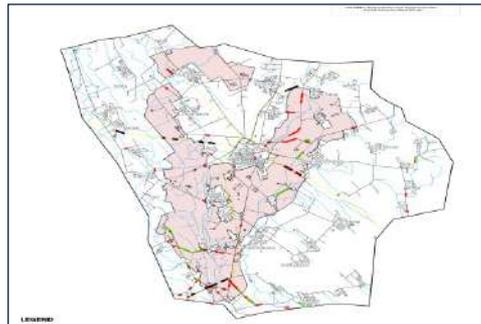
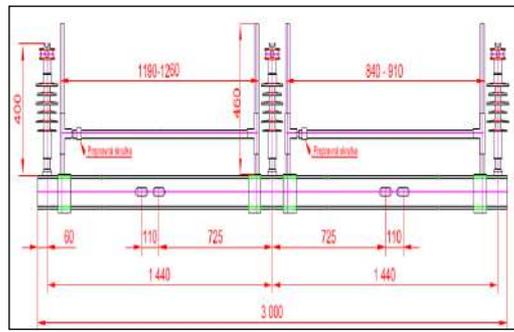


Electrocution mortality & solutions

European practices overview

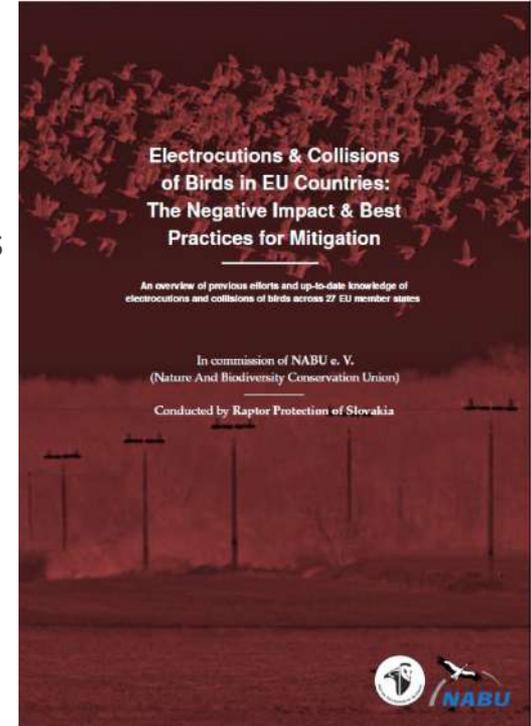


Marek Gális, Scientific coordinator
Raptor Protection of Slovakia



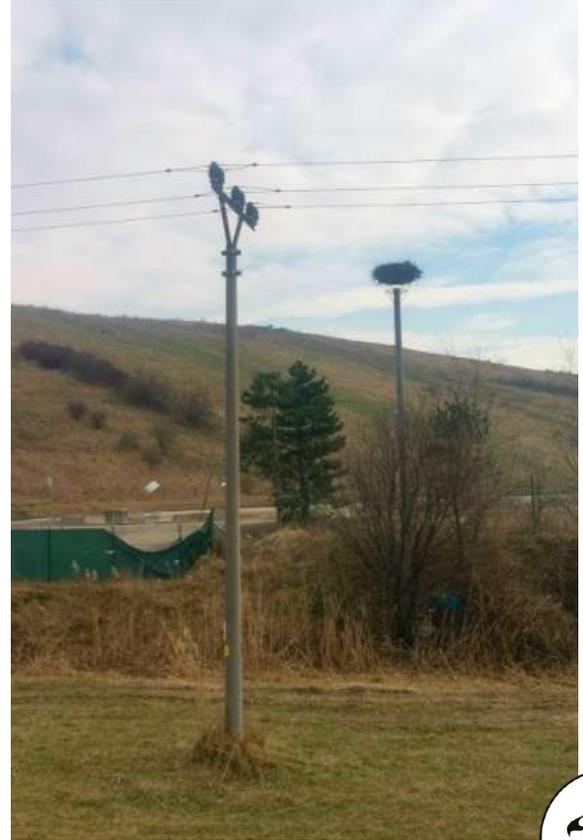
Background

- Important topic – ecological barrier, risk of electrocution & collision
- Different technical solutions and levels of knowledge
- Cooperation, before/after studies, data sharing
- Questionnaire ⇒ Electrocutions & Collisions of Birds in EU Countries



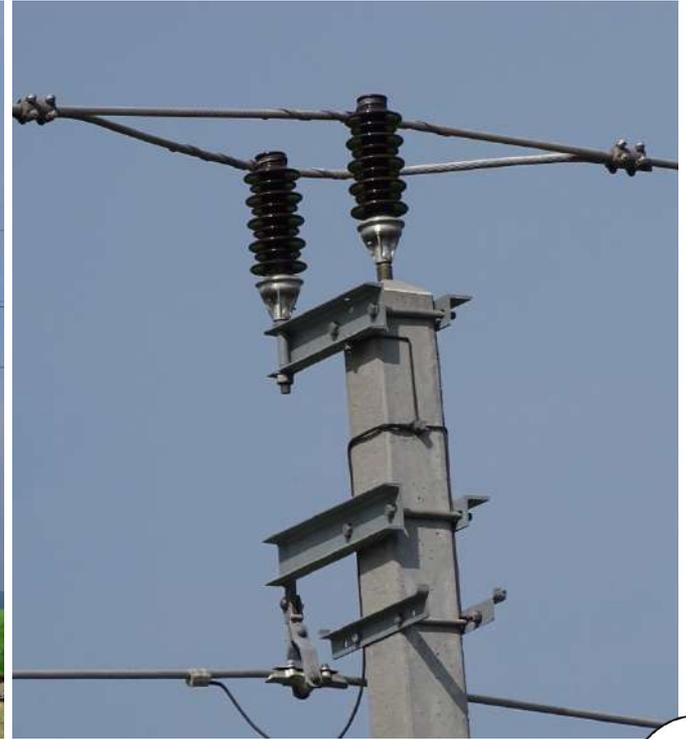
Mortality risk

- Medium voltage lines < 45 kV
- Technical construction
- Similarity/dissimilarity of design
- Morphological aspects
- Importance of area, species composition, proximity of nests....



