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# THE USE OF THERMOVISION TO SEARCH WILD BOAR CARCASSES

PROJECT QK1920184 NAZV



# Game reserve Sedlice, Czech Republic

255 ha  
450 – 500 m ASL

Wild boar,  
Fallow deer,  
Dybowski's sika deer





# MONITORING OF THE WILD BOAR CARCASS





# MONITORING OF THE WILD BOAR CARCASS





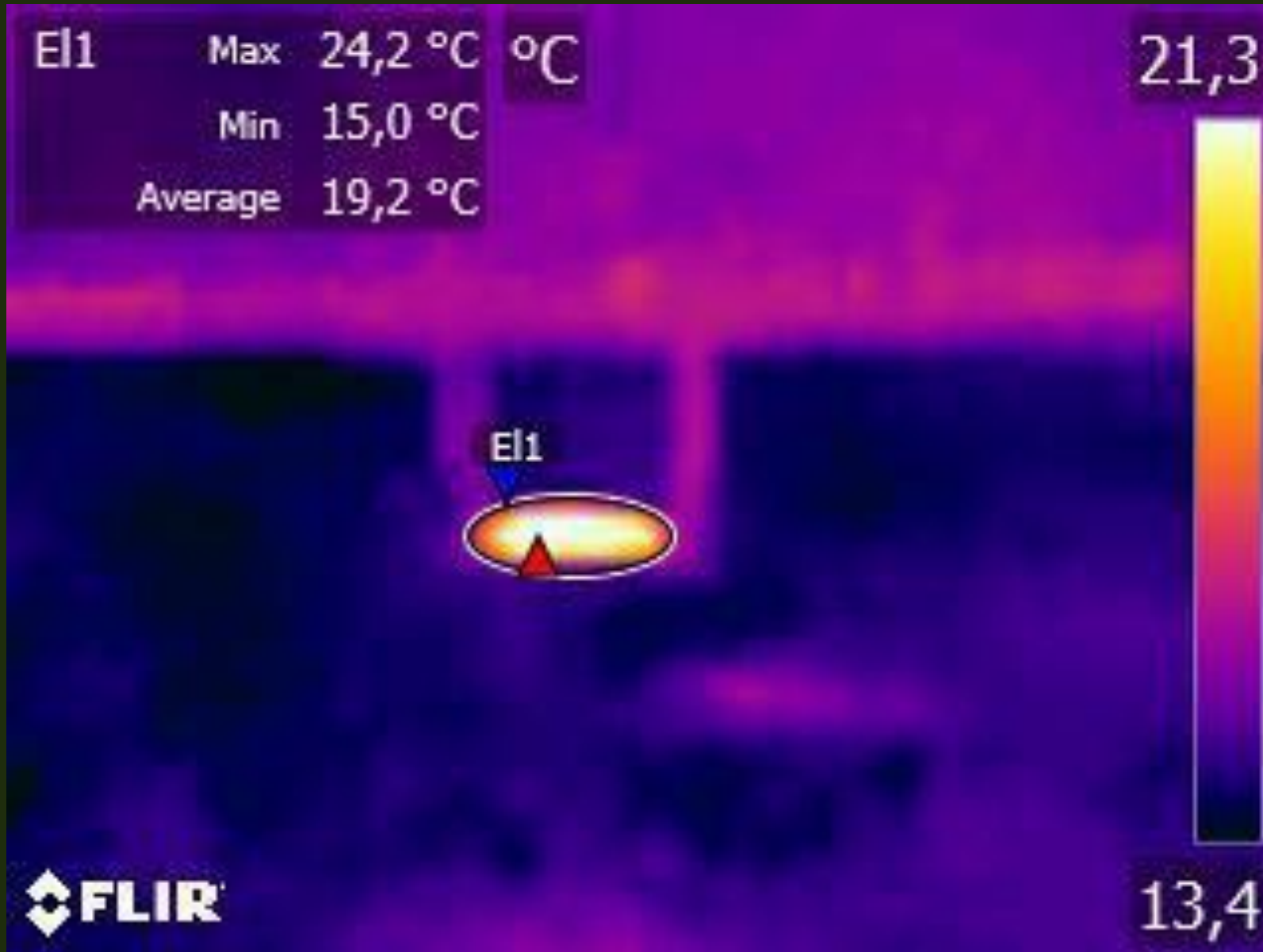
# MONITORING OF THE WILD BOAR CARCASS



On-line monitoring:

- Air temperature
- Relative humidity
- Rectal temperature
- Solar radiation
- Wind speed and direction
- Rain
- Thermal imaging with Flir C3 (80x60px)

