Connecting people,
connecting landscapes

2022

IENE

Infrastructure & Ecology
Network Europe

Programme Book

International Conference
A Hybrid Event

Cluj-Napoca, România
19–23 September 2022

Contents

More Information

For more information about the IENE 2022 International Conference, please visit www.2022iene.info

For specific questions about the Conference, please contact us via e-mail:

- for programme matters: programme@2022iene.info
- for overall organisation matters: organisation@2022iene.info

For more information about the IENE and the activities of the network, please visit www.iene.info

For specific questions about the IENE, contact the secretariat through: info@iene.info

If you are interested in becoming a member of IENE, please visit https://www.iene.info/members/become-a-member

IENE 2022 International Conference "Connecting people, connecting landscapes" – Programme Book, September 19–23, 2022, Cluj-Napoca, Romania

EDITORS: Gavril Marius Berchi, Darryl Jones, Radu Moț, Leon Muntean, Cristian-Remus Papp

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During the last 30 years IENE has been developing as a powerful network of experts in the field of transport ecology and became a formal organisation holding an impressive knowledgebase and a key entity to promote the development of sustainable transport infrastructure in Europe

Welcome

The Organising and Programme Committees of the IENE 2022 International Conference have chosen the following motto for the Conference: ***"Connecting people, connecting landscapes"***, since connectivity is quintessential for both human society and natural systems.

Although in the past we mostly built transport infrastructure that became a barrier for wildlife movement, now we have the knowledge for developing sustainable, resilient and biodiversity-friendly transport networks. To put this into practice, we need to connect people and organisations across different sectors to collaborate in mainstreaming biodiversity into transport sector.

Transport sector (which includes infrastructure and energy networks) is a key sector for people and it is driven and influenced by a multitude of factors and has a tremendous and complex impact on natural environment. While important progress has been made to understand and to mitigate it, a lot more is needed for properly addressing this impact at landscape level and beyond.

Cooperation between stakeholders and specialists from different sectors as well as the support of the general public is crucial for developing functional and sustainable solutions.

We are inviting you to explore together during the 4 days of the Conference, and beyond, the current state of play, the gaps, needs and solutions, as well as to lookback for lessons learned and ahead for future challenges and opportunities:

- *from policies & financing to planning & environmental impact assessment;*
- *from design & implementation to operation, upgrading & decommissioning;*
- *from monitoring, research & learning to improving;*
- *from communication & awareness raising to efficient consultations & effective collaboration.*

We are looking forward to having you in-person in Cluj-Napoca, Romania, or on-line, and we are wishing you all an exciting and worthwhile experience!

The Organising and Programme Committees

The main theme of the IENE 2022 International Conference is:

AN INTEGRATED APPROACH FOR MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR (INCLUDING INFRASTRUCTURE AND ENERGY NETWORKS)

The themes and topics of the IENE 2022 International Conference are:

THEME #1: MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR (INCLUDING INFRASTRUCTURE AND ENERGY NETWORKS):

What is the state of play after 20+ years of transport ecology and what are the next strategic actions needed?
A general overview of the mainstreaming biodiversity into transport sector efforts *will provide the context for future strategic actions needed and will set the stage for the more in-depth discussions under themes no. 2 and 3.*

1.1. The state of play at European-level, including policies, strategies and funding mechanisms. (Similarities and differences between European countries; an overview of the existing support provided to biodiversity & transport harmonisation and what could be improved, etc.)

1.2. Regional needs specific to the South East Europe and Black Sea countries. (Challenges and solutions adapted to the rapid transport networks development, etc.)

1.3. Regional needs specific to the Western European countries. (Lessons learned: presentation of specific defragmentation programmes, etc.)

1.4. Strategic needs, challenges and opportunities for the future of biodiversity & transport harmonisation at European level.

THEME #2: PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY:

In practice, what works and what doesn't for harmonising transport and biodiversity?
We will discuss what we learned from transport ecology experience: *how we could identify good or bad practices, how to make best use of existing resources and how to adapt the available knowledge to the local context.*

Looking ahead, what are the key challenges and opportunities related to transport ecology?

2.1. What is a good practice? (Definition and criteria for good practices; what is missing or is still not sufficiently studied; needs for further applied research, etc.)

2.2. What has worked and not worked in the field of transport and biodiversity harmonisation? (The effectiveness of biodiversity & transport harmonisation solutions – from initial planning to learning and improving; evidences of lessons learned and how to use existing resources, including libraries and databases, etc.)

2.3. Harmonization of guidelines, standards and norms. (How to best use available guidelines, standards and norms, as well as scientific and grey literature? how to adapt them to different local contexts?, etc.)

2.4. What are the key challenges and opportunities related to transport ecology? (From practical perspective, what are the most important challenges in implementing the principles of road ecology? What are the key opportunities, including in terms of development in road ecology? What are the future perspectives of this field?)

2.5. Applied research and studies in the field of transport ecology. (Presentation of findings, studies and research relevant for transport ecology, including different types of impacts, demonstration or innovative approaches, etc.)

2.6. Other topics.

THEME #3: INTEGRATED SOLUTIONS FOR ECOLOGICAL CONNECTIVITY:

As any complex problem, landscape connectivity requires multi-sectoral cooperation and therefore "breaking the silos".

We will address the goal of safeguarding *connectivity at landscape level* and the challenges and solutions for *cooperation between relevant sectors* (transports, nature protection, agriculture, forestry, water management, game management, tourism, spatial planning, etc.) for developing *integrated solutions*. We will discuss the need for transdisciplinary learning and the challenges of an *efficient communication*.

3.1. Multi-sectoral cooperation for integrated solutions. (Are there any relevant synergies? Examples of integrated planning and implementation; the role of formal and informal networks, etc.)

3.2. Communicating ecological connectivity. (How to improve awareness and knowledge exchange across a multitude of different target groups and stakeholders, etc.)

3.3. Improving stakeholder engagement and examples of concrete stakeholder actions towards maintaining landscape connectivity. (Challenges and solutions to advance from informing to collaborating and co-creating with stakeholders; joint strategies and partnerships for shared landscapes and visions, etc.)

3.4. Transdisciplinary approaches to landscape connectivity – the role of specific training and education. (Needs and possible solutions for creating future specialists; potential structure of an ideal tailor-made curricula, etc.)

3.5. Other topics.

Conference Organisers

IENE 2022 International Conference was made possible by:

Co-host organisations:

Partner projects

ORGANISING COMMITTEE:

Radu Moț (Zarand, Romania) – co-chair
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PROGRAMME COMMITTEE:

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Sara Santos (University of Évora, Portugal)
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Yun Wang (Chinese Academy of Transportation Sciences, China)

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Yannick Autret (French Ministry for the Ecological and Solidarity Transition, France)
Jean-François Lesigne (RTE, France)

General Information

The IENE 2022 International Conference is being designed as a Hybrid Event, offering both in-person and on-line participation options for attendees and presenters. The Conference language is English.

On-line participation

The on-line participation will take place in the Conference Virtual Venue: https://ic22.virtual-venue.io/
We recommend using the Google Chrome browser, as there have been frequent glitches with the Safari, in particular. Please use your access data specified during the registration (username and password). After logging into the Virtual Venue, please complete your personal profile, including a selection of areas of interest.
We would appreciate if you upload a photo of yourself to make the contact during the conference a bit more personal. You will be able to navigate through the detailed Programme of the Conference and select your preferred events.
We are inviting you to visit the ePoster section before the Conference starts, to exchange opinions with the authors and rate the best poster (**voting will end on 20 September, 16:30 CET**). You could also vote for the best photos of the first IENE Photo Contest (**voting will end on 22 September, 16:30 CET**).
We also invite you to use the comment function that you will find for each event. In this way, you can exchange opinions with fellow attendees, and have the opportunity to communicate your questions and suggestions about the respective event to the speakers in advance. You could engage with our Partner Projects via their dedicated pages on the Virtual Venue.

In-Person Participation

Conference location:
The Conference will take place in the **USAMV Venue – "ICHAT" Building** and **"Biodiversity"Building.**
Address: USAMV (Universitatea de Științe Agricole și Medicină Veterinară), **Calea Mănăștur 3–5, 400372, Cluj-Napoca, Romania**. On Google Maps: DIRECTIONS

Registration desk:

Registration will be opened during the following periods (Romanian time = CET + 1):

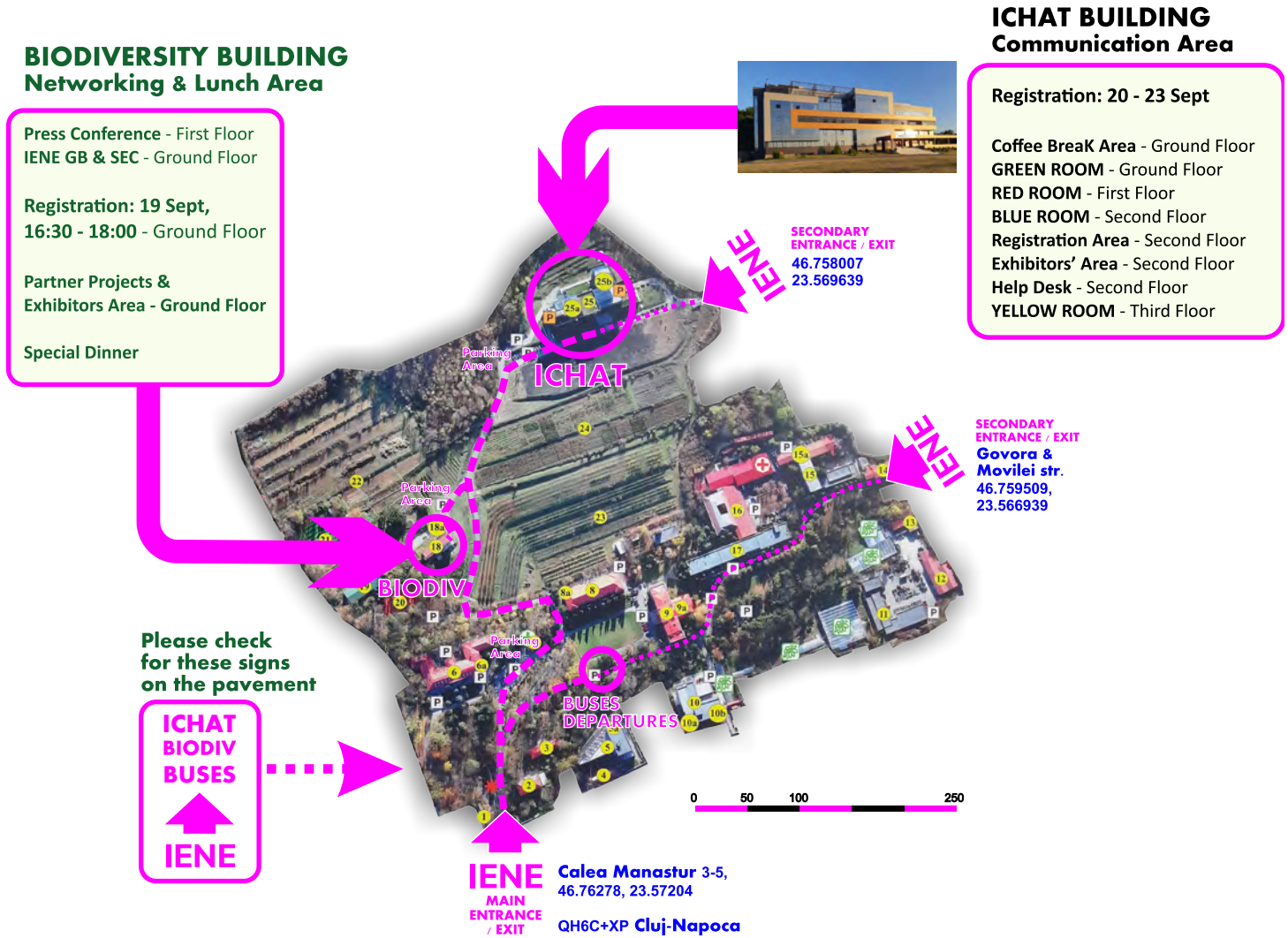
Monday, September 19,	**16:30 – 18:00**	**"BIODIV" Building**
Tuesday, September 20	**8:00 – 9:00**	**"ICHAT" Building – Blue Room Foyer @ 2nd Floor**
Thursday, September 22	**8:00 – 8:45**	**"ICHAT" Building – Blue Room Foyer @ 2nd Floor**
Friday, September 23	**8:00 – 8:45**	**"ICHAT" Building – Blue Room Foyer @ 2nd Floor**

The Conference Venues at USAMV

Please follow the signs on the pavement to get to the two Conference venues and to the Buses Departure area (for the field trips).

There are parking areas nearby the two venues.

If you will arrive by car, please take a ticket from the automatic machine to open the barrier. The parking is free – please show your IENE 2022 badge at the main exit when you are leaving the venue.



IENE Awards 2022

IENE recognizes and awards outstanding efforts made to reduce the detrimental effects of transport infrastructure on nature and enhance its potential for a positive influence.
The IENE awards comprise a public recognition and do not include any grants.
The awards are given in two variants:

The IENE 2022 Personal Award, appreciates outstanding engagement and special achievements made by individuals that are not necessarily related to a particular activity.

The IENE 2022 Project Award, appreciates extraordinary work accomplished by initiatives, activities or plans.
The IENE Personal and Project Awards are granted by the IENE Governance Board.

In addition to these awards, a third award will be given during the conference:
The IENE 2022 Best Poster Presentation Award, appreciating the highest-quality poster presentation.
The IENE 2022 Best Poster Presentation Award will be decided by the conference participants through voting on the virtual venue.

Please make sure to rate the posters by **20 September, 16:30 CET**.

Photo Contest & IENE Image Library

The **first photo contest on the theme of transport infrastructure and biodiversity** will take place on the occasion of IENE 2022 Conference in Cluj-Napoca and will not only allow IENE to reward the best photographs, but also to make an image bank available to our IENE members for publication purposes.

Please vote for your preferred photograph under the four categories of the competition by **22 September, 16:30 CET**.

Conference at a glance

DAY 0 / **MONDAY, SEPTEMBER 19**

CLOSED EVENTS (BY INVITATION ONLY)
+
IN-PERSON-ONLY: REGISTRATION OPENS & EXHIBITORS SET-UP
+
ON-LINE-ONLY: SET-UP YOUR PROFILE, VISIT & RATE ePOSTERS, NETWORKING

Hour: ROMANIAN TIME (CET + 1)	**EVENTS**
10:30 – 11:30 **On-line** By invitation only	**IC22 PRESS CONFERENCE:** IENE & Partner Projects (BISON, SaveGREEN, GreenWeb, Transport4Nature)
11:30 – 12:30 **In-person & On-line** By invitation only	**IENE Governance Board Meeting** By invitation only **BIODIVERSITY VENUE**
	EXHIBITORS SET-UP
15:00 – 16:30 **In-person & On-line** By invitation only	**IENE Governance Board and Scientific and Expert Committee members, as well as new Scientific and Expert Committee members nominated for the period 2022-2024 Meeting** **BIODIVERSITY VENUE**
16:30 – 18:00 **In-person only** **OPEN EVENT**	**REGISTRATION OPENS & WELCOME RECEPTION** **BIODIVERSITY VENUE**
18:30 – ... Dinner on your own	

DAY 1 / **TUESDAY, SEPTEMBER 20**

HYBRID: IN-PERSON & ON-LINE

Hour: ROMANIAN TIME (CET + 1)	**EVENTS**
8:00 – 9:00 **In-person only**	**REGISTRATION OPENS** Foyer **BLUE ROOM**
9:00 – 9:10 **In-person & On-line**	**Set-up time** **BLUE ROOM**
9:10 – 9:30 **Plenary session** **In-person & On-line**	**WELCOME SESSION** **BLUE ROOM**
9:30 – 10:00 **Plenary** **In-person & On-line**	**KEYNOTE SPEECH I:** ***"IENE, a key actor for the development of an ecologically sustainable linear infrastructure in Europe"*** Anders Sjölund **BLUE ROOM**
10:00 – 10:30 **Plenary session** **In-person & On-line**	**KEYNOTE SPEECH II:** ***"Biodiversity and infrastructure synergies and opportunities for European transport networks and beyond"*** Yannick Autret, Carme Rosell & Thierry Goger **BLUE ROOM**
10:30 – 11:00 **Plenary session** **In-person & On-line**	**KEYNOTE SPEECH III:** ***"Harnessing the power of evidence to improve transport ecology"*** Silviu Petrovan **BLUE ROOM**
11:00 – 11:30 Coffee Break & Networking **In-person** **+** **On-line**	**In-person: Networking + Visit Exhibitors' Area** **On-line: Individual Networking + Visit and Rate ePosters & Photos + Visit Partner Projects' Area**

<table>
<tr><td>Hour:
ROMANIAN TIME
(CET + 1)</td><td colspan="3">EVENTS</td></tr>
<tr><td>11:30 – 13:00
Parallel sessions
In-person & On-line</td><td>PS 1. FULL PRESENTATIONS:
Practical experiences, challenges and opportunities related to transport ecology – 1
BLUE ROOM</td><td>PS 2. FULL PRESENTATIONS:
Practical experiences, challenges and opportunities related to transport ecology – 2
RED ROOM</td><td>PS 3. FULL PRESENTATIONS:
Practical experiences, challenges and opportunities related to transport ecology – 3
GREEN ROOM</td></tr>
<tr><td>13:15 – 15:15
Lunch Break & Networking
In-person
+
On-line</td><td colspan="3">In-person: Networking & Announcements:
• Book launch: “Edge and verge effects of transport infrastructure. Mitigating their impact on biodiversity”, by the Spanish Ministry for Ecological Transition – Spanish National Working Group on Habitat Fragmentation & National Defragmentation Plan. Introduced by dr. Carme Rosell.

BIODIVERSITY VENUE
On-line: Individual Networking + Visit and Rate ePosters & Photos + Visit Partner Projects’ Area</td></tr>
<tr><td rowspan="2">15:30 – 16:10
Parallel sessions
In-person & On-line
16:20 – 17:00
Parallel sessions
In-person & On-line</td><td colspan="2">Panel Discussion & Networking – 1
“WIRE: Women in Road Ecology”
BLUE ROOM</td><td>Panel Discussion & Networking – 2
“The role of Professional Networks and Conventions in shaping sustainable transport infrastructure worldwide”
GREEN ROOM</td></tr>
<tr><td>Panel Discussion & Networking – 3
“Young Researchers and Practitioners in Road Ecology”
BLUE ROOM</td><td>Panel Discussion & Networking – 4
“Mobility and Biodiversity: interactions and synergies between mobility and wildlife, international projects and cooperations; future needs of cooperation between IENE and PIARC.”
RED ROOM</td><td>Panel Discussion & Networking – 5
“Transport4Nature: Best practices taken voluntarily by companies involved in the transport infrastructure sector to preserve biodiversity”
GREEN ROOM</td></tr>
</table>

Hour: ROMANIAN TIME (CET + 1)	EVENTS
17:00 – 17:30 Coffee Break & Networking **In-person** **+** **On-line**	**In-person: Networking + Visit Exhibitors' Area** **On-line: Individual Networking + Visit and Rate ePosters & Photos + Visit Partner Projects' Area** (Note: Poster Rating Closes!)
17:30 – 17:45 **Plenary** **In-person – only**	**Logistic remarks regarding the Field trips for the next day** **BLUE ROOM**
17:45 – 19:20 **Plenary** **In-person & On-line**	**IENE GENERAL ANSEMBLY** **+** **Adoption of the IENE 2022 Declaration** **+** **Announcement of the next IENE International Conference in the Czech Republic!** **BLUE ROOM** or **Join the Zoom Meeting** (Secret code: 129327) (OPEN TO ALL PARTICIPANTS & TO IENE MEMBERS)
19:25 – 19:55 **Plenary** **In-person & On-line**	**IENE AWARDS CEREMONY** **BLUE ROOM** or **Join the Zoom Meeting** (Secret code : 129327) (OPEN TO ALL PARTICIPANTS & TO IENE MEMBERS)
20:00 – ... Dinner on your own	

DAY 2 / **WEDNESDAY, SEPTEMBER 21**

FIELD TRIPS, IN-PERSON–ONLY (OPTIONAL)

Departure time ROMANIAN TIME (CET + 1)	**FIELD TRIP**		**Duration**	**Estimated return time in Cluj-Napoca / USAMV Venue**
9:00	**Field trip #1 & Field trip #2 merged!**	**The Planned Metropolitan Ring Of Cluj-Napoca & Turda Salt Mine And The Old City Center Of Cluj-Napoca**	Approx. 7–8 hours in total	Afternoon / Early Evening
8:30	Field trip #3:	**The Turzii Gorges**	Approx. 8-9 hours in total	Late Afternoon
8:00	Field trip #4:	**Trascău / Apuseni Mountains**	Approx. 10 hours in total	Evening
7:30	Field trip #5:	**The Apuseni Mountains – Southern Carpathians Corridor / Mureș Valley & SaveGREEN Workshop (With Guests From IENE & BISON)**	Approx. 12 hours in total	Late Evening

All buses will depart from inside the USAMV Venue. Boarding starts 30 minutes prior to departures; buses will depart promptly!

Final Logistic details regarding the Field trips will be discussed on Tuesday.

DAY 3 / **THURSDAY, SEPTEMBER 22**

HYBRID: IN-PERSON & ON-LINE

Hour: ROMANIAN TIME (CET + 1)	**EVENTS**		
8:00 – 8:45 **In-person only**	**REGISTRATION OPEN** Foyer **BLUE ROOM**		
8:45 – 9:00 **In-person & On-line**	**Set-up time** **BLUE ROOM**		
9:00 – 9.10 **Plenary Session** **In-person & On-line**	**OPENING & ANNOUNCEMENTS** **BLUE ROOM**		
9:10 – 9:40 **Plenary Session** **In-person & On-line**	**KEYNOTE SPEECH IV:** ***"Developing practical solutions and tools for maintaining ecological connectivity"*** Irene Lucius **BLUE ROOM**		
9:50 – 11:20 **Parallel Sessions** **In-person & On-line**	**PS 4. FULL PRESENTATIONS:** Mainstreaming biodiversity into transport sector **BLUE ROOM**	**PS 5. FULL PRESENTATIONS:** Integrated solutions for ecological connectivity – 1 **RED ROOM**	**PS 6. FULL PRESENTATIONS:** Integrated solutions for ecological connectivity – 2 **GREEN ROOM**
11:20 – 11:50 Coffee Break & Networking **In-person** **+** **On-line**	**In-person: Networking + Visit Exhibitors' Area** **On-line: Individual Networking + Visit ePosters + Rate Photos + Visit Partner Projects' Area**		

Hour: ROMANIAN TIME (CET + 1)	EVENTS			
12:00 – 13:30 **Parallel Sessions** **In-person & On-line**	**PS 7. LIGHTNING TALKS:** Practical experiences, challenges and opportunities related to transport ecology – 1 **BLUE ROOM**	**PS 8. LIGHTNING TALKS:** Practical experiences, challenges and opportunities related to transport ecology – 2 **RED ROOM**	**PS 9. LIGHTNING TALKS:** Integrated solutions for ecological connectivity **GREEN ROOM**	
13:30 – 15:15 Lunch Break & Networking **In-person** **+** **On-line**	**In-person: Networking & Announcements:** • ***Book launch: Darryl Jones – A Clouded Leopard in the Middle of the Road****, introduced by the author.* **BIODIVERSITY VENUE** **On-line: Individual Networking + Visit ePosters + Rate Photos + Visit Partner Projects' Area**			
15:30 – 16:30 **Parallel sessions** **In-person & On-line**	**Workshop – 1** ***"Strategies for the valorisation and exploitation of research results in infrastructure and biodiversity to support operational action"*** **BLUE ROOM**	**Workshop – 2** ***"Towards a Road map for facilitating mainstreaming biodiversity into transport in South East Europe: Challenges and opportunities, transferability of existing knowledge and adaptation to the specific context"*** **RED ROOM**	**Workshop – 3** ***"Tackling climate change and biodiversity – nature-based solutions and their role in economic transition. Examples of Transport4Nature commitments"*** **GREEN ROOM**	**Workshop – 4** ***"Identification of Natura 2000 sites / natural protected areas potentially affected by an infrastructure project"*** **YELLOW ROOM**
16:30 – 17:00 Coffee Break & Networking **In-person** **+** **On-line**	**In-person: Networking + Visit Exhibitors' Area** **On-line: Networking + Visit ePosters & Rate Photos + Visit Partner Projects' Area** (Note: Photo Rating Closes!)			