Mortality risk

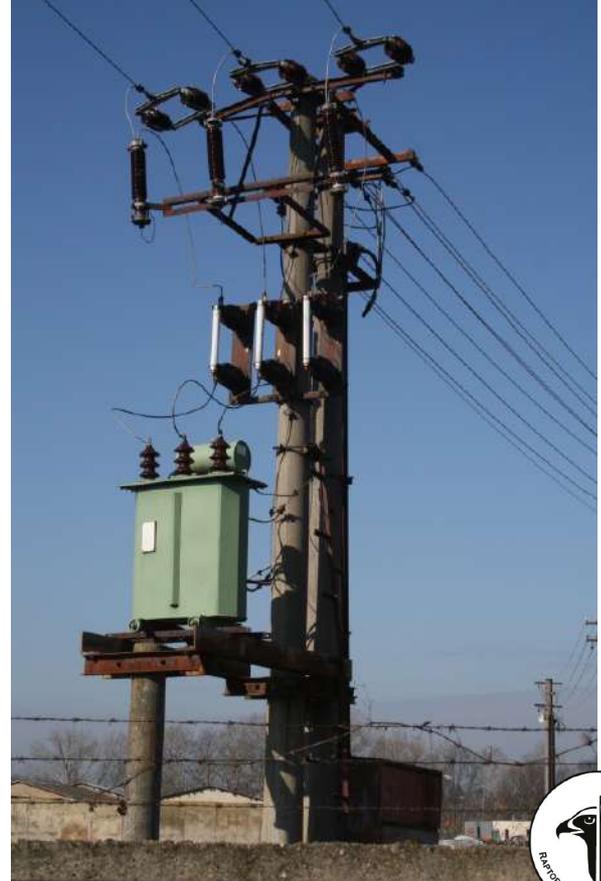
Austria



Mortality risk



Mortality risk



Mortality risk



7



Practical solutions

- 50.000- 60.000 €/km



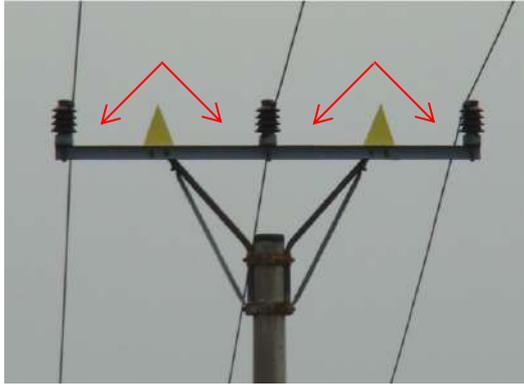
Practical solutions

- Variety of cost-effective solutions
- Preventative – corrective – mitigating measures
- Effective/ineffective solutions
- Lack of data, insufficient systematic survey
- Technical standards