# FIRST DAYS OF MONITORING, THERMAL IMAGING CAMERA FLIR C3

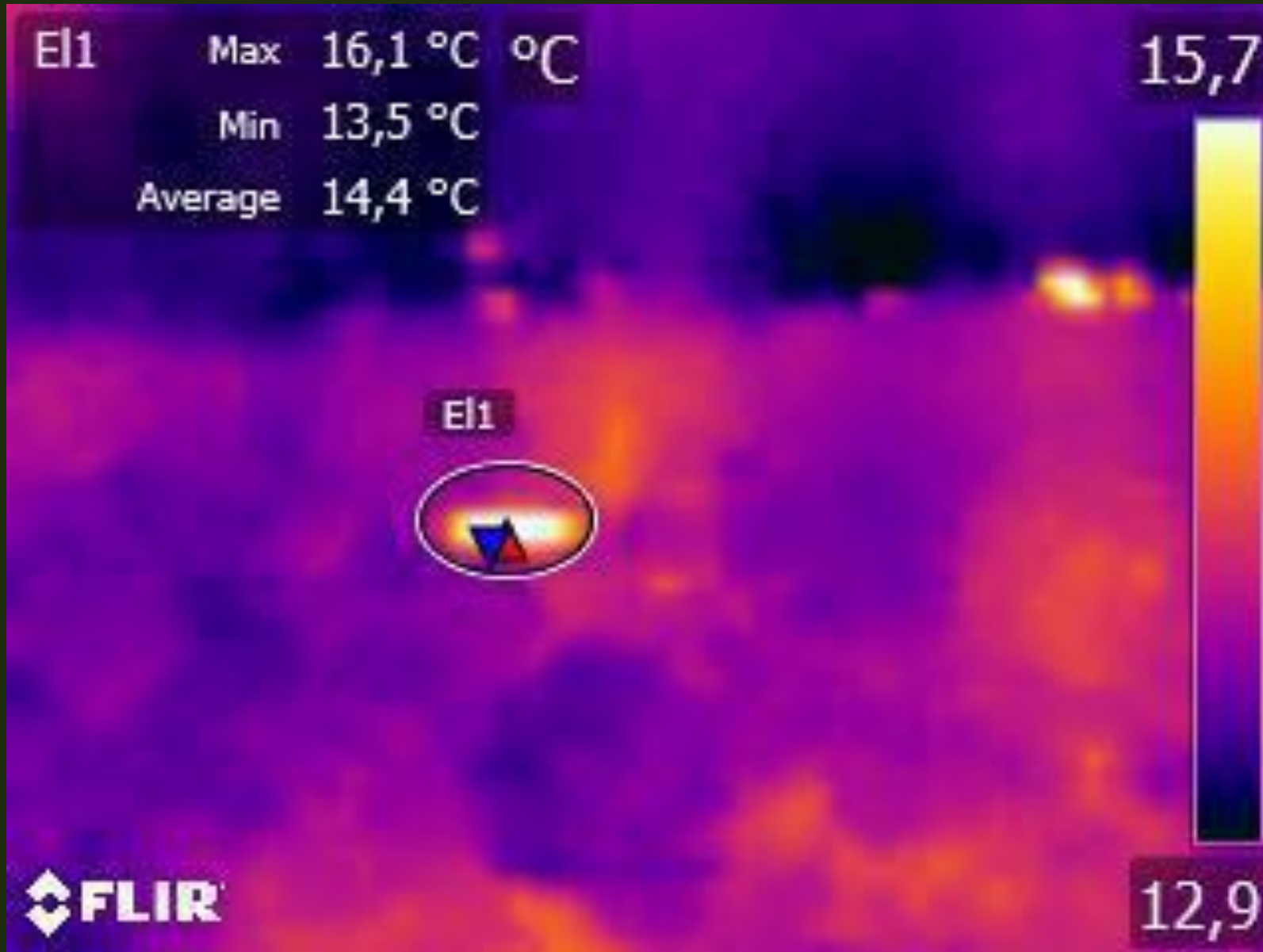


VIDEO

July 31st  
8:40 p.m.

-  
August 5th  
10:00 a.m.

