

Birds and powerlines in Czechia - threats and possible solutions

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NATURE IS OUR HERITAGE
AND OUR FUTURE

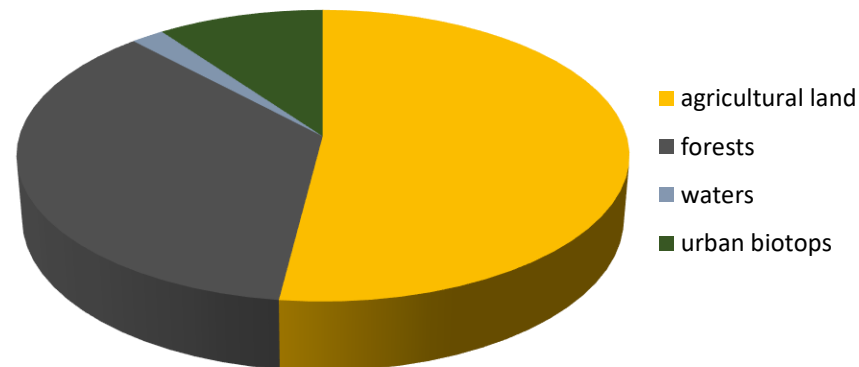
Czechia - Հայաստան

Area 78.866 km²

Altitude from 115 m a.s.l to 1603 m a.s.l.

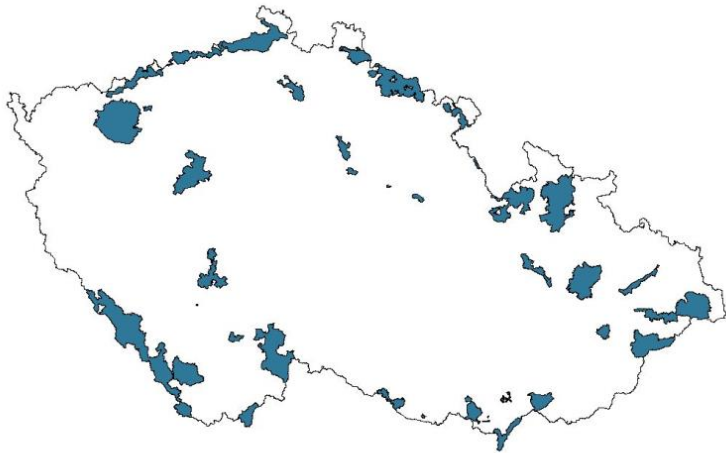
52% farmland, 36 % forest, 2% water, 10% settlements

Population 10.870 mil., density 134 / 100 km² (2023)

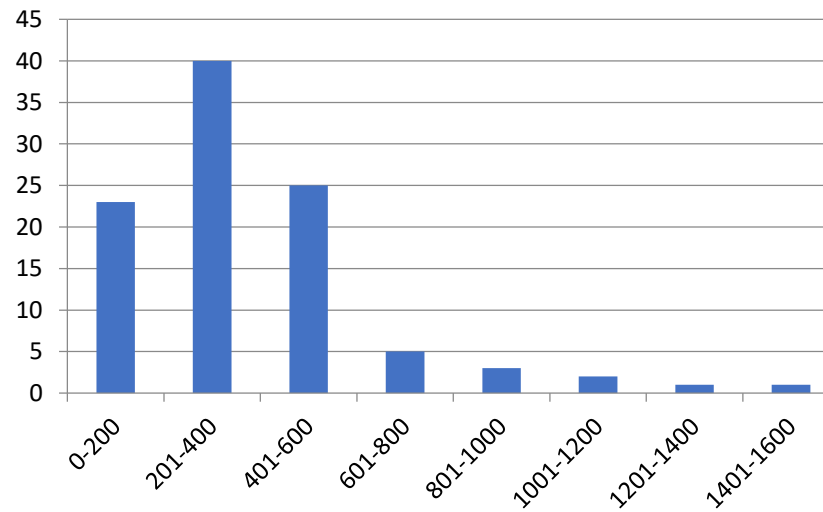


Czechia - Չեխիա

4 national parks (1.5%), 26 protected landscape areas (13.6%),
41 special protected areas - SPAs (ca 9% of the area)