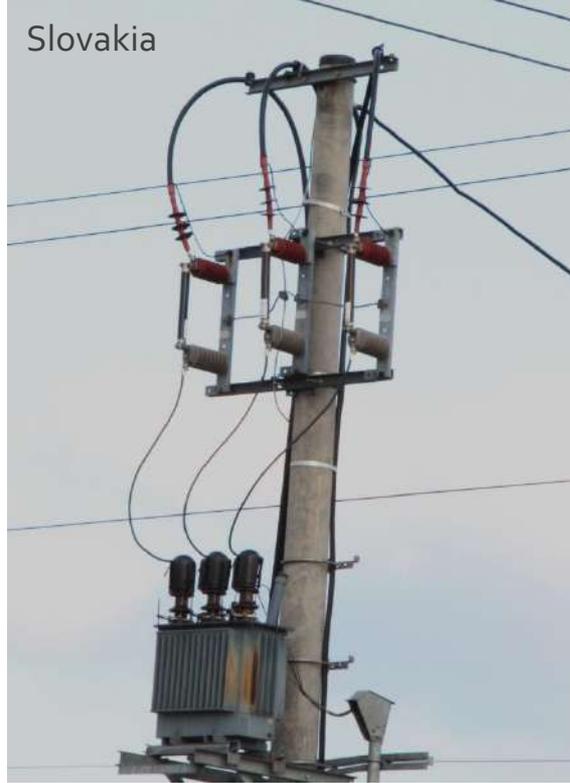


Anti-perching devices

Slovakia



Covering and insulating elements



Covering and insulating elements

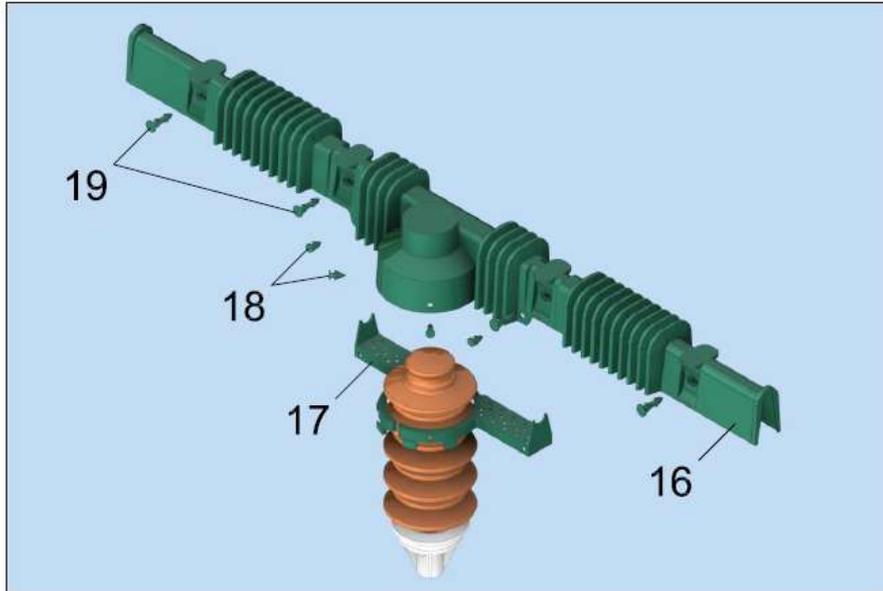


Credit: EDG WEST, Bulgaria



Covering and insulating elements

Beispielhafte Darstellung am Stützisolator:



Covering and insulating elements



Covering and insulating elements



Hungary



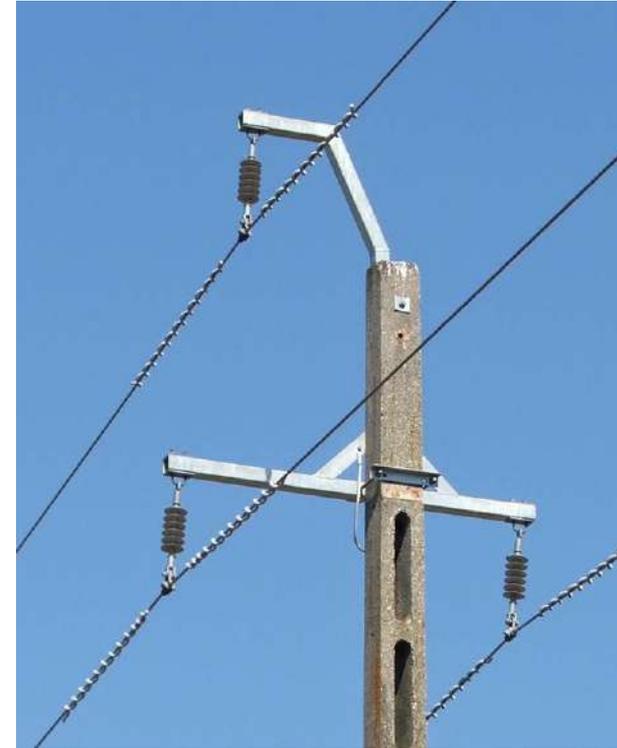
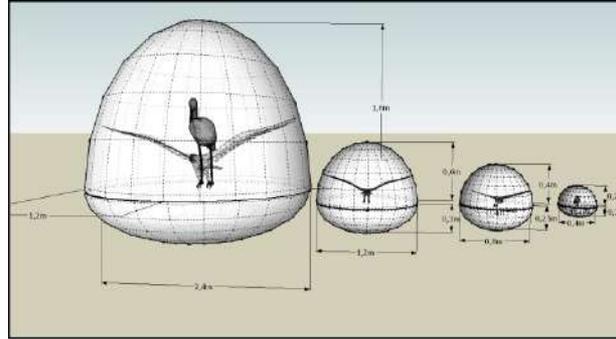
Modification of supports



