

# Application of combined field methods in golden jackal monitoring:

## Howling, Conservation dogs and DNA analysis

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150 YEARS  
FEATURING  
FUTURE  
1872 - 2022

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# Overview



**Pre-Story:** Looking at ecology and differences between canids

**Story:** Field methods

**Preliminary Results**

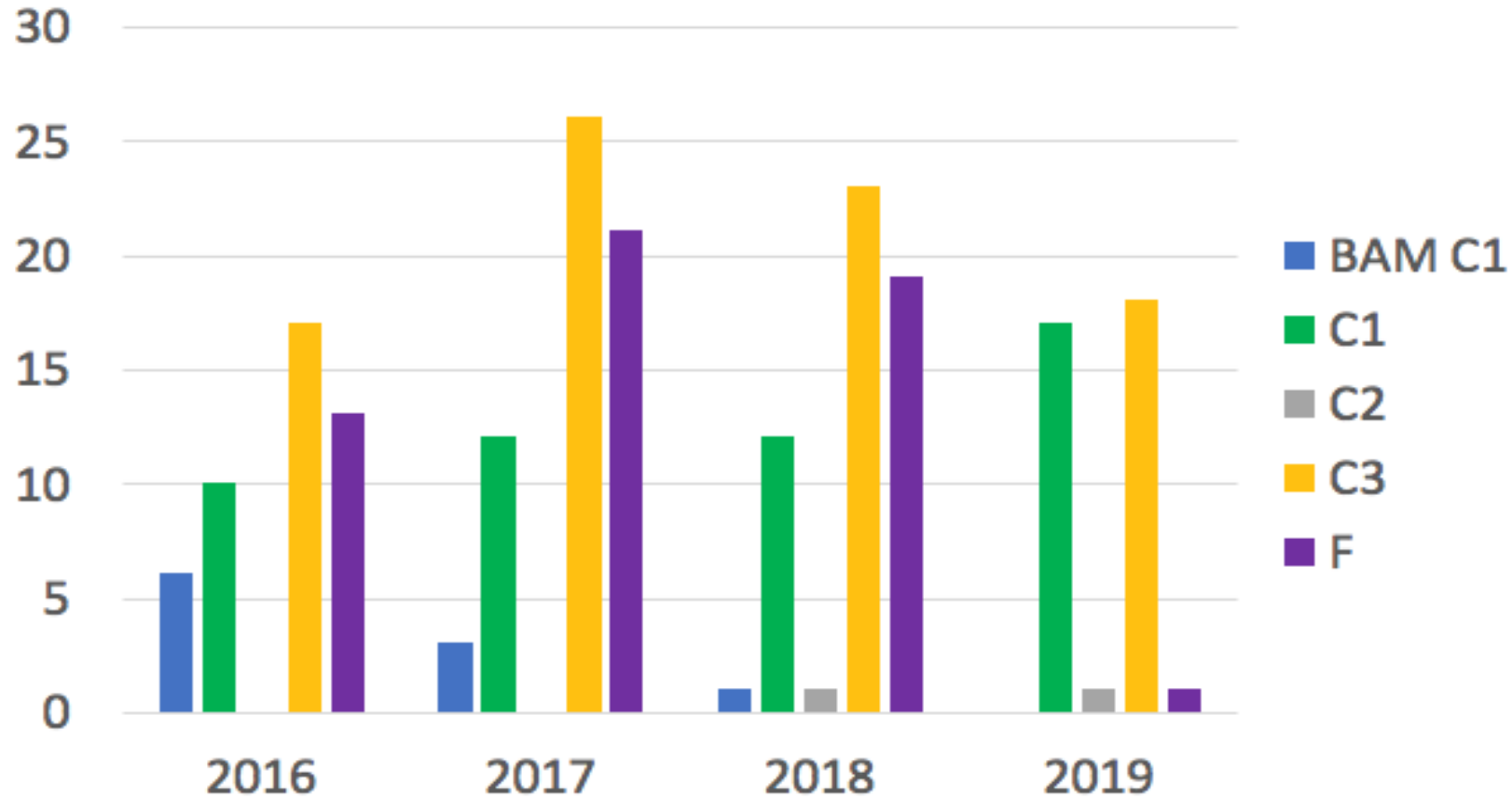
**Discussion**

# Looking at ecology



Canid sp. Mix-ups ?