# THE WILD BOAR CARCASS AFTER 3 MONTHS, THERMAL IMAGING CAMERA FLIR C3



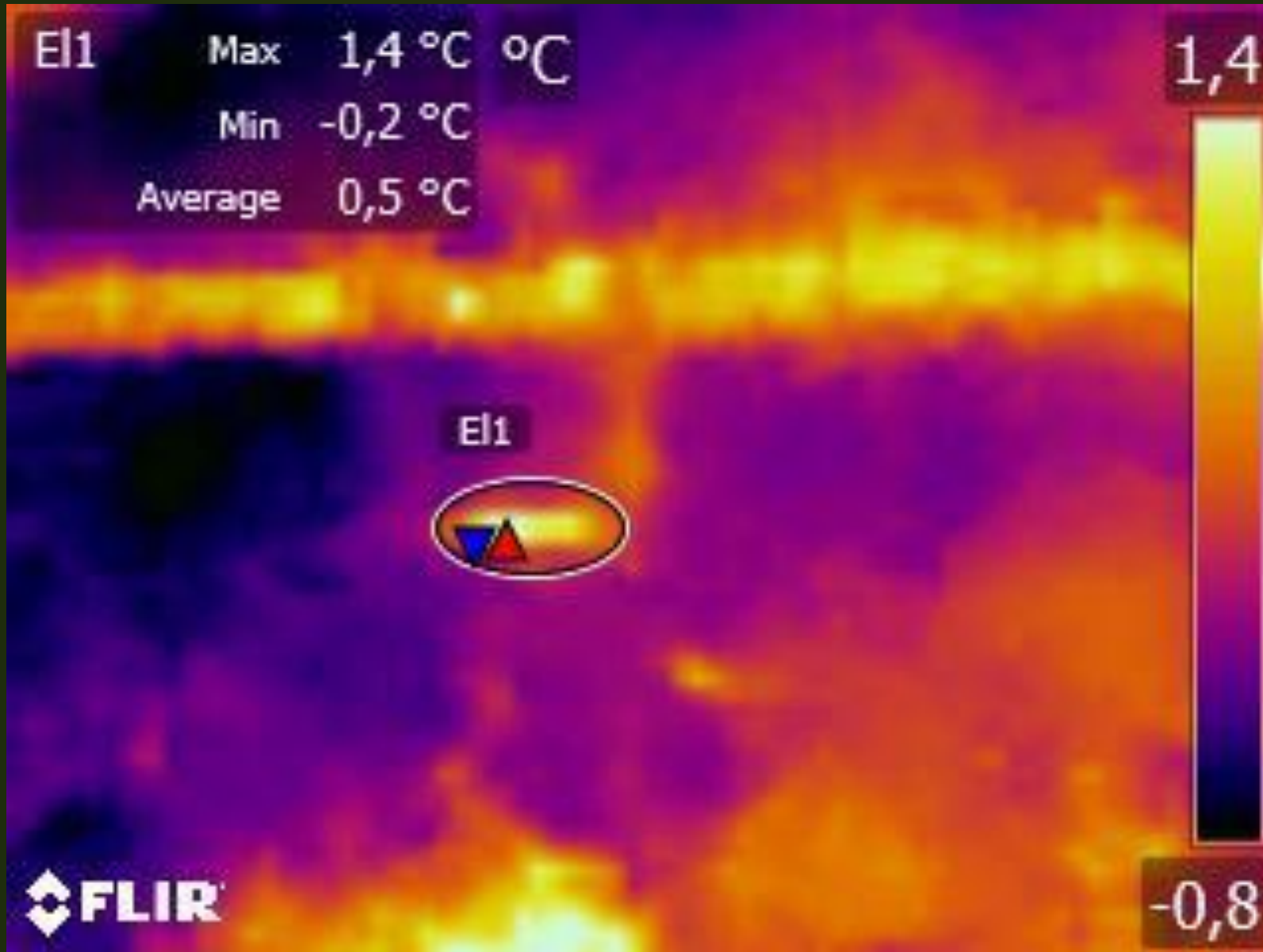
## VIDEO

October 23rd  
3:00 p.m.

-  
October 26th  
12:00 a.m.



# GRAZING DEERS AT THE CARCASS, THERMAL IMAGING CAMERA FLIR C3



VIDEO

October 7th  
2:00 a.m.



