First online course on the use of camera trapping for monitoring wildlife and density estimation in the framework of the EOW

Study design and field protocol

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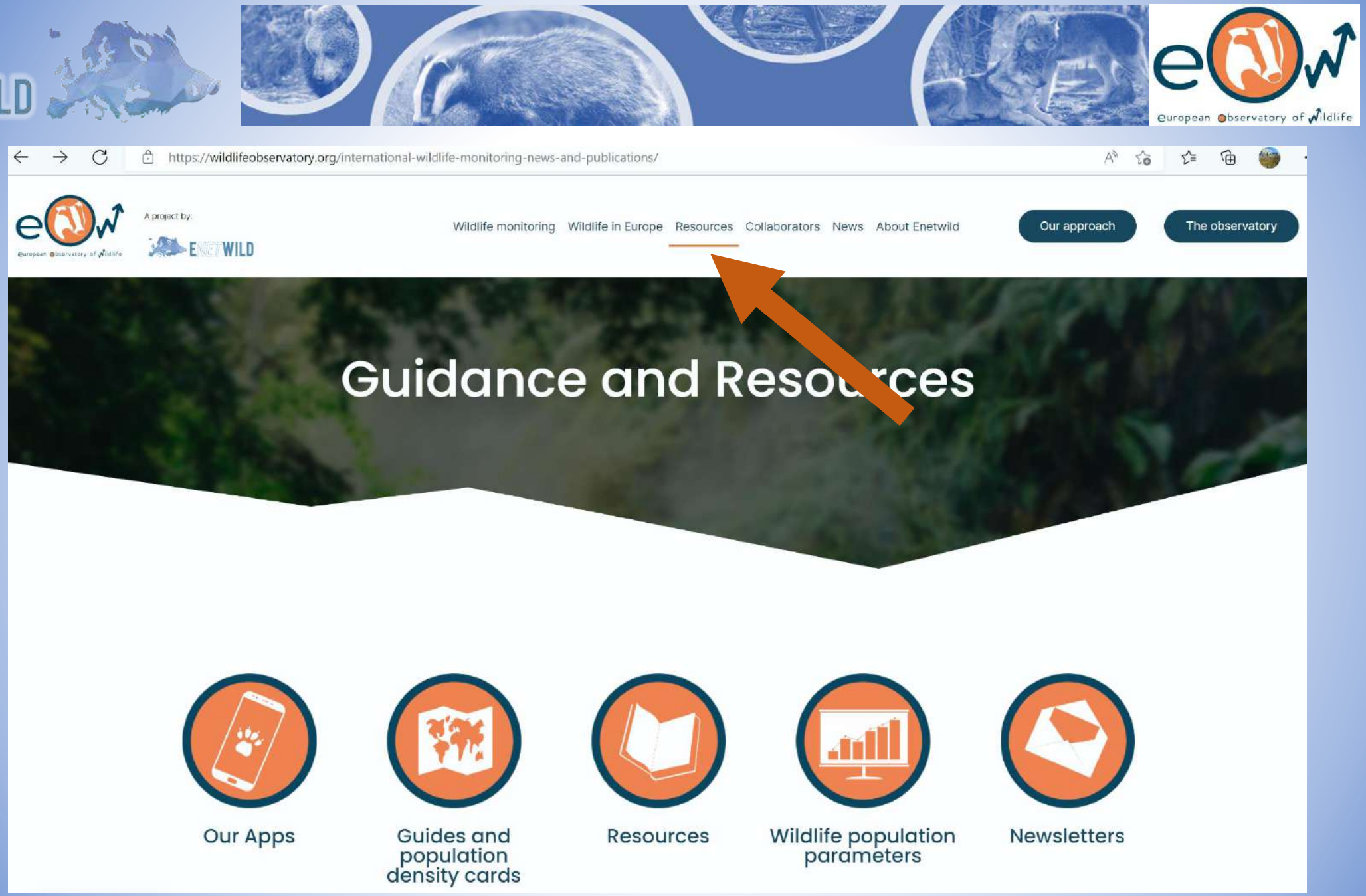
https://wildlifeobservatory.org/international-wildlife-monitoring-news-and-publications/
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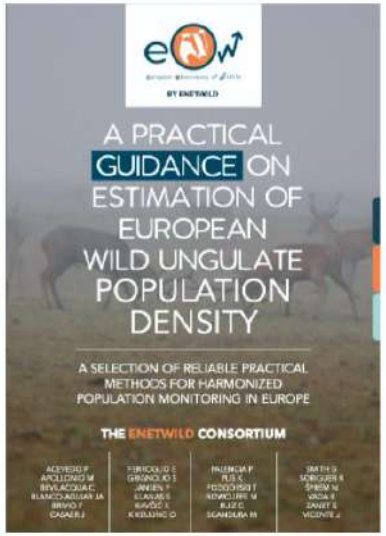
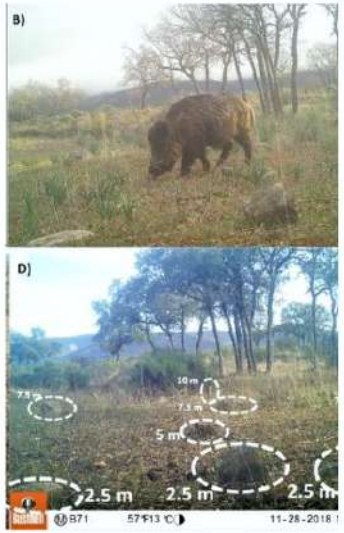
Guides and population density cards



