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# Improving the success of restocking programs: The case of the critically endangered European hamster (*Cricetus cricetus*)

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Rosturgeons



AP/The Daily Times



www.sustainablehousaramanagement.org

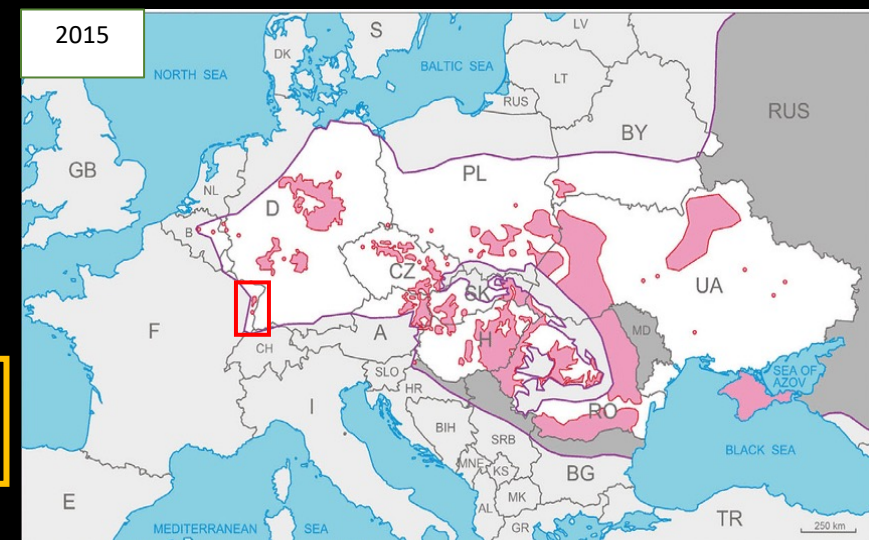
## Introduction

### Restocking programs

- ❖ Used to preserve endangered populations
- ❖ Success low or unknown
- ❖ Strategy limited due to heavy short-term mortality

### Why?

- ❖ Unfamiliarity with local conditions
- ❖ Limited foraging capacities
- ❖ Defficient immune system
- ❖ Abnormal behaviors with predators



## Introduction

Predation is the major cause of mortality for captive-bred hamsters



Strategy developed in France to reduce predation on released hamsters:  
**electrical fences + permanent wheat cover**