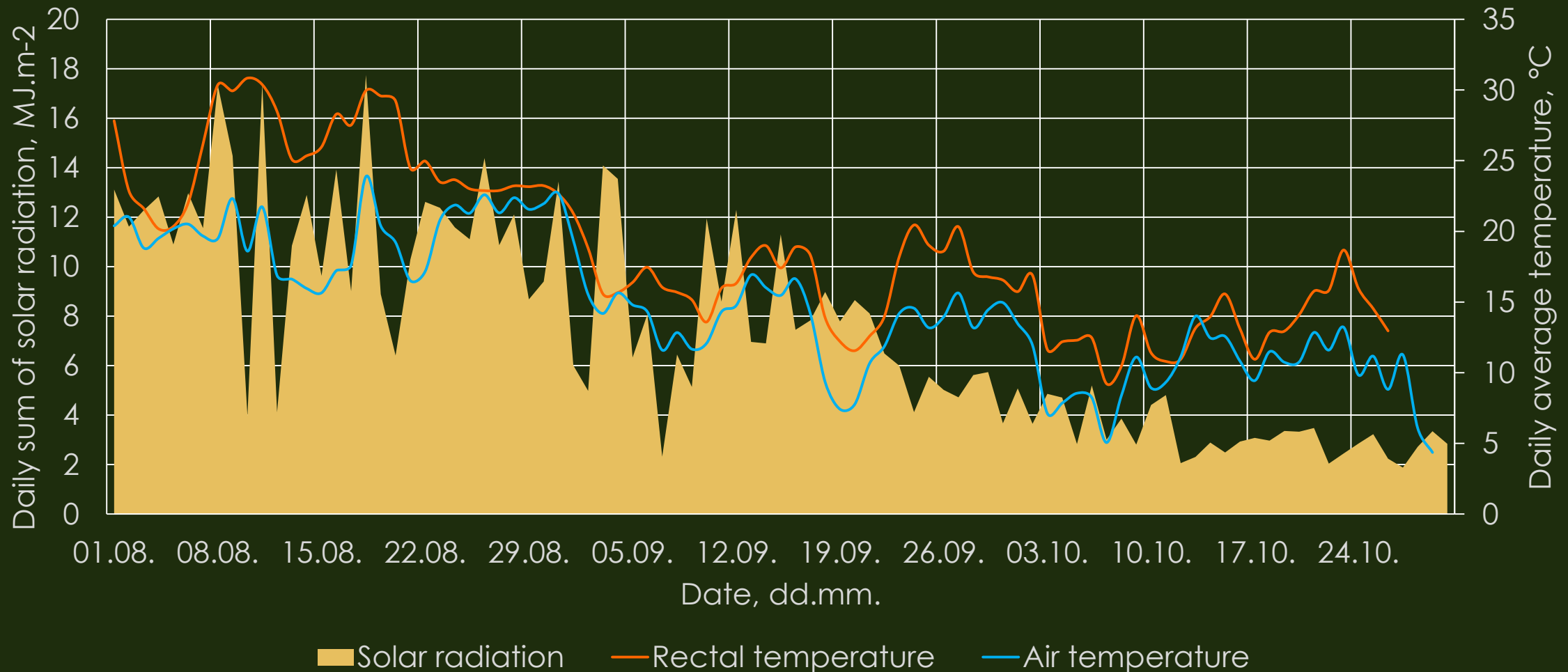
# FOX PACK AT THE CARCASS, THERMAL IMAGING CAMERA FLIR C3



PHOTO

October 26th  
6:30 a.m.

# DAILY AVERAGES OF RECTAL TEMPERATURE OF THE CARCASS, AIR TEMPERATURE AND DAILY SUM OF SOLAR RADIATION DURING THE MONITORING PERIOD

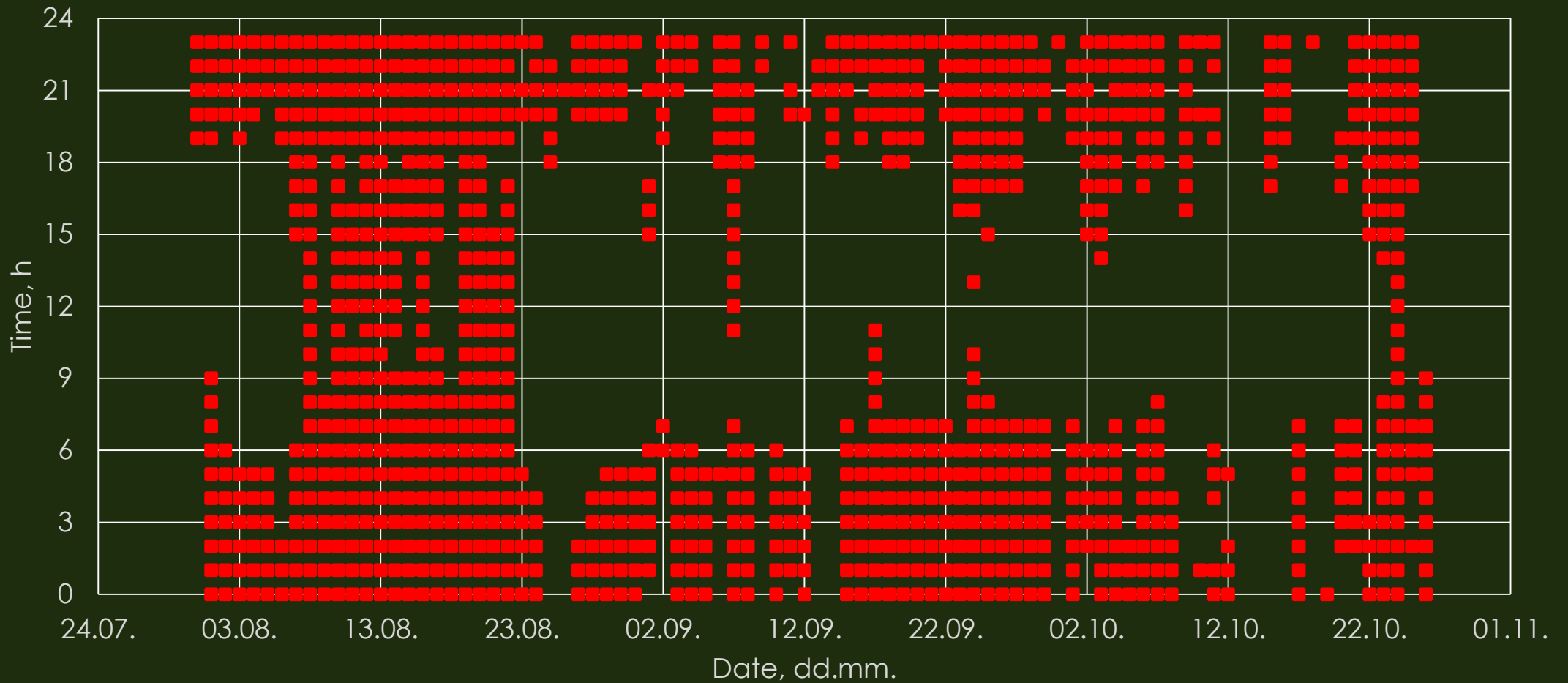




# POTENTIAL VISIBILITY OF WILD BOAR CARCASS BY THERMAL IMAGING CAMERA DURING A DAY



Best hours to use thermovision during the monitoring period based on the difference of rectal temperature and air temperature ( $\Delta t > 4$ )





# Photos of the Wild boar carcass



WILD BOAR CARCASS 1 WEEK OLD  
strongly inflated body



WILD BOAR CARCASS 3 MONTHS OLD  
totally collapsed body





# PARROT BEBOP-PRO THERMAL DRONE

Quadcopter with thermal imaging camera Flir One Pro (160x120px)