A practical guidance on estimation of European wild ungulate population density



Camera trapping protocol for wild boar density estimation

Guides for carnivores, wild ruminants and wild boar density and abundance estimation

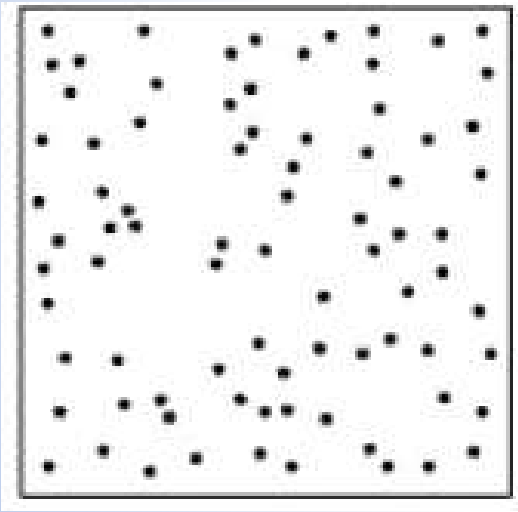
1. Camera trap placements (computer generated)
2. Camera trap deployment (real ones)
3. Camera trap settings
4. Calibrating field of view of the cameras

Random Encounter Model

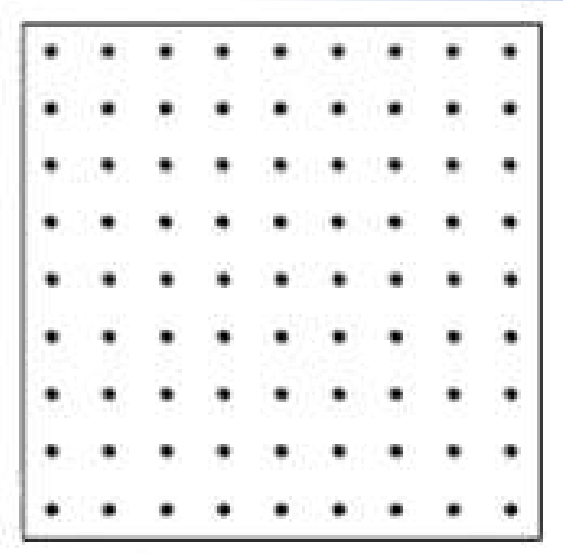
(But also for other unmarked methods)

Random means random

Fully random



Systematic grid with random origin



Cameras should be placed randomly with respect to animal movement

Not bait, not choose the “best”places, not human trails, not preferred locations (food, water, mineral licks…)

Create your computed-generated points using a GIS-software (QGIS, ArcGIS, GvSIG…)

And, if you don’t have the necessary GIS skills… no worries!

GridMaker (shinyapps.io)

Camera trap placements (computer generated)

Purpose and use of the GridMaker app

This app generates a regular grid of points with a randomised starting point within one or more boundaries, optionally with one or more holes within the boundaries. The boundaries and holes must be supplied as .kml polygon files (see below for instructions on creating these). Once the boundary and any hole polygons have been uploaded, and number, spacing and/or orientation of points have been adjusted to taste, you can generate and inspect a randomised grid of points by clicking the Generate grid button. You can then download the point long/lat locations by clicking the download button.

To create kml files in Google Earth Pro:

1. Zoom to your region of interest

2. Right-click on My Places in the Places pane -> Add -> Polygon

3. Enter a name and digitise your site boundary on the map -> OK

4. Right-click on the resulting polygon in the Places pane -> Save Place As -> choose directory, enter a file name and select Save as type Kml (*.kml) -> Save

Camera trap placements (computer generated)

GridMaker

App for generating systematic survey grids. Click App info for useage instructions.

