The mountain slopes above the gorge are a habitat of both species (summer feeding for *Ursus arctos* and hunting habitat for *Canis lupus*). Occasional migration through the gorge is observed for *Ursus arctos*, but there is no viable population established west of the gorge. For *Ursus arctos*, the gorge provides the only possible bio-corridor for dispersal and for restoration of historical population in the mountains at the border of North Macedonia (extinct since the 20th century). East-west movements of *Canis lupus* through the gorge are

observed more often than for *Ursus arctos* and there are viable populations on both sides of the gorge;

- It is unclear whether traffic reduction on the existing road without defragmentation will be enough for the restoration of populations. Furthermore, defragmentation measures cannot be implemented on the existing road without stopping the transit traffic;
- At present there are conflicting views on the efficiency of mitigation measures. Further scientific data is needed to confirm one of the two opposing views;
- Ensuring protection of species and habitats in the Kresna gorge is the focus of the Bern Convention and Recommendation no.212 (2021), and the process can benefit from IENE experience and best practices.

The participants call for the:

- Implementation of possible defragmentation measures on the existing road regardless of further developments;
- Avoidance as much as possible of the destruction of currently unaffected landscapes with new infrastructure developments;
- Avoidance of fragmentation caused by the construction of new infrastructure to bio-corridors of *Canis lupus* and *Ursus arctos*;
- Provision of sufficient measures to ensure the restoration of populations and habitats connectivity of *Testudo graeca*, *Testudo hermanni*, *Elaphe quatorlineata*, *Elaphe situla* and guarantee daily movements of individuals,

and draw attention to the following best practices, approaches and methods to be utilised in similar cases in the planning, implementation and maintenance of transport infrastructure:

- In planning and design, combine green and grey infrastructure and plan measures that satisfy the needs of different species as well as people. Whenever unaffected landscapes are concerned, maintain high permeability of new infrastructure with respect of the known routes of wild animals, biology of the species and habitat characteristics. Consider the combined effect of natural and man-made barriers.
- Promote a culture of learning and constructive cooperation between different stakeholders as well as between environmentalists and technicians that focuses on solutions for the sustainable coexistence of ecological and transport corridors, while effectively sharing data, experience and know-how between multilevel and multidisciplinary entities.
- Zero solution is the worst solution especially when there is a known pressure exerted on wildlife by existing infrastructure and a clear need to construct new infrastructure. It is therefore not in the public interest to stall development until all data is gathered (it can never be complete because situation constantly changes) and decisions based on the best available scientific knowledge are justified.
- Test actions/measures (design of facilities, location, etc.) and make the results widely available. Agree with stakeholders on the success indicators and possible contingency measures.

- The degree of efficiency of defragmentation measures can only be established based on scientifically verified data. Otherwise claims that they work or do not work are unsupported. Expert opinions and hypothesis need to be backed by data, which can inform decisions to make changes to initially planned designs.
- Establish environmental supervision and monitoring of the effectiveness of transport infrastructure features on wildlife permeability in all phases of planning, designing, construction, utilisation and maintenance of investment. Use robust study designs that evaluate effects of infrastructure and measures and ensure evidence-based decision-making for further developments. Focus on a small number of key aspects and study them well, rather than superficial interpretation of scattered data.
- Guarantee long-term maintenance of facilities by integrating the necessary expenditures and performance indicators in the maintenance contracts. Use automated methods to monitor integrity and usage of facilities. Ensure control of the monitoring activities and the functioning of the facilities by the competent authorities.
- Consider allocating funding for research and innovation, monitoring and evaluation on the effects of transport infrastructure on wildlife and the way to reduce the negative impact.
- In order to ensure sustainability and resilience of infrastructure and address fragmentation of habitats in the development of transport strategies and plans, integrate green infrastructure priorities based on available data for distribution and threats to species, in particular large carnivores. Do a robust cost-benefit analysis of such measures to demonstrate feasibility and relevance.

More information can be found on the website of the Workshop:
<https://www.coe.int/en/web/bern-convention/-/kresna-technical-workshop>