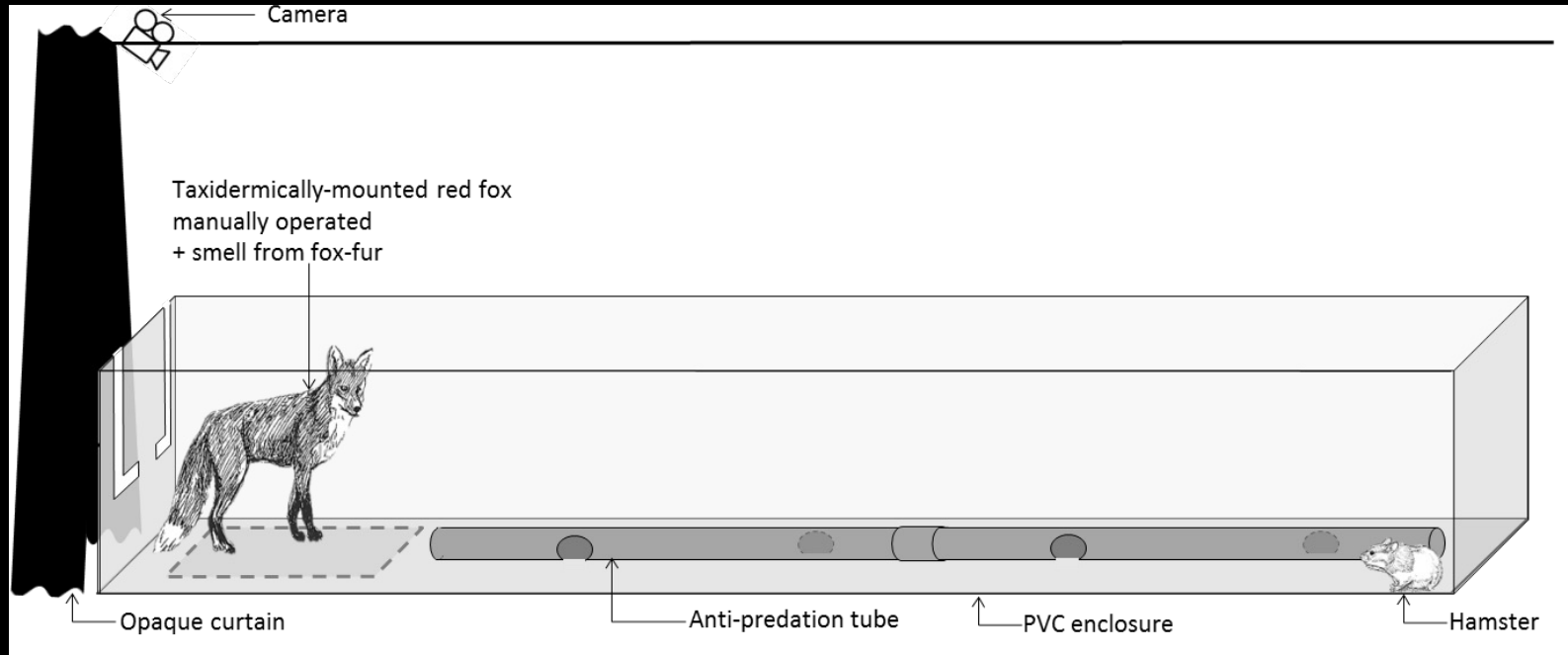
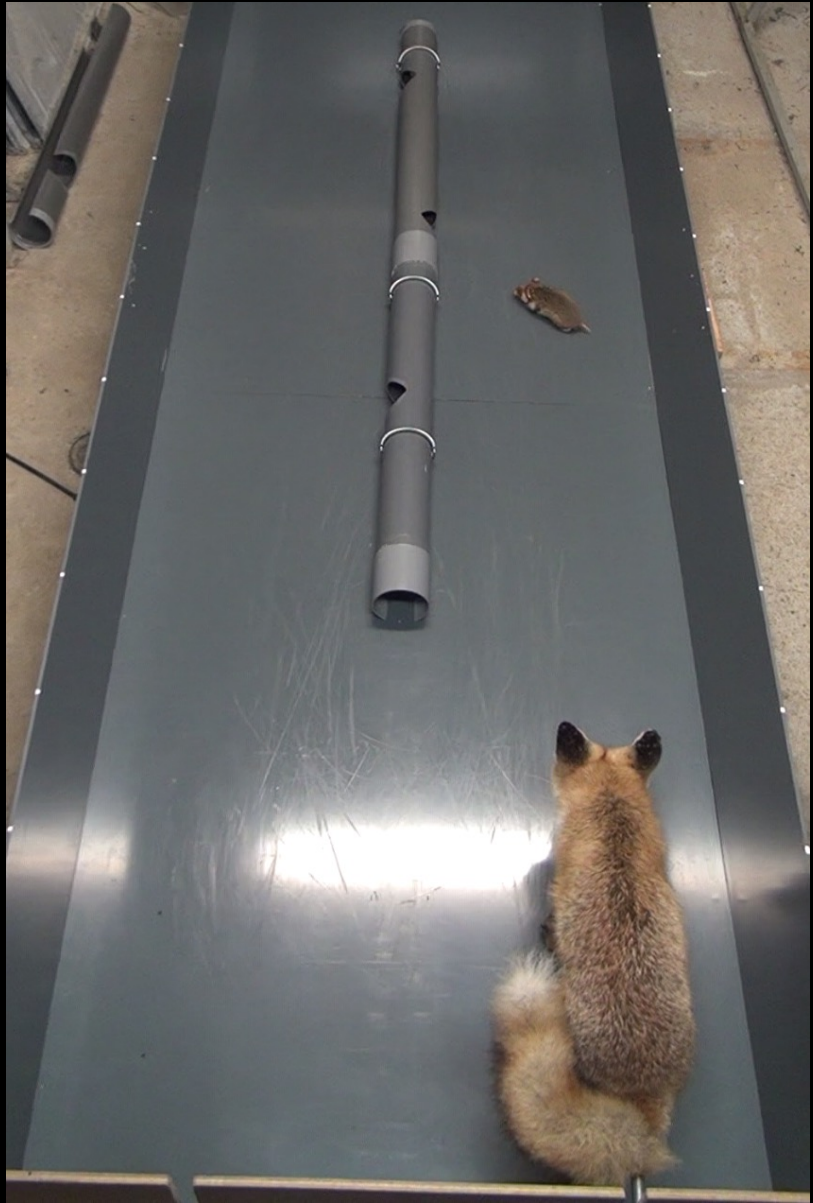
~ 50% mortality 3 weeks after release