Hour: ROMANIAN TIME (CET + 1)	EVENTS			
17:00 – 18:30 **Parallel sessions** **In-person & On-line**	**Workshop – 5** ***"Future to actions: Prospective scenarios concerning mainstreaming biodiversity into transport infrastructures"*** **BLUE ROOM**	**Workshop – 6** ***"The Draft CEDR Biodiversity Manual – Part I Round-table Discussions"*** **RED ROOM**	**Workshop – 7** ***"Identifying best solutions to mitigate impacts of roads on large carnivores: a multi-stakeholder approach"*** **GREEN ROOM** **– In-person Only**	**Workshop – 8** ***"Application Toolbox for Functional Monitoring"*** **YELLOW ROOM**
19:00 – ... **In-person only** **OPTIONAL EVENT** Or dinner on your own	**CONFERENCE SPECIAL DINNER** **BIODIVERSITY VENUE**			

DAY 4 / **FRIDAY, SEPTEMBER 23**

HYBRID: IN-PERSON & ON-LINE

Hour: ROMANIAN TIME (CET + 1)	**EVENTS**		
8:00 – 8:45 **In-person only**	**REGISTRATION OPEN** Foyer **BLUE ROOM**		
8:45 – 9:00 **In-person & On-line**	**Set-up time** **BLUE ROOM**		
9:00 – 9.10 **Plenary Session** **In-person & On-line**	**OPENING & ANNOUNCEMENTS** **BLUE ROOM**		
9:20 – 11:20 **Parallel sessions** **In-person & On-line**	**PS 10. FULL ORAL PRESENTATIONS:** Practical experiences, challenges and opportunities related to transport ecology – 4 **BLUE ROOM**	**PS 11. FULL ORAL PRESENTATIONS:** Practical experiences, challenges and opportunities related to transport ecology – 5 **RED ROOM**	**PS 12. FULL ORAL PRESENTATIONS:** Practical experiences, challenges and opportunities related to transport ecology – 6 **GREEN ROOM**
11:20 – 11.50 Coffee Break & Networking **In-person** + **On-line**	**In-person: Networking + Visit Exhibitors' Area** **On-line: Individual Networking + Visit ePosters + Visit Partner Projects' Area**		

Hour: ROMANIAN TIME (CET + 1)	**EVENTS**			
12:00 – 13:20 **Parallel sessions** **In-person & On-line**	**Workshop – 9** ***"The Draft CEDR Biodiversity Manual – Part II Panel Discussion"*** **BLUE ROOM**	**Workshop – 10** ***"Identification of gaps and barriers to mainstream biodiversity in transport infrastructure"*** **RED ROOM**	**Workshop – 11** ***"Priorities to overcome fragmentation effects caused by European Transport Infrastructure – content and use of the European Defragmentation Map"*** **GREEN ROOM**	**Workshop – 12** ***"A discussion on the registration of Animal-Vehicle collisions"*** **YELLOW ROOM**
13:30 – 14:50 **Parallel sessions** **In-person & On-line**	***Workshop* – 13** ***"Recommendations towards the integration of the EU Strategy on Green Infrastructures (EU SGI) into the national policy and legislation systems of EU Member States, regarding transport infrastructure development"*** **BLUE ROOM**	**Workshop – 14** ***"Strategies for stakeholder outreach and involvement around ecological connectivity – an experience exchange with members of the SaveGREEN Project"*** **RED ROOM**	**Workshop – 15** ***"Roadside Animal Detection Systems / Wildlife Warning Systems: Different names but the same goal – A workshop to bring together global experiences in warning drivers of wildlife near the roads"*** **GREEN ROOM**	**Workshop – 16** ***"Relevance and prioritization of research actions for biodiversity-friendly transport infrastructures in Europe"*** **YELLOW ROOM**
15:00 – 15:15 **Plenary Session** **In-person & On-line**	**CLOSING SESSION** **BLUE ROOM**			

Hour: ROMANIAN TIME (CET + 1)	**EVENTS**
15:20 – 16:50 Lunch Break & Networking **In-person** **+** **On-line**	**In-person: Networking & Announcements** **BIODIVERSITY VENUE** **On-line: Individual Networking + Visit ePosters + Visit Partner Projects' Area**
17:00 – 18:30 **In-person only** **Optional**	**PARTNER PROJECTS DISCUSSIONS** **+** **Individual Networking**
18:45 – 20:00 **In-person only** **Optional**	**CONFERENCE WRAP-UP** **BIODIVERSITY VENUE**
20:00 – ... Dinner on your own	

Plenary Keynote Speakers

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Infrastructure and Ecology Network Europe (IENE) was established 1996 in connection with an EU financed project, COST 341, which aimed to compile the knowledge about the interaction between Roads and Ecology. The result was a Handbook Wildlife and Traffic that was launched 2003.

Since then, IENE has developed into a broad and comprehensive network of specialists, with an established general assembly (GA). The hub of the network consists of an executive secretariat and a Governance Board (GB), which execute tasks and missions according to decisions in the GA. Lately group of appointed scientists and experts (SEC) have been established to advise and support the GB in its work.

IENE will be present in the society and be an obvious and natural partner to everyone involved in planning, designing, construction and maintenance of linear infrastructure.

Anders Sjölund

Anders Sjölund *has a Master of Science degree in zoological ecology and is an engineer. After 11 years in engineering at Ericsson, he has been involved for 31 years in biodiversity and nature conservation with regional and local authorities, mainly with the Swedish Road Administration and the Swedish Transport Administration.*

He also runs a small farm and forestry business where theory and practice meet in the field of biodiversity enhancement and renewable resource production.

Anders has been the chair of the Infrastructure and Ecology Network Europe (IENE) since 2009 and of the Transport4Nature initiative since 2021.

anders.sjolund@trafikverket.se

Yannick Autret

*A geographer-urbanist by training, **Yannick Autret** holds a master's degree in planning, urbanism and spatial dynamics from the Sorbonne University, and works in the research and innovation department of the Ministry of Ecological Transition. He is a certified international expert in natural resource management, specialised in the environmental impacts of transport and energy, and manages the national research programme ITTECOP (Transport Infrastructure, Territories, Ecosystems and Landscapes – www.ittecop.fr).*

Yannick is the French representative to the OECD Joint Transport Research Centre and a member of the governance board of the European research network IENE (Infrastructure and Ecology Network Europe – http://www.iene.info/). He is currently leading the H2020 BISON project (Biodiversity and Infrastructure, synergies and opportunities for European Transport Networks – https://bison-transport.eu/), which brings together 16 countries and will set the future strategic research and innovation agenda on the subject at European level.

Yannick is a member of the sustainable infrastructure partnership – community of learners – UNEP (https://nicholasinstitute.duke.edu/sustainable-infrastructure-webinars).

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Carme Rosell

***Dr. Carme Rosell** is a senior research consultant who leads Minuartia and takes part in a research group at the University of Barcelona (UB). She has led many projects on mitigation of human-wildlife conflicts particularly focused on wild boar, animal-vehicle collisions, wildlife passages and practice to enhance biodiversity in transport infrastructure.*
Carme co-authored the European Handbook "Wildlife and Traffic", the "Handbook of Road Ecology", the "Technical prescriptions for wildlife crossing and fence design" and the "Guidelines for maintenance of ecological assets on transport linear infrastructure".

She participated in R&D projects such as the Action COST 341 Habitat Fragmentation due to Transportation Infrastructure, the CEDR project SAFEROAD Safe Roads for Wildlife and People, and currently, the HORIZON 2020 BISON on Biodiversity and Transport Infrastructure. She is also teaching for master's degree in Landscape Architecture at the Polytechnic University of Catalonia and Ecological Restoration at UB.

Carme is an elected member of the Infrastructure and Ecology Network Europe (IENE) Governance Board.

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Thierry Goger

Dr. Thierry Goger *is a senior executive in Transport Research and European Affairs. As the FEHRL Secretary-General – the association of the European National Road Research Centres –, Thierry is a strategist and an engaged facilitator of cooperative research and innovation, in the field of road and transport infrastructure.*

Thierry has also a solid experience in policy-briefing and research grant management, as well as in fostering the exploitation and implementation of research results. Prior to joining FEHRL, Thierry was the Science Officer for the Transport and Urban Development Domain at the COST Office – European Cooperation in Science and Technology. His expertise and advocacy skills are regularly demanded by the industry, policy-makers and transport authorities.

On the research front, Thierry has about 20 years of experience and is a Coordinator or Partner of several European projects.

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A "tsunami of infrastructure" were the words that Bill Lawrence used at the IENE 2016 in Lyon. In fact, nearly 60% of the infrastructure that will exist in 2060 has not yet been built. Most of it will be built in developing countries with huge investments that could cumulate to more than 94 trillion dollars by 2040.

The impact of infrastructure on biodiversity has been known for several decades and is a certainty. However, the initiatives and knowledge developed to mitigate its impact are scattered and are not, or only partially integrated into an insufficiently advanced strategic reflection. In fact, in order to achieve this objective, it is necessary to break out of the usual frameworks of reflection and to create new interdisciplinary paradigms to respond to the issues at stake.

Being aware of these challenges, the UN, the G7, the G20, the OECD and the international investment banks are beginning to try to reconcile economic development with environmental protection or restoration. Europe plays an essential role in this objective. Its vast professional network, the expertise at its disposal and the willingness of its governments to try to reduce both climate change and the decline of biodiversity are essential ingredients. At the heart of this nexus, the BISON project, an intense cooperation initiative between administrations, research centres, companies and NGOs, aims to open the way to new synergies that will bring ambitions and hopes both for our continent and most certainly beyond.

To maximise implementation success important management decisions should ideally be based on effectiveness as demonstrated by scientific testing or systematic review of evidence. However, experts commonly offer recommendations for management actions or mitigation which can be based entirely on individual experience or opinion and guidelines are often a mix of the two without clear separations.

Silviu will discuss specific challenges, such as local relevance and adaptation to local conditions as well as ongoing issues with weak study designs and geographic biases. Collating and integrating evidence improves retention of institutional knowledge while embedding processes that capture the information used to guide decision making minimises the risk of knowledge erosion or loss and facilitates learning. Even when recommendations must be made in the absence of satisfactory information, making this process transparent can highlight the need for further evidence. It can also ensure that only efficient actions are put in place, maximising conservation benefits that can be achieved from a set budget.

The mature phase of transport ecology needs strategic generation and embedding of the evidence, improved expert elicitation, structured decision making that integrates local context and the robust embedding of experiments into practice, management plans, guidance and policies.

Silviu Petrovan

*Since 2016, **Dr. Silviu Petrovan** has been working at the University of Cambridge, focusing on evidence-based conservation, expert assessments and decision making in biodiversity conservation and biological risk.*

He is a Senior Research Associate and has published over 50 peer-reviewed papers and several book chapters, largely focusing on understanding the effects of anthropogenic changes on biodiversity and improving evidence-based solutions for counteracting negative effects at population or landscape scale.

Silviu has authored several papers on road ecology and road mitigation with a focus on small vertebrates and how to improve the quality of data monitoring, including with technological innovations and citizen science and how to assess the effectiveness of mitigation systems. The 2016 paper on the national-scale decline of common amphibian species in the UK and Switzerland used multi-decade citizen science data collection on roads to understand and document population trends and has since then become an important biodiversity monitoring tool in other countries.

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Maintaining ecological connectivity is a complex task that requires the active participation of various stakeholders from all relevant fields of activity, such as nature conservation, hunting, agriculture, forestry, water management, etc.

To maximise and achieve long-term results, a genuine co-creation process has to be initiated with these stakeholders. This is the approach that WWF CEE started over a decade ago through some of its flagship projects concerning ecological connectivity (e.g., BioREGIO, TRANSGREEN, ConnectGREEN, SaveGREEN).

Various tools and solutions have been jointly developed with the stakeholders, thanks to all these projects, varying from practical guidelines on identifying corridors to interactive GIS maps and strategic documents endorsed by the parties to the Carpathian Convention. The SaveGREEN project is capitalising on these key results and fosters transdisciplinary and a joint venture to safeguard ecological connectivity and biodiversity in the Carpathians.

Irene Lucius

Irene Lucius *is the Regional Conservation Director of WWF Central and Eastern Europe. Holding a master's degree in biology, she managed projects in the field of environmental communication, integrated coastal zone management, policy advocacy and nature conservation in countries across the European continent and beyond before joining WWF in 2008.*

Today, Irene's responsibilities include coordinating WWF's conservation work in the Green Heart of Europe – countries in Central and Eastern Europe. The focus is on conserving and restoring the natural values of the region's forests, rivers and wetlands, protecting sturgeons and large carnivores, and promoting good governance and green economy approaches.

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Full Presentations

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THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY – 1**
DATE & TIME	**Tuesday, 20 September / 11:30 – 13:00 Romanian Time (CET+1)**
SESSION	**P.S. 1**
ROOM	**BLUE**
MODERATORS	**Rodney van der Ree, Manisha Bhardwaj**

11:30 Live #1 Improving best-practice mitigation on road projects while meeting conditions of approval – a scientifically robust experiment to test the effectiveness of hollow-replacement strategies

Rodney van der Ree (Ecology and Infrastructure International Pty Ltd, Victoria, Australia)

The regulator and transportation agency adopted an approach to explicitly undertake an experiment to meet conditions of approval while testing effectiveness of mitigation. A scientifically robust experiment was undertaken to test the effectiveness of different tree hollow types. Rates of use varies among hollow type. The transport agency is using these results on future projects and acknowledges the value of this experiment.

KEYWORDS: Experimentation, Applied research, Mitigation, Critical habitat, Shelter, Wildlife, Tree hollows, Condition of approval, Learning while doing.

11:45 Rec. #2 Improving habitat connectivity: Developing best practice guidance and structural re-design of the Animex Wildlife Bridge for dormice in the UK

Darrelle Moffat (Animex International Inc., Lee On Solent, United Kingdom), **Steve Béga** (Animex International Inc., Lee On Solent, United Kingdom), **Ian White** (Peoples's Trust for Endangered Species, London, United Kingdom)

This presentation explores the work we have done to improve the technical design and lifespan of the wildlife bridge to ensure it can be widely accepted and implemented by transport authorities. The outcome of our work has resulted in two specific design types: a standalone bridge and a retrofit design. Several bridges have now been installed on projects across roads and motorways and we will be discussing the development and implementation process from two case studies.

KEYWORDS: Bridge, Connectivity, Development, Research, Arboreal, Hazel Dormouse, Engineering, Improvement.

12:00 Rec. **#3 A multi-taxa approach to habitat connectivity modeling in the Terai Arc Landscape of Nepal: implications for road upgrading**

Clara Grilo (CESAM – Centro de Estudos do Ambiente e do Mar, Lisboa, Portugal), **Bhuvan Keshar Sharma** (Jade Consult, Kathmandu, Nepal), **Babu Ram Lamichhane** (NTNC – Biodiversity Conservation Center, Chitwan, Nepal), **Anthony P. Clevenger** (Western Transportation Institute, Bozeman, MT, USA)

Multi-taxa approaches and analyses at local and large scale were developed to identify road segments that can be crossed by potential movement corridors. We selected 17 mammal species representing large mammals of conservation concern, ungulates, primate of conservation concern and small / medium size mammals to run habitat suitability and connectivity models. Potential corridors for movement varied among species. Our findings show the importance of using multiple species and scales to obtain more robust results on where to implement mitigation measures.

KEYWORDS: Mammals, Nepal, Wildlife corridors, Road impacts, Habitat suitability, Royal Bengal tiger.

12:15 Live **#4 Comparing the spatiotemporal variation of crossing and collision positions by roe deer, *Capreolus capreolus***

Johanna Märtz (Forest Research Institute Baden-Wuerttemberg, Freiburg, Germany), **Falko Brieger** (Forest Research Institute Baden-Wuerttemberg, Freiburg, Germany), **Martin Strein** (Forest Research Institute Baden-Wuerttemberg, Freiburg, Germany), **Manisha Bhardwaj** (University of Freiburg, Freiburg, Germany)

We compared roe deer collisions to GPS-crossing locations to evaluate how collision hotspots relate to potential barriers to movement. DVC in south-western Germany were most likely to occur where roads were surrounded by broad-leafed forests, and road densities of 5 km / km^2. There was less spatial predictability in crossing location. Number and location of road crossings appear to be a result of individual behaviour, rather than road characteristics. While collision locations are useful to identify areas to mitigate against collisions, GPS collaring data may be useful to identify areas that are potential barriers. This requires further investigation.

KEYWORDS: Wildlife-vehicle-collisions, Roe deer, SDM, Spatiotemporal variation, Road crossings, Movement ecology.

12:30 Rec. #5 A large-scale analysis reveals unimodal and U-shaped effects of traffic volume on roadkill probability

Dror Denneboom (Technion – Israel Institute of Technology, Haifa, Israel), **Avi Bar-Massada** (University of Haifa, Kiryat Tivon, Israel), **Assaf Shwartz** (Technion – Israel Institute of Technology, Haifa, Israel)

The theorized unimodal effect of traffic volume on roadkill probability was empirically supported for large, highly mobile carnivore species. For the first time, a quadratic U-shaped effect of traffic volume on roadkill probability was identified for six species. The novel U-shaped effect could be explained by intra-species variability in traffic avoidance behavior, driven by increased tolerance of anthropogenic disturbances. We identified varying effects of road attributes and landscape features on roadkill probability that are valuable for effective roadkill mitigation. Low traffic roads can pose a major risk of wildlife mortality for many species, and mitigation efforts should be directed accordingly.

KEYWORDS: Wildlife-vehicle collisions, Roadkill, Traffic volume, Unimodal effect, Roadkill mitigation.

12:45 Live #6 Human footprint and mountain lion territory use in human-dominated landscapes

Rafael Barrientos (Universidad Complutense de Madrid, Madrid, Spain), **Winston Vickers** (University of California Davis, Davis, USA), **Travis Longcore** (University of California Los Angeles, Los Angeles, USA), **Eric Abelson** (University of Texas, Austin, USA), **Justin Dellinger** (California Department of Fish and Wildlife, Sacramento, USA), **Dave Waetjen** (University of California Davis, Davis, USA), **Bruce Markman** (University of California Davis, Davis, USA), **Fraser Shilling** (University of California Davis, Davis, USA)

This is the first study that combines fine-scale radiotelemetry with landscape light, and road noise and light pollution. Our findings will be of interest for mountain lion conservation to identify the tolerance thresholds for road density and light pollution inside their territories, as well as to characterize the mountain lion crossing points at roads, to reduce the main mortality source for this species (i.e., roadkills).

KEYWORDS: Nighttime light pollution, *Puma concolor*, Roadkills, Roads, Traffic noise.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY – 2**
DATE & TIME	**Tuesday, 20 September / 11:30 – 13:00 Romanian Time (CET+1)**
SESSION	**P.S. 2**
ROOM	**RED**
MODERATORS	**Darryl Jones, Marguerite Trocmé**

11:30 Live #7 Creating power lines green corridors: An alternative vegetation management is possible

Lisa Garnier (RTE France, La Défense, France), **Bruno Salvi** (RTE France, La Défense, France), **Agnès Baccelli** (RTE France, La Défense, France), **Sandrine Willer** (RTE France, La Défense, France), **Damien D'eaubonne** (RTE France, La Défense, France), **Jean-François Lesigne** (RTE France, La Défense, France), **Gérald Sambardier** (RTE France, La Défense, France), **Christophe Martinez** (RTE France, La Défense, France), **Gérard Jadoul** (Ecofirst, Awenne, Belgium), **Pierrette Nyssen** (Ecofirst, Awenne, Belgium), **Nicolas Bock** (Parc naturel Régional des Ardennes, Renwez, France), **Céline Davril-Bavois** (Parc naturel Régional des Ardennes, Renwez, France)

BELIVE is a Transmission System Operator (RTE) project that aims to study how, at an industrial level, alternative vegetation management can be generalized underneath overhead lines for the benefit of biodiversity, ecosystem services and local stakeholders. Financial viability and ecosystem services are estimated to engage further development and expand in European countries for creating green infrastructures in forest ecosystems.

KEYWORDS: Biodiversity, Power lines, Ecosystem services, Vegetation management, Forest corridor.

11:45 Rec. #8 Multiuse overpasses as crossing structures for wild animals – the role of human disturbance

Ida Anomaa (University of Helsinki, Parola, Finland), **Milla Niemi** (Latvasilmu osk., Hankasalmi, Finland)

We studied nine multiuse overpasses built for both animals and humans. During our one-year-long study period with camera traps, altogether eleven mammal species used passages located in southern Finland. When using a limited dataset and concentrating on ungulates only, we found that they used the overpasses most active during the early evening, while human activity peaked during the day. Non-motorized human activities disturbed ungulates more than motor vehicles, but only moose showed signs of spatiotemporal avoidance. We conclude that even multiuse overpasses could be useful, the possible human-caused disturbance needs to be considered with severity.

KEYWORDS: Crossing structure, Passage, Mitigation, Co-use, Spatiotemporal avoidance.

12:00 Rec. #9 Permeability of highways in Croatia for large carnivores

Djuro Huber (Veterinary Faculty, Velika Gorica, Croatia)

Linear structures like highways create serious habitat fragmentation. Large carnivores are particularly sensitive to habitat fragmentation due to their large home ranges, low densities, as well as alimentary and reproductive needs. There are the ways to make sure that the minimum permeability of highways can be secured. The objects which large carnivores can use are tunnels, viaducts, bridges and green bridges. Should be at least one such object each 5 km. The use of crossing structures by animals should be monitored and eventual improvements applied. The fence should be constructed in the way that animals cannot cross it. Attractants such as garbage or road kill should not occur on the highway. The total permeability of the motorways in the large carnivore range in Croatia ranges from 5 to 25% of the route length.

