Sonic devices effectiveness in keeping wildlife off the road

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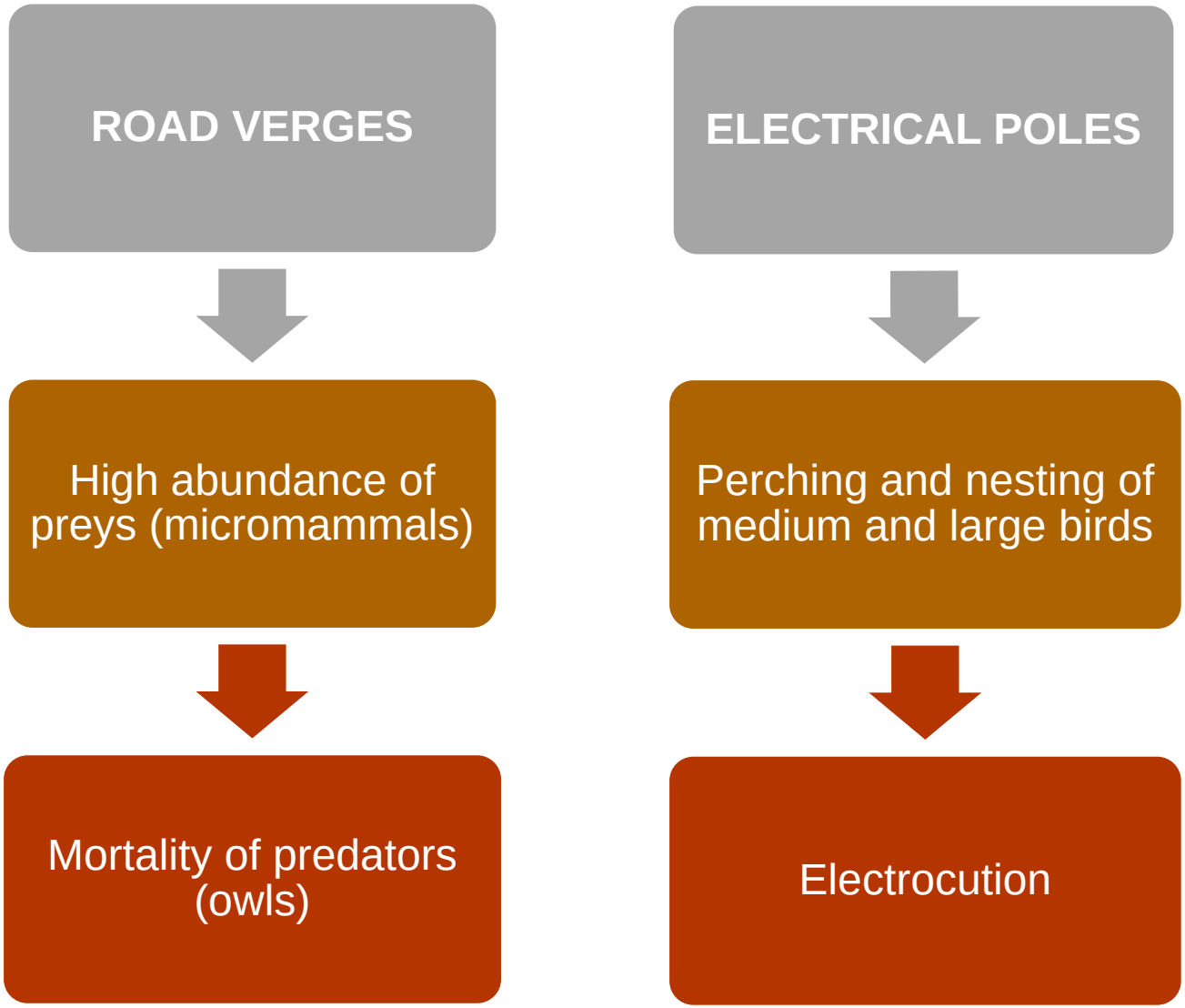

ROAD VERGES
High abundance of preys (micromammals)
Mortality of predators (owls)
ELECTRICAL POLES
Perching and nesting of medium and large birds
Electrocution