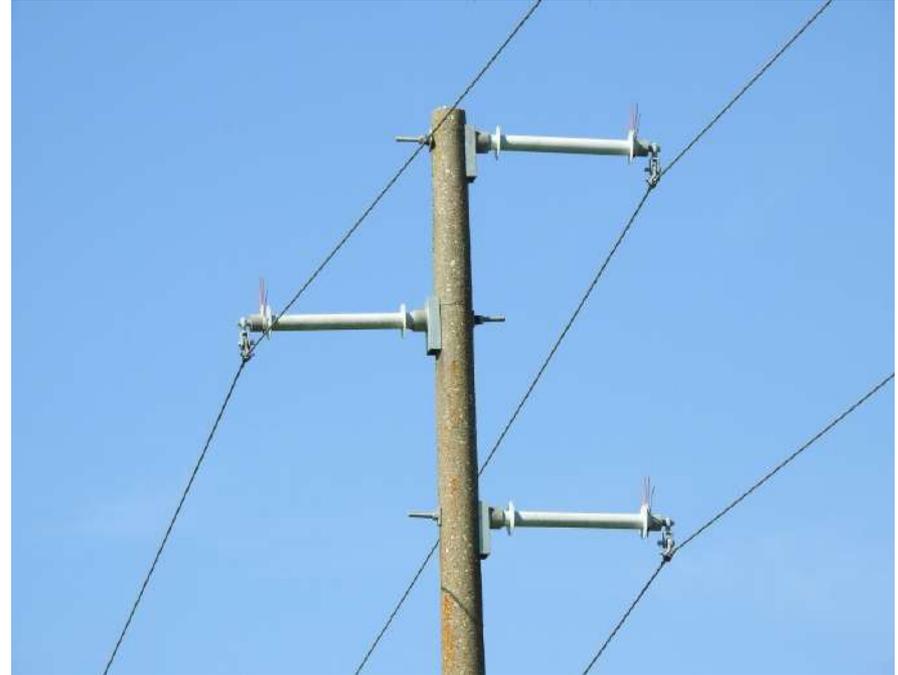
Slovakia

Modification of supports

Credit: Szabolcs Solt, MME Hungary



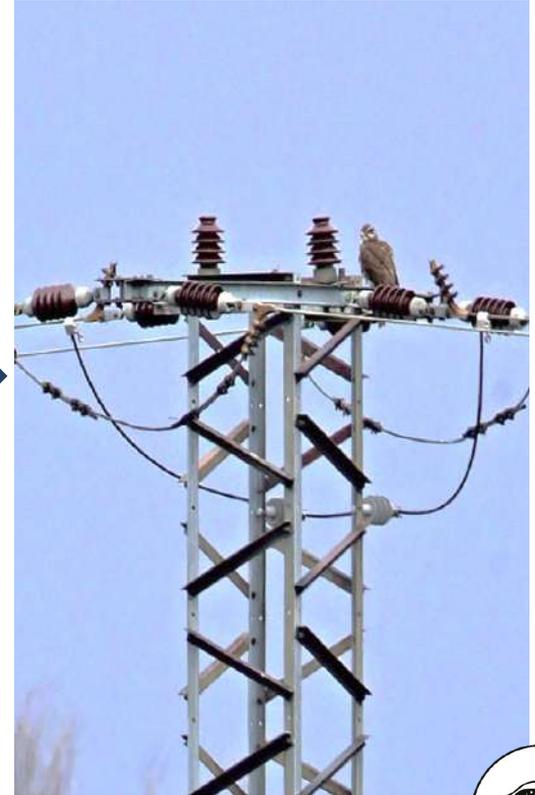
Modification of supports



Credit: EDG WEST, Bulgaria



Modification of supports



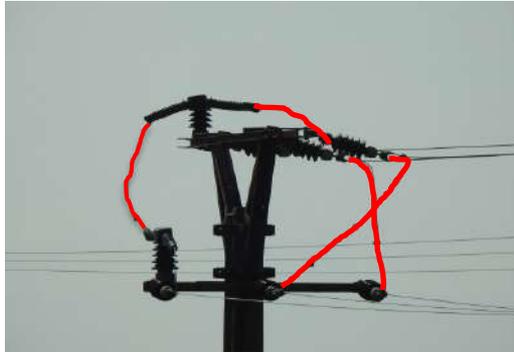
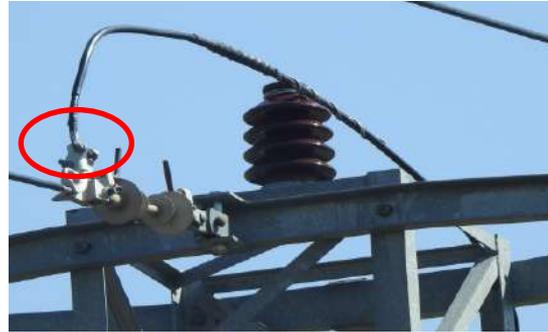
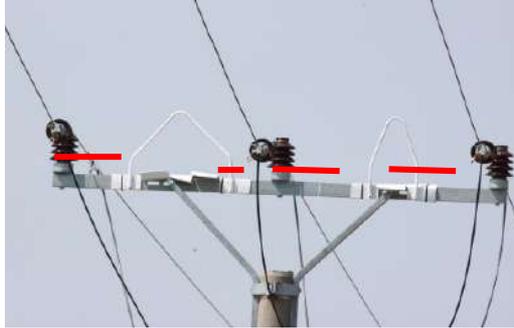
Slovakia



Proper of instalation

- Use of poor-quality or non-durable materials
- Poor installation
- Non-insulated live parts on supports

Slovakia



Proper of instalation

- Use of poor-quality or non-durable materials
- Poor installation
- Non-insulated live parts on supports



Proper of instalation

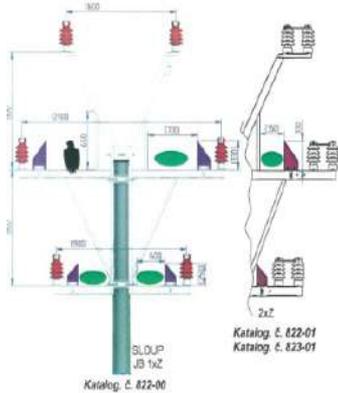


National regulation - legal obligation - guidelines

- Yes/no
- EIA procedures
- Rules, nature protection law, nature conservation authorities
- Cooperation + internal policy and guidelines of DSO,
- Methodological guidelines, memorandums, agreements , LIFE projects
- *"Everybody who builds or reconstructs voltage lines has to apply efficient protective measures to protect birds from being killed by electrocutions"*