How to increase the survival of captive-bred hamsters released into the wild?

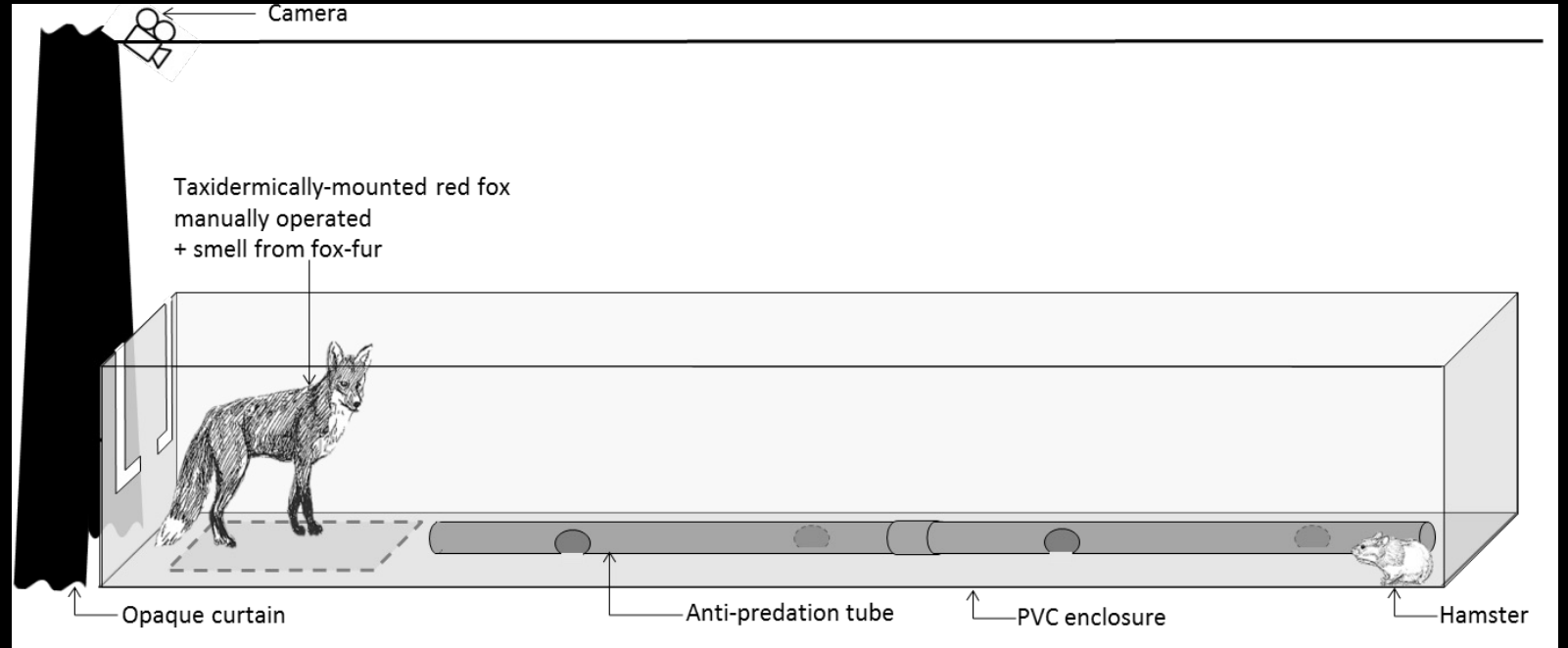
Study the impact of a « soft-release » :

