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Department of Nature Conservation Zoology  
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# **The moving pattern and short-term survival of Hooded crow in an urban environment**

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**Sofia, 14.06.2018**

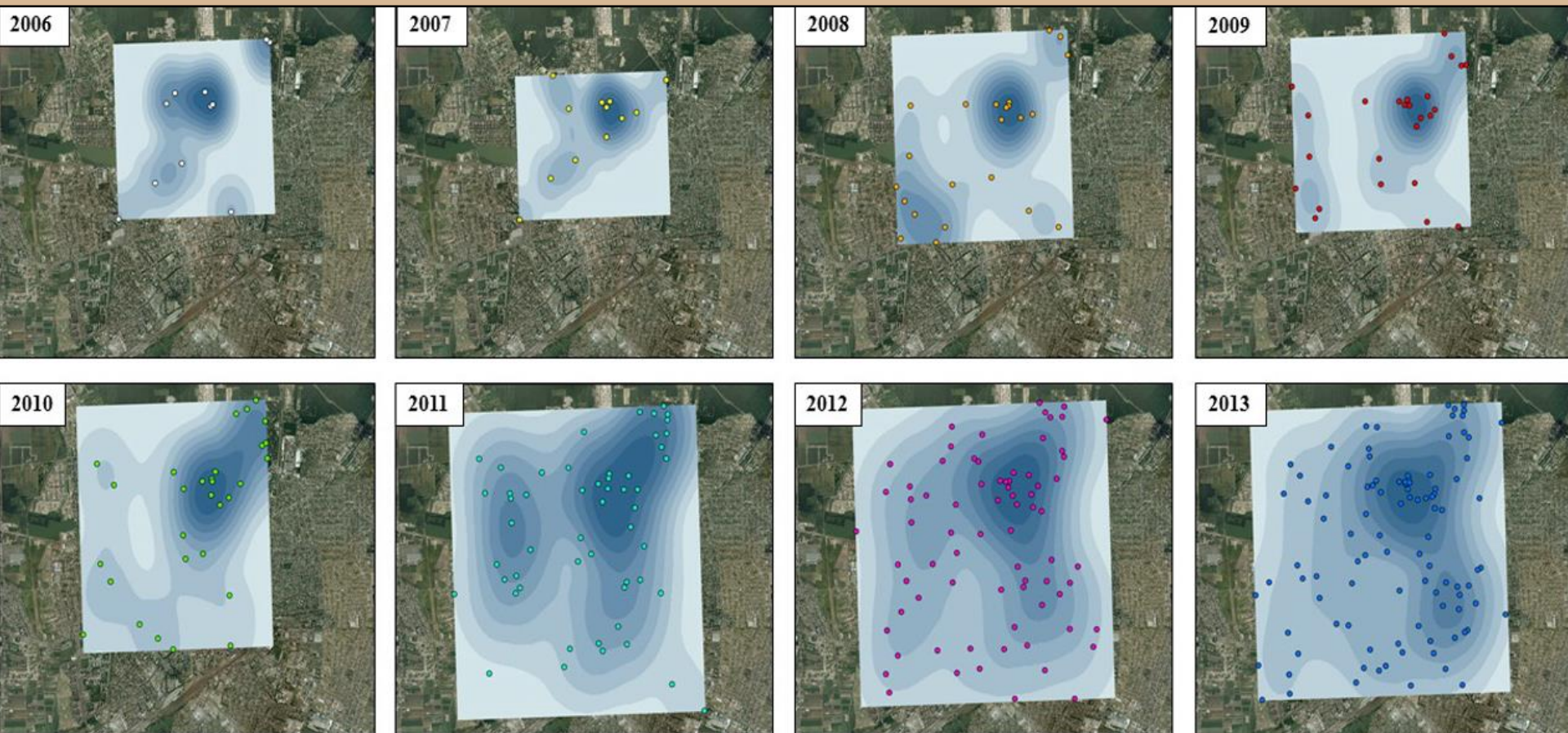


**Urbanization → Urban wildlife management**



# Introduction

- 1970: first nesting in Debrecen, Hungary
- 1990: resident
- from 2000: continuous population increase



# Problems



# Nagyerdő Stadium issue



2014-08-13 19:46:16



# Aims of the study

- Home range, area use, moving patterns
- Survival



## *Questions:*

1. How is the urban crows' area use (home range, area fidelity)?
2. How does the area use change seasonally?
3. Can we explain the area use by availability of food?
4. How is the short-term survival of urban crows?
5. Does the survival change between the seasons?