INTRODUCTION

✓ Sonic and ultrasonic devices to repel and control animal pests commercially available → not properly tested

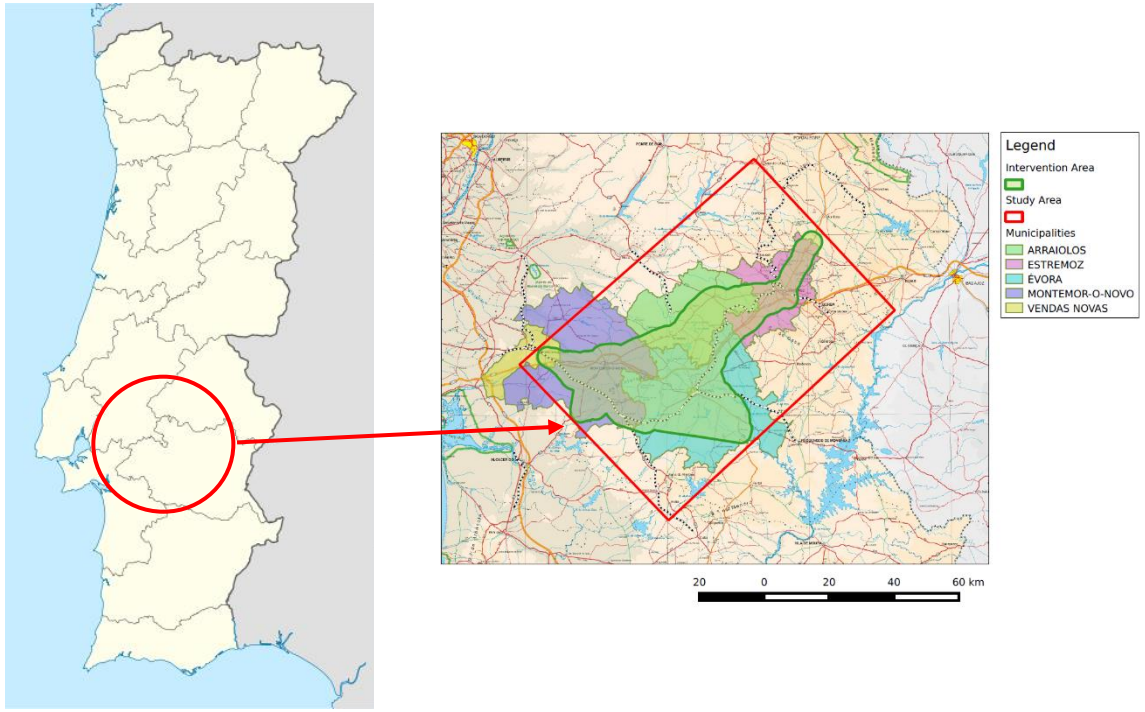
✓ High-intensity sound may cause animals pain, fear, disorientation or distress → **animal avoidance**

✓ Advantages of the use of sonic/ ultrasonic devices: economically and logistically achievable, little disturbance for people and wildlife, require little construction work and little maintenance

OBJECTIVES

Test the efectiveness of...

...an **ultrasonic** device in dissuading rodents of approaching roads and check if the effectiveness change with distance and time	...a **sonic** device in dissuading medium and large birds of approaching electrical lines	...a **camera** in monitoring the approach of medium and large birds on the electrical pole with the sonic device



1. Dissuasion device for rodents on roads

✓ Play **ultrasound** continuously

20-32 KHz
140db
30m range

✓ Tests followed a **Before-After** methodology:

60 Sherman traps along a road verge (half inside the 30m range) checked every morning

Switch on the device after 10 days of survey and repetition of tests for more 17 days

1. Dissuasion device for rodents on roads

2 species of rodents captured:

Apodemus sylvaticus

Mus spretus;