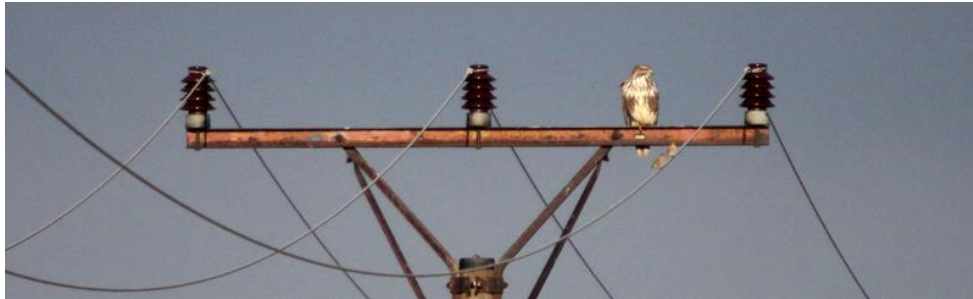
Altitude



- 75.000 km of medium voltage power lines (22kV, 35 kV)
- i.e. ca 750.000 pylons
- ca 400 bird species (35 raptor species, 19 of them breeding)

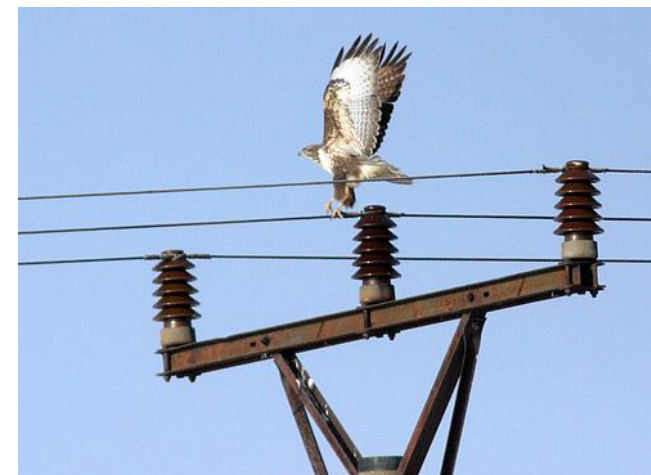
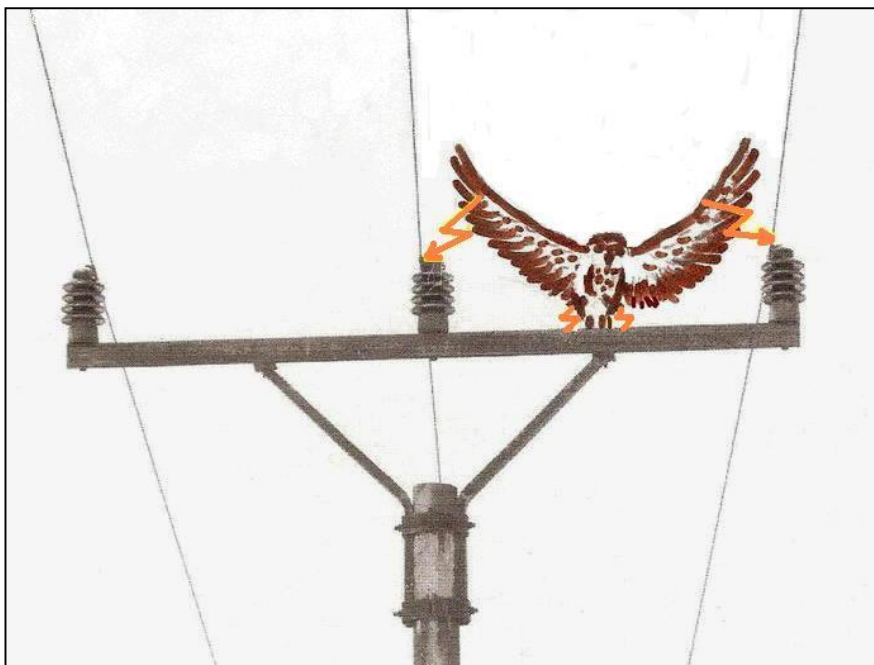
Birds and powerlines

Estimated more than 100 thousand birds (esp. birds of prey) die every year on power lines in the Czech Republic...