# Looking at ecology





# Looking at ecology

Merkmal

Rotfuchs

Goldschakal

Wolf

Kopf von vorne



Kopf von der Seite



Körper von der Seite



Hatlauf J & Böcker F (2022)



# Examples



*Böcker/ Hatlauf*



# Examples

**Fox**



*Böcker/ Hatlauf*

**Jackal**



# Thats why we need the dogs



# Thats why we need the dogs



Find scats in very **dense Habitat**

Find scats that are **impossible to see for the human eye**

Find scats as **tiny** as fingernails



# Habitat



*R. Krickl*





# Impossible to see?



150 YEARS  
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CES AND





# Impossible to see?





# Tiny?





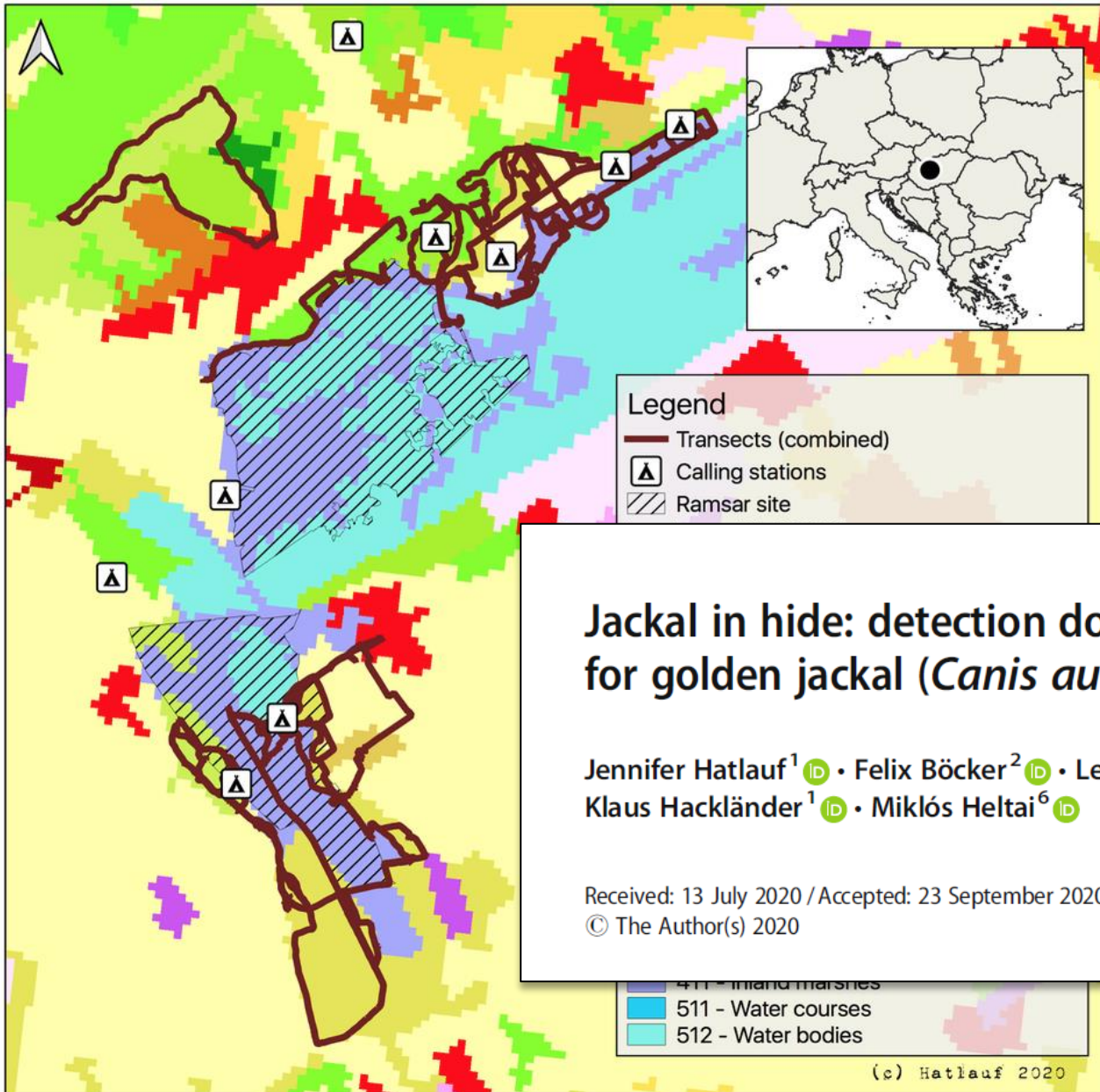
# Field methods (Scat detection dogs)