Výstavba a opravy od napätí 20 kV a viac v súlade so smernicou Zákona 19/2003	
	<p>Bezpečné odľahčenie a) Bezpečné odľahčenie liniek napätím a akceptovaním, ktoré neodporúčajú zmeny napätia.</p>
	<p>Bezpečné odľahčenie b) Bezpečné odľahčenie liniek napätím a akceptovaním, ktoré neodporúčajú zmeny napätia.</p>
	<p>Bezpečné odľahčenie c) Bezpečné odľahčenie liniek napätím a akceptovaním, ktoré neodporúčajú zmeny napätia.</p>
	<p>Bezpečné odľahčenie d) Bezpečné odľahčenie liniek napätím a akceptovaním, ktoré neodporúčajú zmeny napätia.</p>

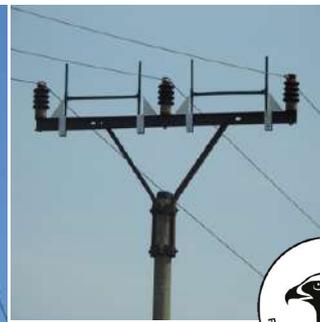
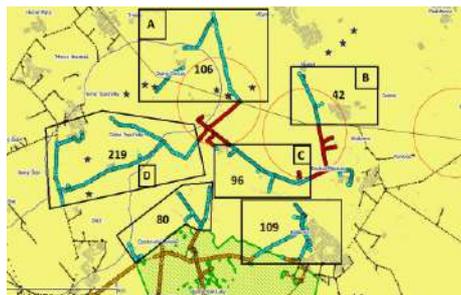


LIFE Danube Free Sky

DANUBEFREESKY.EU



- 15 Project Partners from 7 European countries (including 5 DSO + 3 TSO)
- Project Area: 25 Special Protection Areas and 9 Important Bird Areas
- Conservation of birds – elimination of risk of collisions with power lines and electrocution

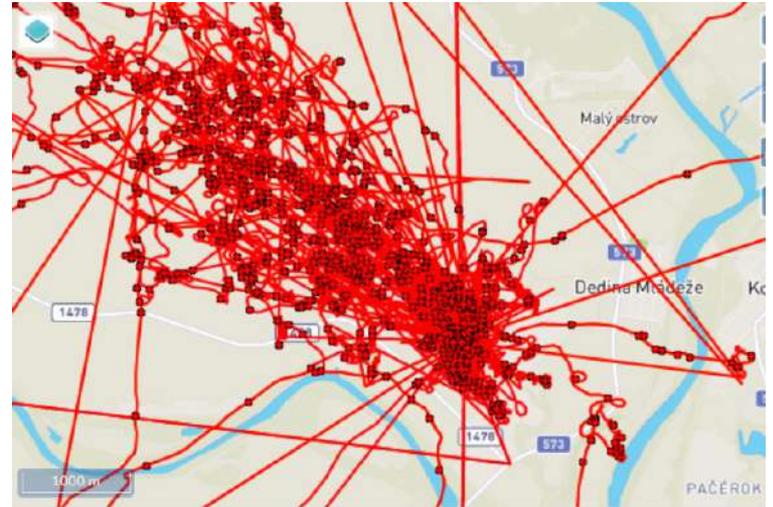
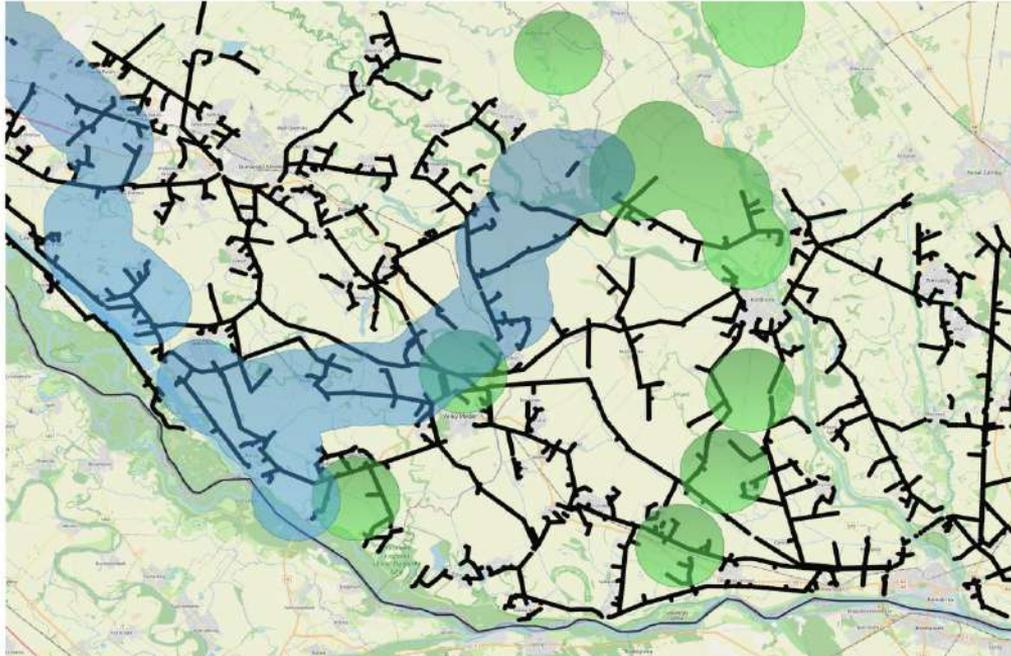


LIFE Danube Free Sky

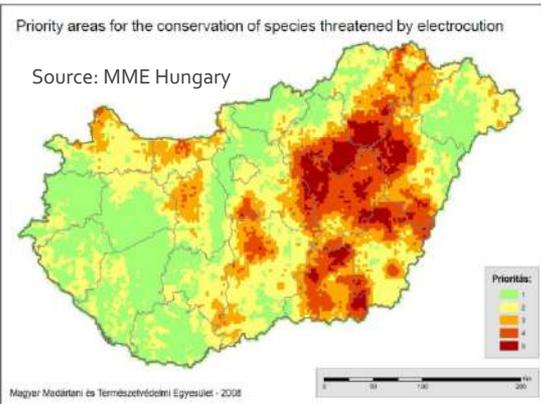


DANUBEFREESKY.EU

Slovakia > 800



Recommendation



THANK YOU FOR YOUR ATTENTION!