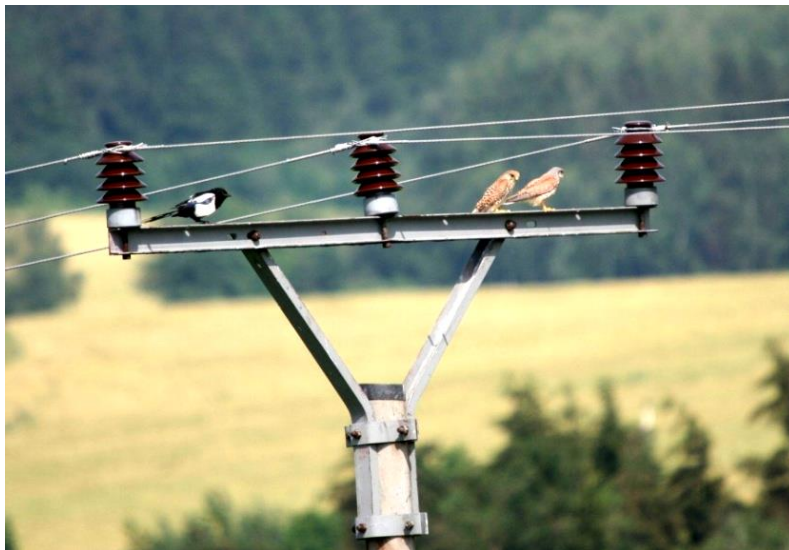
Birds and powerlines

A. Electrocution



Birds and powerlines

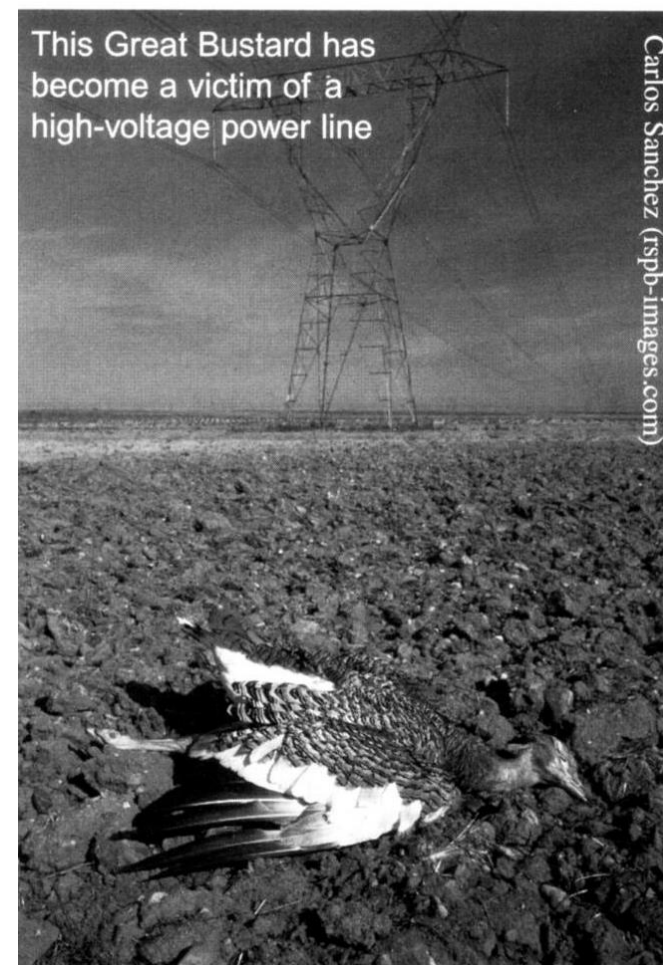
A. Electrocution



„Killer pole“

Birds and powerlines

B. Collision of flying birds with wires



Dangerous hollow power poles



Birds and powerlines - different types of injuries on different types of lines



High voltage line: **only collision** (electrocution possible in 110 kV pylons – droppings)



Midle voltage line: **electrocution and collission**



Low voltage line: **only collision** (this type is used only in build up areas – not so important)



Birds and powerlines - experience from the Czech Republic

The protection of birds on power lines was ensured by law in the Czech Republic more than 20 years ago