App info

Choose bounday kml file(s)

Browse... EOW_StudySite.kml

Upload complete

☐ Add polygon holes

Covered area: 122.083 sq km

◉ Fixed number ○ Fixed spacing

Number of points 36

Point spacing (km) 1.864

Grid orientation

-45 0 45

-45 -36 -27 -18 -9 0 9 18 36 45

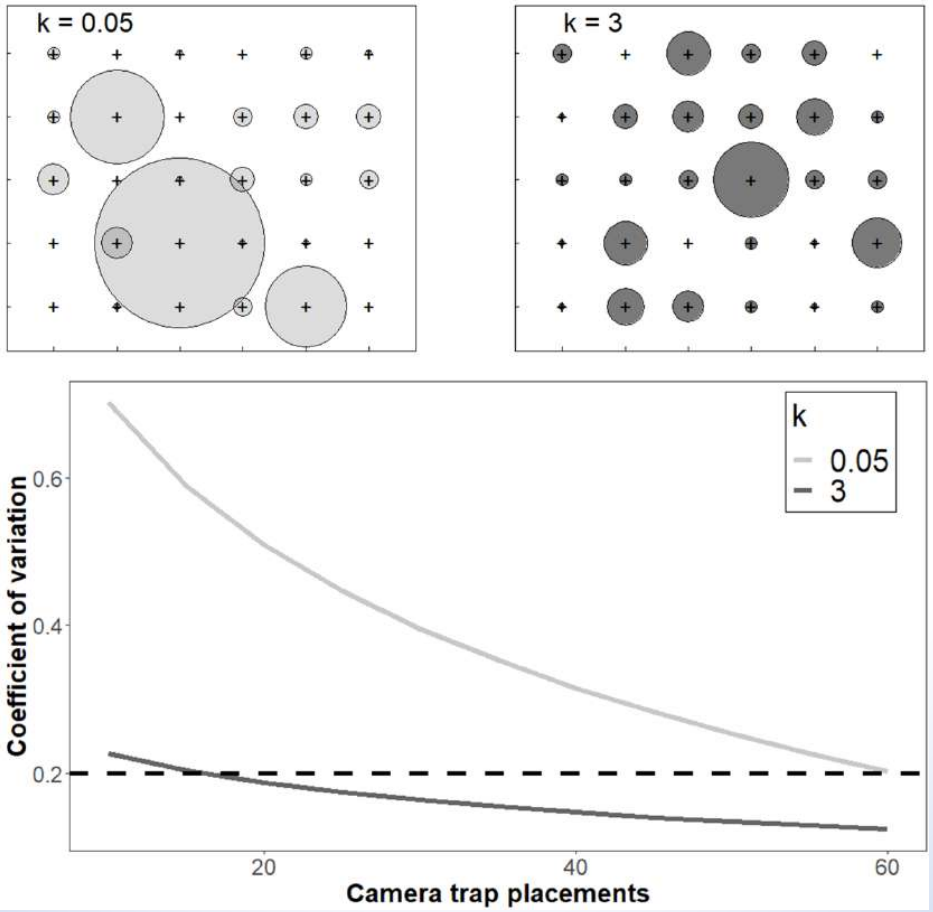
Generate grid

Download locations

Camera trap placements (computer generated)

How many placements?

The aggregation of the population determines the precision for a given number of cameras



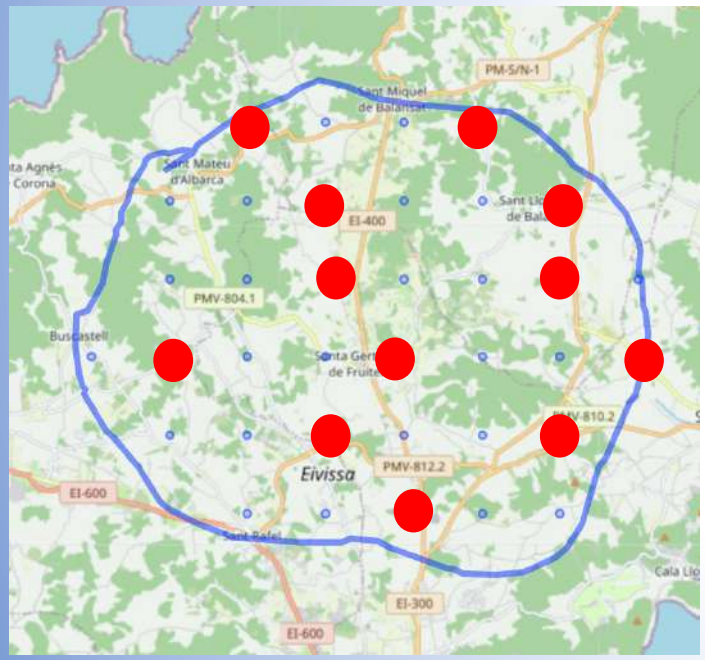
45 to 60 for an appropriate precision

Palencia *et al.*, 2022 – Remote Sensing in Ecology and Conservation – Accepted! DOI:10.1002/rse2.269