If you want to learn more about the ecology, behaviour and social structure

- **Generate a lot of DATA**
- Success Rate of dogs is higher (genetic costs for „wrong“ material can be kept minimal)
- **difficult habitats (shrub areas) can be surveyed**





## Feasibility Study 2017

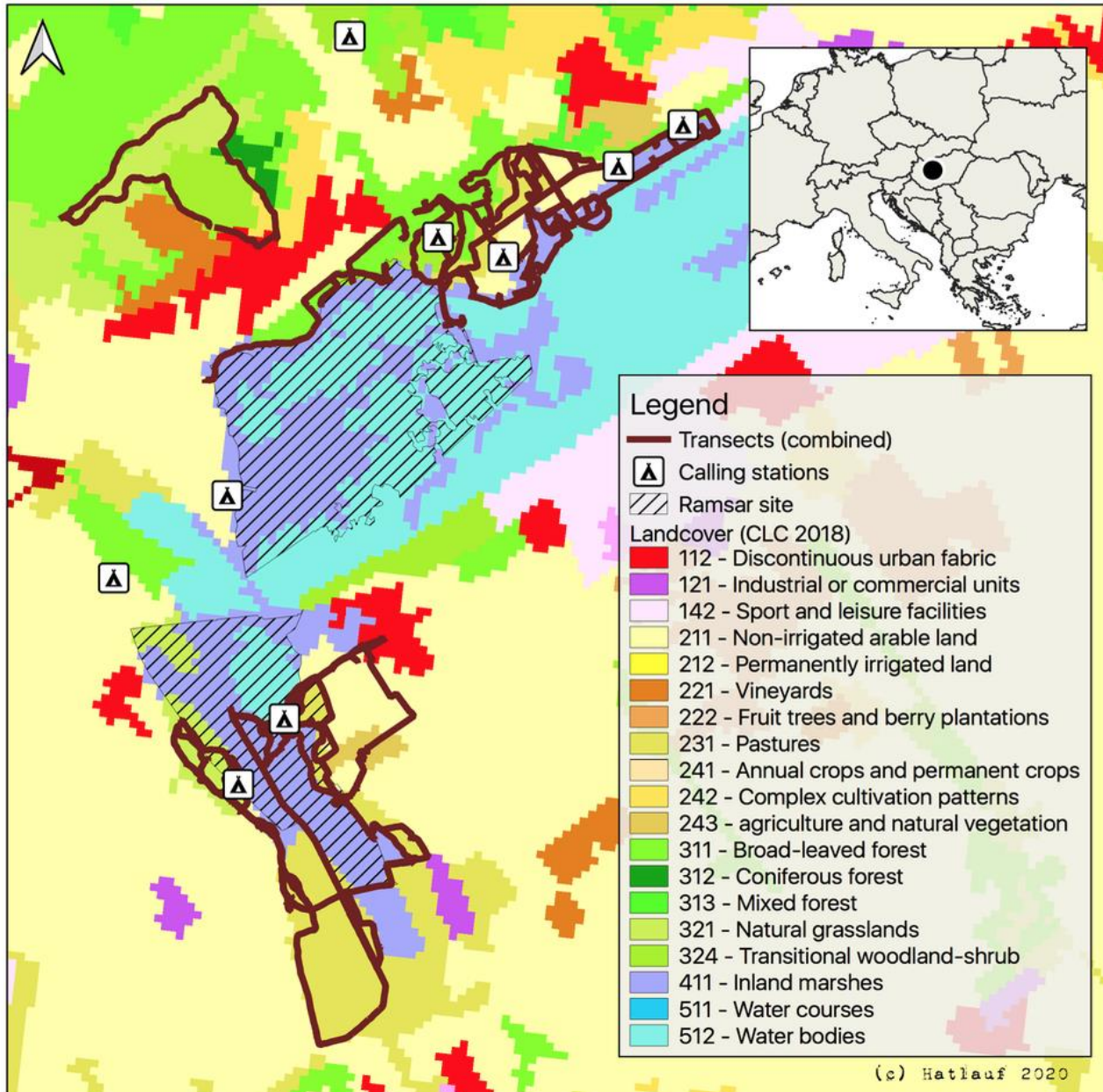
### Jackal in hide: detection dogs show first success in the quest for golden jackal (*Canis aureus*) scats