# Material and method

## #1 Trapping (01.11.2016 - 28.02.2017)

- Swedish trap
- Larsen trap (side-door)
- Larsen trap (upper door)
- Ladder trap

X: live decoy-bird



# Used trap types

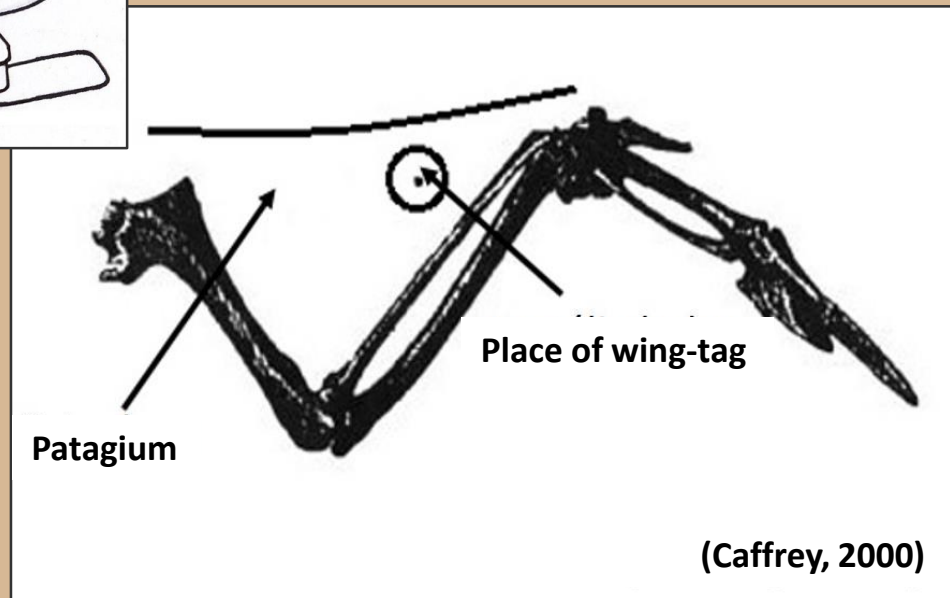
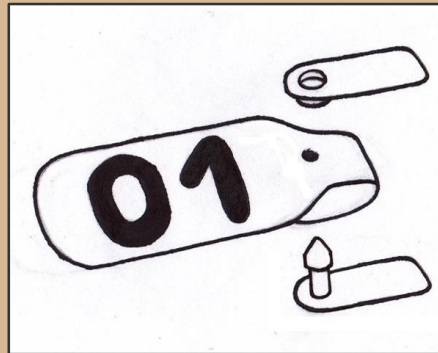
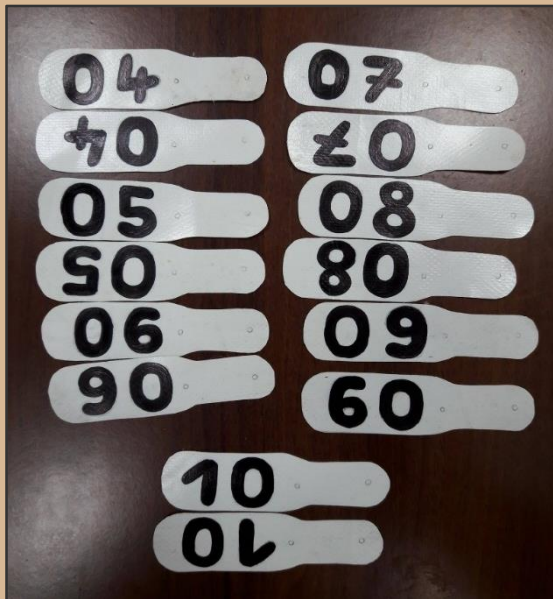
Kövér et al. 2018. Corvid control in urban environments: a comparison of trap types. North-Western Journal of Zoology, 14 (1): 85-90.