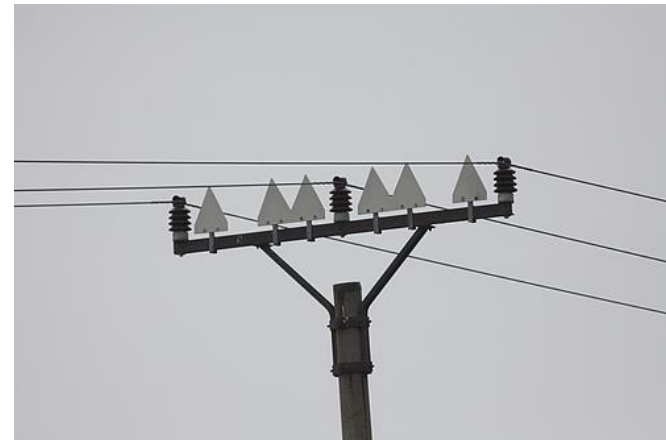
Nature Conservation Act:

Bird-safe designs must be used when **building** or **renovating** power lines

Energetic law:

The obligation to implement technical measures to protect birds on all existing middle-voltage power poles by 2024

However, legal protection itself has not solve the problem ...

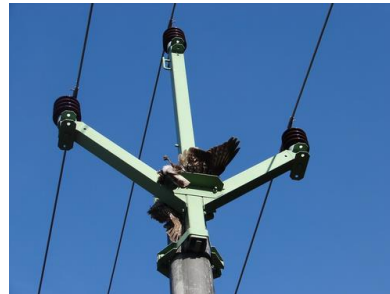
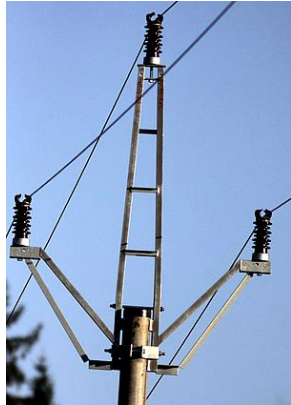


Birds and powerlines - experience from the Czech Republic

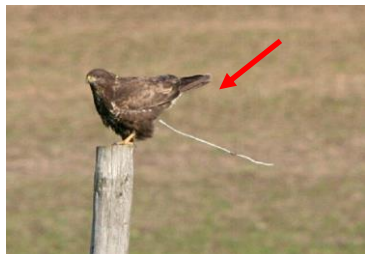
Major problem - what is a safe solution?



Many types of plastic protection have lost their function after several years.



The inclined arm console has been developed as a safe solution for birds. However, bird mortality has also been seen on this construction.

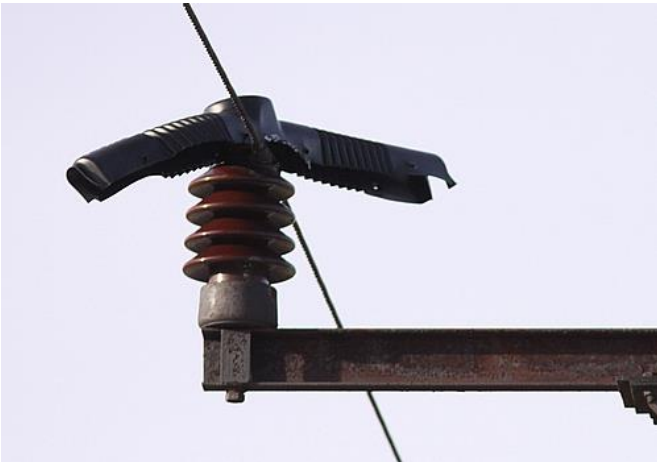
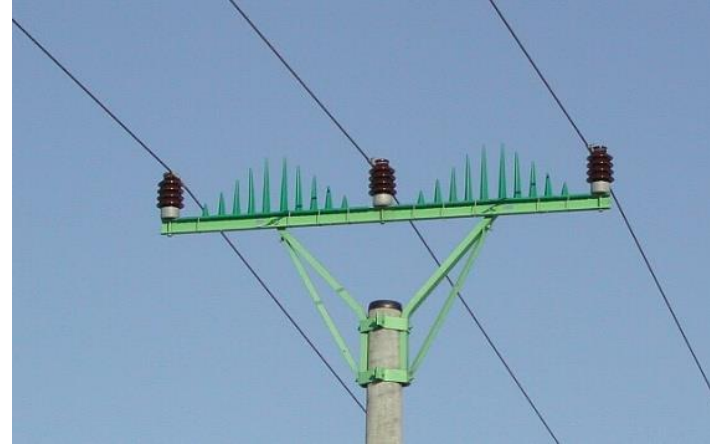


The conductors under the console seemed to be a safe solution for birds, but a sitting bird can hit the conductor with droppings ... mortality also occurs there.