KEYWORDS: Large carnivores, Croatia, Highways, Permeability, Green bridges.

12:15 Live #10 Assessing and Mitigating the Impacts of Road Projects on Soil – The RoadSoil Project

Hans Martin Hanslin (Norwegian Institute of Bioeconomy Research, NIBIO, Klepp St, Norway), **Tim Geiges** (Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Birmensdorf, Switzerland), **Attila Nemes** (Norwegian Institute of Bioeconomy Research, NIBIO, Ås, Norway), **Maria Dietrich** (Norwegian Institute of Bioeconomy Research, NIBIO, Klepp St, Norway), **Monica Jayesingha** (Norwegian Institute of Bioeconomy Research, NIBIO, Ås, Norway), **Loraine Ten Damme** (Swedish University of Agricultural Sciences, Uppsala, Sweden), **Lorena Chagas Torres** (Swedish University of Agricultural Sciences, Uppsala, Sweden), **Teodora Todorcic Vekic** (Norwegian Institute of Bioeconomy Research, NIBIO, Ås, Norway), **Silvia Tobias** (Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Birmensdorf, Switzerland), **Thomas Keller** (Swedish University of Agricultural Sciences, Uppsala, Sweden), **Trond Knapp Haraldsen** (Norwegian Institute of Bioeconomy Research, NIBIO, Ås, Norway)

Strategies for soil management are critical to reduce environmental impact of road projects. The ROADSOIL project will compile and disseminate knowledge of best-practices in soil management to reduce loss of soil functions and quality and restore and rebuild soils for road verges and ecological compensation.

KEYWORDS: Sustainable land management, Soil functions, Guidelines, Mitigation.

12:30 Rec. **#11 Net Loss or No Net Loss? Multiscalar analysis of a gas pipeline offset efficiency for a protected butterfly population**

Sylvain Moulherat (TerrOïko, Sorèze, France), **Marie Soret** (TerrOïko, Sorèze, France), **Xavier Paris** (Téréga, Pau, France), **Catherine de Roincé** (TerrOïko, Sorèze, France)

Gas pipelines verges may constitute corridors for butterflies. Complex changes in ecological network functioning may induce loss of biodiversity even if new corridors arise with the infrastructure development. Large scale scenario simulations of metapopulation functioning may help in preventing unexpected loss of biodiversity due to complex changes in ecological network functioning.

KEYWORDS: Metapopulation functioning, Linear infrastructure, Gas pipeline, Mitigation measure efficiency, Ecological corridor, Butterfly ecology, Landscape graphs, Environmental impact assessment, Ecological modelling, Scale.

12:45 Live **#12 Including biodiversity on highway verges in road asset management**

Marguerite Trocmé (ASTRA, Bern, Switzerland)

- Biodiversity as part of road assets;
- Simple standardized biodiversity evaluation methodology.

KEYWORDS: Road verges, Biodiversity, Corridor function, Maintenance, Asset management.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY – 3**
DATE & TIME	**Tuesday, 20 September / 11:30 – 13:00 Romanian Time (CET+1)**
SESSION	**P.S. 3**
ROOM	**GREEN**
MODERATORS	**Edgar van der Grift, Charlotte Navarro**

11:30 Live #13 Presenting scientific evidence in guidelines for road mitigation

Edgar van der Grift (Wageningen Environmental Research, Wageningen, Netherlands), **Peter Smulders** (Kragten, Roermond, Netherlands), **Dennis Wansink** (Bureau Waardenburg BV, Culemborg, Netherlands), **Adam Hofland** (Rijkswaterstaat, Water Verkeer en Leefomgeving, Utrecht, Netherlands)

In the new Dutch handbook for fauna measures at transportation infrastructure, published in 2021, the measures are classified on the basis of scientific research. It concerns a classification for the effectiveness of the measures in reducing fauna mortality and / or increasing habitat connectivity. Wildlife crossing structures are also classified on the basis of research into the use of these facilities by fauna. The developed system makes it possible to easily update the classification on the basis of new research. The insight gained should help policymakers and road planners to draw up effective mitigation plans and a targeted research agenda.

KEYWORDS: Road mitigation, Wildlife fence, Crossing structure, Effectiveness, Guidelines, Handbook.

11:45 Rec. #14 The Wildlife Fencing Guide – Improving Wildlife Fencing for Herpetofauna to Aid Effective Implementation

Steve Béga (Animex International Inc., Lee On Solent, United Kingdom)

Wildlife fencing is used as a global mitigation solution for herpetofauna species to prevent roadkill. However, the fence material, height, and implementation requirements vary between country to country, state to state and region to region. This resource will become a valuable asset and help agencies across the world ensure they can easily implement reliable, cost effective and ecologically sensitive mitigation measures to help reduce global wildlife mortality.

KEYWORDS: Fencing, Handbook, Guidelines, Specifications, Reptiles, Amphibians, Mammals.

12:00 Rec. #15 Spatio-temporal patterns and successful mitigation of bird-caused electrical faults in transmission power lines in Portugal

Francisco Moreira (CIBIO / InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Lisboa, Portugal), **Ricardo C. Martins** (CIBIO / InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Lisboa, Portugal), **Francisco F. Aguilar** (CIBIO / InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Lisboa, Portugal), **António Canhoto** (REN – Rede Eléctrica Nacional, S.A., Maia, Portugal), **Jorge Martins** (REN – Rede Eléctrica Nacional, S.A., Maia, Portugal), **José Moreira** (REN – Rede Eléctrica Nacional, S.A., Maia, Portugal), **Joana Bernardino** (CIBIO / InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Lisboa, Portugal)

Bird nests on transmission lines can cause electrical faults which reduce service reliability. White storks account for an important portion of faults in the Portuguese transmission electricity grid. Faults are more likely to occur at night, and on circuits where the proportion of pylons occupied and the number of stork nests is higher. The management actions implemented to discourage storks from nesting in hazardous locations of the pylons, were effective in reducing bird-related fault rates. The nest management program developed is likely to be successful in other countries where storks are common and use electricity pylons for nesting.

KEYWORDS: Power lines, Service reliability, Outages, Bird streamers, White stork, *Ciconia ciconia*, Nesting, Long-term management.

12:15 Live #16 Planning for mitigation: Brown bear occurrence along a proposed highway route in the Eastern Carpathian Mountains of Romania

Csaba Domokos (Milvus Group Bird and Nature Protection Association, Târgu Mureș, Romania), **Ferenc Jánoska** (University of Sopron, Sopron, Hungary), **Bogdan Cristescu** (University of Cape Town, Cape Town, South Africa)

Construction and operation of the A8 highway route in the Eastern Carpathian Mountains of Romania will affect habitat connectivity for brown bears. We used baited hair traps to monitor brown bear occurrence long-term and inform mitigation planning of the highway project. Most detections of bears were in rugged areas located in the westernmost part of the sampled planned highway route. We detected genetically related bear individuals on both sides of the planned highway, suggesting that connectivity occurs at present i.e., before highway construction, and emphasizing the need to mitigate the envisioned fragmentation effects of highway development and operation.

KEYWORDS: A8, Fragmentation, Hair trapping, Highway mitigation, *Ursus arctos*.

12:30 Rec. **#17 Road alteration of species interactions**

Pablo Quiles Tundidor (Universidad Complutense de Madrid, Madrid, Spain), **Rafael Barrientos Yuste** (Universidad Complutense de Madrid, Madrid, Spain)

We know little about how roads alter the natural flow of ecosystems and the relationships between its components. Our literature review shows how some interactions have been given more attention than others as well as some road impacts are better studied than others. Likewise, there is a lack of research covering multiple taxa and their relationships, a lack of studies at a population scale and a lack of articles focused on the possible road-mediated cascade effects derived from these alterations of interspecific relationships.

KEYWORDS: Road Ecology, Species interactions, Literature review, Road impacts.

12:45 Live **#18 Operational integration of biodiversity in linear transport infrastructure projects**

Claudia Morin (Setec International, Paris, France), **Eric Belnot** (Setec International, Paris, France)

Our presentation aims to explain how environment and especially biodiversity needs to be included in projects. Several aspects of biodiversity are addressed in our work. Biodiversity and environment are considered in environmental studies with respect to time and space aspects. Environmental and socioeconomic studies, however, do not use the same tools. This gap is an obstacle to considering environment at the same level as socio-economic topics. New tools from research to integrate biodiversity into projects are not used because of different obstacles. Some measures are effective and can lead to new research paths and innovative measures.

KEYWORDS: Integration, Biodiversity, Operational, Study office, Regulation, Approach, Gaps, Tools, Development, Feedbacks.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Thursday, 22 September / 09:50 – 11:20 Romanian Time (CET+1)**
SESSION	**P.S. 4**
ROOM	**BLUE**
MODERATORS	**Andreas Seiler, Denis François**

09:50 Live #19 Emerging trends and future challenges for mainstreaming biodiversity in the transport sector

Andreas Seiler (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Olivier Pichard** (Cerema HdF, Lille, France), **Sylvain Moulherat** (TerrOïko, Sorèze, France), **Manon Teillagorry** (Cerema, Bron, France), **Marine Pasturel** (TerrOïko, Sorèze, France), **Fanny Benard** (Cerema, Bron, France), **Chloé Desplechin** (CDC Biodiversity, France), **Sophie Menard** (CDC Biodiversity, France), **Miriam Herold** (Bundesanstalt für Straßenwesen, Bergisch Gladbach, Germany), **Pia Bartels** (Bundesanstalt für Straßenwesen, Bergisch Gladbach, Germany), **Jörgen Wissman** (Swedish University of Agricultural Sciences, Uppsala, Sweden)

We present a new report from the BISON project on Mainstreaming Biodiversity and Transportation on the emerging trends and challenges the transport and environmental sectors most likely will have to deal with in the coming decades.

KEYWORDS: Biodiversity, Infrastructure, Future transport, Electrification, Cumulative impacts, Invasive species, Climate change, Holistic.

10:05 Rec. **#20 Mainstreaming biodiversity in transport infrastructure management thanks to sensor-based data collection: future trends according to the BISON project**

Sylvain Moulherat (TerrOïko, Sorèze, France), **Manon Teillagorry** (Cerema, Bron, France), **Frédéric Jehan** (Egis Structures et Environnement, Balma, France), **Yannick Autret** (Ministry of Ecological Transition, La Défense, France), **Luis Fernandez** (Minuartia, Barcelona, Spain), **Alfred Figueras** (Amphi, Odense M, Denmark), **Lorenzo Franzoni** (UIC, Paris, France), **Enric Miralles** (Generalitat de Catalunya, Barcelona, Spain), **Andreas Seiler** (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Jordi Solina** (Generalitat de Catalunya, Barcelona, Spain), **Pinar Yilmazer** (UIC, Paris, France)

Biodiversity and transport sectors use data and tools for specific purposes which can often be mutualised offering opportunities for cost-efficient improvement of transport infrastructure and biodiversity management. Sensor-based data collection and AI offer a large field of future intersectorial collaborative research opportunities.

KEYWORDS: Data collection, Data management, Artificial Intelligence, Digitalisation, Emerging trends.

10:20 Rec. **#21 Mainstreaming biodiversity in transport infrastructure management in the digital model: the GIS, BIM, Digital Twin continuum for biodiversity data management and representation**

Frédéric Jehan (Egis Structures et Environnement, Balma, France), **Sylvain Moulherat** (TerrOïko, Sorèze, France), **Manon Teillagorry** (Cerema, Bron, France), **Yannick Autret** (Ministry of Ecological Transition, La Défense, France), **Luis Fernandez** (Minuartia, Barcelona, Spain), **Alfred Figueras** (Amphi, Odense M, Denmark), **Lorenzo Franzoni** (UIC, Paris, France), **Pinar Yilmazer** (UIC, Paris, France), **Andreas Seiler** (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Jordi Solina** (Generalitat de Catalunya, Barcelona, Spain), **Enric Miralles** (Generalitat de Catalunya, Barcelona, Spain)

Biodiversity objects are to date almost absent from the BIM world. Developing the biodiversity theme in the BIM environment offers unexplored research opportunities with strong impact at the same time for biodiversity and transport infrastructure management. Efficient mainstreaming of biodiversity in transport infrastructure would require the GIS, BIM, Digital Twin dedicated software interoperability.

KEYWORDS: BIM, Digital Twin, Data management, Collaborative work, Process innovation, Project management, Biodiversity.

10:35 Live #22 Mitigating barrier impacts of transport infrastructure in Sweden – a permeability approach

Henrik Wahlman (Enviroplanning AB, Linkoping, Sweden), **Andreas Seiler** (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Emma Håkansson** (Enviroplanning AB, Gothenburg, Sweden), **Mattias Olsson** (Enviroplanning AB, Gothenburg, Sweden), **Ulrika Lundin** (Swedish Transport Administration, Borlänge, Sweden), **Anders Sjölund** (Swedish Transport Administration, Borlänge, Sweden)

The STA (Swedish Transport Administration) regularly monitor the permeability of the transport infrastructure on ungulates.

Several steps were used to identify infrastructure barriers:

- Identification of infrastructure barriers;
- Identification of crossing points for fauna;
- Quantification of remaining barriers.

The results are used on many levels. Quantified data on the extent of the barriers are used by the government to define a target for defragmentation and allocate funding for defragmentation measures. Based on the analysis, STA prioritizes and distributes funding to regional and local levels and monitors the yearly progress towards the set target.

KEYWORDS: Geospatial analysis, Transport infrastructure, Roads, Railways, Barrier impacts, Permeability, Mitigation, Defragmentation.

10:50 Rec. #23 A Strategy and Actions for Biodiversity Conservation on European Railways

Richard Pywell (UK Centre for Ecology & Hydrology, Wallingford, United Kingdom), **Jeff Ollerton** (University of Northampton, Northampton, United Kingdom), **Pinar Yilmazer** (The International Union of Railways, Paris, France), **Thomas Schuh** (Austrian Federal Railways, Wien, Austria), **Michael Below** (Deutsche Bahn AG, Berlin, Germany)

The UIC and railway infrastructure managers across Europe have formulated a collective vision for conserving and enhancing biodiversity on the rail network. Adoption of the 13 key strategic goals and actions will embed biodiversity management at every level of the railway business alongside safety, performance and sustainability. Best practices collected from the REVERSE project participants provide examples of positive, practical actions that railways are already taking to significantly benefit Europe's declining biodiversity and ecosystems. Together, this will transform the rail network and enable it to play a positive role in protecting and enhancing biodiversity across Europe.

KEYWORDS: Landscape connectivity, Mitigation hierarchy, Habitat restoration, Integrated monitoring, Partnership working.

11:05 Live **#24 Development of a strategic research agenda for biodiversity-friendly transport infrastructures in Europe**

Denis François (Université Gustave Eiffel, Bouguenais, France), **Ivo Dostál** (Centrum dopravního výzkumu, v. v. i., Brno, Czech Republic), **Peter Mederly** (Univerzita Konštantína Filozofa v Nitre, Nitra, Slovakia), **Yannick Autret** (Ministry of Ecological Transition, La Défense, France)

A research roadmap for biodiversity-friendly transport infrastructure is to be built for Europe. A bottom-up approach allows gathering expectations and proposals from all types of stakeholders and for all types of transport infrastructures. Cross-analysis allows the identification of research needs in all relevant areas and throughout transport infrastructure life stages. The hundreds of relevant research actions revealed by the process are distributed in a series of 18 structuring themes for the agenda. The final Strategic Research Agenda (actions and timetable) will be consolidated through consultation of all stakeholders.

KEYWORDS: Bottom-up, Cross-analysis, Expectation, Innovation, Knowledge, Methodology, Need, Proposal, Roadmap, Stakeholder.

THEME	**INTEGRATED SOLUTIONS FOR ECOLOGICAL CONNECTIVITY – 1**
DATE & TIME	**Thursday, 22 September / 09:50 – 11:20 Romanian Time (CET+1)**
SESSION	**P.S. 5**
ROOM	**RED**
MODERATORS	**Filippo Favilli, Carme Rosell**

09:50 Live **#25 Combining GIS and SWOT analysis for enhancing ecological connectivity in the Alpine-Adriatic Area**

Filippo Favilli (EURAC Research, Bolzano, Italy), **Peter Laner** (EURAC Research, Bolzano, Italy)

The current research wants to highlight the importance of combination of social and spatial approaches to better identify the most important locations for ecological connectivity together with local stakeholders and define, with them, the needed actions on the ground to preserve both the human and wildlife presence and encourage coexistence, considering the effects of current climatic crisis.

KEYWORDS: Ecological connectivity, Spatial models, SWOT, Alps, Dinaric.

10:05 Rec. **#26 Coupling connectivity modeling, roadkill hotspots and expert-opinion to reduce barrier effects of transport infrastructures**

Céline Clauzel (Université Paris Cité, Paris, France), **Simon Tarabon** (Ubiquiste, Lyon, France), **Claire Godet** (LADYSS, Saint Fulgent, France)

- This study contributes to the improvement of knowledge on road ecology;
- Reducing the barrier effect due to major transportation infrastructures;
- Improvement of existing road structures and creation of new wildlife crossings;
- Maximizing connections between species habitats from a multi-scale perspective;
- Relationships between landscape connectivity and roadkill data were analyzed;
- The methodological framework appears useful to locate mitigation measures areas.

KEYWORDS: Mitigation measures, Wildlife crossing, Impact assessment, Landscape connectivity, Graph theory, Conservation planning.

10:20 Rec. **#27 Ecological corridors: the right (policy) instruments to encourage cooperation**

Thomas Impens (Provinciaal Natuurcentrum Limburg, Genk, Belgium), **Jan Mampaey** (Provinciaal Natuurcentrum Limburg, Genk, Belgium)

As an educational nature centre that is part of the provincial government, we are the main support in biodiversity policy making in Limburg for this government. In this presentation we focus on 2 specific cases where we are experimenting with tools and policy instruments which can inspire our partners in taking action in the realisation and management of ecological corridors. In case 1 we examine the role of the province within a broad collaboration of partners. In case 2 we are setting up a framework of agreements with partners on the management of a corridor that will be realised in the near future.

KEYWORDS: Cooperation, Stakeholder engagement, Realisation, Ecological corridor, Policy instruments.

10:35 Rec. #28 A substantial theoretical and practical post-graduate professional diploma course in transport ecology

Rodney van der Ree (Ecology and Infrastructure International Pty Ltd, Victoria, Australia), **Hanna Helsingen** (WWF-Myanmar, Yangon, Myanmar), **Urvana Menon** (WWF-Myanmar, Yangon, Myanmar), **Sai Than Lwin** (WWF-Myanmar, Yangon, Myanmar)

Continuous stakeholders engagement reinforces the trust and collaboration between each other. The initiative of a Transport Ecology Professional Diploma in Myanmar is an example that proves maintaining stakeholder engagements to further formalize the integration of ecological concerns in future linear infrastructure planning. This diploma shows Transport Ecology opportunities in South-east Asia to address the demand for more technical knowledge.

KEYWORDS: Transport ecology, Diploma, Stakeholders engagement, Collaboration.

10:50 Live #29 Development of an evaluation methodology for ecological corridors on the planed section of the M2 highway

Zsombor Bányai (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **András Weiperth** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **László Kollányi** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Krisztina Filepné Kovács** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Edina Dancsokné Fóris** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Ádám Staszny** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Ferincz Árpád** (Hungarian University of Agriculture and Life Sciences, Agárd, Hungary), **Anna Hegedűs** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Vera Lente** (Hungarian University of Agriculture and Life Sciences, Agárd, Hungary), **Virág Kutnyánszky** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary)

- Complex GIS based evaluation about ecological corridors to find out the most valuable gateways location and type on the planned section of the M2 highway.

KEYWORDS: Ecological corridors, Wildlife paths, M2 highway, Evaluation, Animal crossing.

THEME	**INTEGRATED SOLUTIONS FOR ECOLOGICAL CONNECTIVITY – 2**
DATE & TIME	**Thursday, 22 September / 09:50 – 11:20 Romanian Time (CET+1)**
SESSION	**P.S. 6**
ROOM	**GREEN**
MODERATORS	**Yannick Autret, Cristian-Remus Papp**

09:50 Live #30 International perspectives on fundings and research needs in infrastructure and biodiversity

Yannick Autret (Ministry of Ecological Transition, La Défense, France)

According to the G20, the forthcoming investment of over $94 trillion worldwide in the transport and energy sectors represents a major opportunity for stimulus packages such as the EU Green Deal. However, the 50% increase in networks by 2040 is also a major challenge for biodiversity and the environment. Sustainability research and policy in the transport and energy sector must now take into account both biodiversity and climate issues. This paper will present an overview of the challenges in terms of sustainable funding of infrastructure research and innovation and their impact. Based on the analysis of the latest G20, OECD, World Bank and UN resolutions, we will also present the trends and potential future tensions in terms of research needs on the interactions between infrastructure and biodiversity in view of the massive investments underway or to come. Finally, I will discuss the way in which European research organisations are mobilised to meet these needs, the challenges they face and the responses in order to improve the coordination of research investments and the exploitation of the results.

KEYWORDS: Research, Prospective, Policy, Norms and standards, OECD, UNEP, G20-G7, EU – Horizon Europe, GEF 8.

10:05 Rec. **#31 An imaginative and prospective approach to linear infrastructures: a landscape architecture educational experience at the service of the ecological and energy transition**

Sophie Bonin (Ecole Nationale Supérieure de Paysage, Versailles, France), **Roberta Pistoni** (LATTS, Marne-la-Vallée, France), **Patrick Moquay** (Ecole Nationale Supérieure de Paysage, Versailles, France), **Lauri Mikkola** (Ecole Nationale Supérieure de Paysage, Versailles, France), **Benoît Dugua** (Université de Reims Champagne-Ardenne, Reims, France)

- Correlation between the search for socio-economic multifunctionality of infrastructure dependent spaces and the improvement of socio-ecological connectivity;
- Relational virtue of the energy theme;
- Potential of infrastructure dependent / derelict / relictual / marginal spaces;
- Difficulties to articulate with existing policies and actors;
- A crucial need for disciplinary cross-fertilisation between engineering, ecological sciences and project design and creation, still to be developed.

KEYWORDS: Landscape architecture, Global approach, Linear infrastructure, Territory, Landscape didactics, Imagination.

10:20 Rec. **#32 Alignment Optimization: A preliminary assessment of construction, economic, and environmental costs**

Grant Connette (Smithsonian Institution, Washington D.C., USA), **Urvana Menon** (WWF-Myanmar, Yangon, Myanmar), **Sai Than Lwin** (WWF-Myanmar, Yangon, Myanmar), **Carl Reeder** (WWF-Myanmar, Yangon, Myanmar), **Hanna Helsingen** (WWF-Myanmar, Yangon, Myanmar), **Gustavo Nicolas Paez** (WWF-Myanmar, Yangon, Myanmar), **Ramiro Crego** (Smithsonian Institution, Washington D.C., USA), **Katie La Jeunesse Connette** (Smithsonian Institution, Washington D.C., USA), **Nirmal Bhagabati** (WWF-US, Washington D.C., USA)

We implemented a genetic algorithm in Google Earth Engine to identify and evaluate alternative route alignments for a planned highway project through Myanmar's Alaungdaw Kathapa National Park.