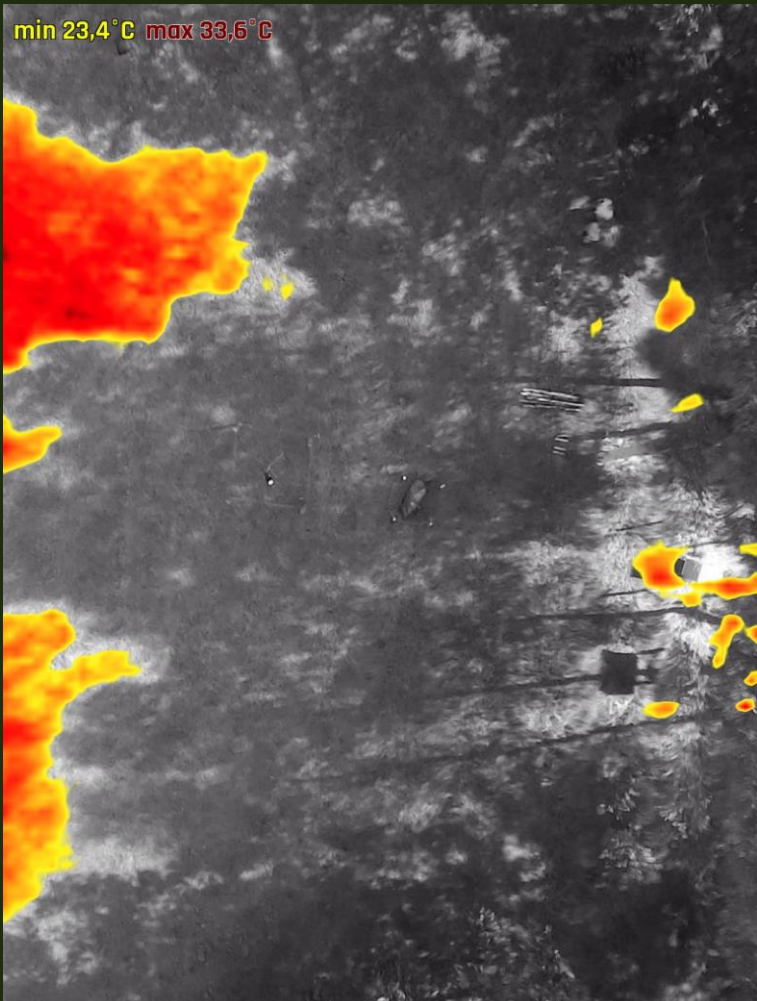


# THE USE OF DRONE WITH THERMAL IMAGING CAMERA

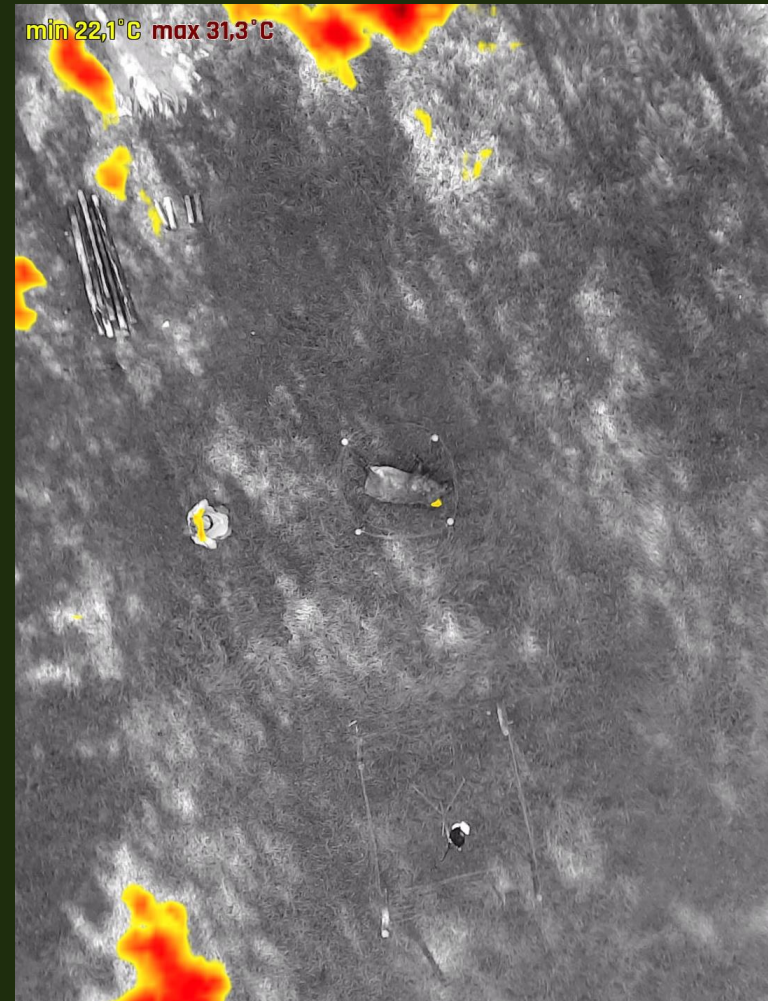
Carcass 1 week old

(inappropriate weather condition – high solar radiation, air temperature, 11:00 a.m.)