Camera trap placements (computer generated)

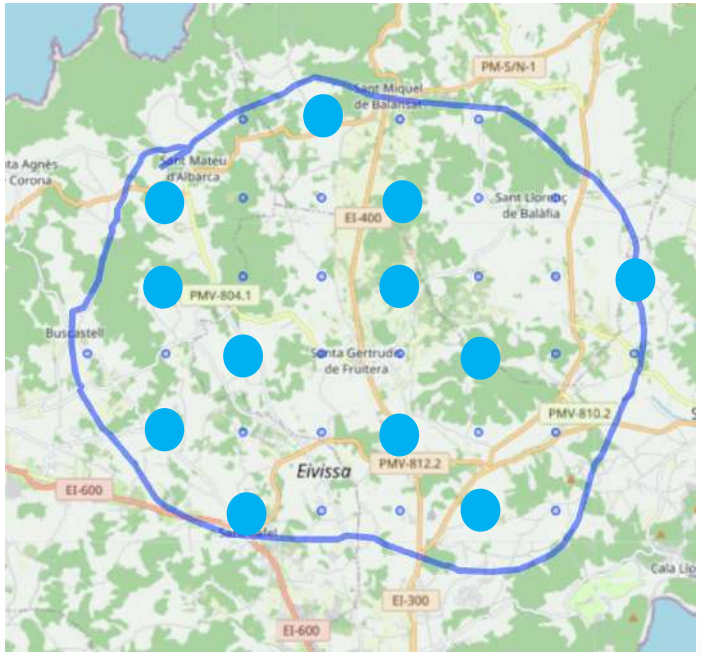
12 cameras (devices), moved twice to sample 36 placements

Round 1



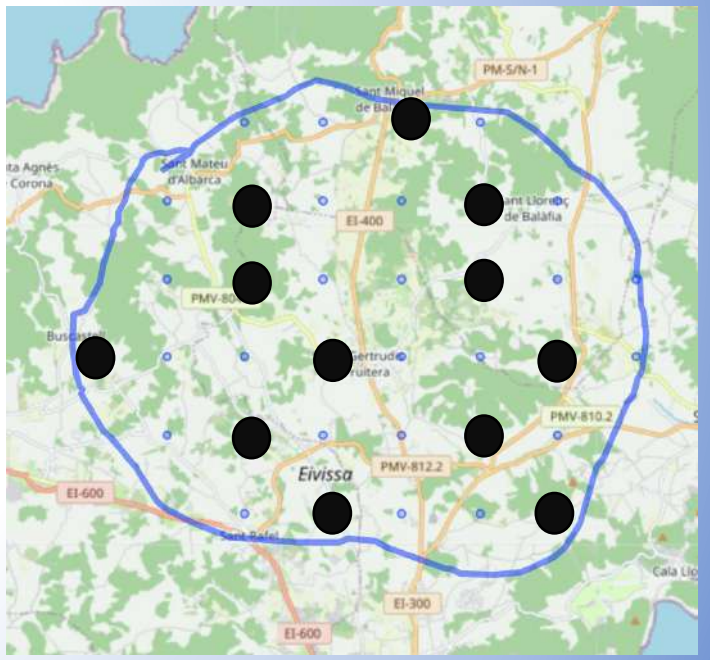
1 month (approx.)

Round 2



1 month (approx.)