KEYWORDS: Environmental impact, Alternative routes, Google Earth Engine.

10:35 Rec. #33 Targeted tree and habitat establishment alongside the operational railway in Great Britain to benefit safety, people and nature

Neil Strong (Network Rail Infrastructure Ltd, Milton Keynes, United Kingdom), **Richard Pywell** (UK Centre for Ecology & Hydrology, Wallingford, United Kingdom), **Jon Stokes** (The Tree Council, London, United Kingdom), **David West** (Forestry Commission, Exeter, United Kingdom)

Development of a simple and practical tool to identify locations that deliver public and biodiversity benefit from tree and other habitat establishment, whilst maintaining the safety of the operational linear transport infrastructure. Creation of a design for an infrastructure woodland edge and nature belt to enable establishment of new, or management of existing, habitat adjacent to operation linear transport routes.

KEYWORDS: Railway, Biodiversity, Satellite remote sensing, Adjacent landowner, Carbon sequestration, Safety.

10:50 Live #34 Modelling structural connectivity to identify areas of conflicts between ecological and transportation networks in Hungary

László Kollányi (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **András Weiperth** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Gyula Tar** (Ministry of Agriculture, Budapest, Hungary), **Ádám Staszny** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Mónika Csőszi** (Lechner Non-Profit Ltd., Budapest, Hungary), **Katalin Török** (Centre for Ecological Research, Budapest, Hungary), **Liu Manshu** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Xinyiu Wang** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Krisztina Filepné Kovács** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary)

The analysis has highlighted the missing elements of ecological corridors, bottlenecks of the network system, priorities of development. Nevertheless, identified problem areas for the development of the transport network. Network links at national level have been made comparable with the National Spatial Plan and the spatial development concept. As a final result on detailed level potential arable land were identified as part ecological corridor areas.

KEYWORDS: Structural and functional ecological connectivity, Ecological network, Biodiversity, Transportation network, Spatial and regional planning.

11:05 Live **#35 Maintaining ecological connectivity in the Carpathian region through an integrated and participatory approach**

Cristian-Remus Papp (WWF Romania, Bucharest, Romania), **Hildegard Meyer** (WWF Central and Eastern Europe, Wien, Austria), **Zuzana Okanikova** (Nature Conservation Agency, Prague, Czech Republic), **Martin Strnad** (Nature Conservation Agency, Prague, Czech Republic), **Vaclav Hlavac** (Nature Conservation Agency, Prague, Czech Republic), **Dusan Romportl** (Faculty of Science, Charles University, Prague, Czech Republic), **Kristyna Vlkova** (Faculty of Science, Charles University, Prague, Czech Republic), **Gabriella Mária Nagy** (CEEweb for Biodiversity, Budapest, Hungary), **Radu Moț** (Association Zarand, Brașov, Romania), **Lazaros Georgiadis** (CERTH, Thessaloniki, Greece), **Milan Husár** (Spectra, CE, STU Bratislava, Slovakia), **Maros Finka** (Spectra, CE, STU Bratislava, Slovakia), **Gavril Marius Berchi** (West University of Timișoara, Timișoara, Romania)

Ecological connectivity can only be maintained if dedicated tools are developed and implemented, as well as genuine stakeholder interactions and engagements are facilitated in an integrated way. We designed such an approach by working closely with key actors from various fields, including nature conservation, spatial planning, and academia. Practical results such as methodology for identifying ecological corridors in a harmonised way, ecological network, decision support tool, etc., were mainstreamed into relevant policies such as an international action plan on conservation of large carnivores and ensuring ecological connectivity. All results were designed and validated through stakeholder consultations and engagement.

KEYWORDS: Connectivity conservation, Ecological network, Large carnivores, Stakeholder engagement.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY – 4**
DATE & TIME	**Friday, 23 September / 09:20 – 11:20 Romanian Time (CET+1)**
SESSION	**P.S. 10**
ROOM	**BLUE**
MODERATORS	**Yannick Autret, Thomas Schuh**

09:20 Live #36 Flor'Elec: a future indicator for power lines right of ways?

Estelle Nicot (RTE France, La Défense, Paris, France), **Gabrielle Martin** (Université Toulouse-III-Paul-Sabatier, Toulouse, France), **Anne Douard** (Réserves Naturelles de France, Dijon, France), **Lisa Garnier** (RTE France, La Défense, Paris, France)

To investigate the contribution of right-of-way wildflower management practices to plant diversity, an indicator for non-botanical specialists, called Flor'Elec, has been developed by France's transmission system operator (RTE) with the help of the association Réserves naturelles de France, which federates nature professionals. The purpose of this study is to propose the Flor'Elec protocol, which is standardised and accessible to all, to collect data allowing the calculation of a wild flora indicator at the scale of the right-of-way, in relation to management practices. Additional comprehensive botanical surveys are conducted as part of this study to ensure its robustness.

KEYWORDS: Indicator, Alternative vegetation management, Biodiversity, Ecosystems, Right of ways, Power lines.

09:35 Rec. #37 OCAPI – Biodiversity monitoring thanks to more intelligent cameras

Sylvain Moulherat (TerrOïko, Sorèze, France), **Jean-Philippe Tarel** (Université Gustave Eiffel, Marne-La-Vallée, France), **Olivier Gimenez** (CNRS, Montpellier, France).

The OCAPI project developed a collaborative deep learning environment (data warehouse, annotation platform, GPU rental service). Deep learning based monitoring can be used to map collision risk. Connected infrastructure may contribute to develop large scale biodiversity monitoring systems.

KEYWORDS: Artificial Intelligence, AVC, Risk map, Adaptive maintenance.

09:50 Rec. **#38 Roads as drivers of population spreading: the case study of bee-eaters in Doñana –**

Miguel Suarez-Couselo (Estación Biológica de Doñana, Seville, Spain), **Julio Blas** (Estación Biológica de Doñana, Seville, Spain), **Jacinto Román** (Estación Biológica de Doñana, Seville, Spain), **Giulia Bastianelli** (Estación Biológica de Doñana, Seville, Spain), **Martina Carrete** (Universidad Pablo de Olavide, Seville, Spain), **Eloy Revilla** (Estación Biológica de Doñana, Seville, Spain), **Marcello D'Amico** (Estación Biológica de Doñana, Seville, Spain)

In this study, we found that bee-eaters spread to theoretically suboptimal habitats to excavate their nests and colonize new areas. Studying this possible life strategy that can be carried out by wildlife inhabiting road proximities can help us to better understand the relationship between animals and infrastructures.

KEYWORDS: European bee-eater *Merops apiaster*, Road Ecology, Doñana Biosphere Reserve, Habitat selection, Impact on wildlife.

10:05 Rec. **#39 Environmental audit of existing transport infrastructure**

Ivo Dostál (Centrum dopravního výzkumu, v. v. i., Brno, Czech Republic), **Petr Anděl** (Evernia, s.r.o., Liberec, Czech Republic), **Jiří Jedlička** (Centrum dopravního výzkumu, v. v. i., Brno, Czech Republic)

Methodology to address:

- environmental burden from old infrastructure, build before the EIA process was established;
- focus on components of environment, not covered by other tools – biota and connectivity; waters and soils; landscape;
- certified by Ministry of Transport;
- voluntary tool.

KEYWORDS: Existing infrastructure, Auditing, Environmental impacts.

10:20 Live #40 Terrestrial transport infrastructure impact on longitudinal connectivity of rivers – a case study on Gilort River, Romania

Istvan Falka (EPA Gorj, Târgu Jiu, Romania), **Nicolae Calma** (EPA Gorj, Târgu Jiu, Romania), **Cristian Tetelea** (Invisible Nature, București, Romania)

- Innovative fish pass designs at road bridges;
- Modification of an existing weir to whole river width fish ramp;
- Testing of protocol for the monitoring of fish pass permeability;
- Ensure connectivity at the scale of a large river basin;
- Evaluation of the impact of barriers in case of natural disasters.

KEYWORDS: Longitudinal connectivity, Road bridge barriers, Fish passes, Weirs, Flood, Colonization, Biodiversity.

10:35 Rec. #41 A spatiotemporal analysis of ungulate-vehicle collision hotspots in response to road construction and realignment

Michal Bíl (Transport Research Centre, Brno, Czech Republic), **Sandra MacDougall** (Red Deer Polytechnic, Red Deer, Canada), **Richard Andrášik** (Transport Research Centre, Brno, Czech Republic), **Jiří Sedoník** (Transport Research Centre, Brno, Czech Republic), **Esther Stuart** (Red Deer Polytechnic, Red Deer, Canada)

Cluster analysis tools run temporally through a step-wise process, are a useful tool for monitoring wildlife mitigation measures and ungulate-vehicle collision hotspot development after road construction. Wildlife exclusion fencing with underpasses had a large effect on reducing direct ungulate mortality, however, its net benefit at a larger scale was impacted by mortality on a nearby unmitigated highway. Conversion of a 2-lane undivided to a 4-lane divided highway had little effect on unmitigated spatiotemporally stable ungulate-vehicle collision hotspots. As traffic volume became extremely high near a busy urban area, UVCs shifted temporally to days with lower traffic volume.

KEYWORDS: Deer, Fence-end effect, KDE+, Mitigation monitoring, Moose, Mule deer, STKDE+, Underpass, White-tailed deer, Wildlife fencing.

10:50 Rec. **#42 Key species and areas for research and conservation in Road Ecology. A widely applicable approach**

Pablo Medrano-Vizcaíno (University of Reading, Reading, United Kingdom), **Clara Grilo** (CESAM – Centro de Estudos do Ambiente e do Mar, Lisboa, Portugal), **Manuela Gonzalez Suarez** (University of Reading, Reading, United Kingdom)

We identified priority conservation areas in most of the Amazon region with some smaller areas in southern Argentina, northeastern Honduras, and the border of Panama with Colombia. Top research priorities occurred in most of Central America, northern regions of Venezuela and Colombia, a great part of Ecuador, western Perú, southern Chile and Uruguay, central Argentina, and some coastal areas in Brazil (particularly for birds). At a national scale, we note that no systematic roadkill surveys have been reported for five countries that overlap with identified top research priority areas: Belice, El Salvador, Honduras, Nicaragua, and Uruguay.

KEYWORDS: Caribbean, Habitat, Knowledge gaps, Neotropics, Machine learning, Roadkill, Random forest, Traits, Birds, Mammals, Prioritization.

11:05 Live **#43 Protecting Railways from Wildlife-Vehicle-Accidents with a Virtual Fence**

Thomas Schuh (Austrian Federal Railways, Wien, Austria), **Andreas Schalk** (iPTE Traffic Solutions Ltd, Graz, Austria), **Alexander Froetscher** (iPTE Traffic Solutions Ltd, Graz, Austria), **Erich Jaekel** (iPTE Traffic Solutions Ltd, Graz, Austria)

- Development of wireless connected devices that meet the special requirements of rail infrastructure, development of special trigger devices to detect high speed trains from a greater distance, maintenance free design, easy installation.

KEYWORDS: WiConNET, WVC, Wildlife vehicle accidents prevention, Railways, High speed trains, Electromagnetic compatibility.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY – 5**
DATE & TIME	**Friday, 23 September / 09:20 – 11:20 Romanian Time (CET+1)**
SESSION	**P.S. 11**
ROOM	**RED**
MODERATORS	**Anders Sjölund, António Mira**

09:20 Live #44 The impact of COVID-19 related traffic reductions on the number of killed ungulates on Czech roads

Michal Bíl (Transport Research Centre, Brno, Czech Republic), **Richard Andrášik** (Transport Research Centre, Brno, Czech Republic), **Vojtěch Cícha** (Transport Research Centre, Brno, Czech Republic)

Covid-19 lockdowns induced a decrease in the traffic flow, which influenced the frequency of wildlife-vehicle collisions (WVC). Assuming no lockdown in 2020, expected weekly sums of WVC in 2020 were estimated. A comparison of expected and observed weekly sums of WVC revealed a significant reduction of killed ungulates from the 11th week of the year 2020. We observed a decrease of 16.4% and 25.3% in WVC counts during the spring and autumn covid waves, respectively.

KEYWORDS: Wildlife-vehicle collisions, Traffic flow, Covid, Lockdown, Time series analysis, Seasonal modelling.

09:35 Rec. #45 Can linear transportation infrastructure verges constitute a habitat and / or a corridor for biodiversity and in which context?

Hugo Mell (Muséum National d'Histoire Naturelle, Paris, France), **Romain Sordello** (PatriNat OFB-CNRS-MNHN, Paris, France), **Sébastien Filoche** (Muséum National d'Histoire Naturelle, Paris, France), **Yorick Reyjol** (PatriNat OFB-CNRS-MNHN, Paris, France)

Three systematic reviews were performed on the role of infrastructure verges for biodiversity. Very few studies exists on the role of corridors and most of literature deal with roads or waterways regardless of the taxonomic group. Biases concerning the experimental protocols have been recurrently observed in a significant number of studies. Pollinators and insect herbivores are more abundant in non-motorway roads verges than in similar habitats in the landscape matrix. Highway verges represent refuge areas for small mammals but are unfavorable for passerines.

KEYWORDS: Green infrastructures, Refuge, Corridor, Verges, Insects, Vertebrates, Vegetation.

09:50 Rec. #46 Evaluation of the effectiveness of trenches for reducing chelonian fatalities on railways

Bibiana Terra Dasoler (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Tatiane Bressan Moreira** (Rumo Logística, Curitiba, Brazil), **André Soller** (Valec Engenharia Construções e Ferrovias, Brasília, Brazil), **Andreas Kindel** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **George Rangel** (Valec Engenharia Construções e Ferrovias, Brasília, Brazil), **Leandro Brenner Fernandes** (Rumo Logística, Curitiba, Brazil), **Natália Bittencourt de Oliveira Angarten** (Valec Engenharia Construções e Ferrovias, Brasília, Brazil), **Nathan Teixeira Sarmento** (Valec Engenharia Construções e Ferrovias, Brasília, Brazil), **Paula Durante Tagliari** (Valec Engenharia Construções e Ferrovias, Brasília, Brazil), **Renata Twardowsky Ramalho Bonikowski** (Rumo Logística, Curitiba, Brazil), **Stefani Gabrieli Age** (Rumo Logística, Curitiba, Brazil), **Tiê Pires Com Adamenas** (Rumo Logística, Curitiba, Brazil), **Fernanda Zimmermann Teixeira** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil).

Trenches can be a solution to avoid fatalities of chelonians trapped between rails. The terrestrial chelonian species experimentally tested does not use wooden-structured trench, apparently due to the height of the gap. Depending on the composition of chelonian species exposed to railways, different models of trenches must be designed and tested.

KEYWORDS: Mitigation measures, Wildlife crossing, Fauna trapping.

10:05 Live #47 Results of the Austrian Research Project "WiConNET", Wildlife Protection at Infrastructure Facilities

Andreas Schalk (iPTE Traffic Solution Ltd., Graz, Austria), **Michael Aleksa** (Austrian Institute of Technology, Wien, Austria), **Martin Forstner** (WWN-Forstner, Arbesbach, Austria), **Erich Jaekel** (iPTE Traffic Solution Ltd., Graz, Austria).

- Development of wireless connected devices, development of special trigger devices to detect high speed vehicles, development of a gateway to transfer data from the various devices to a central control app, development of a web-based control app to monitor the status of the connected devices and to collect various data (temperature, charging status, luminance, etc.), development of new applications.

KEYWORDS: WiConNET, WVC, Wildlife vehicle accidents prevention, Roads, Highways, Railways, Test sites, Wildlife behaviour, Measures.

10:20 Rec. **#48 Highway crossing structures in a tiger landscape: structural heterogeneity caters to the needs of multiple species**

Akanksha Saxena (Wildlife Institute of India, Chandrabani, India), **Bilal Habib** (Wildlife Institute of India, Chandrabani, India)

Monitoring of animal crossing structures revealed differential use by 21 mammals, indicating differential responses and adaptations to road-related disturbance. Environmental and anthropogenic variables differentially impacted use by wildlife. Vegetation cover near underpasses was important for prey species, while most predators temporally avoided periods of high human activity under crossing structures. Similar capture rates of large carnivores between crossing structure and adjacent habitat were observed, indicating crossing structures are successful in maintaining near-natural movement rates. Results indicate that heterogeneity in structure design and size are important to enable use of crossing structures by multiple species.

KEYWORDS: Mitigation, Linear infrastructure, Mammals, Central India, Animal community, Wildlife underpass.

10:35 Rec. **#49 Biodiversity loss in Dutch road verges explained by climate and mowing regime**

Wiene Bakker (Wageningen Environmental Research, Wageningen, Netherlands)

Plant diversity in road verges of Dutch main roads has declined. Tall plants increased whereas small (including very common) plants decreased in presence and cover. Lowering mowing frequency (from twice to once a year) was related to loss of botanical diversity. Winter warming was related to a lower plant diversity. Productive and intermediately productive road verges should be mown twice with hay removed and a delay in second mowing date should be considered to prevent further biodiversity loss as a result of climate change.

KEYWORDS: Winter warming, Climate change, Management, Nitrogen deposition, Permanent Quadrats, Plant diversity decline, Road verges.

10:50 Rec. **#50 Species or group of species to predict roadkill likelihood?**

Carine Firmino Carvalho-Roel (Federal University of Uberlândia, Uberlândia, Brazil), **Ana Elizabeth Iannini-Custódio** (Federal University of Uberlândia, Uberlândia, Brazil), **Oswaldo Marçal Júnior** (Federal University of Uberlândia, Uberlândia, Brazil), **Clara Grilo** (CESAM – Centro de Estudos do Ambiente e do Mar, Lisboa, Portugal)

Roadkill likelihood using either species or group of species does not reach to same results. Spatial, climatic, and temporal patterns are consistent within the class Reptilia. Climate and temporal analyses should be performed at species and order level, respectively, for birds. For mammals, climate should be assessed at species level while landscape variables should be evaluated at species level or if not possible at least at order level. Order level seemed to be the best approach to analyze temporal patterns of mammal roadkill.

KEYWORDS: Cerrado, Human-wildlife conflict, Land cover, Road mortality, Savanna, Seasonality, Spatial patterns, Climate patterns, Temporal patterns, Wildlife-vehicle collision.

11:05 Live **#51 Experimental Studies for Measuring the Effectiveness of Roadkill Mitigation Measures: A Bayesian Approach**

Richard Andrášik (Transport Research Centre, Brno, Czech Republic), **Jiří Sedoník** (Transport Research Centre, Brno, Czech Republic), **Tomáš Kušta** (Czech University of Life Sciences Prague, Praha, Czech Republic), **Zdeněk Keken** (Czech University of Life Sciences Prague, Praha, Czech Republic), **Michal Bíl** (Transport Research Centre, Brno, Czech Republic)

There are contradictory results regarding the effectiveness of odour repellents. According to our pilot study, a reduction of WVC counts between 26% and 43% could be expected. The minimum sample size was estimated by means of a simulation study as a precaution taken against attaining only statistically insignificant or inconclusive results. A classical evaluation using the odds ratio was enriched by the Bayesian inference to further handle the issue of a low sample size.

KEYWORDS: Mitigation measures, Before-After-Control-Impact study, Odds ratio, Bayesian inference, Wildlife-vehicle collisions.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY – 6**
DATE & TIME	**Friday, 23 September / 09:20 – 11:20 Romanian Time (CET+1)**
SESSION	**P.S. 12**
ROOM	**GREEN**
MODERATORS	**Andreas Seiler, Elke Hahn**

09:20 Live #52 Wildlife warning for safer railways – testing technical solutions to prevent animal-train collisions

Andreas Seiler (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Mattias Olsson** (EnviroPlanning AB, Gothenburgh, Sweden / Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Carolin Berndt** (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Manisha Bhardwaj** (University of Freiburg, Freiburg, Germany), **Aina Winsvold** (Ruralis – Institute of rural and regional research, Trollåsen, Norway), **Svein Eilertsen** (Norwegian Institute of Bioeconomy Research, Ås, Norway)

New measures are needed, that complement exclusion fences and wildlife crossings. We study whether and how ungulates can be alerted, warned or temporarily deterred from railways to prevent train-collisions. Trials under controlled settings (at feeding sites) indicated a significant effect of human voices on displacing wildlife. Now we study the possible implementation of these results in an operative setting at the railroad.

KEYWORDS: Railroad, Wildlife-vehicle collision, Mitigation, Deterrent, Warning, Accident avoidance, Fear.

09:35 Rec. #53 Global spatial-temporal trends in habitat fragmentation by road traffic

Maarten J. van Strien (ETH Zurich, Zurich, Switzerland), **Adrienne Grêt-Regamey** (ETH Zurich, Zurich, Switzerland)

First global assessment of traffic-induced habitat fragmentation. We predicted traffic volumes on all primary and secondary roads and highways outside of settlements for multiple time steps. We found strong differences between countries in the rate and intensity of traffic-induced habitat fragmentation. Large parts of the terrestrial land-surface are still unfragmented by high-traffic roads.

KEYWORDS: Road network, Effective mesh size, AADT, Traffic volume, Habitat connectivity.

09:50 Rec. #54 Mitigating traffic disturbance can improve functionality of wildlife underpasses

Marcus Elfström (EnviroPlanning AB, Gothenburg, Sweden), **David Börjesson** (County Administrative Board of Skåne, Malmö, Sweden), **Jan Olof Helldin** (SLU Swedish Biodiversity Centre, Uppsala, Sweden), **Isak Holmberg** (Lund University, Lund, Sweden), **Mattias Olsson** (EnviroPlanning AB, Gothenburg, Sweden / SLU Swedish Biodiversity Centre, Uppsala, Sweden), **Emma Håkansson** (EnviroPlanning AB, Gothenburg, Sweden), **Andreas Seiler** (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Annelie Rossander** (Swedish Transport Administration, Kristianstad, Sweden), **Kristina Rundcrantz** (Swedish Transport Administration, Kristianstad, Sweden)

We lack understanding of how to cost-efficiently improve established passages for wildlife connectivity. We analyzed functionality of wildlife passage after mitigation actions by screening off traffic disturbance. Cost-efficient improvements boosted the functionality of wildlife underpass. The impact may be applicable also for multiuse passages (i.e., passage to both humans and wildlife). Most underpasses are not adapted for wildlife, but screening off traffic disturbance often constitutes an available mitigation action.

KEYWORDS: Mitigation efforts, Traffic disturbance, Fauna passage, Wildlife screen, Wildlife tunnel, *Sus scrofa*, *Dama dama*, *Capreolus capreolus*, *Cervus elaphus*.

10:05 Live #55 Assessing the impact of roadkill on the persistence of the giant anteater

Fernando Ascensão (Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal), **Débora Yogui** (ICAS – Wild Animal Conservation Institute, Campo Grande, Mato Grosso do Sul, Brazil), **Arnaud Desbiez** (ICAS – Wild Animal Conservation Institute, Campo Grande, Mato Grosso do Sul, Brazil)

Few studies empirically estimated the impact of roadkill on wildlife populations. Giant anteaters inhabiting road vicinity areas have lower survival rates. 20% of the anteaters inhabiting road vicinity areas are road-killed. Roads are sink areas for giant anteaters.