# Material and method

## #2 Wing-tagging

- left tarsus: aluminium/scheme ring
- right tarsus: white plastic ring
- wings: white wing-tag with numbers



# Tagging



# Material and method

Short route: ~4 km, 4x/week (n=161)

## #3 Data collection (27.11.2016 - 09.09.2017)



## Material and method

**Long route: ~10 km, 2x/week (n=79)**

### #3 Data collection (27.11.2016 - 09.09.2017)

**Σ: 1434 km**



# Material and method

## ***#4 Data management***

coordinates, date, time, photo, video

- ArcGIS 10.1, Google Earth
- Area use: Minimum Convex Polygon
- Movement analysis: Shapiro-Wilk test, Mann-Whitney U-test, Wilcoxon paired test, Kruskal-Wallis test
- Survival analysis: MARK program

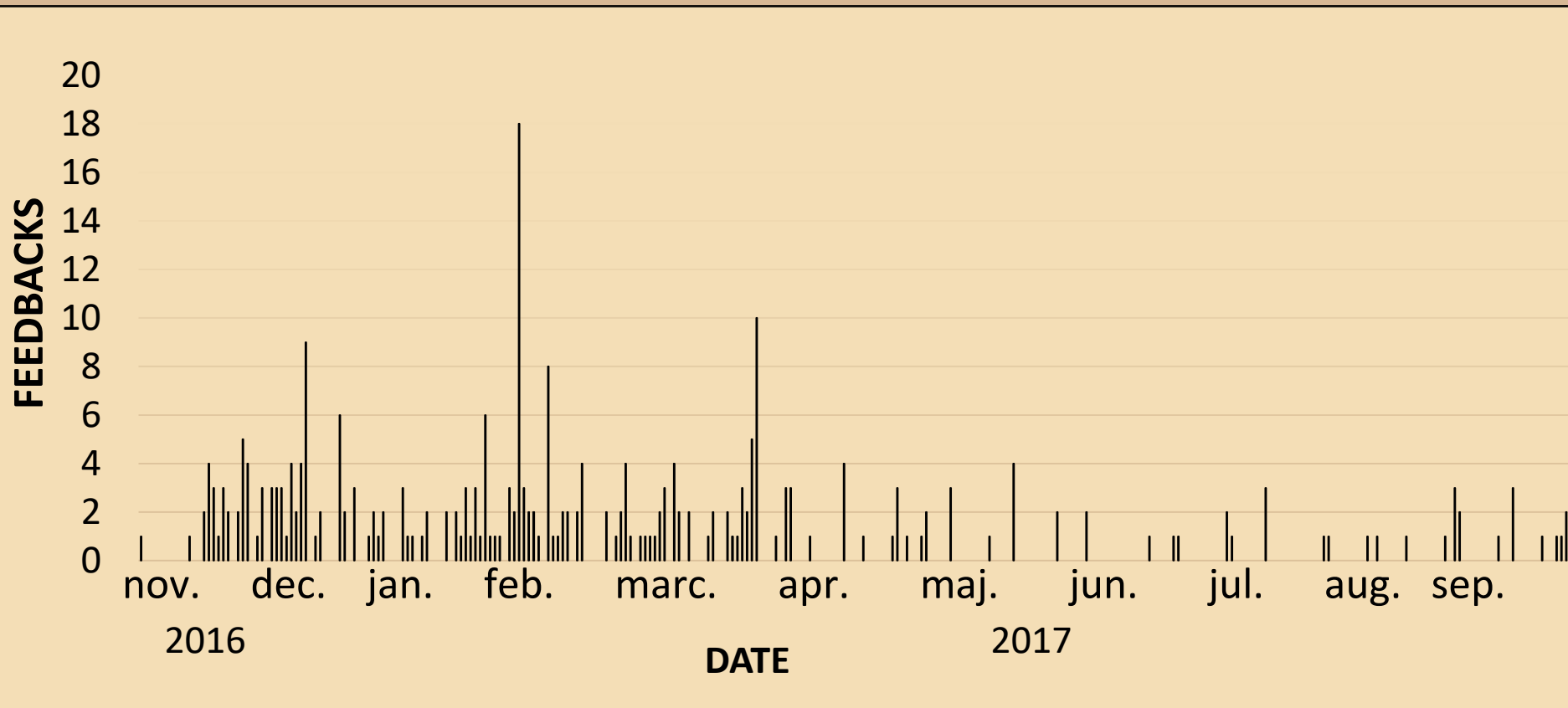
# Results

- 28 marked Hooded crow, (juv)
- We have data about 26 crows (2 died)