- ❖ Adult and juvenile hamsters
- ❖ Tests in controlled conditions (first study)
- ❖ After the release (second study)





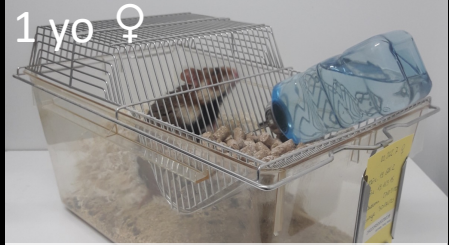
→ Compare behaviors before and after the treatment and between groups



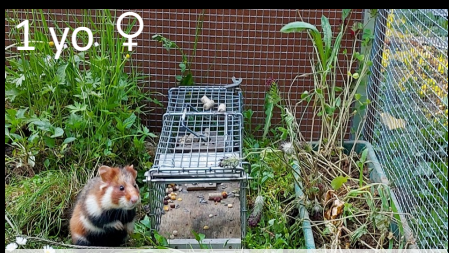
- **After 2 weeks in an outside enclosure, adults hide faster and for a longer period of time**
- **With or without 2 weeks in the outside enclosure, juvenile females hide faster and for a longer period of time**

**Are these results a good proxy for the survival of hamsters after release?**

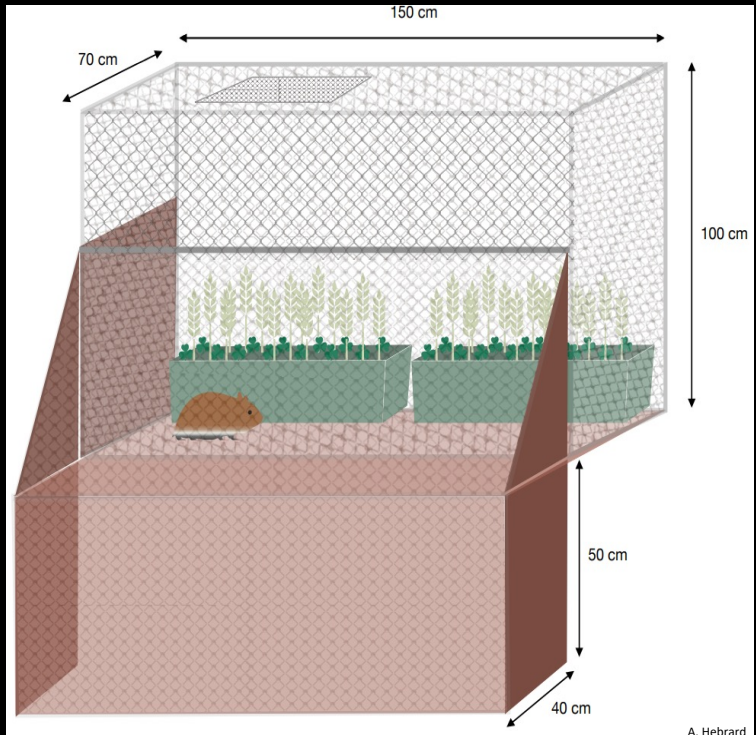
# Second study – Material & Method



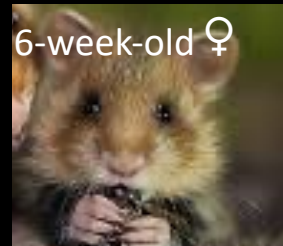
**Control group**  
2021 (N=16) – 2022 (N=16)



**Enclosure group**  
2021 (N=16) – 2022 (N=16)



**Sub-adult group**  
2021 (N=16)



**Juvenile group**  
2022 (N=10)

## Second study – Material & Method



**Control group**

2021 (N=16) – 2022 (N=16)