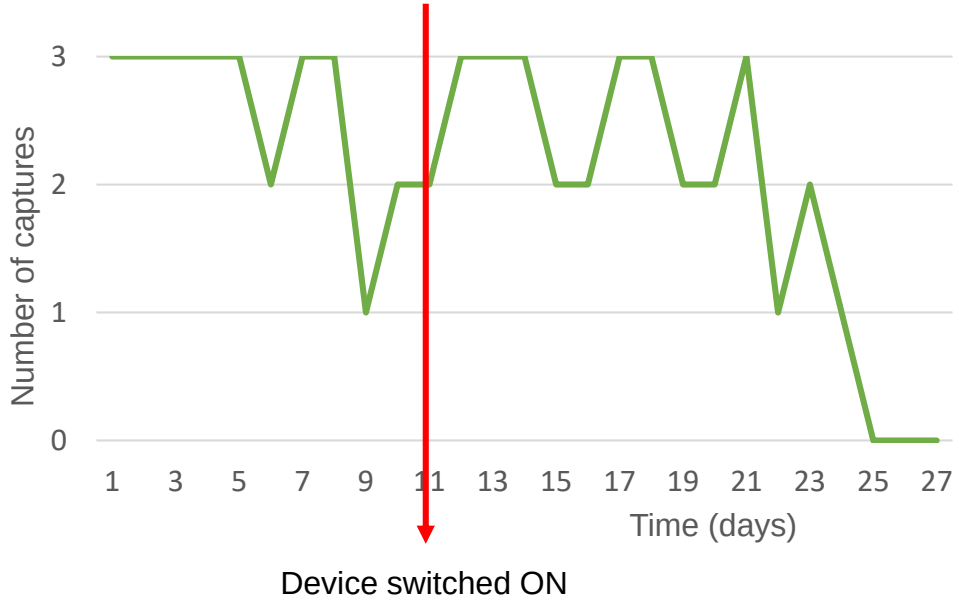
<u>10 days of survey with device **OFF** +
17 days of survey with device **ON**</u>

26 rodents with device OFF = 2,6/ day

32 rodents with device ON = 1,9/ day

1. Dissuasion device for rodents on roads

✓ Does the total number of captures in each day change over time?