Round 3



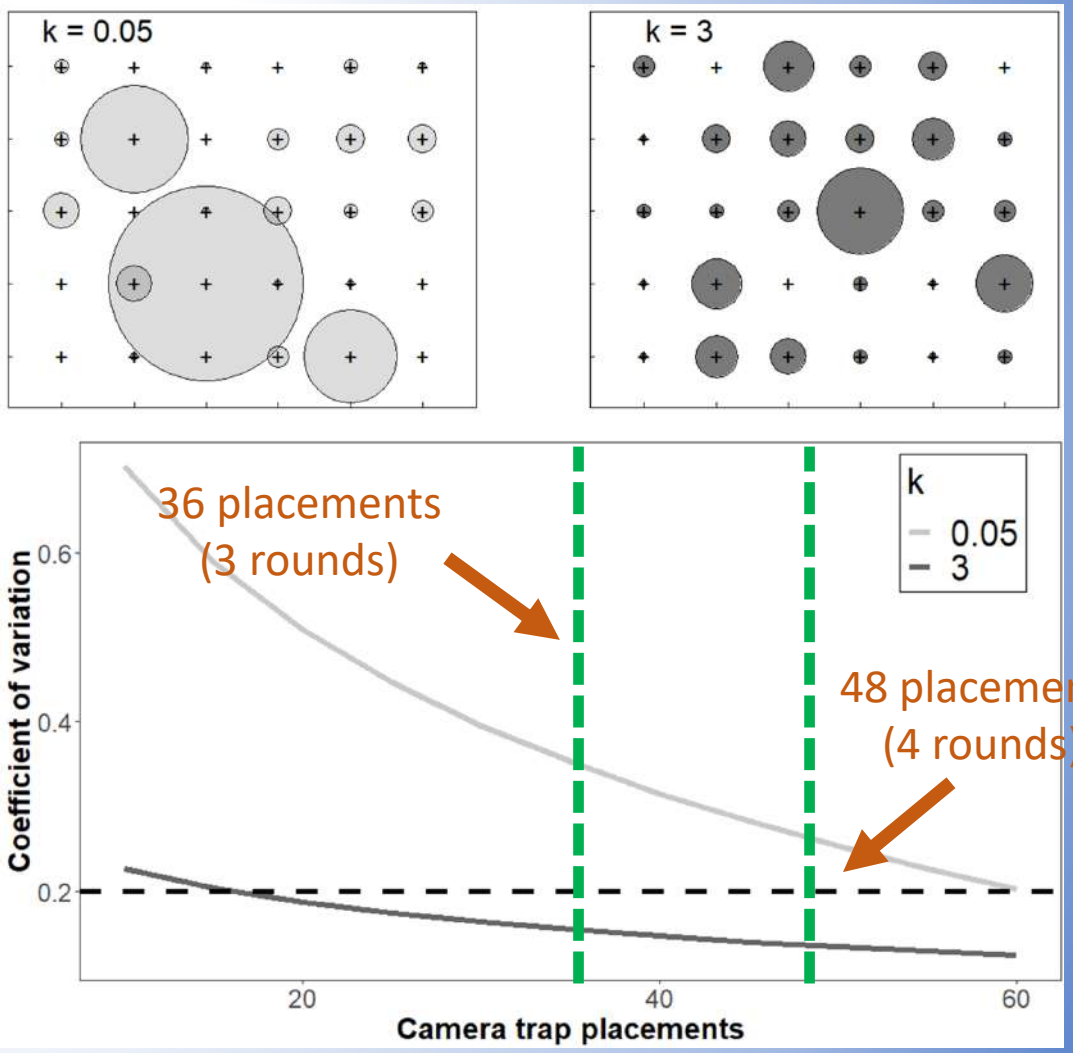
1 month (approx.)

Camera trap placements (computer generated)

...But!

Round 4 is highly recommended

Improvement in precision!!



Camera trap deployment (real ones)

1. Find a suitable attachment point for the camera **as close as possible to the computer-generated point**.
2. Keep in mind the **microhabitat** in which it fell and aim to place the camera in the same habitat
3. To the extent possible, **point cameras** at ground that is reasonably even, **not extremely rough**
4. **Remove as less vegetation as possible** (beyond 4-5m usually don't activate cameras)
5. Camera **facing north**
6. Set the camera at **50cm** (approx.)
7. **Camera perpendicular to the ground** (PIR sensor parallel to the ground)

Palencia *et al*., 2021 – J. Zool.

Camera trap deployment (real ones)

1. **Resist** the temptation to choose spots that **seem good** for animals
2. **Don't** use **baits, attractants**, etc.
3. **Not** human **paths**, no wildlife **trails** (if the computer-generated point is in a wildlife trail, then place your camera there!)
4. **Don't create "football stadiums"** in front of the cameras (animals will react!). Remove just the needed vegetation to avoid "blank photos"
5. **Don't smoke, pee, eat**…

Camera trap deployment (real ones)

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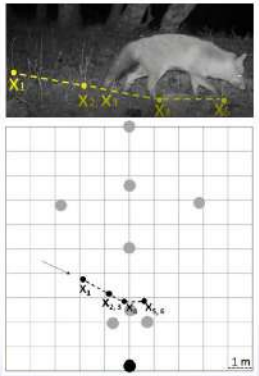
Camera trap settings