**Enclosure group**

2021 (N=16) – 2022 (N=16)



**Sub-adult group**

2021 (N=16)



**Juvenile group**

2022 (N=10)

2021: N=48  
2022: N=42

RFID +  
Telemetry logger

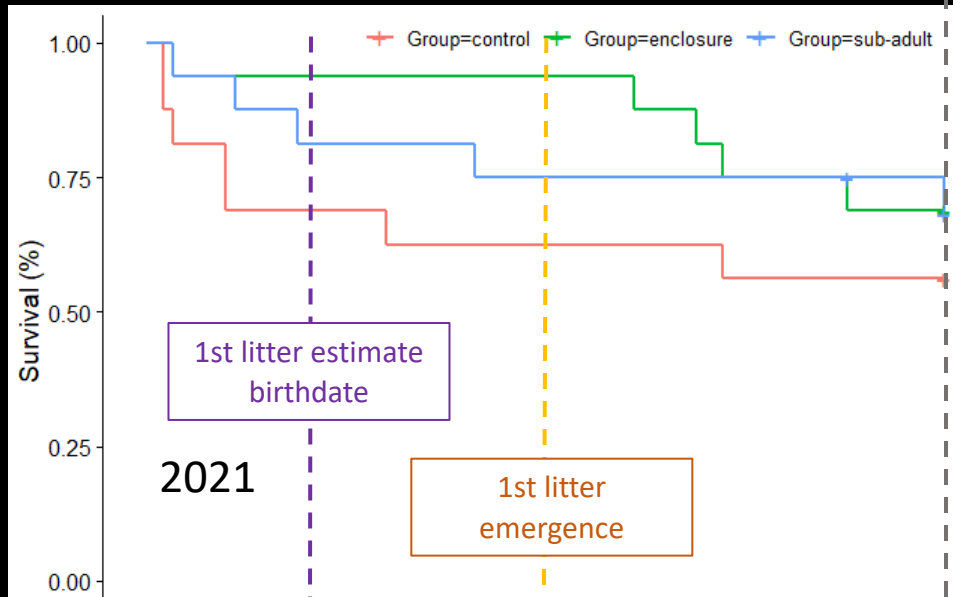


- Release protocol similar to the one commonly used in France
- Collect of **survival data twice a week** from release to hibernation (mid-June to October)
- Collect of **reproduction data once a week** via camera traps and nocturnal captures (August to October)



2021 + 2022 : No differences between the groups

## Preliminary results – survival data



### 2021

- Good overall survival rates (+50% at 80D)
- A tendency between **control** and **enclosure** group at 45D ( $p=0.06$ )
- **Sub-adult** survival rate similar to the other groups

### 2022

- Overall lower survival rates compared to 2021 (<30% for **control** and **enclosure** groups)
- No significant differences between groups
- **High mortality** between day 21 and day 45 for all the groups



# Preliminary results – Reproduction data

Camera traps analysis



+

Captures at the females' burrow



+

Genetic analysis



Camera traps analysis



+

Captures at the females' burrow



+

Genetic analysis



- The 3 groups had 2 litters (total:220 pups)
- Genetical analysis are necessary to confirm the pups/mother assignment
- Genetic analysis proved sub-adults (3 months old) were able to reproduce

## Differences between the 2 years

- **Very different climates**
  - **2021**: low temperatures + high rainfall
  - **2022**: high temperatures + drought
- High mortality rate in 2022 started after the 1st litter was born  
→ beginning of the drought period in the Alsacian region
  - High energetic demand in a difficult climatic period?
  - Predation pressure was perhaps higher at this time too?





## Conclusion

- ❖ 2 weeks of "soft release" may help hamsters to adapt more quickly to a new environment **but** is not enough to improve their survival
- ❖ The release of 3-month-old hamsters can be an interesting option - they are **less affected by captivity + can produce young** in the year of their release

Artificial photoperiod in captivity to produce 3-month-old hamsters ready to be released in June

Are the 6-week-old juveniles able to reproduce after being released?

# Thank you all

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+

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