This presentation was prepared under the project LIFE Danube Free Sky – Transnational conservation of birds along the Danube river (LIFE19 NAT/SK/001023). Project has received funding from the LIFE Programme of the European Union.



Marek Gális
Raptor Protection of Slovakia
Scientific Coordinator
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Collision mortality & solutions

European practices overview



Marek Gális, Scientific coordinator
Raptor Protection of Slovakia

Mortality risk



Mortality risk



Mortality risk

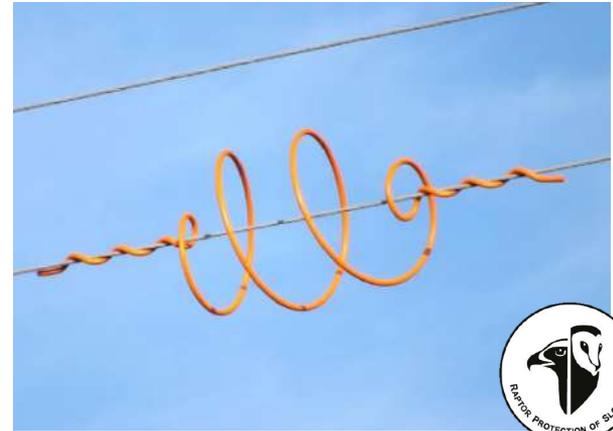


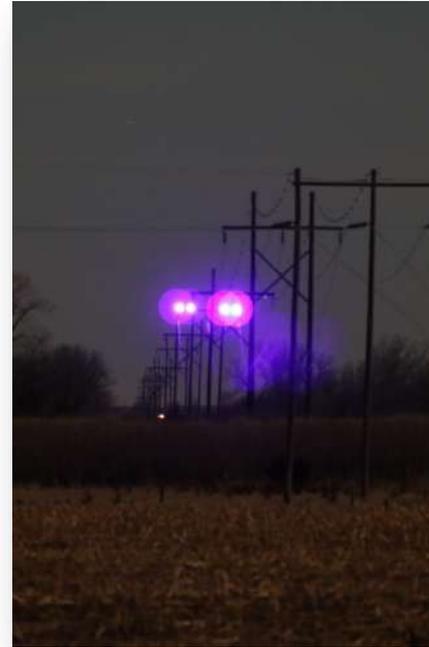
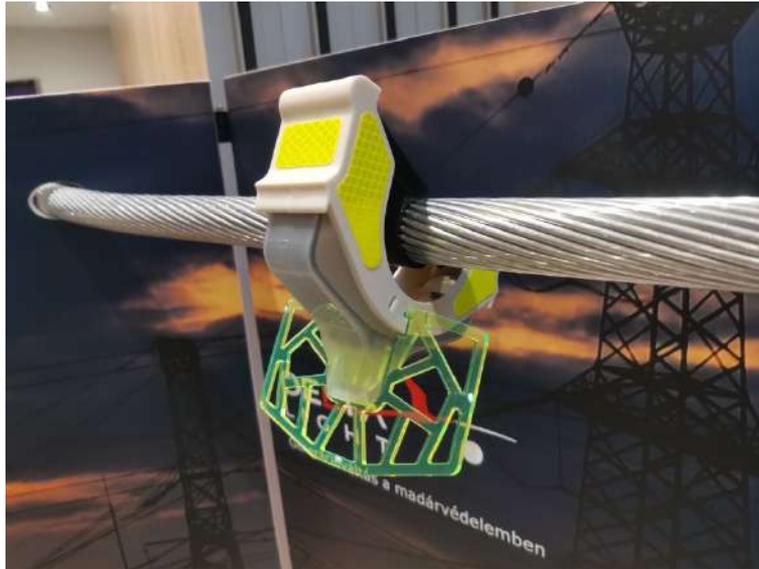
Practical solutions

- Variety of cost-effective solutions
- Preventative – corrective – mitigating measures
- Effective/ineffective solutions
- Lack of data, insufficient systematic survey
- Technical standards