1. Operation of **24h** per day
2. **Burst mode** (maximum number of photos per activation)
3. **Minimum** waiting **time between activations**
4. **Time and date stamped** on the photo
5. **Sensitivity low** (usually works for our target species)
6. **Flash** intensity (regulate to your cameras and placements). Avoid overexposed photos
7. **Picture quality** (as lower as better to optimize memory)
8. Take **daily control photos**. If possible, set your camera to record –a time lapse- photo at 00:00 and 12:00. This will be very useful to know when camera was operational

Calibrating field of view of cameras

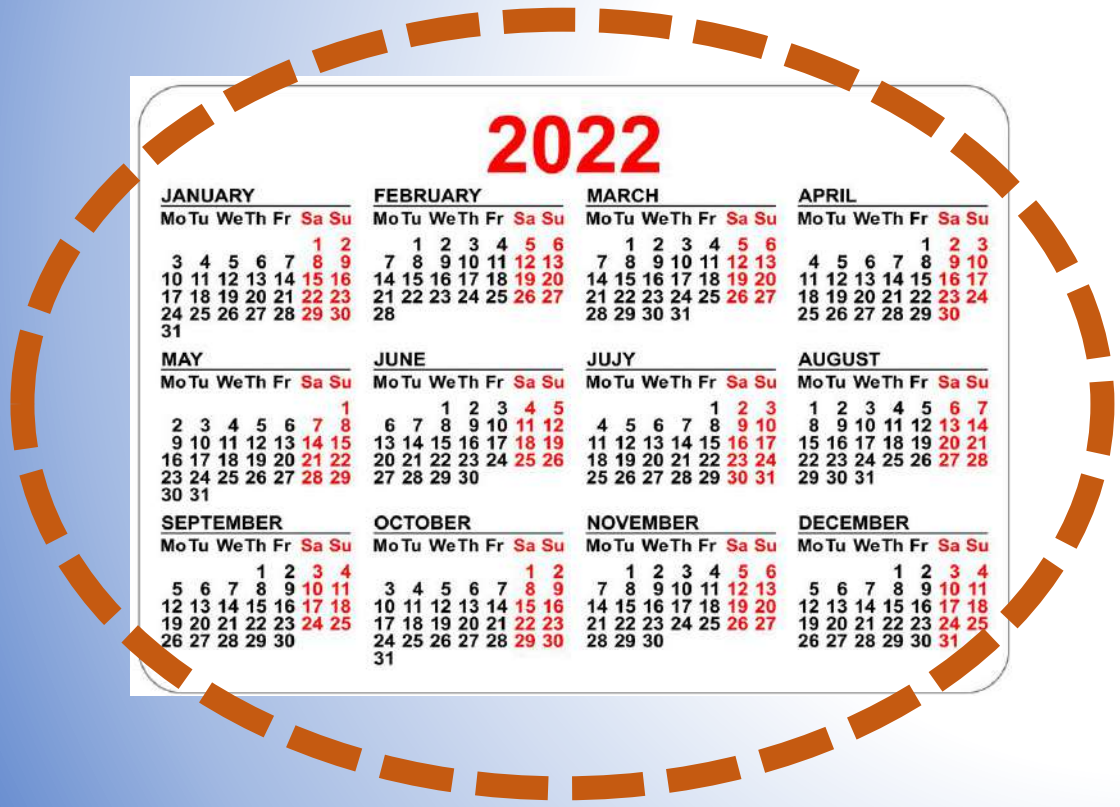
For most of the unmarked camera trap methods,
we need to locate animals in the field of view