KEYWORDS: Population Viability Analysis, Population persistence, Road Ecology, Transportation 39 infrastructures, *Myrmecophaga tridactyla*.

10:20 Rec. #56 Development of the ecological network of bird's habitats near the M6 motorway in Tolna county, Hungary

Virág Kutnyánszky (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Zsolt Szilvácsku** (Magyar Agrár – és Élettudományi Egyetem, Tájépítészeti, Településtervezési és Díszkertészeti Intézet, Budapest, Hungary)

The aim of our research was to define the deficiencies and conflicts in the ecological network. Specifically, we aimed to determine the spatial impact of the M6 and the M9 motorways on the ecological networks system. Our research took place in Tolna County, around Szekszárd, where the M6 and the M9 motorways intersect. To supervise the ecological network, we used four bird species as indicators, while also taking the natural characteristics of the research area into account. Our results showed that the ecological network in the area is insufficient, and we could show evince the effect of the M6 motorway.

KEYWORDS: Ecological network, Motorway, Connectivity, Barrier-effect, Fragmentation, Bird species, Bird ecology.

10:35 Rec. #57 Can traffic mortality of wild forest reindeer *Rangifer tarandus fennicus* impact population persistence?

Milla Niemi (Wildlife Service Finland, Ivalo, Finland), **Sari C. Cunningham** (Wildlife Service Finland, Ivalo, Finland), **Sakari Mykrä-Pohja** (Wildlife Service Finland, Pori, Finland)

The European wild forest reindeer (WFR) *Rangifer tarandus fennicus* is an ungulate species potentially negatively affected by traffic mortality. As the total population is ca. 5,000 animals, any mitigation measures are important to the conservation of this species; we show that traffic mortality is a factor that should be considered. We calculated collision rates and road mortality rates for two Finnish subpopulations, with results likely underestimated. Road mortality rate was likely adult-biased, indicating a possible negative effect on population persistence. The high proportion of adult road-killed WFR indicates that traffic mortality should be considered when implementing species-specific mitigation measures.

KEYWORDS: Ungulate-vehicle collision, The LIFE programme, Road-kill.

10:50 Rec. **#58 The direct effects of roads on leopards' spatial behavior**

Cláudia Silva (Faculdade de Ciências da Universidade de Lisboa, Algés, Portugal), **Chris Wilmers** (University of California Santa Cruz, Santa Cruz, USA), **Kathryn Williams** (Cape Leopard Trust, Cape Town, South Africa), **Lynne Isbell** (University of California Davis, Davis, USA), **Mohammad Farhadinia** (University of Oxford, Oxford, United Kingdom), **Russell Hill** (Durham University, Stockton-on-Tees, United Kingdom), **Sanjay Gubbi** (Nature Conservation Foundation, Mysore, India), **Vidya Athreya** (Wildlife Conservation Society-India, Kodigehalli, India), **Tiago Marques** (University of St. Andrews, St. Andrews, United Kingdom), **Clara Grilo** (CESAM – Centro de Estudos do Ambiente e do Mar, Lisboa, Portugal)

Leopards tend to avoid paved roads and seem to prefer unpaved roads. Leopard females tend to avoid paved roads more than males. Leopard males tend to use unpaved roads more than females. Leopard males tend to use unpaved roads at night-time at higher frequency than during the day.

KEYWORDS: *Panthera pardus*, Road impacts, Paved roads, Unpaved roads, GPS-locations, Africa, Asia, Daily activity.

11:05 Live **#59 Modelling wildlife movement and connectivity for the Nairobi to Mau Summit Highway Project in Kenya**

Rodney van der Ree (Ecology and Infrastructure International Pty Ltd, Victoria, Australia), **Maya Brenna Jacot** (WSP Canada, Montreal, Canada), **Matthew Deshais** (WSP Canada, Montreal, Canada), **Alex Lechner** (Monash University, Banten, Indonesia), **Darrel Chin Fung Tiang** (University of Nottingham Malaysia Campus, Selangor, Malaysia)

An Environmental and Social Impact Assessment (ESIA) was prepared for a major highway upgrade in Kenya, Africa. Wildlife surveys included a range of methods, including targeted searches and an array for 50 camera traps. Machine learning was used to automated image analysis from camera traps.

Habitat suitability modelling and connectivity modelling at large spatial scales was used to identify priority locations for mitigation measures. This project has set a high standard for future impact assessments in Africa and globally.

KEYWORDS: Best practice ESIA, Connectivity, ESIA, Kenya, Africa, Habitat suitability modelling, Impact assessment.

Lightning Talks

2022

IENE

Infrastructure & Ecology Network Europe

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THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY – 1**
DATE & TIME	**Thursday, 22 September / 12:00 – 13:30 Romanian Time (CET+1)**
SESSION	**P.S. 7**
ROOM	**BLUE**
MODERATORS	**Andreas Seiler, Elke Hahn**

12:00 Live #1 CAPTURE – New platform for image management and recognition

Andreas Seiler (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Peter Jäderkvist** (Sweco Sverige AB, Stockholm, Sweden), **Jan Dalheimer** (Sweco Sverige AB, Stockholm, Sweden), **Caroline Jansson** (Sweco Sverige AB, Stockholm, Sweden)

Capture combines automated image recognition with depersonalization of images containing people or vehicles and provides a flexible way for meta-data storage and analysis. In its present form, it is tailored to fit monitoring projects on fauna passages, but other usage is possible and welcome.

KEYWORDS: Camera traps, Monitoring, AI, Application, Data management, Data integrity.

12:08 Rec. #2 ControlInRoad: Controlling invasive alien plant species along roads

Friederike Trognitz (AIT Austrian Institute of Technology, Tulln, Austria), **Swen Follak** (Austrian Agency for Health and Food Safety, Institute for Sustainable Plant Production, Vienna, Austria), **Alexander Fürdös** (AANTA AB, Baneryd, Sweden), **Norbert Sedlacek** (HERRY Consult GmbH, Vienna, Austria), **Maximilian Koch** (Zasso GmhH, Aaachen, Germany), **Angela Sessitsch** (AIT Austrian Institute of Technology, Tulln, Austria)

The project “ControlInRoad” (http: / / www.controlinroad.org) was set up in 2017 in frame of the CEDR Transnational Road Research Program Call 2016 “Biodiversity – Conflicts along the Road: Invasive Species and Biodiversity”, funded by the road administration of Austria, Germany, Ireland, the Netherlands, Norway, Sweden and Slovenia. In frame of the project occurrence of invasive alien plants along roadsides were assessed, currently available control methods and regulations throughout Europe reviewed and different control methods tested. The results of the field trials as well as the stakeholder consultation formed the basis for guidelines for dealing with IAPs and a cost-benefit assessment of the methods.

KEYWORDS: Invasive alien plants, Road margins, Weed control methods, Cost benefit analysis.

12:16 Rec. #3 A Global Assessment of the Impact of Scavengers in Roadkill Persistence

Harriet Rhodes (Doñana Biological Station CSIC, Sevilla, Spain), **Fernando Ascensão** (Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal), **Rafael Barrientos** (Universidad Complutense de Madrid, Madrid, Spain), **Miguel Clavero** (Doñana Biological Station CSIC, Sevilla, Spain), **Alberto García-Rodríguez** (Doñana Biological Station CSIC, Sevilla, Spain), **Carlos Rodriguez** (Doñana Biological Station CSIC, Sevilla, Spain), **Jacinto Román** (Doñana Biological Station CSIC, Sevilla, Spain), **Eloy Revilla** (Doñana Biological Station CSIC, Sevilla, Spain), **Marcello D'Amico** (Doñana Biological Station CSIC, Sevilla, Spain)

There is a higher co-occurrence of scavenger species and road density in areas of Central Europe and North America, as well as many regions across the globe on a finer-scale. Scavenger species feeding on roads can be at higher risk of traffic incidents, therefore the ecosystem services they provide may be threatened. Trials of persistence time need to become more common place in monitoring studies.

KEYWORDS: Scavenger, Carcass persistence, Road ecology, Wildlife-vehicle collisions, Roadkill, Vultures, Carnivores.

12:24 Live #4 Invasive plant management on railway infrastructure: study of different biological mechanisms of plant competition on the development of invasive alien species

Valentin Morin (SNCF Réseau, Reims, France)

The tested protocols do not use any phytosanitary product. The mechanisms stimulated in experimental stations exist in their natural state (allelopathy, mycorrhiza, etc.). The plant palettes are composed of indigenous species adapted to the local environment. The important number of stations and repetitions guarantees the reliability of results and interpretations. Acquisition of knowledge on the development of Invasive Alien Species and the mechanisms of invasion. The cooperation of laboratories and research themes contribute to the development of an efficient and virtuous management solution.

KEYWORDS: Invasive Alien Plant Species, Railway infrastructure, Ecological restoration, Plant competition, Allelopathy, Mycorrhiza, Microbial activity.

12:32 Rec. #5 A480 Motorway – Maintenance and reinforcement of longitudinal ecological continuity through innovative ecological solutions on acoustic and retaining walls

Hippolyte Pouchelle (Egis Structures et Environnement, Lyon, France), **Dorothée Labarraque** (Egis, Balma Cedex, France)

The upgrading of the A480 to a 2 x 3 lane motorway required AREA / APRR to provide an innovative treatment to strengthen the longitudinal ecological corridor along the Drac river. An ecological treatment of the acoustic / retaining walls was designed according to the Landboost® ecodesign approach developed by Egis to accommodate biodiversity in technical structures. The development consisted in installing eco-integrated shelter structures in gabion walls to host multi fauna species, and bringing vegetation to diversify habitats and reduce the development of invasive exotic species. Ecological monitoring has shown a rapid occupation of several species, and nesting of certain bird species.

KEYWORDS: Motorway, Biodiversity, Continuity, River, Alpes, Integration, Fauna, Biodiversity artificial structure.

12:40 Rec. #6 Uncovering barriers to implement WVC mitigation measures through a literature review

Yuri Geraldo Gomes Ribeiro (Wild Animal Conservation Institute, Campo Grande, Brazil), **Erica Naomi Saito** (Wild Animal Conservation Institute, Campo Grande, Brazil), **Rafael Batista de Morais** (Wild Animal Conservation Institute, Campo Grande, Brazil), **Maria Labão Catapani** (Wild Animal Conservation Institute, Campo Grande, Brazil), **Arnaud Léonard Jean Desbiez** (Wild Animal Conservation Institute, Campo Grande, Brazil)

The results described here defines what are the barriers for mitigation measures implementation based on literature. Specialists, according to our literature review, tend to define “cost or economics” and “barriers related to impacts in wildlife” as the main bottle necks in mitigation measures implementation. There was scarce information available on the topic of specific barriers for WVC mitigation measures implementation.

KEYWORDS: Barriers, Roadkill mitigation, Wildlife conservation, Mitigation setbacks, Literature review, Specialists’ opinion, Decision making, Communication.

12:48 Rec. #7 Seasonal variation in vertebrate roadkills in Gabes Region, southern Tunisia

Oumayma Dhiab (Faculty Of Sciences Of Gabès, Gabès, Tunisia), **Slaheddine Selmi** (Faculty Of Sciences Of Gabès, Gabès, Tunisia)

Temporal trends of vertebrate road-kills have been investigated in a road section in southern Tunisia. An overall daily road-killing rate of 0.085 road-kills / km / day has been recorded, with birds and, in a less extent, mammals being the most impacted groups. Bird road mortality was higher during spring and summer compared to fall and winter, while an opposite trend was observed in mammals.

KEYWORDS: Roads, Season, Tunisia, Vertebrates, Wildlife–vehicle collisions.

12:56 Live #8 Capacity building regarding EIA and AA assessments for transport infrastructure (SaveGREEN project component)

Marius Nistorescu (EPC Consultanță de mediu, Bucharest, Romania), **Alexandra Doba** (EPC Consultanță de mediu, Bucharest, Romania), **Silvia Borlea** (EPC Consultanță de mediu, Bucharest, Romania)

The proposed training event will involve an interactive presentation, which is aimed at ensuring that the participants are informed and understand the requirements of an EIA in the transport sector, and are aware of the latest developments and requirements related to EIA. This will contribute to a higher quality level of the assessments developed for infrastructure projects and will, overall, ensure a better and more adequate implementation of transport related projects.

KEYWORDS: Natura 2000 impact assessment, Road ecology, Ecological connectivity, Long distance impacts, Cumulative impact.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY – 2**
DATE & TIME	**Thursday, 22 September / 12:00 – 13:30 Romanian Time (CET+1)**
SESSION	**P.S. 8**
ROOM	**RED**
MODERATORS	**Michal Bíl, Johan Rydlov**

12:00 Live #9 When do roe deer cross roads? A case study on precise road crossing data

Michal Bíl (Transport Research Centre, Brno, Czech Republic), **Vojtěch Cícha** (Transport Research Centre, Brno, Czech Republic), **Richard Andrášik** (Transport Research Centre, Brno, Czech Republic), **Tomáš Kušta** (Czech University of Life Sciences Prague, Prague, Czech Republic), **Miloš Ježek** (Czech University of Life Sciences Prague, Prague, Czech Republic)

WVC represents only the unsuccessful attempts when animals are trying to cross roads. Data from animal tracking systems helps to reveal the actual behaviour of wildlife at roads. We determined traffic intensities and average between-car gaps when roe deer actually crossed primary roads.

KEYWORDS: GPS collars, Tracking, Traffic intensity, Behaviour, Ungulates.

12:08 Rec. #10 Factors determining roadkills in a mammal carnivore are road type specific

Guillermo Carmona Castresana (Complutense University of Madrid, Madrid, Spain), **Emilio Virgós** (King Juan Carlos University, Móstoles, Madrid, Spain), **Tamara Burgos** (King Juan Carlos University, Móstoles, Madrid, Spain), **Rafael Barrientos Yuste** (Complutense University of Madrid, Madrid, Spain)

Carnivores are one of the most affected taxa by roadkill of their high mobility searching for food, mate or territory. We compared 85 polecat roadkills in highways with 73 casualties on conventional roads. Roadkill points were characterized by a higher abundance of polecat main prey in both road types. On highways occurred in wider sections, on conventional roads were associated with areas of remnant natural vegetation. Our results highlight the need for different roadkill mitigation strategies depending on the road characteristics.

KEYWORDS: Road ecology, Linear infrastructure, Road verges, *Oryctolagus cuniculus*, *Mustela putorius*, European polecat.

12:16 Rec. #11 An inventory of amphibian roadkill in the western Soutpansberg, Limpopo Province, South Africa

Thabo Hlatshwayo (University of Kwa-Zulu Natal, Nelspruit, South Africa), **Eduard Stam** (University of Venda, Thohoyandou, South Africa), **Wendy Collinson** (Endangered Wildlife Trust, Johannesburg, South Africa), **Abeda Dawood** (Tshwane University of Technology, Pretoria, South Africa)

The results comprised an inventory of 248 roadkill specimens, belonging to eight species and six families, and one unidentified specimen. Roadkill proportions were strongly influenced by season, with the greatest roadkill rate recorded in the hot / dry season (0.051 roadkill-1 km-1 day-1) compared to the hot / wet season (0.019 roadkill-1 km-1 day-1). Amphibian roadkill patterns were related to roadside habitat. Of the roadside habitat types identified, road sections that were adjacent to waterbodies had the highest amphibian roadkill frequency, followed by road sections closer to open savanna bushland. Roadkill frequency was low in areas that were partly located in human modified habitats (residential and agricultural areas) but highest in natural landscapes (near waterbodies and savanna bushland).

KEYWORDS: Amphibians, Road ecology, Roadkill, Western Soutpansberg, South Africa.

12:24 Live #12 Controlling vegetation in a railway environment: "Chosen seeding" of service tracks and runways as an alternative to pesticides use

Claire Couvrechef (SNCF RESEAU, La Plaine-Saint-Denis, France), **Anne Petit** (SNCF RESEAU, La Plaine-Saint-Denis, France), **Laura Clevenot** (SNCF RESEAU, La Plaine-Saint-Denis, France)

- Alternative to the use of phytopharmaceutical products in a constrained environment;
- Industrialized technique on old service roads and railway tracks;
- Adapted solution based on nature which contributes to the reduction of mineralized spaces and in favor of biodiversity;
- Vegetation cover control which limits maintenance cycles (one annual mowing).

KEYWORDS: Seeding, Plant competition, Service road, Tracks, Railway, Alternative, Vegetation, Nature-based solution, Ecological engineering.

12:32 Rec. #13 Spatially prioritizing mitigation actions for amphibian roadkills based on fatality estimation and landscape cover change

Larissa Oliveira Gonçalves (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Julia Beduschi** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Caroline Zank** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Ismael Verrastro Brack** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Andreas Kindel** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil)

We provide a four-step framework for spatial mitigation prioritization considering fatality estimation and landscape change. We optimized sampling with site pre-selection and we had a 5-fold reduction in the number of priority segments. By surveying amphibian roadkills with spatiotemporally replicated counts with a dependent double-observer protocol and hierarcuical models we were able to estimate roadkill population parameters accounting for imperfect detection. We estimated a mean of 114 roadkilled amphibians / km / day in the 5 km surveyed.

Carcass persistence probability was higher at night and lower in sites with high traffic volume. Roadkill rates were positively related to wetlands and rainy periods.

KEYWORDS: Anurans, Imperfect detection, Persistence probability, Hierarchical models, Mitigation.

12:40 Rec. #14 Environmental and traffic-related factors determining wildlife road-kills threatening human safety in Mediterranean landscapes

Alessio Patriarca (Tuscia University, Viterbo, Italy), **Veronica Cippitelli** (Ente Monti Cimini – Riserva Naturale Lago di Vico, Caprarola, Italy), **Giuseppe Puddu** (Ente Monti Cimini – Riserva Naturale Lago di Vico, Caprarola, Italy), **Marcello D'Amico** (Doñana Biological Station CSIC, Seville, Spain)

This is the first study focusing on the roadkill of large vertebrates in Mediterranean environments, entailing relevant implications for road safety in this relatively overlooked biome.

KEYWORDS: Roadkill, Wildlife-vehicle collisions, Road Ecology, Wild boar, *Sus scrofa*, Road safety, Landscape Ecology, Habitat selection, Remote sensing, Road sinuosity, Road roughness.

12:48 Rec. #15 Use of wildlife crossing structures does not mean low roadkill records

Talita Menger (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Bibiana Terra Dasoler** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Franciane Almeida** (Sociedade Sinhá Laurinha, Vila Velha, Brazil), **Fernanda Zimmermann Teixeira** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Gabriela Schuck de Oliveira** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Ingridi Camboim Franceschi** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Júlio Cezar Gonçalves Leonardo** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Larissa Donida Biasotto** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Larissa Oliveira Gonçalves** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Ricardo Miranda Braga** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Andreas Kindel** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil)

We used recordings of 13 years from daily monitoring of wildlife roadkills and underpasses use to evaluate mitigation effectiveness. Roadkill hotspots overlapped underpass locations, even for species frequently registered using them, evidencing that underpasses are not preventing roadkills. Associate effective fences to crossing structures is essential and urgent to mitigate roadkills.

KEYWORDS: Underpass, Roadkill mitigation, Long-term road monitoring, Mitigation fences, Road crossings, Wildlife-vehicle-collisions.

12:56 Live #16 Is ecology science used at its full potential? The perspective of 44 years of practice in linear infrastructure projects

Caroline Vincent (Université Paris Saclay, Paris, France), **Nathalie Frascaria-Lacoste** (Université Paris Saclay, Laboratoire Ecologie, Systématique et Evolution, AgroParisTech, Gif-sur-Yvette, France), **Cécile Blatrix** (Université Versailles St-Quentin-en-Yvelines (PRINTEMPS), AgroParisTech, Guyancourt, France)

- Historical work on 44 years of practice;
- Interdisciplinary work including ecology, conservation biology and sociology;
- Methodology that includes an evaluation grid focused on justification and not on oversimplifying indicators that do not represent life's diversity;
- No work like this one in France, probably in Europe too;
- Methodology that offers new ways of elaborating projects and integrating ecological issues;
- Open possibility to work on other components of the environment (landscapes, population health and well-being, etc.).

KEYWORDS: Environmental impact assessment, Environmental impact statement, Ecological quality, Effectiveness, Ecology.

THEME	**INTEGRATED SOLUTIONS FOR ECOLOGICAL CONNECTIVITY**
DATE & TIME	**Thursday, 22 September / 12:00 – 13:30 Romanian Time (CET+1)**
SESSION	**P.S. 9**
ROOM	**GREEN**
MODERATORS	**Denis François, Darryl Jones**

12:00 Live #17 Estimating the linear and surface potential of linear transport infrastructure rights-of-way as ecological shelter on a national scale – Case of metropolitan France

Denis François (Université Gustave Eiffel, Bouguenais, France), **Léa Medous** (Université Gustave Eiffel, Bouguenais, France), **Claire Etrillard** (INRAE – UMR 1302 SMART-LERECO, Rennes, France)

Rights-of-way of transport infrastructures are able to provide shelter to local biodiversity and to help reweave green and blue networks. Developing relevant policy and action to make the most of rights-of-way requires their ecological shelter potential (ESP) at national scale to be known. Linear extent and surface area of ESP have been estimated for road, railway, waterway and power line networks by means of geographic information system. The share of involvement of public or private operators and owners is revealed for the different networks and informs stakes and the necessary strategy at national scale.

KEYWORDS: Action, Asset, Connectivity, Coordination, Habitat, Network, Operator, Owner, Private, Public.

12:08 Rec. #18 Re-developing a road-kill reporting app to improve the user experience and quality of data collected

Steve Béga (Animex International Inc., Lee On Solent, United Kingdom), **Sarah Raymond** (Cardiff University, Cardiff, United Kingdom)

People have been recording road-kill data to help gain a better understanding of how transport networks impact wildlife across the world for many years. This presentation explores the process in which the team have taken to implement new features and improve functionality to create a better experience for users and ensure the users capture better quality data.

KEYWORDS: Technology, Collaboration, Software, Citizen Science, Roadkill, App.

12:16 Rec. #19 Making Roads Safer for All: Influencing public policy in Mato Grosso do Sul through engagement and a multi-stakeholder approach

Erica Naomi Saito (ICAS – Wild Animal Conservation Institute, Campo Grande, Brazil), **Yuri Geraldo Gomes Ribeiro** (ICAS – Wild Animal Conservation Institute, Campo Grande, Brazil), **Arnaud Léonard Jean Desbiez** (ICAS – Wild Animal Conservation Institute, Campo Grande, Brazil), **Maria Fernanda Balestieri** (Bioparque do Pantanal, Campo Grande, Brazil)

The manual of WVC mitigation guidelines was created through a participatory Interinstitutional Group effort. The manual compiles guidelines for planning, decision-making and efficiency of WVC mitigation measures. This is the first time that guidelines have been compiled to implement mitigation measures to serve the government of a state in Brazil. The Mato Grosso do Sul State establishes the manual as a public policy. We hope that this initiative will encourage other states in the search for safer roads in Brazil.