# Distribution of feedbacks between the seasons

- 281 feedbacks/records (winter: 174, spring: 75, summer: 32)

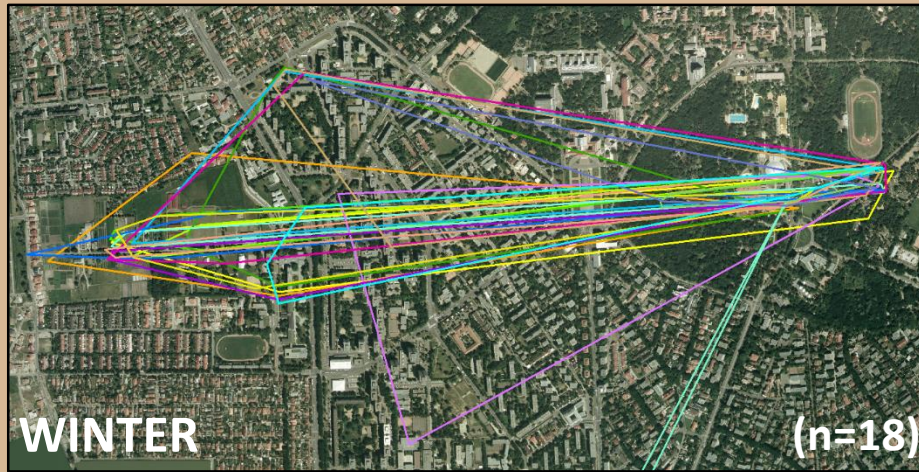


# Distribution of feedbacks between the part of day

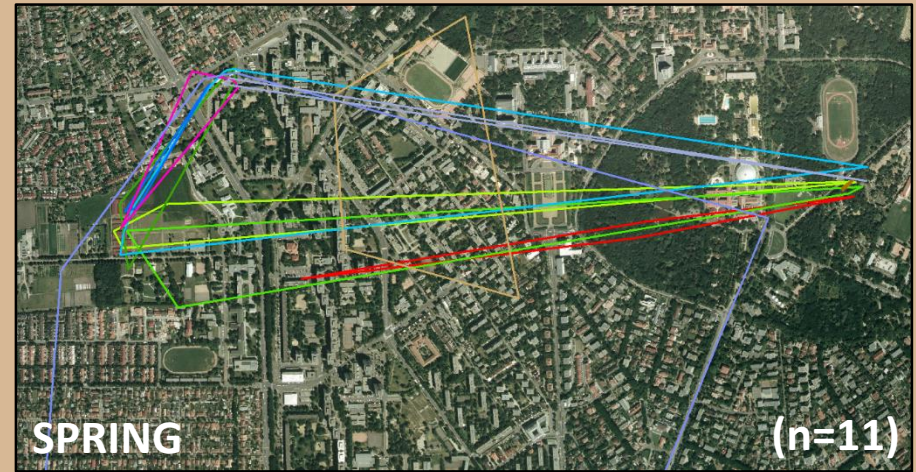
|        | Morning | Afternoon | Sum |
|--------|---------|-----------|-----|
| Summer | 8       | 24        | 32  |
| Spring | 35      | 40        | 75  |
| Winter | 70      | 104       | 174 |
| Sum    | 106     | 161       | 281 |