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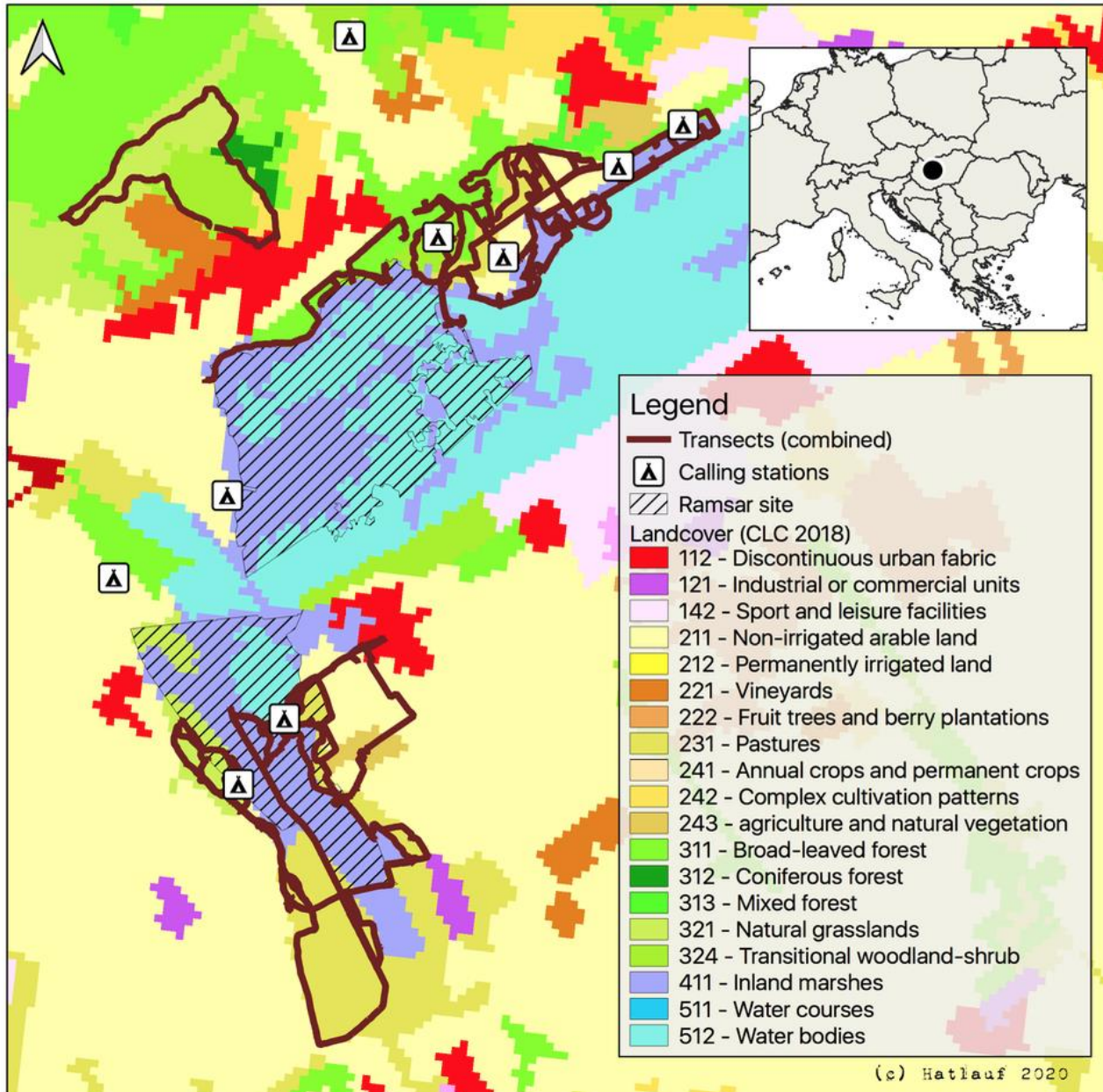