KEYWORDS: Mitigation measures, Road safety, Biodiversity conservation, Wildlife Vehicle Collision, Roadkill, Road Ecology, Public Policy, Cerrado, Pantanal, Brazil.

12:24 Rec. #20 Acoustic deterrent for large terrestrial mammals: Development of a tool applicable to rail networks

Anna Terrade (SNCF, La Plaine Saint-Denis, France), **Claire Chaufour** (SNCF Voyageurs, Le Mans, France), **Yannick Matillon** (SNCF Voyageurs, Lyon, France), **Anne Petit** (SNCF Réseau, La Plaine-Saint-Denis, France), **Yann Locatelli** (Museum National d'Histoire Naturelle, Azay-le-Ferron, France), **David Reby** (Université Jean Monnet Saint-Etienne, Saint-Etienne, France)

- No flight response to ultrasounds for red deer and wild boars;
- Pecarries react to ultrasonic stimuli;
- Ultrasonic signals cannot be used to reduce ungulate-train collisions.

KEYWORDS: Collisions, Railways, Mammals, Ultrasounds, Bioacoustics.

12:32 Live #21 Sustainability and road mobility, PIARC's commitments

Eric Dimnet (French Ministry for an Ecological and Solidary Transition, La Defense, France), **Eric Guinard** (Cerema Sud-Ouest, Saint-Médard-en-Jalles, France)

PIARC is a 113 years old worldwide non-profit road association, missioned to facilitate knowledge, best practice and tools dissemination and communications about all topics concerning roads. The PIARC Plan of activities is distributed in 4 Strategic Themes, themselves developed through 17 Technical Committees (TC) and in Working Groups (WG). The TC 3.4 Environmental Sustainability in Road Infrastructure and Transport includes 3 WG: the WG 3.4.3 "Road and road transport impact on wildlife habitats and their interconnections" goals and products are finally exposed.

KEYWORDS: World Road Association, Environment, Biodiversity.

12:40 Rec. #22 Stakeholder perceptions on environmental issues, causes and mitigation measures related to linear infrastructure development in Sri Lanka

Dishane Hewavithana (University of Miami, Coral Gables, USA)

Semi-structured interviews were conducted with participants from five key stakeholder groups involved in the LI development process in Sri Lanka to understand factors affecting their perceptions on the impact of LI development, mitigation, and limitations for implementing proper mitigation measures. Six main themes were identified. These include personal thoughts and solutions, the influence of the community and NGOs, ethics and responsibilities, financial restrictions / limitations, history and evolution of the EIA process, and unique national concerns. These themes could be used to identify how the relevant stakeholders could be influenced during the LI development process to make environmentally friendly decisions.

KEYWORDS: Stakeholder perceptions, Limitations, Unique national concerns.

12:48 Live #23 Thermal water polluted infrastructures as invasion corridors

Vera Lente (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Anna Hegedűs** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Attila Csaba Kondor** (Eötvös Loránd Research Network, Budapest, Hungary), **Ádám Staszny** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Árpád Ferincz** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Bettina Szajbert** (Eötvös Loránd University, Budapest, Hungary), **Blanka Gál** (Eötvös Loránd Research Network, Tihany, Hungary), **Béla Urbányi** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Dániel Berényi** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Réka Enikő Balogh** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Gábor Herczeg** (Eötvös Loránd University, Budapest, Hungary), **Tamás Müller** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Szonja Franyó** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Zsombor Bányai** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **András Weiperth** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary)

Thermal water polluted ponds as watercourses could function as invasion corridors between the urbanized and natural habitat.

KEYWORDS: Aquatic invasion, Escape, Rainwater, Urbanized habitats, Water management, Maintenance.

12:56 Live #24 Conservation hot-spots or barriers: the effect of stream sections under bridges for the populations of native and non-native crayfish in Hungary

Ádám Staszny (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Anna Hegedűs** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Árpád Ferincz** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Béla Urbányi** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Vera Lente** (Hungarian University of Agriculture and Life Sciences, Agárd, Hungary), **Zsombor Bányai** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **László Kollányi** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Krisztina Filepné Kovács** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Blanka Gál** (Eötvös Loránd Research Network, Tihany, Hungary), **Bettina Szajbert** (Eötvös Loránd University, Budapest, Hungary), **János Farkas** (Eötvös Loránd University, Budapest, Hungary), **Gábor Herczeg** (Eötvös Loránd University, Budapest, Hungary), **Géza Gelencsér** (Vox Vallis Development Association-Koppányvölgy Naturpark, Törökkoppány, Hungary), **Balázs Tóth** (Directorates of Danube-Ipoly National Park, Budapest, Hungary), **Gábor Fera** (Directorates of Őrség National Park, Őriszentpéter, Hungary), **András Weiperth** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary)

The habitat structures and the maintenance practices of different bridges and wildlife mitigation measures have different effect of the crayfish species assemblages in the watercourses of Hungary.

KEYWORDS: Underpasses, Watercourses, Aquatic habitats, Aquatic invasion, Water management, Maintenance.

ePoster Communications

2022

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THEME: MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR

#1 Appropriate Assessment on regional road improvements in Northwestern Greece. Local needs and proposals for securing wildlife permeability

Lazaros Georgiadis (CERTH, Thessaloniki, Greece)

Upgrade of existing roads includes several important issues on ecological connectivity effects. The new status of implementation of EIA in Natura 2000 areas demands an Appropriate Assessment. Such a case in Northwestern Greece is presented in the proposed poster in which data collected about the use of the area by the wildlife from, wildlife tracks, camera trapping, recording of roadkills and interviews from locals. In this poster we will demonstrate the results of the collection of the above information as well as the proposed proposals for improving the wildlife permeability of the road.

KEYWORDS: Transport ecology, Ecological connectivity, Biodiversity, Appropriate assessment, Natura 2000, Wildlife crossings.

#2 TRIIAS – Applied research on management of invasive plants in infrastructure

Juliana Dániel-Ferreira (Swedish University of Agricultural Sciences, Uppsala, Sweden), **Jan Olof Helldin** (SLU Swedish Biodiversity Centre, Uppsala, Sweden), **Tommy Lennartsson** (Swedish University of Agricultural Sciences, Uppsala, Sweden), **Jörgen Wissman** (Swedish University of Agricultural Sciences, Uppsala, Sweden)

The newly established research program TRIIAS will generate guidelines for cost-effective control practices for invasive alien plant species in roadsides and knowledge about the effects of invasive alien plants on biodiversity and infrastructure. The research program will also generate guidelines for the prevention of spread and establishment of invasive alien plants through the management of vegetation and soil in roadsides and for cost-effective survey methods of invasive alien plants.

KEYWORDS: Invasive alien plants, Soil and vegetation management, Environmental quality, Roadsides.

THEME: PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY

#3 Which road-related features can explain high incidence of successful crossings for carnivores?

Ellen Rodrigues Fermin (Universidade Federal de Lavras, Lavras, Brazil), **Katarzyna Bojarska** (Institute of Nature Conservation, Polish Academy of Sciences, Poland), **David C. Munuera** (Generalitat de Catalunya, Catalunya, Spain), **Maren Huck** (University of Derby, United Kingdom), **Alexandros Karamanlidis** (ARCTUROS / Mom, Greece), **Miguel de Gabriel Hernando** (ARCTUROS / Mom, Greece), **Jenny Mattisson** (Norwegian Institute for Nature Research, Trondheim, Norway), **John Odden** (Norwegian Institute for Nature Research, Trondheim, Norway), **John D.C. Linnell** (Norwegian Institute for Nature Research, Trondheim, Norway), **Henryk Okarma** (Institute of Nature Conservation, Polish Academy of Sciences, Poland), **Rubén Portas** (Cheetah Research Project, Berlin, Germany), **Sarah Perkins** (Cardiff University, United Kingdom), **Fernanda Souza** (Universidade Federal de Lavras, Lavras, Brazil), **Winston Vickers** (University of California Davis, Davis, USA), **Bettina Wachter** (Cheetah Research Project, Berlin, Germany), **Kathy Zeller** (US Forest Service, USA), **Anthony P. Clevenger** (Montana State University, USA), **Clara Grilo** (CESAM – Centro de Estudos do Ambiente e do Mar, Lisboa, Portugal)

Road-related features were analyzed in 1,658 locations with high and low incidence of carnivore crossings. The incidence of crossings was higher in segments of roads with one-lane and road verges with grassland. Low traffic volume may explain the high incidence of crossings in one-lane segments. The visibility of the road may explain the high number of crossings in segments where the road verge has grassland. The number of lanes and road verge structure influence the incidence of crossings.

KEYWORDS: Carnivores, Mammals, Road effects, Road crossings, Road kills.

#4 Effectiveness of small wildlife tunnels in urban context

Piret Remm (Rewild OÜ, Tallinn, Estonia), **Jaanus Remm** (Rewild OÜ, Tallinn, Estonia)

Wildlife facilities in urban areas improve connectivity of fragmented habitats for various taxa. Street design should consider wildlife to reduce mortality.

KEYWORDS: Mitigation effectiveness, Road mortality, Small fauna, Amphibians, Tunnel, Urban environment.

#5 "Road Ecology: Synthesis and Perspectives": an upcoming book on Road Ecology

Marcello D'Amico (Doñana Biological Station CSIC, Seville, Spain), **Rafael Barrientos** (Universidad Complutense de Madrid, Madrid, Spain), **Fernando Ascensão** (Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal)

This book will comprehensively present both the state of knowledge and future developments of an emerging discipline: Road Ecology.

KEYWORDS: Road Ecology, Roadkill, Fragmentation, Connectivity, Barrier effect, Pollution.

#6 Development of Deer Deterrent Equipment for Mitigation of Deer-Train Collisions in Japan

Minoru Shimura (Railway Technical Research Institute, Kokubunji, Tokyo, Japan), **Masateru Ikehata** (Railway Technical Research Institute, Kokubunji, Tokyo, Japan), **Tomoyoshi Ushiogi** (Railway Technical Research Institute, Kokubunji, Tokyo, Japan)

To mitigate deer-train collisions, we developed equipment to enable automatic broadcasting of the deterrent sound from trains when they are in designated sections where collisions happen frequently. We compared the collision frequency of trains with and without the equipment and found a 40% reduction in collisions.

KEYWORDS: Deer, Train, Collisions, Deterrent Equipment.

#7 Permeability of Wildlife Migration Corridors in the Beskydy Mountains – changes in land use over the last 30 years

Ivo Dostál (Centrum dopravního výzkumu, v. v. i., Brno, Czech Republic), **Marek Havlíček** (Centrum dopravního výzkumu, v. v. i., Brno, Czech Republic), **Josef Svoboda** (Centrum dopravního výzkumu, v. v. i., Brno, Czech Republic), **Jiří Jedlička** (Centrum dopravního výzkumu, v. v. i., Brno, Czech Republic)

Positive as well as negative trends in land-use changes for the potential of area to ensure the wildlife migration were found. Negative impacts included the permeability is the dynamic growth of built-up areas. Trends of grassing on arable land and creation of forest from grassland should be considered as positive. The barrier effect of traffic is composed mainly of a dynamic component due to the lack of highway-type roads.

KEYWORDS: Critical sites, Land-use changes, The Czech Republic, Permeability.

#8 On the Relationship between Wildlife-vehicle Collisions and Fence-ends along D11 motorway, Czechia

Jiří Sedoník (Transport Research Centre, Brno, Czech Republic), **Richard Andrášik** (Transport Research Centre, Brno, Czech Republic), **Michal Bíl** (Transport Research Centre, Brno, Czech Republic)

We studied the influence of fence-gaps and fence-ends on wildlife mortality occurrence on a motorway. The STKDE+ hotspot method was applied to determine the WVC hotspot temporal evolution. We found that the fence ends and the fence gaps induced the WVC concentrations along the motorway.

KEYWORDS: Motorways, Fencing, Hotspot analysis, STKDE+, Fence gaps, Fence-end effect.

#9 Assessment of the driver's view using a mobile lidar

Vojtěch Nezval (Transport Research Centre, Brno, Czech Republic), **Michal Bíl** (Transport Research Centre, Brno, Czech Republic), **Vojtěch Cícha** (Transport Research Centre, Brno, Czech Republic)

A poor driver's view from a vehicle is an important contributing factor to WVC. We propose a method for objective assessment of the driver's view using a lidar. The visibility of the road and its immediate surroundings are rated on a scale of 0–1. The results can be used to increase both road safety and wildlife protection.

KEYWORDS: Lidar, Wildlife-vehicle collision, Sight distance, Driver's view.

#10 Identification of local factors contributing to collisions with ungulates on the Czech rail network

Vojtěch Nezval (Transport Research Centre, Brno, Czech Republic), **Richard Andrášik** (Transport Research Centre, Brno, Czech Republic), **Michal Bíl** (Transport Research Centre, Brno, Czech Republic)

- 2,421 ungulate-train collisions were recorded between 2011 and 2021;
- 100 m increase in distance from the forest decreases the odds of a collision by 14%;
- 10 km/h increase in allowed train speed increases the odds of a collision by 17%;
- 100 m increase in curve radius increases the odds of a collision by 3%.

KEYWORDS: Wildlife-train collision, Ungulate, Accident, Roe deer, Wild boar.

#11 Wildlife mortality in energy and transport infrastructure: Calling for data!

Fernando Ascensão (Faculdade de Ciências da Universidade de Lisboa, Lisboa, Portugal), **Christian Gortázar** (SaBio Instituto de Investigación en Recursos Cinegéticos IREC (UCLM-CSIC-JCCM), Ciudad Real, Spain), **Marcello D'Amico** (Doñana Biological Station CSIC, Seville, Spain)

Roads and other linear infrastructures can represent important threats to biodiversity, namely by causing numerous non-natural mortality. In order to understand the magnitude of this impact, we need to collect broad scale information on non-natural mortality over different landscapes and animal communities. We are calling for data to strengthen our ability to understand patterns of mortality. All data will be available for researchers in the form of a data-paper.

KEYWORDS: Wildlife mortality, Systematic surveys, Meta-analyses, Data-paper.

#12 Splitting target groups improves the detection of multispecies bird roadkill and habitat associations

Gabriela Schuck de Oliveira (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Larissa Oliveira Gonçalves** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Andreas Kindel** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil)

Bird fatalities on roads are related to the adjacent landscape, but also the road features and their immediate surroundings. Multispecies bird data could be grouped considering their functional traits to understand the behavioral relationships. The non-road-user birds were related only to landscape variables. On the other hand, road-user birds were also related to road features and immediate surroundings. Considering all bird recordings together can mask results and undermine mitigation decision-making.

KEYWORDS: Road ecology, Wildlife-Vehicle-Collisions, Bird collisions, Landscape features, Bird behavior, Google Street View, Tropical birds.

#13 Three-year camera trap wildlife overpass monitoring feedback

Manon Teillagorry (Cerema, Bron, France), **Anne-Claire De Rouck** (Cerema, Bron, France)

- Efficacity of a camera trap monitoring method for wildlife overpasses;
- Highlight of the overpass' design efficacity for wildlife crossing;
- Highlight of large mammals populations overpass habituation;
- Highlight of large mammals populations motion patterns.

KEYWORDS: Wildlife overpass, Mammals, Monitoring, Camera trap.

#14 Ecological integration of the bicycle highway along the former rail road Coal Track In Limburg (B)

Huig Deneef (Provinciaal Natuurcentrum Limburg, Genk, Belgium)

- Ecological integration of the bicycle highway along the former rail road Coal Track In Limburg (B);
- Converting coal track as a relic of the mining past into a bicycle highway;
- Functional landscape analysis as basis for ecological "connectivity" and "defragmentation";
- Fauna connections based on "eco-profile" analysis;
- Implementation of a bicycle highway with optimal integration of ecological measures to increase functional organization of the natural landscape.

KEYWORDS: Ecological integration, Bicycle highway, Former rail road Coal Track Belgium.

#15 Use of a canopy bridge and underpasses by arboreal mammals and long-term roadkill monitored on a Brazilian coastal road

Ingridi Camboim Franceschi (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Bibiana Terra Dasoler** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Talita Menger** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Andreas Kindel** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil), **Franciane Almeida da Silva** (Sociedade Sinhá Laurinha, Vila Velha, Brazil), **Júlio Cezar Gonçalves Leonardo** (Sociedade Sinhá Laurinha, Vila Velha, Brazil), **Ricardo Miranda Braga** (Sociedade Sinhá Laurinha, Vila Velha, Brazil), **Fernanda Zimmermann Teixeira** (Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil)

There are eight potential species to use the crossing structures, otherwise we recorded only three species. The three arboreal species recorded were able to use the canopy bridge and different types of underpasses. *Coendou insidiosus* was the species that used the most the canopy bridge. *Didelphis aurita* mainly used the underpasses and is the most roadkilled. Even with canopy bridge and underpasses there were still high fatalities in the segments with these crossing structures. Each species may require different designs of canopy bridges and underpasses.

KEYWORDS: Connectivity, Crossing structure, Mitigation, Road ecology, Roadkill, Hotspots.

#16 The Trial of a Roadside Deer Detection System in Hokkaido, Japan

Masato Sato (Hokkaido Development Engineering Center, Kita-ku, Sapporo, Hokkaido, Japan), **Fumihiro Hara** (Hokkaido Development Engineering Center, Kita-ku, Sapporo, Hokkaido, Japan), **Koichi Tsuruya** (Kushiro Development and Construction Department, Ministry of Land, Infrastructure, Transport and Tourism, Saiwaicyo, Kushiro, Hokkaido, Japan), **Isao Yamazaki** (Kushiro Development and Construction Department, Ministry of Land, Infrastructure, Transport and Tourism, Saiwaicyo, Kushiro, Hokkaido, Japan), **Koki Shimomura** (Kushiro Development and Construction Department, Ministry of Land, Infrastructure, Transport and Tourism, Saiwaicyo, Kushiro, Hokkaido, Japan), **Takane Shikano** (Hokkaido Development Engineering Center, Kita-ku, Sapporo, Hokkaido, Japan)

We examined and trialed an animal detection system to mitigate traffic accidents involving Sika deer. The deer detection rate at the end of the study period was about 90%, with a false detection rate of about 10%. The warning light and the information on the presence of the system are considered to have caused the average vehicle speed on the test section to decrease by between 1.8 and 6.5 km/h. These results verified that the installation of the animal detection system contributed to decreased vehicle speeds, so the risk of collision accidents involving wild animals is considered to have been reduced.

KEYWORDS: Animal detection system, Animal–vehicle collisions, Sika deer.

#17 A magnitude study of roadkill to enhance ecologicals networks: methodology, results, partnerships

Jean-François Bretaud (Cerema Ouest, Nantes, France), **Damien Ivanez** (SEGED, Saint-Herblain, France)

This detailed study shows the very important impact of road mortality (1,082 carcasses for 20 km roads – 54 collisions/km/year) in a sector rich in biodiversity. This is in spite of moderate traffic of 900 to 1,700 veh/d. This work allows a partnership for the testing of innovative solutions on the sections with the most carcasses (in progress).

KEYWORDS: Methodology, Roadkill, Ecological network, Carcasses survey.

#18 Noise and biodiversity in France: state of play and perspectives

Olivier Pichard (Cerema HdF, Lille, France), **Jules Mayrand** (Sciences Po, Lille, France)

In 2022, Cerema carried out a state of play of the impact of noise on biodiversity. Numerous scientific studies demonstrate the negative effects of noise on biodiversity. Public policies and environmental assessment procedures for projects must take a global view of the effects of noise on living organisms in general (one health concept), taking into account the cumulative effects of noise. The subject is increasingly being taken into account in France, by a law of 2021 and the national biodiversity strategy 2021-2030.

KEYWORDS: Noise, Biodiversity, Transport infrastructure, Nature in the city, Soundscape ecology, Bioacoustics, Ecoacoustics.

#19 Experimental animal scaring and recording devices

Carolin Berndt (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Mattias Olsson** (EnviroPlanning AB, Gothenburgh, Sweden / Swedish University of Agricultural Sciences, Riddarhyttan, Sweden), **Manisha Bhardwaj** (University of Freiburg, Freiburg, Germany), **Aina Winsvold** (Ruralis – Institute of rural and regional research, Trollåsen, Sweden), **Svein Eilertsen** (Norwegian Institute of Bioeconomy Research, Ås, Norway), **Andreas Seiler** (Swedish University of Agricultural Sciences, Riddarhyttan, Sweden)

The two presented tools provide an affordable means to study the response of wildlife to different sensory cues such as acoustic warning signals. The design is open source and can easily be reproduced and altered to fit new research studies.

KEYWORDS: Animal deterrent, Raspberry, Sound, Fear.

THEME: INTEGRATED SOLUTIONS FOR ECOLOGICAL CONNECTIVITY

#20 The planned M2 motorway in a transition landscape of the Carpathian Basin Analysis in the frame of Cross-Sectoral Operation Plan of the region of the planned M2 motorway in Northern Hungary

Krisztina Filepné Kovács (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **László Kollányi** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Zsombor Bányai** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Edina Dancsokné Fóris** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **Virág Kutnyánszky** (Hungarian University of Agriculture and Life Sciences, Budapest, Hungary), **András Weiperth** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Radu Moț** (Association Zarand, Brașov, Romania), **Anna Hegedűs** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Ádám Staszny** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Árpád Ferincz** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Béla Urbányi** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary), **Vera Lente** (Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary)

- Complex GIS based assessment about landscape features, landscape structure to highlight the most vulnerable areas of the pilot area and define the most critical zones of the planned motorway.

KEYWORDS: Planned motorway M2, Landscape level assessment, Green and blue infrastructure, Ecological network.

#21 www.transportecology.info: A globally relevant, open access resource to share information, knowledge and experience in ecologically-friendly linear infrastructure

Katherine Aburrow (Animex International Inc., Lee On Solent, United Kingdom), **Rodney van der Ree** (Ecology and Infrastructure International Pty Ltd, Victoria, Australia), **Steve Bega** (Animex International Inc., Lee On Solent, United Kingdom), **Darryl Jones** (Griffith University, Brisbane, Australia)

There is much concern globally about the current and proposed massive investment in linear infrastructure. A significant obstacle to implementing environmentally-sustainable infrastructure is easy access to best-practise. www.TransportEcology.info is an online, open access resource to globally share information, knowledge and experience in ecologically-friendly linear infrastructure. There are 3 main streams: (1) Blog-style research summaries; (2) mitigation and project case studies; and (3) Best-practice instruction, including step-by-step guidance and courses. They are visible and accessible to practitioners, and not hidden behind paywalls and scientific jargon.

KEYWORDS: Linear infrastructure, Resources, Training, Website, Research, Case studies, Best practice.

#22 Using models and media to rank road safety in Central Brazil and support decision making

Yuri Geraldo Gomes Ribeiro (Wild Animal Conservation Institute, Campo Grande, Brazil), **Erica Naomi Saito** (Wild Animal Conservation Institute, Campo Grande, Brazil), **Rafael Batista de Morais** (Wild Animal Conservation Institute, Campo Grande, Brazil), **Arnaud Léonard Jean Desbiez** (Wild Animal Conservation Institute, Campo Grande, Brazil)

This study shows how road can be ranked according to safety for its users which is key for decision making in mitigation measures investments. Data from the media was used as a public opinion proxy. To rank highways, we used high risk species spatial model prioritization, accidents reports and media appearance.