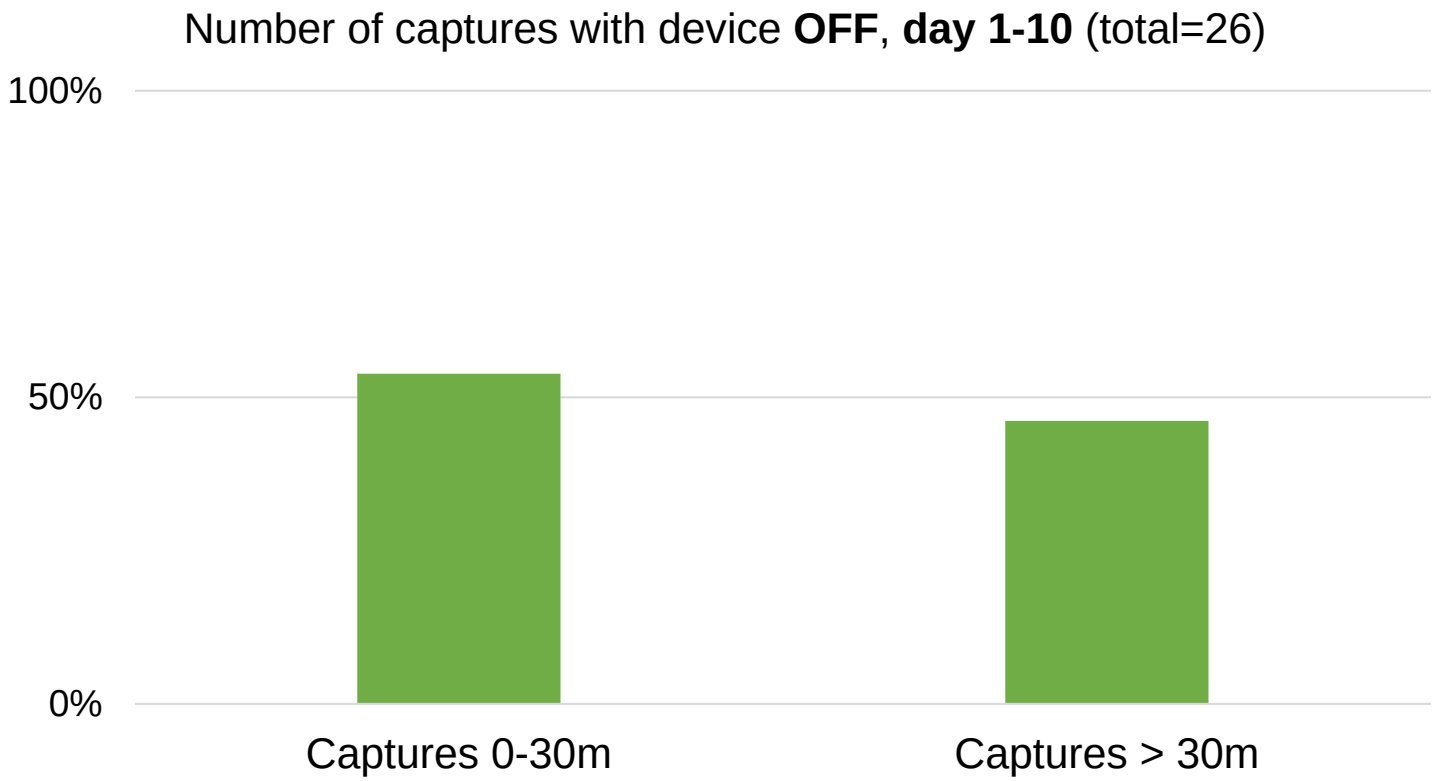


✓ Does the number of captures in each trap change over time?

Repeated measures ANOVA:
p-value = 0.0103

1. Dissuasion device for rodents on roads

✓ Do the effectiveness of the device decrease with distance and increase over time?



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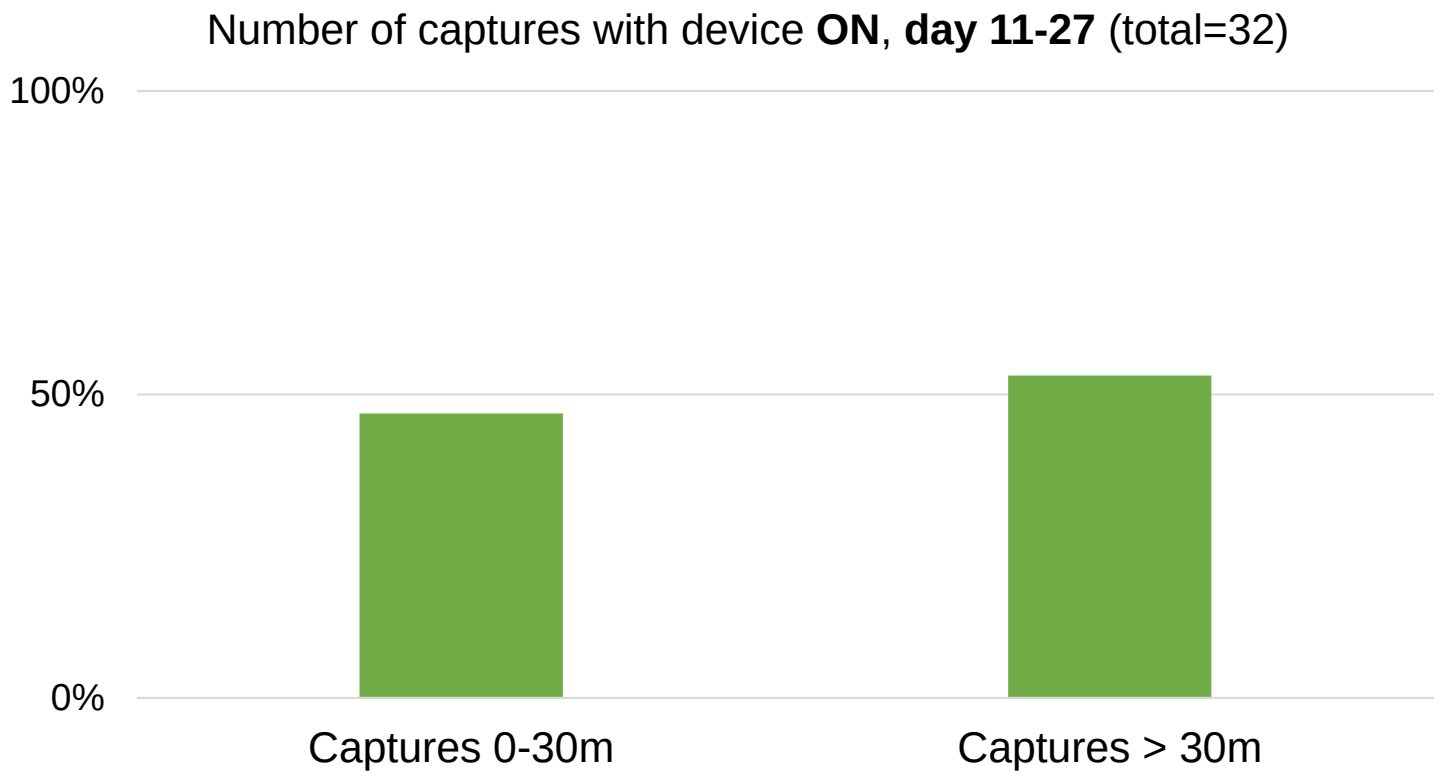