# 1) Confirmed Presence with BAM







**2) With the dogs:  
In 2 seasons/ 130km transects**

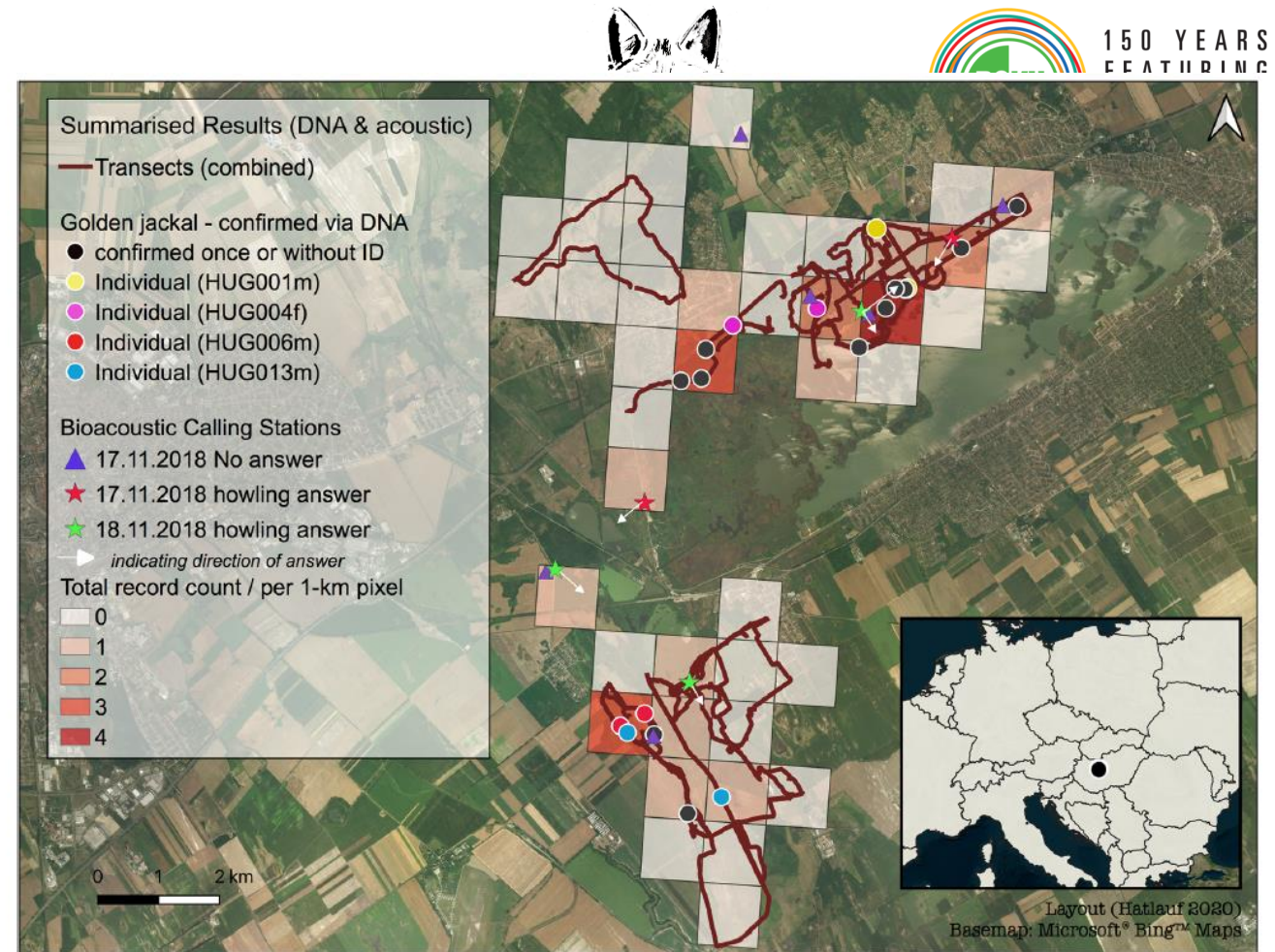
**13 individual golden jackals  
(assumed 2 groups that are related)**