KEYWORDS: Rank, Wildlife-vehicle-collision, Human safety, Decision making, Roadkill, Public policy, Media.

#23 Reducing risk of wildlife-vehicles collisions in the Pyrénées-Atlantiques department: from research to implementation at scale

Céline Delacroix (Département des Pyrénées-Atlantiques, Bayonne, France), **Juliette Feraille** (INP-Toulouse, Tourcoing, France), **Anaïs Demagny** (Observatoire FAUNA – Université de Bordeaux, Pessac, France), **Didier Alard** (Observatoire FAUNA – Université de Bordeaux, Pessac, France), **Brice Mitsoune Ntsoude** (Observatoire FAUNA – Université de Bordeaux, Pessac, France)

- Local authority and university partnership;
- Integration of weighted multi-criteria;
- Local road landscapes and cross-sectional profile taken into account;
- Complementarity between models and field surveys;
- Leveraging scientific research to inform local public policy on the environment.

KEYWORDS: Roadkill, Ecological continuities modelling, Multi-criteria analysis, Road landscapes.

Panel Discussions & Networking

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DATE & TIME	**Tuesday, 20 September / 15:30 – 16:10 Romanian Time (CET+1)**
ROOM	**BLUE**
TYPE	**In-person + On-line**
MODERATORS	**Manisha Bhardwaj**

#1 WIRE: Women in Road Ecology

Manisha Bhardwaj (University of Freiburg, Freiburg, Germany)

This event will be a networking opportunity, designed to bring together women working in road ecology. The event will be loosely structured, and that will involve a bit of experience sharing, but will mostly be about getting to know each other.

Note: While we use the term "women" in road ecology, everyone is welcome to join us.

KEYWORDS: Networking, Sharing experiences, Building cooperation, Building collaborations.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Tuesday, 20 September / 15:30 – 16:10 Romanian Time (CET+1)**
ROOM	**RED**
TYPE	**In-person + On-line**
MODERATORS	**Lazaros Georgiadis, Cristian-Remus Papp**

#2 The role of Professional Networks and Conventions in shaping sustainable transport infrastructure worldwide

Lazaros Georgiadis (CERTH, Thessaloniki, Greece), **Cristian-Remus Papp** (WWF Romania, Bucharest, Romania)

Professional networks and conventions can be key drivers for shaping and influencing sustainable transport development. This will be illustrated by presenting / naming some flagship projects and initiatives, or relevant strategic documents.

However, the role of professional networks and conventions is often not properly explained and their impact might not always be visible enough. Are they true drivers of concrete changes in sustainable transport development?

The panel discussion will reveal it based on the interaction with the representatives of such networks and conventions. The participants will have the opportunity to ask relevant questions related to the potential of networks and conventions to shape and improve transport infrastructure development.

KEYWORDS: Professional networks, Conventions, Sustainable transport.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY**
DATE & TIME	**Tuesday, 20 September / 16:20 – 17:00 Romanian Time (CET+1)**
ROOM	**BLUE**
TYPE	**In-person + On-line**
MODERATORS	**Manisha Bhardwaj, Cristian-Remus Papp**

#3 Young Researchers and Practitioners in Road Ecology

Manisha Bhardwaj(University of Freiburg, Freiburg, Germany), **Cristian-Remus Papp** (WWF Romania, Bucharest, Romania)

Young researchers and practitioners can have a major role in further developing road ecology, especially by conducting e.g., innovative research or comprehensive monitoring studies. Many of them achieve notable results despite the various challenges and barriers they face.

The objective of the workshop is to position the role of young researchers and practitioners into the wider community of road ecologists, as well as to explore what can be done in terms of better supporting these groups in their work and endeavours.

The networking session will map the key challenges but also opportunities that derive from being a young researcher or practitioner. Recommendations will be generated at the end on how to best support this community of practice and its development.

KEYWORDS: Young researchers, Practitioners, Road ecology.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Tuesday, 20 September / 16:20 – 17:00 Romanian Time (CET+1)**
ROOM	**RED**
TYPE	**In-person + On-line**
MODERATORS	**Elke Hahn, Lazaros Georgiadis, Yannick Autret, Lea Ballavoine, Carme Rosell, Anders Sjolund, Hildegard Meyer, Eric Dimnet**

#4 Mobility and Biodiversity: interactions and synergies between mobility and wildlife, international projects and cooperations; Future needs of cooperation between IENE and PIARC

Elke Hahn (Infrastructure and Ecology Network Europe / Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology), **Lazaros Georgiadis** (Infrastructure and Ecology Network Europe), **Yannick Autret** (GCSD), **Lea Ballavoine** (GCSD), **Carme Rosell** (Infrastructure and Ecology Network Europe), **Anders Sjölund** (CEDR), **Hildegard Meyer** (WWF-CEE), **Eric Dimnet** (GCSD / PIARC)

In recent years, international cooperation on taking into account the interactions between mobility and wildlife has moved to a higher level. For instance the BISON project was launched in 2021 as part of the H2020 and Horizon Europe framework programmes for research and innovation of the European Commission. Meanwhile, PIARC (World Road Association) has, for the first time in its history, included the subject of the interaction between road infrastructure and wildlife in its 2019-2023 strategic plan. It has become one of the topics dealt with by the technical committee (TC) 3.4 dedicated to environmental sustainability.

International initiatives are multiplying on this issue and the aim of this discussion is to present what has already been done in this area and to suggest avenues that could unite efforts around new projects. How can the IENE environmental objectives and actions contribute to the environmental policies of PIARC. What are common fields of working together, which synergies can we use?

The expected outcome of this discussion is to inform about the existing projects and those in the process of being set up. Thereby, we hope to arouse vocations to collaborate and set up new initiatives of international cooperation in the field of interaction between mobility and wildlife.

KEYWORDS: Mobility infrastructures, Mainstreaming biodiversity, Wildlife.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY**
DATE & TIME	**Tuesday, 20 September / 16:20 – 17:00 Romanian Time (CET+1)**
ROOM	**GREEN**
TYPE	**In-person + On-line**
MODERATORS	**Cora Cremezi Charlet, Cécile Cren, Lisa Garnier, Elisabeth Aubert**

#5 Transport4Nature: Best practices taken voluntarily by companies involved in the transport infrastructure sector to preserve biodiversity

Cora Cremezi Charlet (SNCF), **Cécile Cren** (VINCI), **Lisa Garnier** (RTE Réseau de Transport d'Electricité), **Elisabeth Aubert** (ENGIE)

Transport4Nature is an initiative aiming to mobilise through their CEOs the companies involved in the transport infrastructure sector in Europe to voluntary commit to biodiversity-sensitive approaches.

This panel discussion will showcase how European companies are using the Transport4Nature methodology to strengthen their actions of biodiversity conservation and restoration and will interact with the audience and to foster further engagement of companies from transport infrastructure sector to making commitments to biodiversity.

Relevant companies from each type of infrastructure (road, rail, airport, waterway, energy) will present examples of SMART commitments made through their involvement in Act4nature or Transport4Nature.

KEYWORDS: Business, Best practices, Transport4Nature, Mainstreaming biodiversity.

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ROOM	**BLUE**
TYPE	**In-person + On-line**
MODERATORS	**Yannick Autret, Annette Mertens, Maros Finka, Lea Balavoine, Elizabeth Losos**

#1 Strategies for the valorisation and exploitation of research results in infrastructure and biodiversity to support operational action

Yannick Autret (Ministry of Ecological Transition, La Défense, France), **Annette Mertens** (AGRISTUDIO, Firenze, Italy), **Maros Finka** (STUBA, Bratislava, Slovakia), **Lea Balavoine** (Ministry for ecological transition – MTE, La Défense, France), **Elizabeth Losos** (Duke University, Durham, NC, USA)

The proliferation of research work and actors dealing with the subject of infrastructure and biodiversity has led to a rapid increase in the number of resource centers, observatories, data collection and management centers with different research methodologies. In the end, several hundred knowledge resource centers are now available throughout the world, and this figure is increasing. A consensus has been building of the need for coordination and articulation of infrastructure and biodiversity at the national and international levels.

After the testimonies of resource websites accompanying the development of researchers' skills and the intervention of a panel of practitioners such as infrastructure developers and biodiversity conservationists reporting on their needs, the workshop will aim to establish a list of recommendations for developing the valorisation and utilization of research results. It will aim to identify ways of improving knowledge sharing, in particular by identifying how the European research and innovation community can improve its exchange processes while supporting the development of the skills of actors in third countries.

KEYWORDS: Valorisation of research, Transfer, Formation, Continuous professional training, Websites, Capacity training, IENE.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Thursday, 22 September / 15:30 – 16:30 Romanian Time (CET+1)**
ROOM	**RED**
TYPE	**In-person + On-line**
MODERATORS	**Lazaros Georgiadis, Radu Moț, Cristian-Remus Papp**

#2 Towards a Road map for facilitating mainstreaming biodiversity into transport in South East Europe: Challenges and opportunities, transferability of existing knowledge and adaptation to the specific context

Lazaros Georgiadis (IENE, Paris, France / GreenWeb, Brașov, Romania), **Radu Moț** (Association Zarand, Brașov, Romania / GreenWeb, Brașov, Romania), **Cristian-Remus Papp** (WWF Romania, Bucharest, Romania / GreenWeb, Brașov, Romania)

While fragmentation is recognized in Western Europe and special defragmentation programmes are completed or under development, South East Europe faces the challenge to avoid fragmentation and preserve the natural capital while developing a modern transport infrastructure. GreenWeb is a platform created by a core group of experts and organizations working under the umbrella of IENE towards securing ecological connectivity and ensuring the ecological functionality while developing linear transportation in South East Europe.

The objectives of the proposed workshop are to engage the participants into an interactive dialogue that should:

i) highlight the specific of the South East Europe in terms of transport and biodiversity facilitated by presentations of representative examples from the region;
ii) to use the opportunities created from the IENE 2022 International Conference in Romania as the first IENE conference in Eastern and South Europe;
iii) identify challenges and opportunities for mainstreaming biodiversity into transport in South East Europe;
iv) support the development of a regional road map adapted to the local needs and benefiting from the Western experience.

The results of the workshop will be used under the framework of IENE development in South East Europe towards increasing the implementation of transport ecology principles in practice considering the local specifics.

KEYWORDS: South East Europe, Transport ecology, Biodiversity, Mitigation hierarchy, Precaution principle, Strategic planning, Sustainability, Proactive engagement, Concrete collaboration, Road map, Action plan.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY**
DATE & TIME	**DATE & TIME Thursday, 22 September / 15:30 – 16:30 Romanian Time (CET+1)**
ROOM	**GREEN**
TYPE	**In-person + On-line**
MODERATORS	**Lisa Garnier, Elisabeth Aubert, Cora Cremezi Charlet, Carme Rosell, Joanne Schante, Dorothee Labarraque**

#3 Tackling climate change and biodiversity – nature-based solutions and their role in economic transition. Examples of Transport4Nature commitments

Lisa Garnier (RTE Réseau de Transport d'Electricité), **Elisabeth Aubert** (ENGIE), **Cora Cremezi Charlet** (SNCF), **Carme Rosell** (Minuartia / BISON), **Joanne Schante** (LGI Sustainable Innovation), **Dorothée Labarraque** (EGIS)

Companies are already starting to use nature-based solutions to address the social and environmental challenges they face. This workshop is intended to be an exchange between practitioners, ecologists, companies and associations where the definition of nature-based solutions, the solutions that companies are seeking to implement today, advice and recommendations from practitioners and ecologists will be put into perspective.

KEYWORDS: Nature based solution, Business, Best practices, IUCN.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY**
DATE & TIME	**Thursday, 22 September / 15:30 – 16:30 Romanian Time (CET+1)**
ROOM	**YELLOW**
TYPE	**In-person + On-line**
MODERATORS	**Silvia Borlea, Alexandra Doba, Marius Nistorescu**

#4 Identification of Natura 2000 sites / natural protected areas potentially affected by an infrastructure project

Silvia Borlea (EPC Consultanță de mediu SRL, Romania), **Alexandra Doba** (EPC Consultanță de mediu SRL, Romania), **Marius Nistorescu** (EPC Consultanță de mediu SRL, Romania)

The workshop is aimed at resolving an existing issue related to environmental impact assessments. Most often, EIA for infrastructure projects take into consideration only protected areas which are intersected by the project, when in fact they should analyse a much bigger area.

It aims at showing participants a real example of a methodology for identifying potentially affected Natura 2000 sites, which was already used for a motorway project in Romania. This will allow them to better understand the extent of an infrastructure project in terms of impact and will, in the end, lead to an improvement in the application of environmental impact assessments.

The workshop will be interactive, based on exercises and a dialogue between the authors and the participants.

KEYWORDS: Natura 2000 impact assessment, Road ecology, Ecological connectivity, Long distance impacts, Cumulative impact.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Thursday, 22 September / 17:00 – 18:30 Romanian Time (CET+1)**
ROOM	**BLUE**
TYPE	**In-person + On-line**
MODERATORS	**Catherine de Roincé, Helen Chalkia, Jules Boileau**

#5 Future to actions: Prospective scenarios concerning mainstreaming biodiversity into transport infrastructures

Catherine de Roincé (Union Professionnelle du Génie Ecologique, Saint-Maur-des-Fossés, France / TerrOïko, Sorèze, France), **Helen Chalkia** (Centre for Research & Technology Hellas / Hellenic Institute of Transport, Greece), **Jules Boileau** (TerrOïko, Sorèze, France)

BISON project aims to address the mainstreaming of biodiversity with transport infrastructure development and maintaining (which includes energy production and distribution) and set up a Strategic Research & Deployment Roadmap on this topic that will be also used by European Commission. In order to plan the present according to the future challenges, BISON partners have described several scenarios of plausible future trajectories for 2040 that can provide insight of what can happen. This workshop aims at involving an international expert group (30–50 actors) to discuss this future scenarios in terms of beneficial or non-beneficial consequences for their activities, and identify the critical paths & technical or organisational solutions to achieve the desired future trajectories.

KEYWORDS: Prospective scenarios, Biodiversity management, Transport infrastructure life cycle, Strategic agenda, European commission.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Thursday, 22 September / 17:00 – 18:30 Romanian Time (CET+1)**
ROOM	**RED**
TYPE	**In-person + On-line**
MODERATORS	**Eugene O'Brien, Yannick Autret**

#6 The Draft CEDR Biodiversity Manual – I Round-table Discussions

Eugene O'Brien (Research Driven Solutions, Dublin, Ireland), **Friederike Trognitz** (AIT Austrian Institute of Technology, Tulln, Austria), **Hans Martin Hanslin** (Norwegian Institute of Bioeconomy Research, Klepp Stasjon, Norway)

The Conference of European Road Directors (CEDR) commissioned two research projects in 2016:

- ControlInroad – Controlling the spread of invasive species with innovative methods in road construction and maintenance, and
- EPICroads – Project ecology in practice: improving infrastructure habitats along roads.

Both projects are now complete and the CEDR Programme Executive Board has appointed a consultant to review the recommendations and write a Biodiversity Manual with practical guidelines for Europe's road owners. This is a proposal for a round-table workshop at the IENE conference to review the draft guidelines in the Biodiversity Manual in Breakout Groups to consider specific recommendations in detail.

CEDR's goal is to identify actions to be taken for different project phases that enhance biodiversity and result in a net gain to biodiversity from the presence of roads. The project phases encompass: 1) Development of high-level advance strategies and policies; 2) actions to be taken when planning and constructing new or upgrading existing roads; and 3) managing and maintaining existing roads.

KEYWORDS: CEDR Biodiversity Manual, Roadside, Verge, Biodiversity, Maintenance, Roadside mapping, Maintenance masterplan.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY**
DATE & TIME	**Thursday, 22 September / 17:00 – 18:30 Romanian Time (CET+1)**
ROOM	**GREEN**
TYPE	**In-person**
MODERATORS	**Annette Mertens, Simone Ricci, Niki Voumvoulaki, Luis M. Fernandez**

#7 Identifying best solutions to mitigate impacts of roads on large carnivores: a multi-stakeholder approach

Carme Rosell (Minuartia, Barcelona, Catalonia, Spain / University of Barcelona, Catalonia, Spain), **Annette Mertens** (Agristudio SRL, Firenze, Italy), **Simone Ricci** (Agristudio SRL, Firenze, Italy), **Marina Torrellas** (Minuartia, Barcelona, Catalonia, Spain), **Luis M. Fernández** (Minuartia, Barcelona, Catalonia, Spain), **Fabio Papini** (Agristudio SRL, Firenze, Italy)

Cooperation between different stakeholders is vital to the design, application and monitoring of measures to reduce impacts of linear infrastructure on wildlife. Procedures which involve infrastructure operators, wildlife experts and local stakeholders as well as governments and regional management authorities, are vital to identify and apply effective solutions which reduce road mortality risks. This process creates notable challenges that need to be tackled collectively to succeed. The LIFE SAFE-CROSSING Project is an example of a multi-stakeholder approach to the design an application of mitigation measures which reduce large carnivore road mortality risk in Southern European countries. In this framework, the workshop is expected to contribute to identifying general recommendations which help to replicate the multi-stakeholder approach.

KEYWORDS: Large carnivore, Road mortality, AVC, Transport Infrastructure, Multi-stakeholder, Replication.

THEME	**INTEGRATED SOLUTIONS FOR ECOLOGICAL CONNECTIVITY**
DATE & TIME	**Thursday, 22 September / 17:00 – 18:30 Romanian Time (CET+1)**
ROOM	**YELLOW**
TYPE	**In-person + On-line**
MODERATORS	**Roland Grillmayer, Christoph Perger, Florian Danzinger**

#8 Application Toolbox for Functional Monitoring

Roland Grillmayer (Environment Agency, Austria), **Florian Borgwardt** (Environment Agency, Austria), **Florian Danzinger** (Environment Agency, Austria)

The workshop will present the Application Toolbox for Functional Monitoring approach (AT-FM) that has been developed within the Interreg Danube Transnational Programme Project SaveGREEN. The participants will be introduced to the AT-FM's underlying generic data model and the advantages of using this approach in their own projects. Furthermore, several objects will be recorded using the mobile applications provided in the AT-FM and the whole data stream up to the provision of the data in a central database via standardized OGC web services and in the form of an interactive web map will be presented. In addition, the methodology for large-scale monitoring of umbrella species will be explained and the experience gained in the SaveGREEN project will be discussed. At the end of the workshop, participants will have the basic knowledge to establish functional monitoring for their own projects by using the AT-FM.

KEYWORDS: Functional monitoring, Functional connectivity, Ecological corridor, Field mapping, Data standardization.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Friday, 23 September / 12:00 – 13:20 Romanian Time (CET+1)**
ROOM	**BLUE**
TYPE	**In-person + On-line**
MODERATORS	**Eugene O'Brien, Manisha Bhardwaj**

#9 The Draft CEDR Biodiversity Manual – II Panel Discussion

Eugene O'Brien (Research Driven Solutions, Dublin, Ireland)

The Conference of European Road Directors (CEDR), commissioned two research projects in 2016:

- ControlInroad – Controlling the spread of invasive species with innovative methods in road construction and maintenance, and
- EPICroads – Project ecology in practice: improving infrastructure habitats along roads.

Both projects are now complete and the CEDR Programme Executive Board has appointed a consultant to review the recommendations and write a Biodiversity Manual with practical guidelines for Europe's road owners. This is a proposal for a plenary workshop, immediately following the round-table discussion (see 1st proposal on the same topic) to review the draft guidelines in the Biodiversity Manual. The objective is to have a Panel Discussion to discuss the findings from the round-table discussions and agree the whole Manual with the audience. Each of about 5 panelists will make a statement based on the round-table discussion and the panel will discuss all the issues with the audience.

CEDR's goal is to identify actions to be taken for different project phases that enhance biodiversity and result in a net gain to biodiversity from the presence of roads. The project phases encompass: 1) Development of high-level advance strategies and policies; 2) actions to be taken when planning and constructing new or upgrading existing roads; and 3) managing and maintaining existing roads.

KEYWORDS: CEDR Biodiversity Manual, Roadside, Verge, Biodiversity, Maintenance, Roadside mapping, Maintenance masterplan.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Friday, 23 September / 12:00 – 13:20 Romanian Time (CET+1)**
ROOM	**RED**
TYPE	**In-person + On-line**
MODERATORS	**Carme Rosell, Annette Mertens, Simone Ricci, Niki Voumvoulaki, Luis M. Fernandez**

#10 Identification of gaps and barriers to mainstream biodiversity in transport infrastructure

Carme Rosell (Minuartia, Barcelona, Catalonia, Spain / University of Barcelona, Catalonia, Spain), **Luis M. Fernández** (Minuartia, Barcelona, Catalonia, Spain), **Matina Loukea** (Hellenic Institute of Transport (HIT) – Centre for Research and Technology Hellas (CERTH), Athens, Greece), **Helen Chalkia** (Hellenic Institute of Transport (HIT) – Centre for Research and Technology Hellas (CERTH), Athens, Greece), **Eric Guinard** (Centre for Studies and Expertise on Risks, the Environment, Mobility and Urban Planning (CEREMA), Bron Cedex, France)

Increasing transport ecology knowledge and practice helps mitigate the negative impacts and enhance the potential positive effects of transport infrastructure design and operation on biodiversity. However, important obstacles remain which hinder the implementation of good practice that mainstream biodiversity in transport infrastructure. Within the HORIZON 2020 BISON Project, existing practices under application in Europe have been collected and evaluated, and obstacles hindering such application are being identified.

The workshop utilizing the "World Café" method, aims to develop a structured dialogue between stakeholders from biodiversity and transport sectors to achieve a consensual diagnosis regarding: i) the identification of Good Practices to mainstreaming biodiversity in transport infrastructure and ii) what are the "Gaps and barriers' limiting their implementation.

Results of the workshop will help to enhance the replication of Best Practice, will be included in reports and in the Strategic and Research Deployment Agenda produced by the BISON Project to establish research and funding priorities for upcoming years.

KEYWORDS: Gaps, Biodiversity, Good Practice, Transport Infrastructure, BISON.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Friday, 23 September / 12:00 – 13:20 Romanian Time (CET+1)**
ROOM	**GREEN**
TYPE	**In-person + On-line**
MODERATORS	**Cindy Baierl, Marita Böttcher, Heinrich Reck**

#11 Priorities to overcome fragmentation effects caused by European Transport Infrastructure – content and use of the European Defragmentation Map

Cindy Baierl (University of Kassel (UniK), Germany), **Marita Böttcher** (Federal Agency for Nature Conservation (BfN Leipzig), Germany), **Heinrich Reck** (Kiel University (CAU), Germany)

Based on information on ecological networks in Europe (methods and results) and on defragmentation priorities (assessment procedures and resulting conflict areas), the best ideas and solutions for mainstreaming biodiversity into TEN-T will be compiled.