Practical solutions



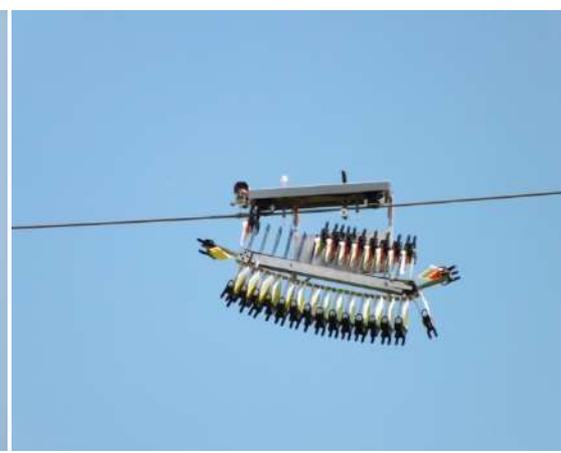


Credit: James Dwyer









Drone – 200 FFs/day
Stick/ground – 50 FFs/day





FireFly

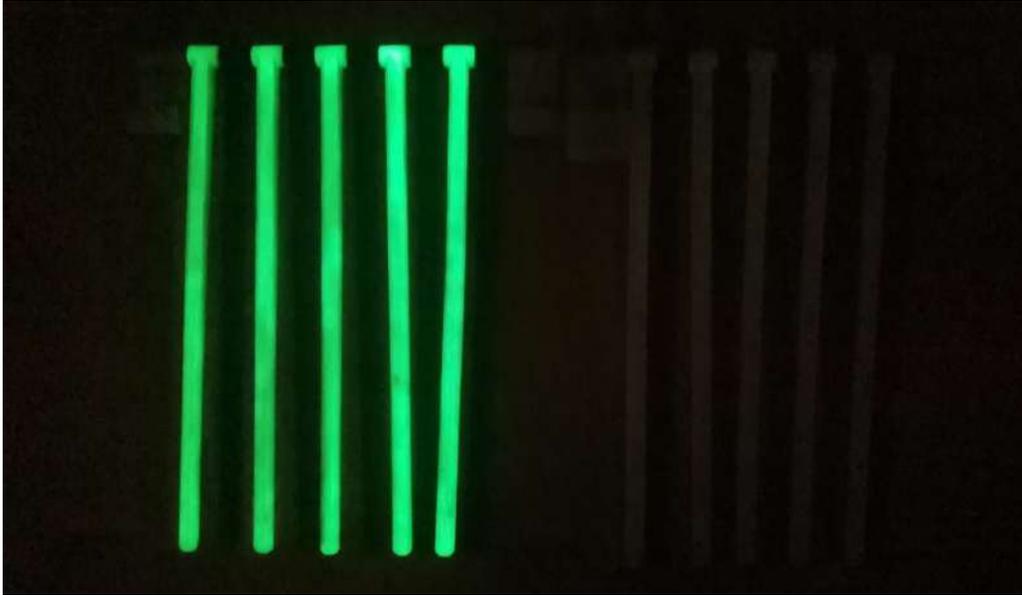


CrocFast



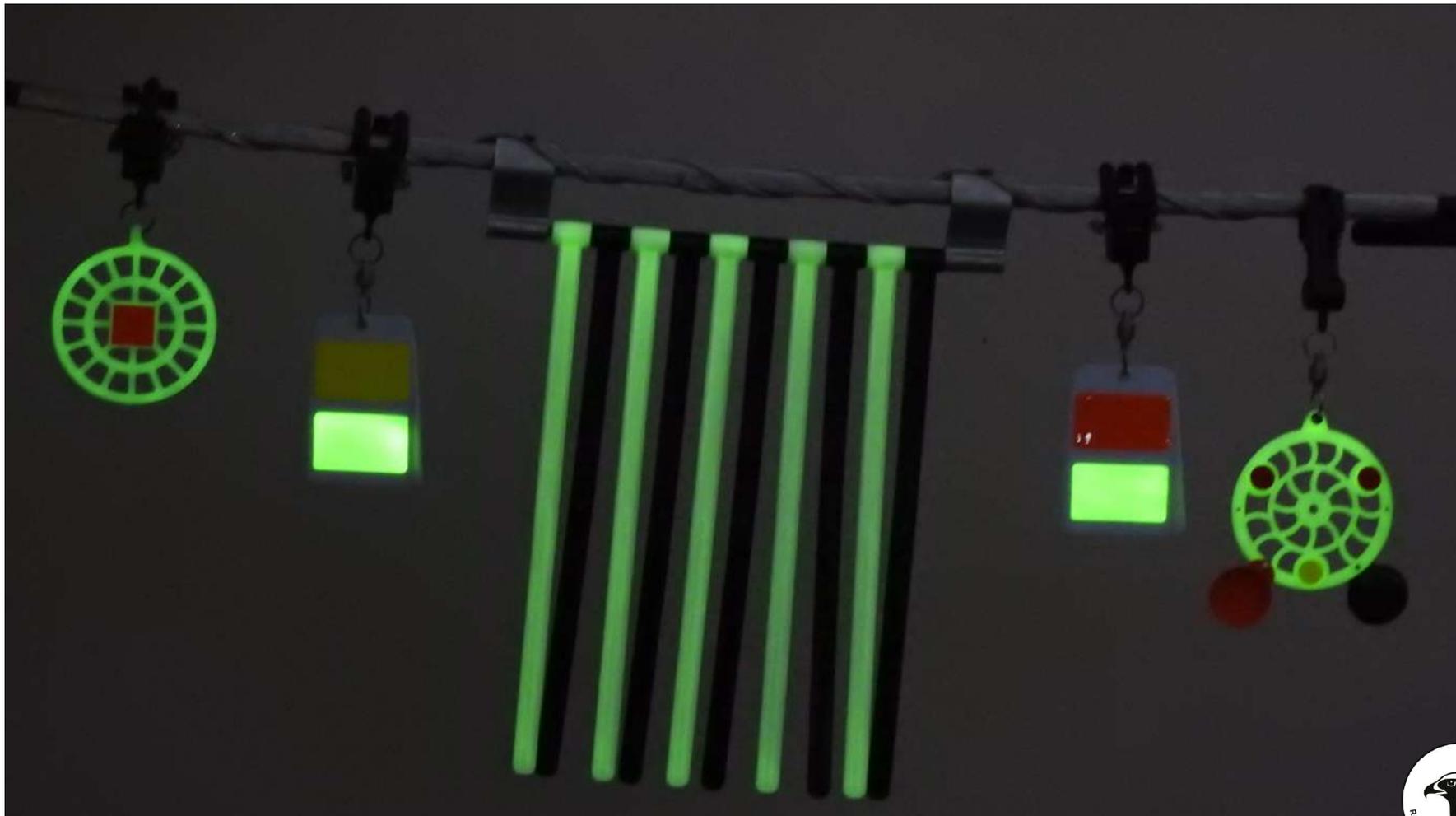
RIBE lamellas

Practical solutions



Credit: MAVIR, Hungary





- Up to 110 kV!!!
- Shield/earth wire



Corona effect



Slipping of diverters



Croatia





Slovakia

Fading of color



LIFE Danube Free Sky

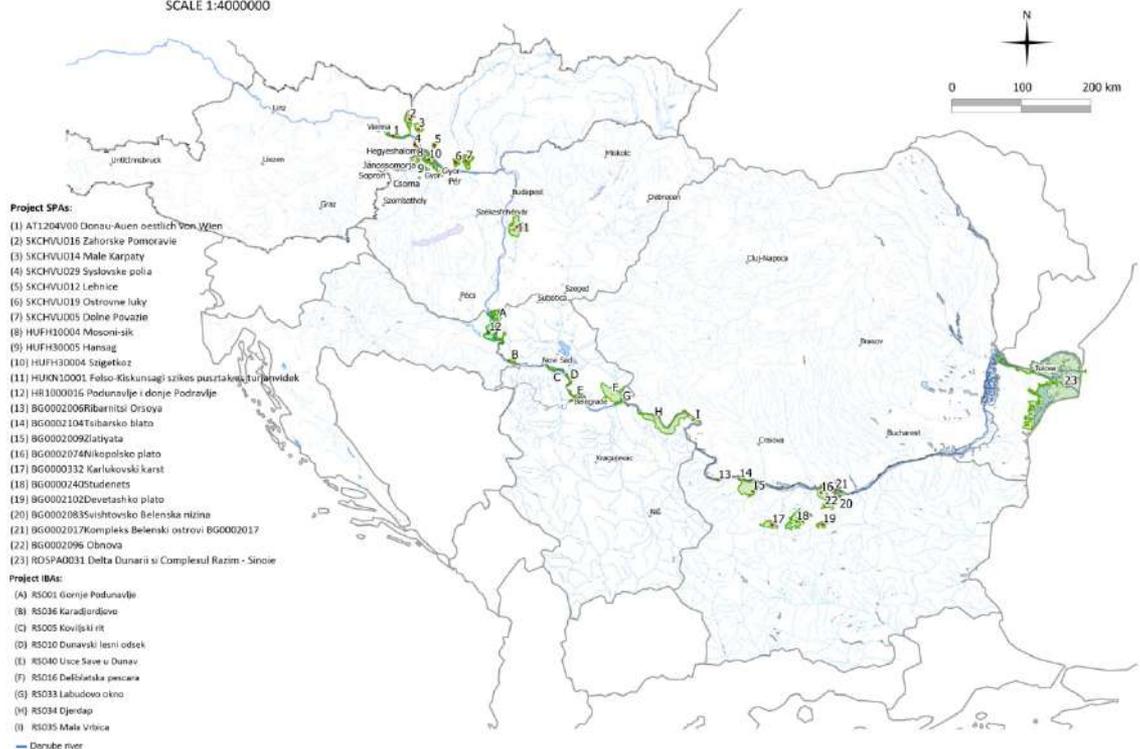
DANUBEFREESKY.EU



MAP OF THE COUNTRY LOCATION OF THE PROJECT SPAs and IBAs

SCALE 1:4000000