# Seasonal changing of area use

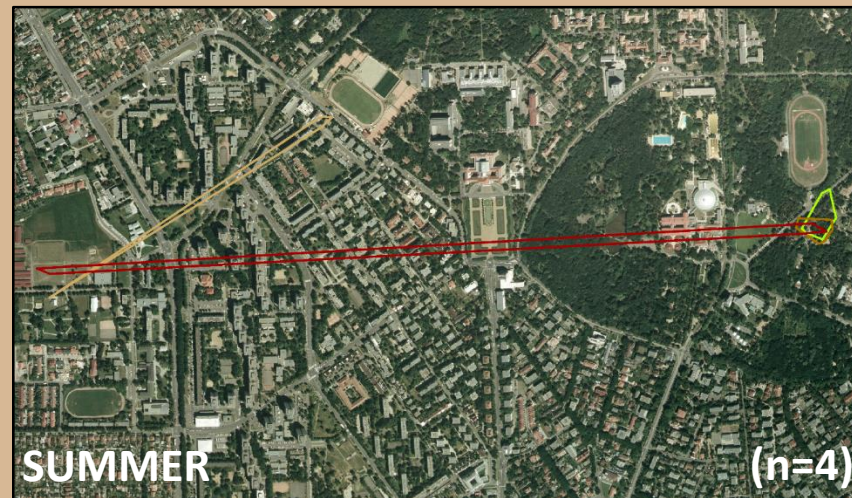
- Total area: 998 ha



Median: 29,2 ha -



Median: 5,1 ha -



Median: 1 ha -

# Area fidelity – the importance of food source

(n=281)



- Bigger open green area
- Park

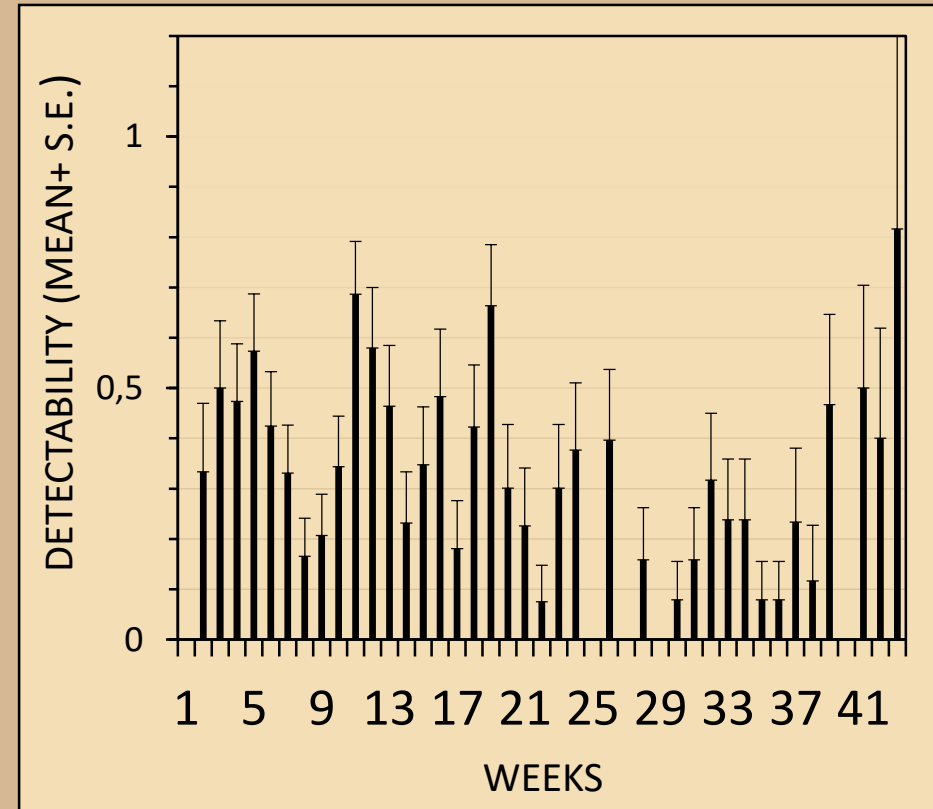
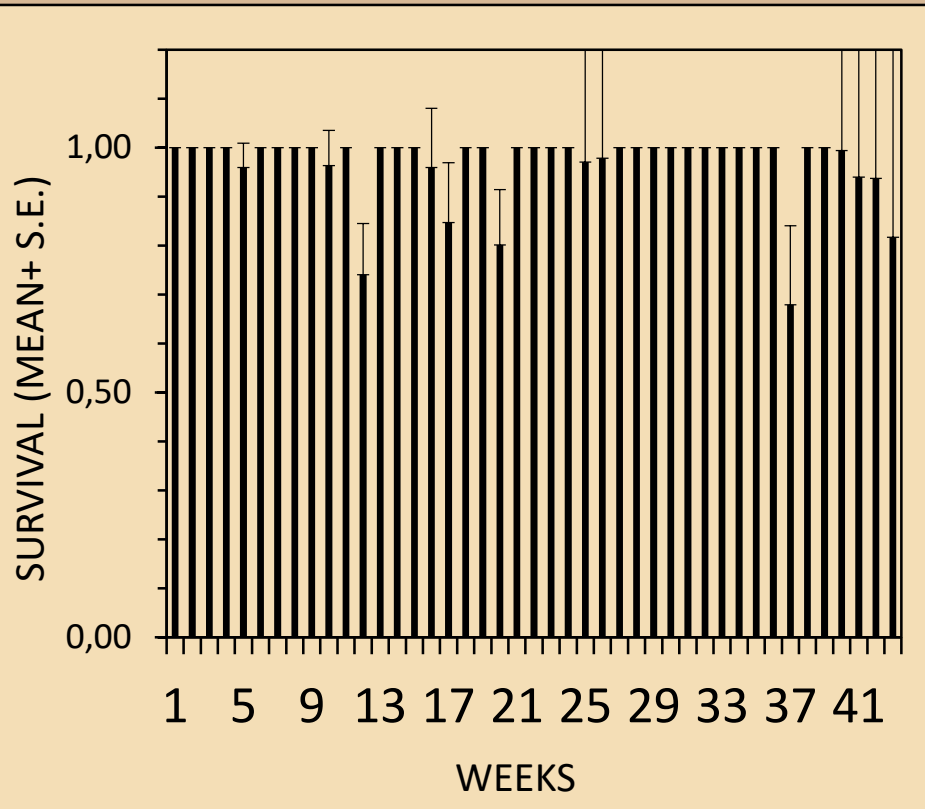
- ZOO
- Feeding place at residential area