KEYWORDS: Trans-EuropeanNetwork-Transport (TEN-T), Transport infrastructure, Green infrastructure, Ecological network, Ecological corridors, Barrier effects, Defragmentation, Indicators.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY**
DATE & TIME	**Friday, 23 September / 12:00 – 13:20 Romanian Time (CET+1)**
ROOM	**YELLOW**
TYPE	**In-person + On-line**
MODERATORS	**Marieke Severijns, Toine Morel**

#12 A discussion on the registration of Animal-Vehicle collisions

Marieke Severijns (Rijkswaterstaat, Ministry of Infrastructure and Water Management, Utrecht, Netherlands), **Adam Hofland** (Rijkswaterstaat, Ministry of Infrastructure and Water Management, Utrecht, Netherlands)

In this workshop, the aim is to collect information how the handling and registering of AVC's should be organized both within the Dutch infrastructure as well as in a European context. The information collected during this workshop will be used to improve the handling and registration approach of AVC's in the Netherlands and will be shared within the IENE network. Furthermore, the collected information and results of the discussion will be used to form a plan of action for an international approach to AVC's which will also be shared within the IENE network.

KEYWORDS: Animal-vehicle collision, Registration, International, Hotspots, Standardization.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Friday, 23 September / 13:30 – 14:50 Romanian Time (CET+1)**
ROOM	**BLUE**
TYPE	**In-person + On-line**
MODERATORS	**Eleni Chalkia, Lazaros Georgiadis**

#13 Recommendations towards the integration of the EU Strategy on Green Infrastructures (EU SGI) into the national policy and legislation systems of EU Member States, regarding transport infrastructure development

Matina Loukea (Hellenic Institute of Transport – Centre for Research and Technology Hellas, Thessaloniki, Greece), **Eleni Chalkia** (Hellenic Institute of Transport – Centre for Research and Technology Hellas, Thessaloniki, Greece), **Emilie Chevalier** (Universite de Limoges, Limoges, France), **Jessica Makowiak** (Universite de Limoges, Limoges, France), **Lazaros Georgiadis** (Hellenic Institute of Transport – Centre for Research and Technology Hellas, Thessaloniki, Greece)

The main cause of biodiversity loss is human activity and in this respect, the development of transport infrastructures have a particular impact in several respects. However, even though actions of EU policy and legislation have brought positive developments, biodiversity losses continue to increase.

The work that has been carried out within the BISON project provides information on how well the EU strategies (especially EU SGI) are known by actors in national level and whether (and how) they are applied in different countries.

This workshop will facilitate a brainstorming discussion aiming to develop a structured dialogue among stakeholders from biodiversity and transport sectors, in order to achieve consensual description of the current situation regarding the identified gaps and barriers for the EU Members States to achieve alignment towards provisions set by the EU SGI, while also identify some respective recommendation for addressing those gaps and barriers towards policy and legislation harmonisation.

Results of the workshop will be included in a report to be submitted to the European Commission and into the Strategic and Research Deployment Agenda produced by the BISON Project to establish research and funding priorities for upcoming years to achieve a more sustainable and resilient transport sector.

KEYWORDS: Green Infrastructure, Transport infrastructure, Integration, EU Policy, Strategic planning, Legislation.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY**
DATE & TIME	**Friday, 23 September / 13:30 – 14:50 Romanian Time (CET+1)**
ROOM	**RED**
TYPE	**In-person + On-line**
MODERATORS	**Eszter Sebestyén, Gabriella Mária Nagy, Hildegard Meyer, Christophe Janz, Csaba Mezei, Elizabeth Óhegyi, Adam Varga**

#14 Strategies for stakeholder outreach and involvement around ecological connectivity – an experience exchange with members of the SaveGREEN Project

Eszter Sebestyen (CEEweb for Biodiversity, Budapest, Hungary), **Gabriella Mária Nagy** (CEEweb for Biodiversity, Budapest, Hungary), **Hildegard Meyer** (WWF Central and Eastern Europe, Vienna, Austria), **Christophe Janz** (WWF Central and Eastern Europe, Vienna, Austria)

The proposed workshop "Strategies for stakeholder outreach and involvement around ecological connectivity – an experience exchange with members of the SaveGREEN Project" seeks to shine a light on the difficulties of stakeholder engagement when dealing with the topic of ecological connectivity, whether it be securing local support for the construction of mitigation measures, such as a green bridge; or indicating cross-sectoral debate between opposing sectors such as forestry vs. wildlife management or infrastructure development vs. nature protection; establishing a basic consensus among members of the general public on the irreplaceable value of biodiversity and the supporting role of ecological connectivity. The strong transnational and multi-sectoral nature of the issue means that a multitude of different actors are required to exchange views, learn from one another and cooperate in order for significant advances to be achieved. For promoters of ecological connectivity seeking to secure the support of a specific target group (usually nature protection), this can in practice often translate into very challenging scenarios.

This workshop will provide participants with the opportunity to share their experiences and lessons learnt when seeking to engage stakeholders from different fields of expertise in their respective lines of work. The workshop organizers, all members of the SaveGREEN Communication Team, will facilitate this process by drawing upon their own observations gathered in the course of the project and by guiding the participants through a series of exercises devised to explore and analyze their shared experiences. Participants will leave the workshop with an increased understanding of the types of communication challenges that can arise in stakeholder engagement work relating to ecological connectivity, as well as a set of tools and best practices from which they can draw in the future, as well as building up a supporting community where all participants can find help and share difficulties / success any time.

KEYWORDS: Ecological connectivity, Stakeholder involvement, Deep listening, Non-violent communication, Green infrastructure, Gray infrastructure.

THEME	**PRACTICAL EXPERIENCES, CHALLENGES AND OPPORTUNITIES RELATED TO TRANSPORT ECOLOGY**
DATE & TIME	**Friday, 23 September / 13:30 – 14:50 Romanian Time (CET+1)**
ROOM	**GREEN**
TYPE	**In-person + On-line**
MODERATORS	**Manisha Bhardwaj, Mattias Olsson, Michele Deis, Falko Brieger**

#15 Roadside Animal Detection Systems / Wildlife Warning Systems: Different names but the same goal – A workshop to bring together global experiences in warning drivers of wildlife near the roads

Manisha Bhardwaj (University of Freiburg, Faculty of Environment and Natural Resources, Chair of Wildlife Ecology and Management, Freiburg, Germany), **Mattias Olsson** (EnviroPlanning AB, Gothenburg, Sweden), **Michele Deis** (Wildlife Institute, Forest Research Institute of Baden-Württemberg, Freiburg, Germany), **Falko Brieger** (Wildlife Institute, Forest Research Institute of Baden-Württemberg, Freiburg, Germany)

Wildlife-vehicle collisions cost millions of Euros each year in loss of life and damage. Wildlife crossing structures combined with suitable fencing are a commonly implemented mitigation strategy to reduce wildlife-vehicle collisions and increase landscape connectivity for wildlife. However, the effectiveness of fencing for traffic safety has an arguable effect on wildlife mortality since wildlife-vehicle collisions tend to occur more often on medium-sized roads, where fencing for wildlife is not prioritized, and wildlife crossing structures are seldom installed due to economical and constructional constraints. In such instances, at-grade fauna passages with Roadside Animal Detection Systems (also known as Wildlife Warning Systems) may serve as an alternative to wildlife bridges and underpasses, since they are cheaper to install and are simpler to construct.

Independently, transportation authorities and researchers from across Europe and the rest of the world have developed, implemented and tested some versions of Roadside Animal Detection Systems – a system to detect wildlife within a detection zone (i.e., within the at-grade crossing) and warn drivers of the potential collision risk. As a consequence, many research groups have collected data towards the same overall research question, while implementing similar techniques, and inevitably running into the same problems. In this workshop, we invite all members of the IENE network that have experience working with Roadside Animal Detection Systems in order to share experience and reduce the amount we all "reinvent the wheel". Discussion will cover technological solutions, data issues (collection, storage, management, and analysis), and findings. The outcome will be the formulation of a working group, which will work together towards collective outputs such as best-practice guidelines and / or a meta-analysis.

KEYWORDS: Wildlife Warning Systems, Roadside Animal Detection Systems, Data collection, Data analysis, Animal behavior.

THEME	**MAINSTREAMING BIODIVERSITY INTO TRANSPORT SECTOR**
DATE & TIME	**Friday, 23 September / 13:30 – 14:50 Romanian Time (CET+1)**
ROOM	**YELLOW**
TYPE	**In-person + On-line**
MODERATORS	**Alix Aliaga, Ondine Deyrieux, Nicolas Hette-Tronquart, Ivo Dostál, Jiří Jedlička, Denis François**

#16 Relevance and prioritization of research actions for biodiversity-friendly transport infrastructures in Europe

Denis François (UGE, Université Gustave Eiffel, France), **Ivo Dostál** (CDV, Centrum dopravního výzkumu, Czech Republic), **Peter Mederly** (UKF, Univerzita Konštantína Filozofa v Nitre, Slovakia), **Nicolas Hette-Tronquart** (OFB, Office Français de la Biodiversité, France), **Alix Aliaga** (Amphi International ApS, Denmark)

One of the objectives of the Coordination and Support Action BISON (Biodiversity and Infrastructure Synergies and Opportunities for European Transport Networks, 2021-2023) of the EU H2020 programme, is to identify and prioritise research and innovation needs for a better integration of biodiversity with transport infrastructures all along their life stages. The methodology used to develop this Strategic Research Agenda (SRA) has taken input from all types of stakeholders' expectations and proposals for more biodiversity-friendly transport infrastructures (roads, railways, waterways, power lines, pipelines, airports, harbours) and all along their life stages, from planning to decommissioning. The workshop, where all types of stakeholders from across Europe are expected to participate, is part of the external process of validation and amendment of the draft roadmap that has been developed. In small working groups, participants will be able to analyse the relevance of the proposed research actions, to suggest improvements of their definition and scope (infrastructure types, life stages, etc.), to argument desired timeframe for their completion, to comment on suitability for different areas in Europe. All the formal and contextual findings, merged in the last step, will serve to improve the relevance, accuracy and usefulness of the final version of the SRA.

KEYWORDS: Consultation, Endorsement, Expertise, Need, Priority, Relevance, Research, Region, Roadmap, Strategy.

THEME	**INTEGRATED SOLUTIONS FOR ECOLOGICAL CONNECTIVITY**
DATE & TIME	**Wednesday, 21 September / 16:00 – 18:00 Romanian Time (CET+1)**
ROOM	**Not the case**
TYPE	**In-person only, during the SaveGREEN field trip**
MODERATORS	**Radu Moț, Lazaros Georgiadis, Hildegard Meyer, András Weiperth, László Kollányi, Gabriella Mária Nagy**

#17 SaveGREEN: A matrix of problems and solutions to be considered for safeguarding structural and functional connectivity at landscape level

Radu Moț (Association Zarand, Brașov, Romania), **Hildegard Meyer** (WWF Central and Eastern Europe), **Christophe Janz** (WWF Central and Eastern Europe), **Roland Grillmayer** (Environment Agency Austria), **Christoph Plutzar** (Environment Agency Austria), **Katrin Sedy** (Environment Agency Austria), **Florian Borgwardt** (Environment Agency Austria), **Emma Gileva** (Black Sea NGO Network), **Rumyana Ivanova** (Bulgarian Biodiversity Foundation), **Petko Tzvetkov** (Bulgarian Biodiversity Foundation), **Miroslav Kutal** (Friends of the Earth), **Radek Křček** (Friends of the Earth), **Ivo Dostál** (Transport Research Centre), **Viktoria Selmeczy** (CEEweb for Biodiversity), **Gabriella Mária Nagy** (CEEweb for Biodiversity), **Csaba Mezei** (CEEweb for Biodiversity), **Eszter Sebestyén** (CEEweb for Biodiversity), **Ildikó Varga** (CEEweb for Biodiversity), **Thor Morante** (CEEweb for Biodiversity), **András Weiperth** (Szent Istvan University), **László Kollányi** (Szent Istvan University), **Krisztina Filepné Kovacs** (Szent Istvan University), **Florina Ciubuc** (Association Zarand, Brașov, Romania), **Răzvan Rohan** (Association Zarand, Brașov, Romania), **Marius Nistorescu** (EPC), **Alexandra Doba** (EPC), **Silvia Borlea** (EPC), **Cristian-Remus Papp** (WWF Romania), **Diana Cosmoiu** (WWF Romania), **Ioana Ismail** (WWF Romania), **Bianca Stefănuț** (WWF Romania), **Andreea Danciu** (WWF Romania), **Adrian Grancea** (WWF Romania), **Milan Janak** (WWF Slovakia), **Barbara Immerova** (WWF Slovakia), **Lukas Holasek** (WWF Slovakia), **Romana Uhrinová** (WWF Slovakia), **Vladimír Ondrejička** (SPECTRA), **Milan Husár** (SPECTRA), **Lazaros Georgiadis** (Association Zarand, Brașov, Romania).

The SaveGREEN project aimed to facilitate a better understanding and a more efficient approach for safeguarding structural and functional connectivity at landscape level. One of the tools being developed by the project is the logframe of assessing multi-sectoral problems and identifying corresponding solutions in a form of Cross-Sectoral Operational Plans (CSOPs). The logframe itself and the collection of sectoral problems to be address and the library of potential solutions should be a valuable tool easy to adapt in any situation where landscape connectivity is concern. The feedback collected from international experts through this workshop will improve the CSOPs and the Handbook of best practices and will also promote the approach outside SaveGREEN's geographical range.

KEYWORDS: Cross-sectoral operational plans, Structural and functional connectivity, Landscape approach, General threats and objectives, Matrix of problems, Collection of integrated solutions, Stakeholder engagement, SaveGREEN.

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IENE

Infrastructure & Ecology Network Europe

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#2 Improving habitat connectivity: Developing best practice guidance and structural re-design of the Animex Wildlife Bridge for dormice in the UK – Darrelle Moffat, Steve Bega, Ian White

#3 A multi-taxa approach to habitat connectivity modeling in the Terai Arc Landscape of Nepal: implications for road upgrading – Clara Grilo, Bhuvan Keshar Sharma, Babu Ram Lamichhane, Anthony P Clevenger

#4 Comparing the spatiotemporal variation of crossing and collision positions by roe deer, *Capreolus capreolus* – Johanna Märtz, Falko Brieger, Martin Strein, Manisha Bhardwaj

#5 A large-scale analysis reveals unimodal and U-shaped effects of traffic volume on roadkill probability – Dror Denneboom, Avi Bar-Massada, Assaf Shwartz

#6 Human footprint and mountain lion territory use in human-dominated landscapes – Rafael Barrientos, Winston Vickers, Travis Longcore, Eric Abelson, Justin Dellinger, Dave Waetjen, Bruce Markman, Fraser Shilling

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#8 Multiuse overpasses as crossing structures for wild animals – the role of human disturbance – Ida Anomaa, Milla Niemi

#9 Permeability of highways in Croatia for large carnivores – Djuro Huber

#10 Assessing and Mitigating the Impacts of Road Projects on Soil – The RoadSoil Project – Hans Martin Hanslin, Tim Geiges, Attila Nemes, Maria Dietrich, Monica Jayesingha, Loraine Ten Damme, Lorena Chagas Torres, Teodora Todorcic Vekic, Silvia Tobias, Thomas Keller, Trond Knapp Haraldsen

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#17 Road alteration of species interactions – Pablo Quiles Tundidor, Rafael Barrientos Yuste

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#20 Mainstreaming biodiversity in transport infrastructure management thanks to sensor-based data collection: future trends according to the BISON project – Sylvain Moulherat, Manon Teillagorry, Frédéric Jehan, Yannick Autret, Luis Fernandez, Alfred Figueras, Lorenzo Franzoni, Enric Miralles, Andreas Seiler, Jordi Solina, Pinar Yilmazer

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#23 A Strategy and Actions for Biodiversity Conservation on European Railways – Richard Pywell, Jeff Ollerton, Pinar Yilmazer, Thomas Schuh, Michael Below

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#26 Coupling connectivity modeling, roadkill hotspots and expert-opinion to reduce barrier effects of transport infrastructures – Céline Clauzel, Simon Tarabon, Claire Godet

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#3 A Global Assessment of the Impact of Scavengers in Roadkill Persistence – Harriet Rhodes, Fernando Ascensão, Rafael Barrientos, Miguel Clavero, Alberto García-Rodríguez, Carlos Rodriguez, Jacinto Román, Eloy Revilla, Marcello D'Amico

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#5 "Road Ecology: Synthesis and Perspectives": an upcoming book on Road Ecology – Marcello D'Amico, Rafael Barrientos, Fernando Ascensão

#6 Development of Deer Deterrent Equipment for Mitigation of Deer-Train Collisions in Japan – Minoru Shimura, Masateru Ikehata, Tomoyoshi Ushiogi

#7 Permeability of Wildlife Migration Corridors in the Beskydy Mountains – changes in land use over the last 30 years – Ivo Dostál, Marek Havlíček, Josef Svoboda, Jiří Jedlička

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#10 Identification of local factors contributing to collisions with ungulates on the Czech rail network – Vojtěch Nezval, Richard Andrášik, Michal Bíl

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#21 www.transportecology.info: A globally relevant, open access resource to share information, knowledge and experience in ecologically-friendly linear infrastructure – Katherine Aburrow, Rodney van der Ree, Steve Bega, Darryl Jones

#22 Using models and media to rank road safety in Central Brazil and support decision making – Yuri Geraldo Gomes Ribeiro, Erica Naomi Saito, Rafael Batista de Morais, Arnaud Léonard Jean Desbiez

#23 Reducing risk of wildlife-vehicles collisions in the Pyrénées-Atlantiques department: from research to implementation at scale – Céline Delacroix, Juliette Feraille, Anaïs Demagny, Didier Alard, Brice Mitsoune Ntsoude

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#4 Mobility and Biodiversity: interactions and synergies between mobility and wildlife, international projects and cooperations; Future needs of cooperation between IENE and PIARC – Elke Hahn, Lazaros Georgiadis, Yannick Autret, Lea Ballavoine, Carme Rosell, Anders Sjölund, Hildegard Meyer, Eric Dimnet

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#2 Towards a Road map for facilitating mainstreaming biodiversity into transport in South East Europe: Challenges and opportunities, transferability of existing knowledge and adaptation to the specific context – Lazaros Georgiadis, Radu Moț, Cristian-Remus Papp

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#16 Relevance and prioritization of research actions for biodiversity-friendly transport infrastructures in Europe – Denis François, Ivo Dostál, Peter Mederly, Nicolas Hette-Tronquart, Alix Aliaga

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#4 Identification of Natura 2000 sites / natural protected areas potentially affected by an infrastructure project – Silvia Borlea, Alexandra Doba, Marius Nistorescu

#7 Identifying best solutions to mitigate impacts of roads on large carnivores: a multi-stakeholder approach – Carme Rosell, Annette Mertens, Simone Ricci, Marina Torrellas, Luis M Fernández, Fabio Papini

#12 A discussion on the registration of Animal-Vehicle collisions – Marieke Severijns, Adam Hofland

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#15 Roadside Animal Detection Systems / Wildlife Warning Systems: Different names but the same goal – A workshop to bring together global experiences in warning drivers of wildlife near the roads – Manisha Bhardwaj, Mattias Olsson, Michele Deis, Falko Brieger

INTEGRATED SOLUTIONS FOR ECOLOGICAL CONNECTIVITY

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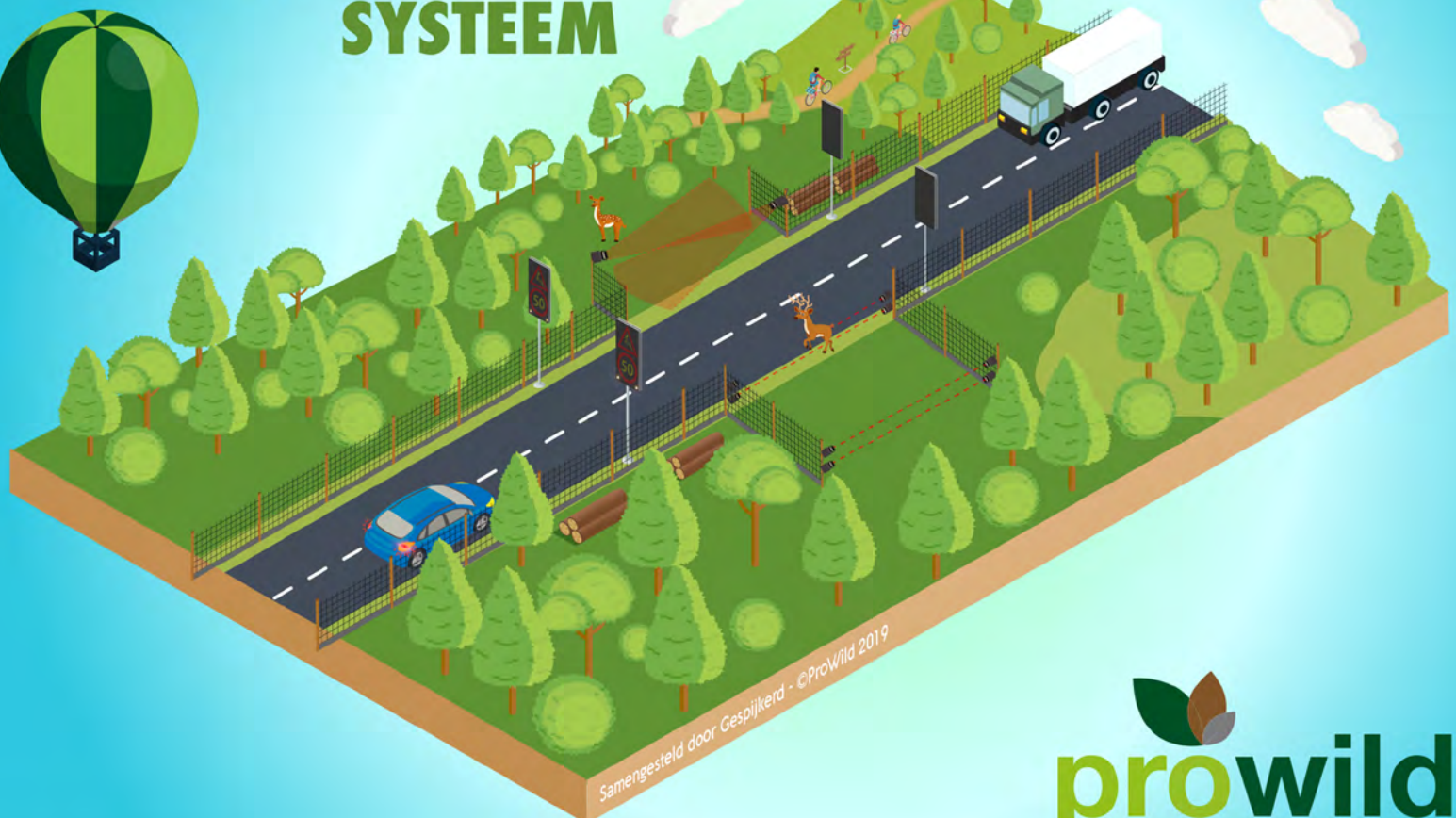

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