Remember this, it is a key point that will be discussed this morning

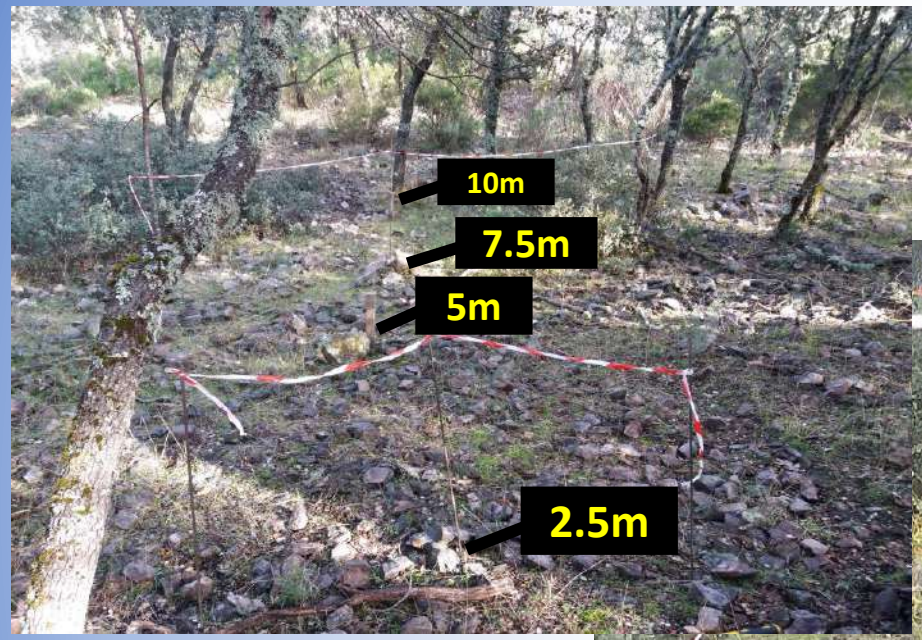
Calibrating field of view of cameras

Present



Future

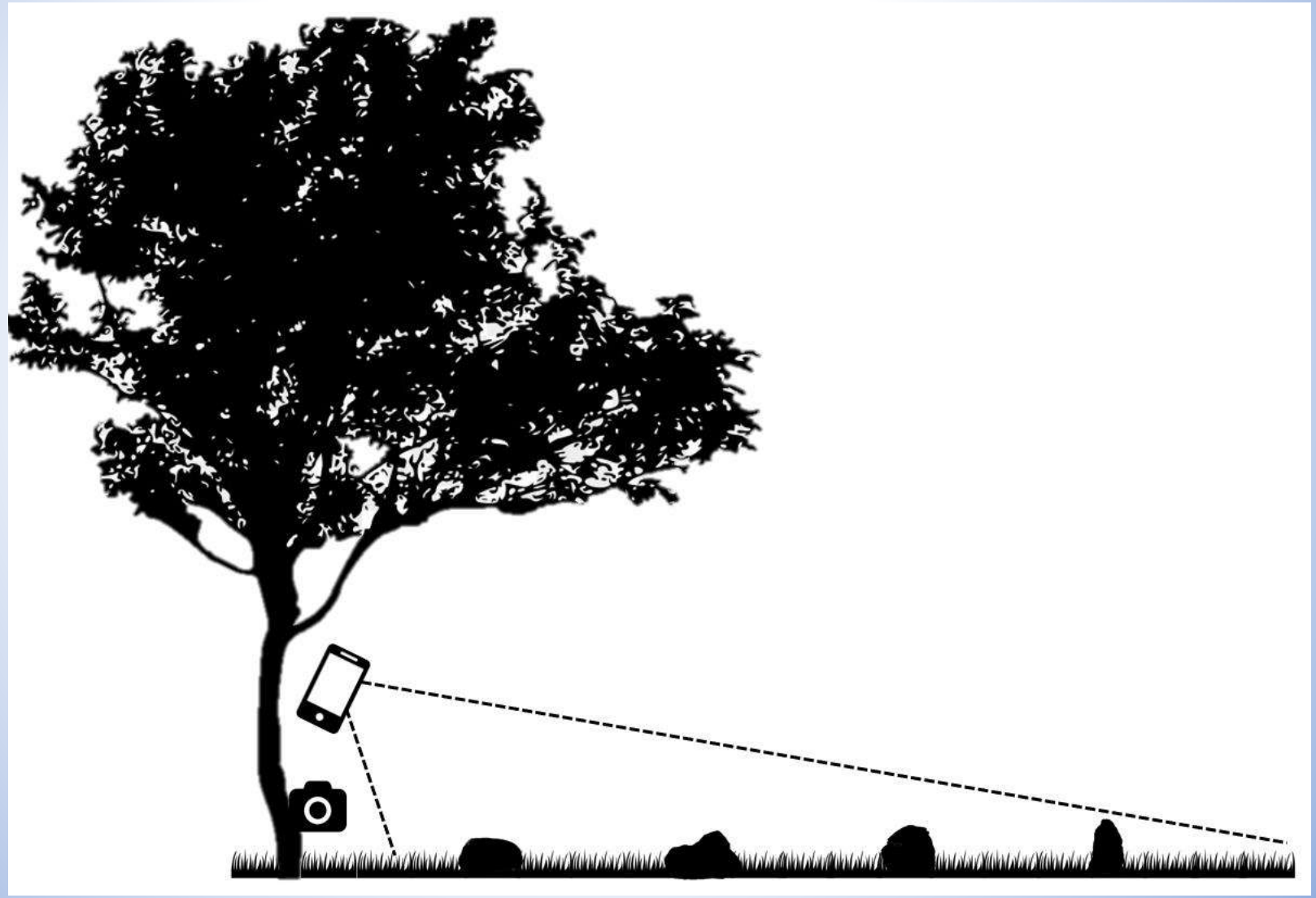