# Area fidelity – some examples

| Nr. of tag | Place                         | Winter | Spring | Summer | Sum |
|------------|-------------------------------|--------|--------|--------|-----|
| 10         | UD. Böszörményi street Campus | 2      | 5      | 0      | 21  |
| 10         | ZOO                           | 2      | 1      | 1      |     |
| 10         | Békás-lake (city park)        | 1      | 0      | 0      |     |
| 10         | Doberdó street                | 3      | 5      | 0      |     |
| 10         | Stadium                       | 1      | 0      | 0      |     |
| 03         | UD, Böszörményi street Campus | 18     | 0      | 0      | 19  |
| 03         | Stadium                       | 1      | 0      | 0      |     |
| 06         | UD, Böszörményi street Campus | 2      | 4      | 0      | 16  |
| 06         | Stadium                       | 1      | 2      | 7      |     |
| 07         | UD, Böszörményi street Campus | 5      | 2      | 0      | 11  |
| 07         | ZOO                           | 1      | 3      | 0      |     |
| 09         | UD, Böszörményi street Campus | 7      | 0      | 0      | 11  |
| 09         | ZOO                           | 3      | 1      | 0      |     |
| 24         | ZOO                           | 0      | 5      | 7      | 12  |

# Short-term survival

- No seasonal, weekly change
- Detectability: winter > spring



# Conclusions



1. Total used area:  $\sim 10 \text{ km}^2$ ; area fidelity depends on individuals.
2. Seasonal changing of area use  $\rightarrow$  winter: 29,2 ha; spring: 5,1 ha; summer: 1 ha.
3. Area use depends on the availability of food sources.
4. Short-term survival of urban crows (juv) is pretty high.
5. No seasonal change in their survival.

# Practical and methodological relevances



Paládi Petra

- Population growth → more problems → population control will be needed.
- Importance of permanent food source → restriction/terminate →  
→ influencing effect for survival → population decrease in long-term.
- Importance of permanent food source → success in management (e.g.: trapping).
- Wing-tagging → effective tracking method.

# The work is continue...



# Thank you for your attention!

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