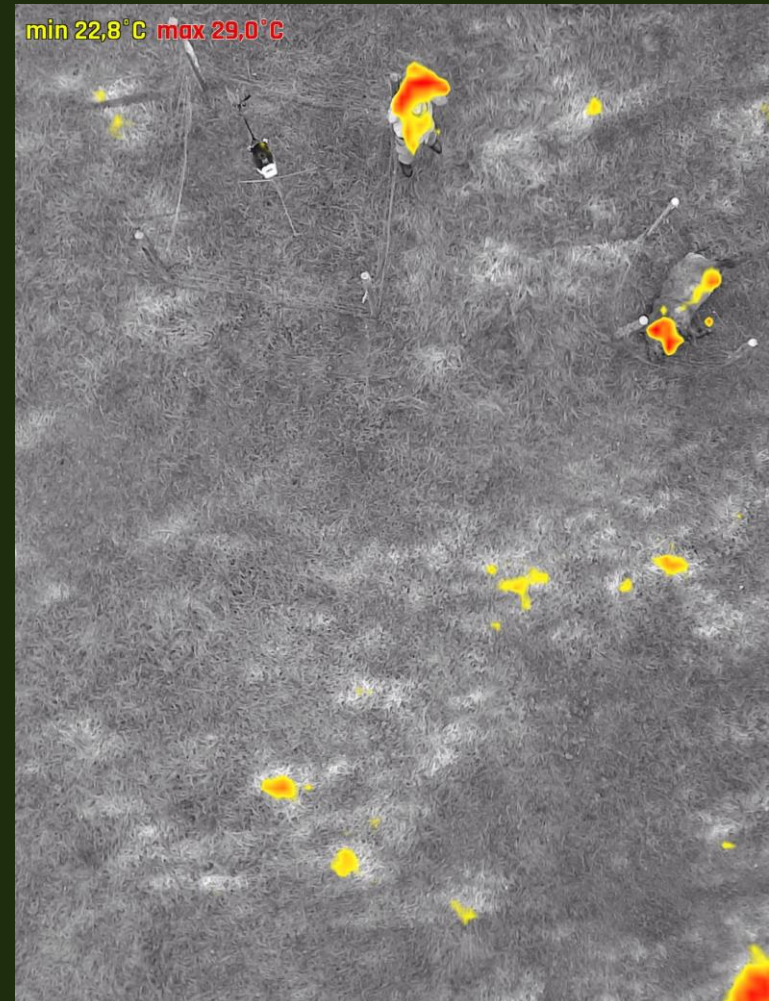
30 m above ground



15 m above ground



10 m above ground





# THE USE OF DRONE WITH THERMAL IMAGING CAMERA

Carcass 3 months old

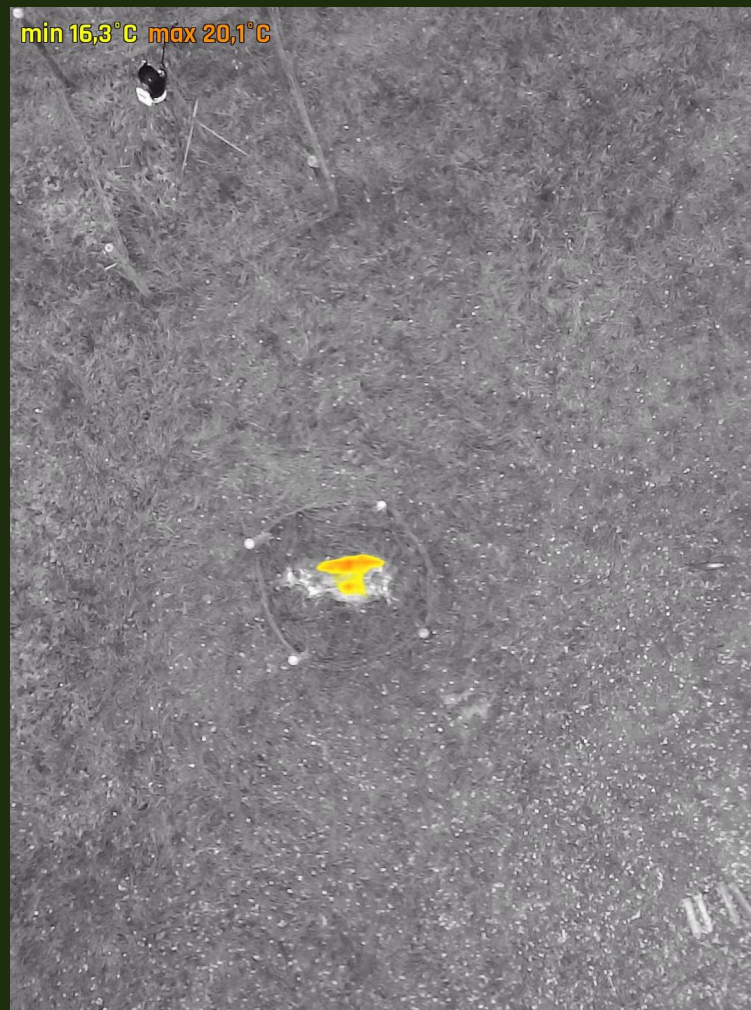
(low solar radiation, low air temperature, 9:00 a.m.)