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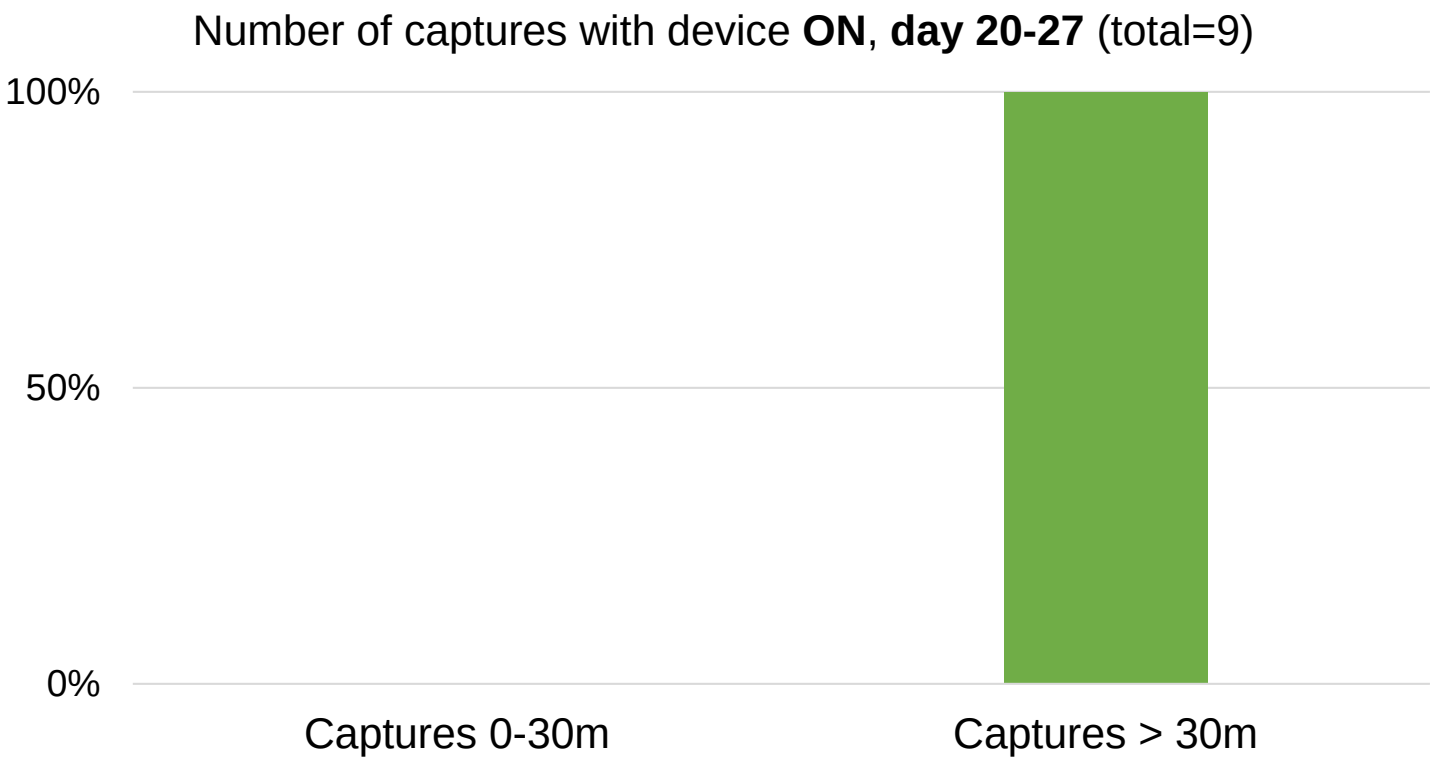