**8 males, 5 females**

# Results

Individual name	Study periods	
	1	2
HUG001m <sup>a</sup>	2	0
HUG002m	1	0
HUG003f	1	0
<b>HUG004f</b>	1	1
HUG005f	1	0
HUG006m <sup>a</sup>	2	0
HUG007m	0	1
HUG008m	0	1
HUG009m	0	1
HUG010f	0	1
HUG011m	0	1
HUG012f	0	1
HUG013m <sup>a</sup>	0	2
NA	0	2

<sup>a</sup> Sampled twice within one study period



Hatlauf, J., Böcker, F., Wirk, L. *et al.* **Jackal in hide: detection dogs show first success in the quest for golden jackal (*Canis aureus*) scats.** *Mamm Res* 66, 227–236 (2021).

<https://doi.org/10.1007/s13364-020-00537-4>



# Additional Results



Marking behaviour

Scat measures

Rendezvous place?

Position of scat	Counts	% of Total
path edge raised	5	26 %
middle of path	5	26 %
path edge	4	21 %
driving lane	3	16 %
offside path	2	11 %

Hatlauf, J., Böcker, F., Wirk, L. *et al.* **Jackal in hide: detection dogs show first success in the quest for golden jackal (*Canis aureus*) scats.** *Mamm Res* 66, 227–236 (2021).