LIFE19 NAT/SK/001023 DANUBE FREE SKY



“We make the power lines along the Danube river safe for birds”

LIFE Danube Free Sky



DANUBEFREESKY.EU



LIFE Danube Free Sky



šeps

Slovenská
elektrizačná
prenosová
sústava

400 kV – 70 km



Co-funded by
the European Union



NATURA 2000

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LIFE Danube Free Sky

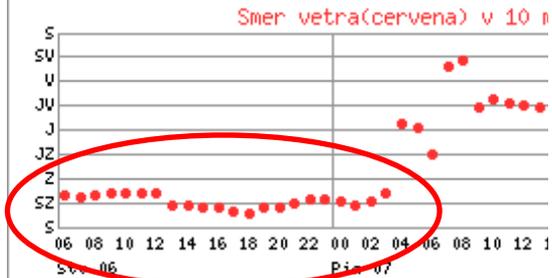
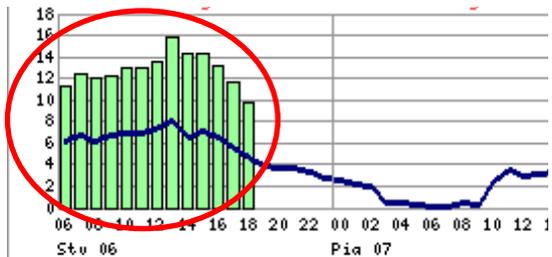


Recommendation

- Monitoring and reporting of collisions
- Scavengers







2017 (c) NWP, SHMU, www.shmu.sk - model:







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