Birds and powerlines - experience from the Czech Republic

Different types of protection measures were used in the past...



...a lot of mistakes and non-functional solutions...

Birds and powerlines - experience from the Czech Republic

An extensive monitoring project was initiated by the Nature Conservation Agency in 2015

- Goals:
- verify actual mortality on particular constructions
 - develop new safe solutions
 - prepare guidelines for "bird-friendly" power lines

Inspected: 6,429 km (~ 76 432 pillars)

- a total of 1,326 individuals of 69 species of birds were found
- 1,170 individuals died due to electrocution (37 species)
- 156 individuals died due to collision (52 species)

The most frequent victims:

Buteo buteo - 35%
Pica pica - 15%
Falco tinnunculus - 12%

MORTALITY ESTIMATE:

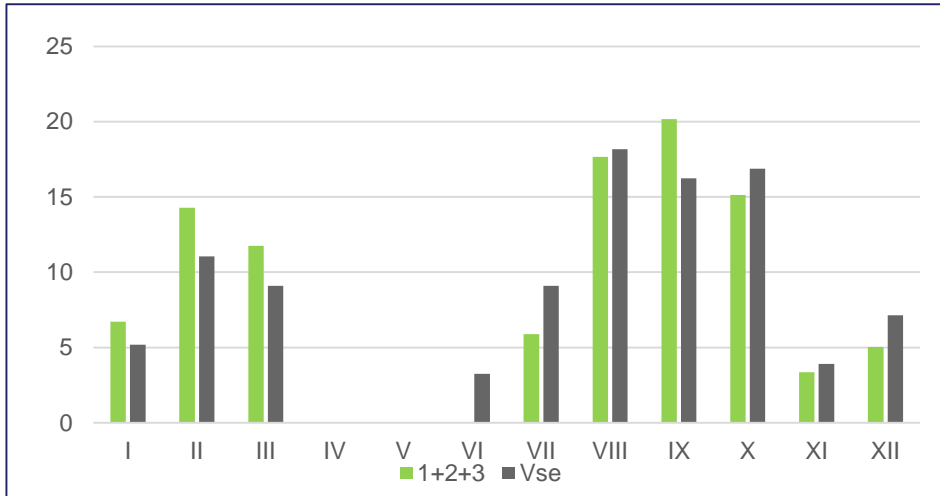
AT LEAST 117,800 OF BIRDS DIE
ON MIDDLE VOLTAGE POWER
LINES IN THE CZECH REPUBLIC
EVERY YEAR



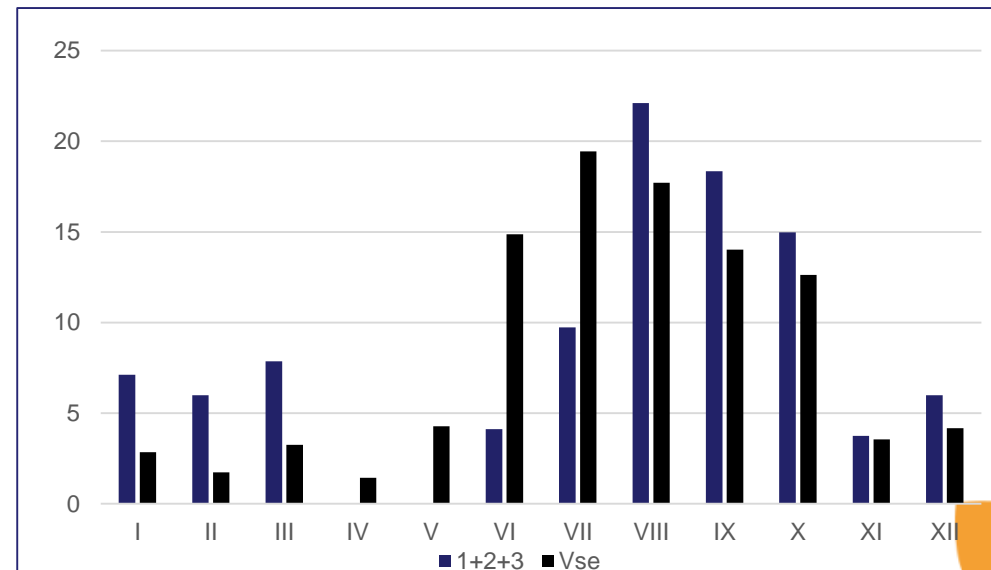
Birds and powerlines - experience from the Czech Republic