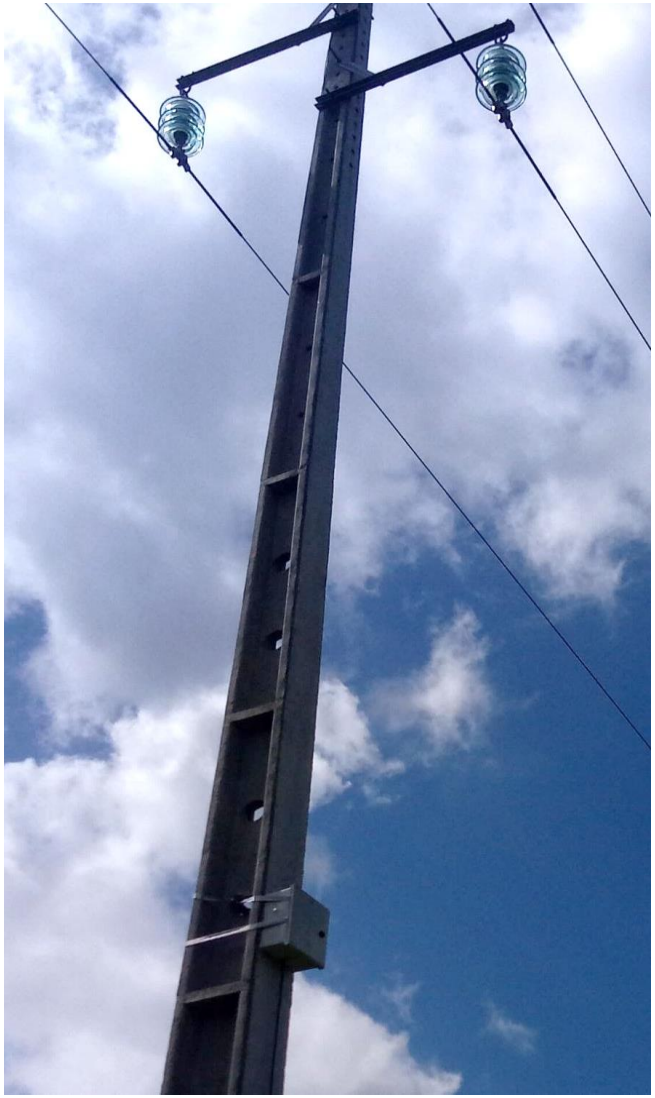
2. Dissuasion device for medium and large birds on electrical lines

- ✓ Play **audible sound** when motion is detected

- ✓ **Tests followed a Before-After** methodology:

Area surveyed for 4 hours, recording medium and large birds' landing

Switch on the device after 10 days of survey and repetition of tests for more 10 days



2. Dissuasion device for medium and large birds on electrical lines

2 medium-sized species observed:

Falco tinnunculus

Corvus corone

<u>20 days of survey</u>

13 observations with device OFF

0 observations with device ON

3. Camera for monitoring medium and large birds on electrical lines

- ✓ **Recording videos automatically** when motion is detected
- ✓ Camera installed in a pole pointed directly to the electrical pole with the dissuasion device
- ✓ Full HD resolution + Infrared emitters + Temperature sensors

CONCLUSIONS

- ✓ Rodents seem to avoid high-intensity ultrasounds after 10 days of exposure
- ✓ Long-term monitoring is necessary to analyse if the decrease of rodents' abundance on roads cause a significant decrease on owl mortality
- ✓ Loud audible sounds seem to dissuade the approach of birds on electrical lines
- ✓ Further research is necessary to address the rodents' and birds' capacity of adaptation to the ultrasound/ audible sound device

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Thank you!