30 m above ground



10 m above ground





## THE USE OF DRONE WITH THERMAL IMAGING CAMERA

Carcass 3 months old, low solar radiation, low air temperature, 9:00 a.m.)

VIDEO



# THE USE OF DRONE WITH THERMAL IMAGING CAMERA



## PROS:

- + fast searching in large area
- + big thermal radiating surface of laying carcass

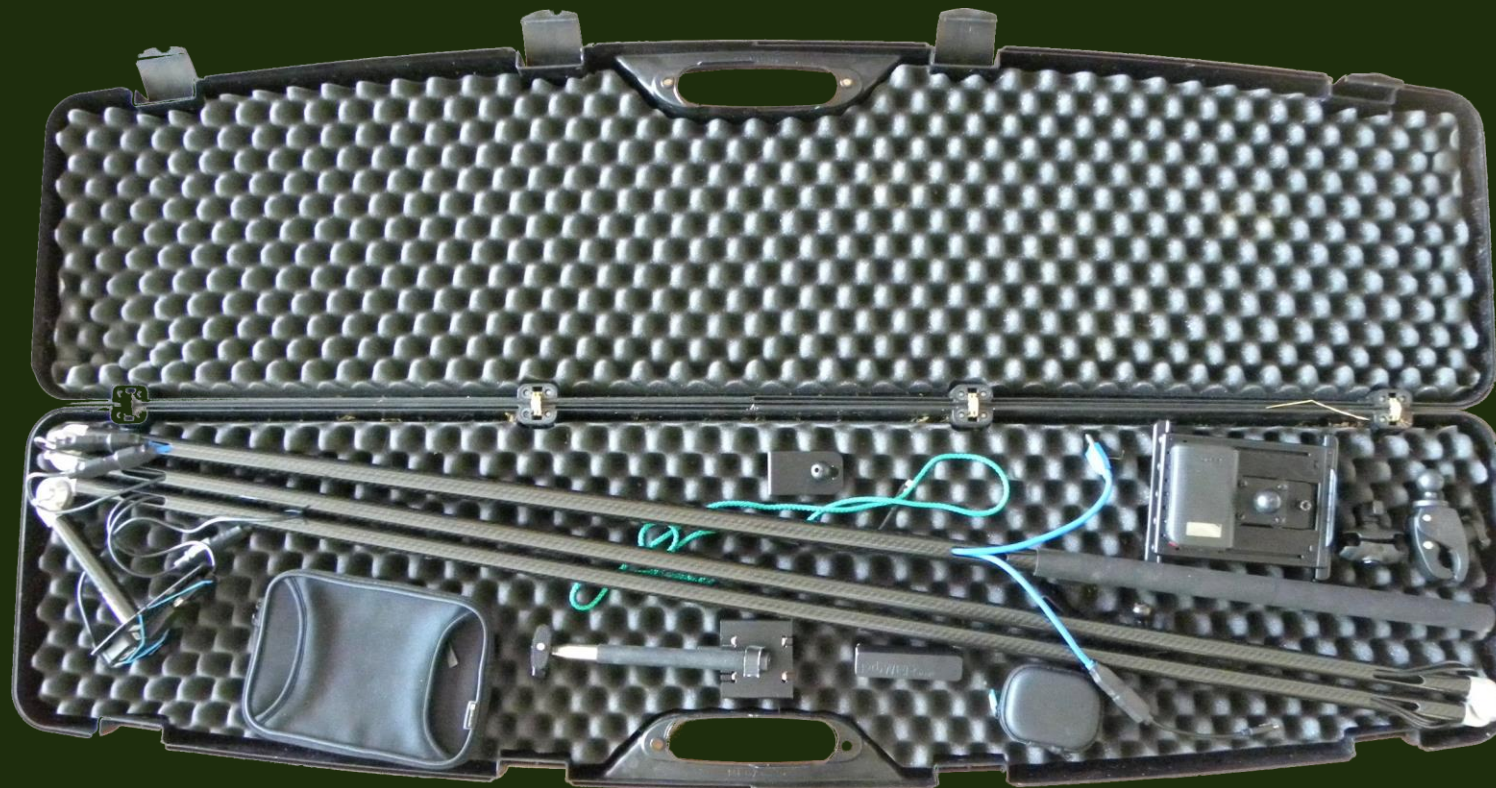
## CONS:

- worse direct visibility through the top of the trees
- legal barriers, especially for night flights
- price

# THERMOVISION LOCATOR VMT-VÚZT

with thermal imaging camera Flir One Pro (160x120px)