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# Results



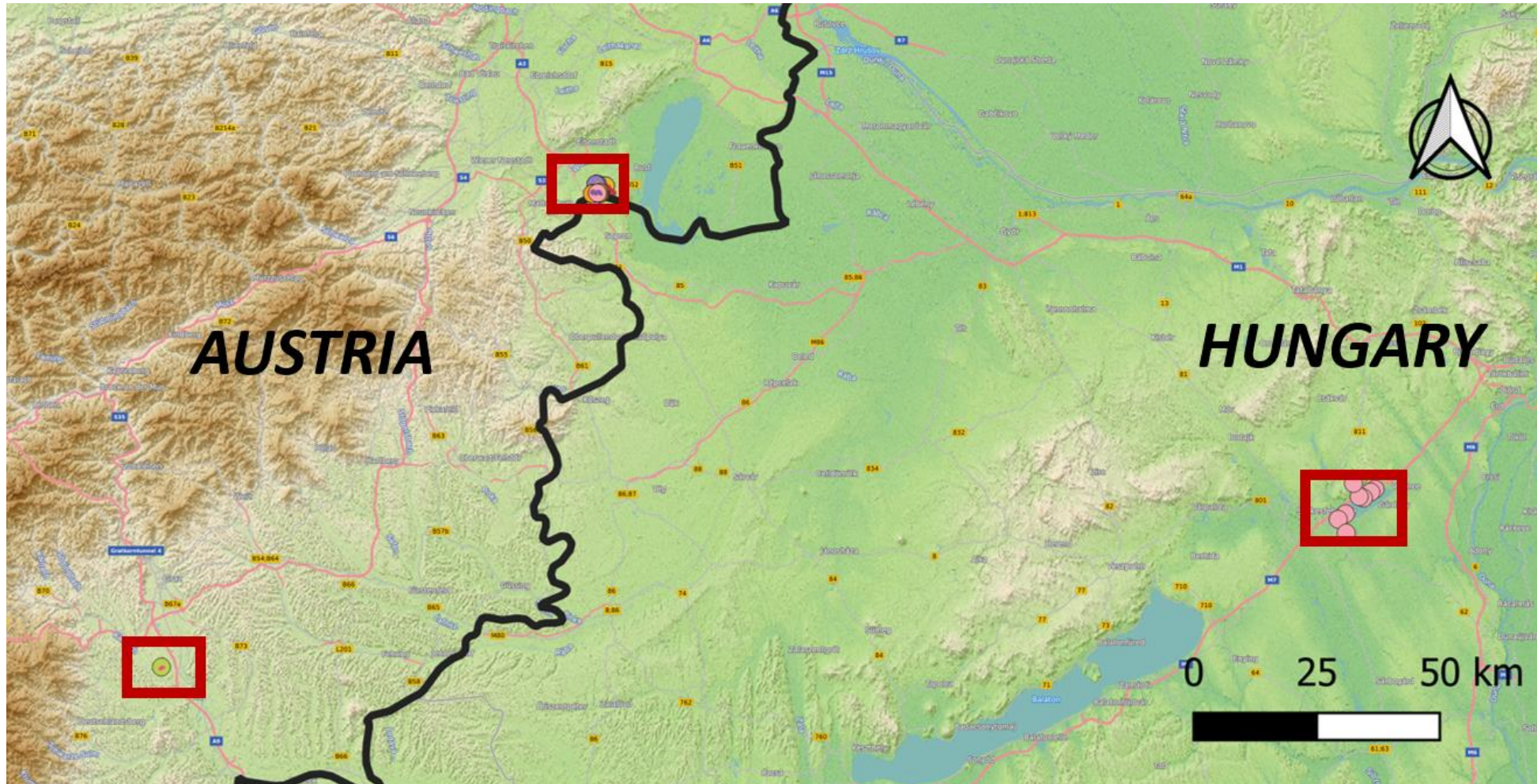
**Measurements of scats**

	N	Mean	Median	SD	SE
Length (cm)	18	15.83	15.50	3.87	0.91
Diameter (cm)	18	2.16	2.20	0.31	0.07

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# Now - we included more areas



**250 km transects  
with human-dog  
teams**

**63 scats**



# Now – we are a bigger team





# Now – we are a bigger team





# Field and Training Session



Video



# Discussion - Challenges



**Dogs are not machines**

**Variance in detection rates (between dogs)**

**Seasonal variation (weather conditions)**

**Training and certification is not synchronized broadly**

**However the challenges, we believe it is a very promising tool**

# Combination of these methods



Depend on the research question!





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**Thank you for the common project!  
And to all the peoples' persistence 😊**

**Szabó L., Böcker F., Wirk L., Marton M.,  
Hackländer K., Heltai M**







[www.goldschakal.at/kriterien](http://www.goldschakal.at/kriterien)

Hatlauf J, Böcker F (2022) Recommendations for the documentation and assessment of golden jackal (*Canis aureus*) records in Europe. *BOKU reports on wildlife research and wildlife management*



# Combination of methods

...to first find and then monitor jackals (numbers)

Collect data (pictures/videos) from hunters/ the public

Acoustic monitoring

Targeted camera trapping

Scat detection dogs

GPS collaring





# Results



## Preliminary Results

14 BAM – points prooved min. **4 Family Groups**

**250 km transects with human-dog teams**

**63 scats**

Previously: 2h 50min to get one positive jackal scat



# Habitat



© Jennifer Hatlauf



# Habitat



*R. Krickl*