Examples of the results I - Temporal distribution of mortality

collision with wires



electrocution



Birds and powerlines - experience from the Czech Republic

Examples of the results II – Mortality depending of the power pole material

Material of the power poles	Amount	Total mortality	Relative mortality
concrete	65,850	574	0.9 %
wood	1,896	1	0.05 %
iron	8,626	146	1.7 %

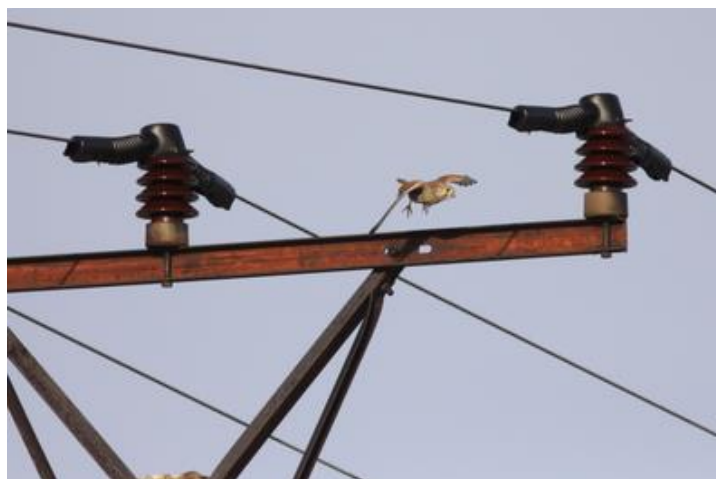
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Examples of the results III – Effect of plastic combs and covers on bird mortality

Protection	Presence of protection	Number	Mortality	Relative mortality	Result
Plastic comb	No	32,468	337	1.0 %	no significant difference
	YES	2,805	24	0.9 %	
Plastic cover	No	32,468	337	1.0 %	significant difference
	YES	3,082	12	0.4 %	



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Examples of the results IV – Role of insulator type in mortality

Type of insulator	Presence	Amount	Total Mortality	Relative mortality	Result
hanging down	No	64,391	495	0.8 %	significant difference
	Yes	2,007	6	0.3 %	
vertical up	No	11,366	61	0.5 %	significant difference
	Yes	55,032	440	0.8 %	
horizontal	No	62,686	476	0.8 %	no significant difference
	Yes	3,712	25	0.7 %	

Note: Power poles with combination of insulators were excluded from the evaluation



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Examples of the results V – The most dangerous power poles

1 buzzard, 5 kestrels, 4 black birds



1 buzzard, 1 kestrel, 6 pigeon



5 buzzards 1 kestrel



4 kestrels, 1 magpie, 1 crow



5 kestrels, 1 magpie



Birds and powerlines - experience from the Czech Republic

Systematic monitoring and close cooperation between biologists and power line operators is an essential condition for finding a satisfactory solution

The results of the monitoring helped us to clarify the degree of safety of the power pole types, the particular structures and efficiency of the protective measures.

Based on this assessment, a catalogue of safe solutions was developed. The catalogue contains recommendations for:

- new construction and reconstruction
- types of protective measures for existing lines

Official agreement: Powerlines operators use only the structures approved by the Nature Conservation Agency !!!



Birds and powerlines: possible use of Czech experience for Armenia

- It is not possible to take over the solution of particular types of bird protection - each country has completely different types of construction - different voltages (and also different birds species).
- It is possible to recommend a general procedure:
 - incorporate the protection of birds on power lines into law
 - perform systematic monitoring of mortality for particular types of power poles and structures
 - solutions based on cooperation between nature conservation authorities, biologists and power line operators





Thank you for your attention.

**Շնորհակալություն ուշադրության
համար.**