4 m long shaft



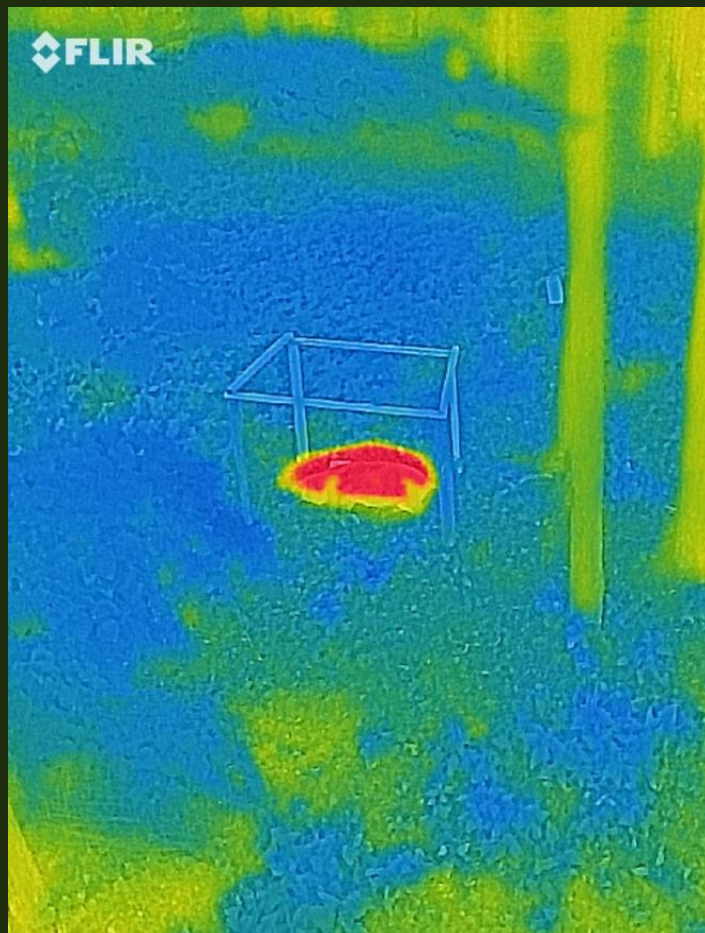


# THE USE OF THERMOVISION LOCATOR VMT-VÚZT



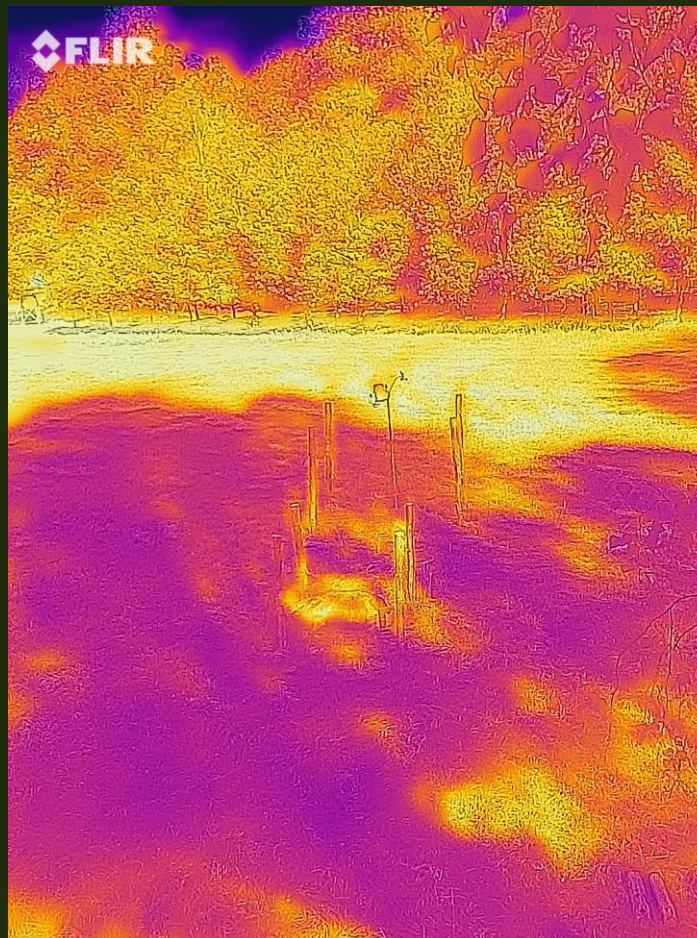
## FRESH CARCASS

(cold weather, night searching, no solar radiation = ideal to search)



## CARCASS 1 WEEK OLD

(inappropriate weather condition, high solar radiation)



## CARCASS 3 MONTHS OLD

(cloudy day, low solar radiation)



# THE USE OF THERMOVISION LOCATOR VMT-VÚZT



## PROS:

- + easy to use
- + view bigger thermal radiating surface of laying carcass comparing to the handheld devices (lower angle to the normal of the land surface), so carcass is easier to find

## CONS:

- maneuverability in densely overgrown terrain



# TESTED HANDHELD THERMOVISION DEVICES



- FLUKE TIS (120x120px)
- FLIR ONE PRO (160x120px)
- SEEK THERMAL COMPACT (206x156px)
- THERMOVISION MONOCULAR NIGHT PEARL IR510 (384x288px)

## PROS:

- + easy to use
- + flexible

## CONS:

- view only small thermal radiating surface of laying carcass (high angle to the normal of the land surface, especially after carcass collapse)

## OVERAL RECOMMENDATIONS



- Minimal interval of searching = 2 weeks
- Search carcasses in the night, or at least early after dawn or before dusk when the sun is low above the horizon and the solar radiation is low
- When use drone (actually forbidden to fly in the night in CZE), bring a helper for precise localization
- Use a proper color pallete of your thermal imager – best to use hotspots if there are no other big thermal radiating subjects



THANK YOU FOR YOUR  
ATTENTION!