Calibrating field of view of cameras



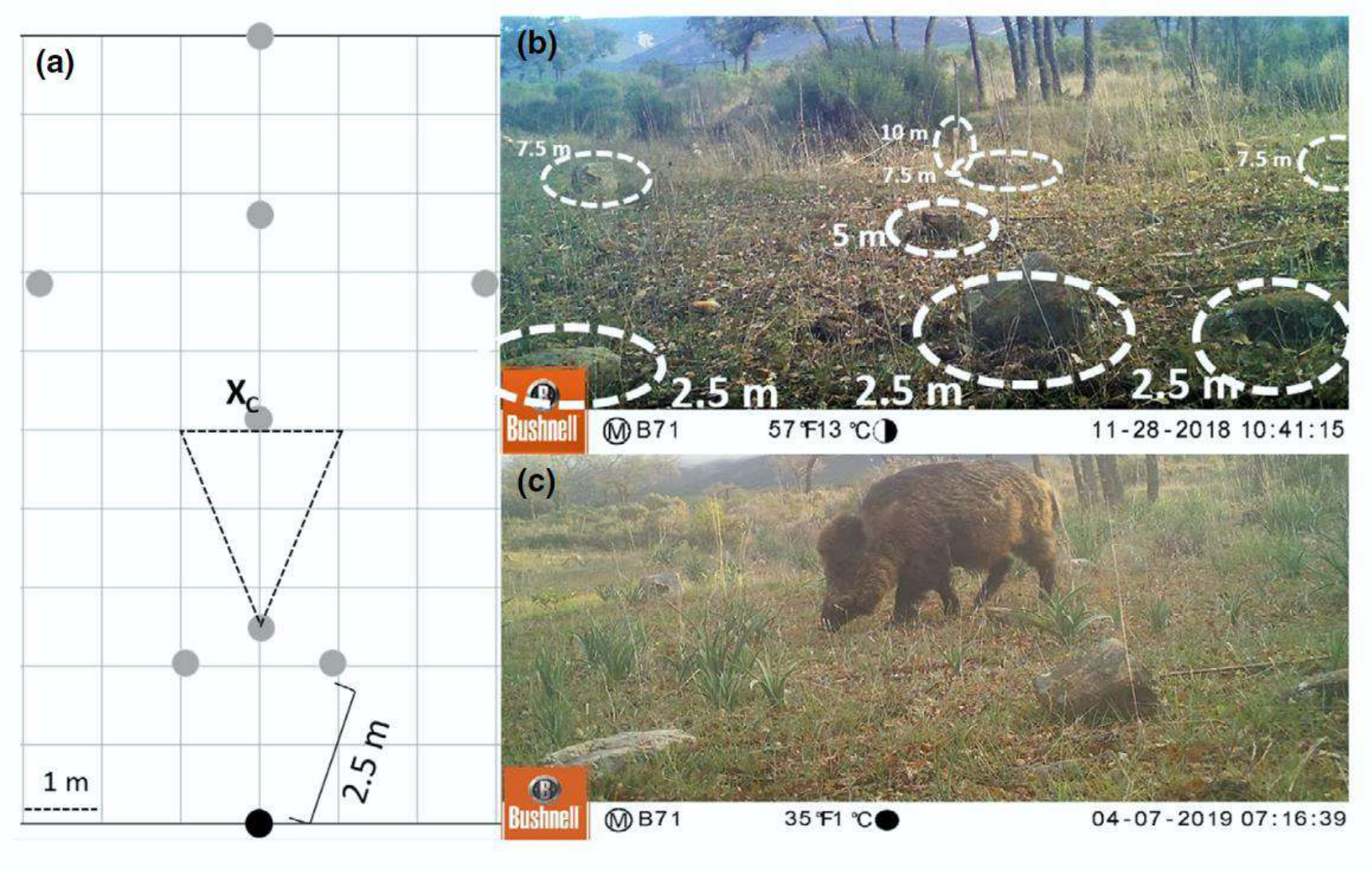
Take a photo with your mobile

Calibrating field of view of cameras

Take a photo with your mobile

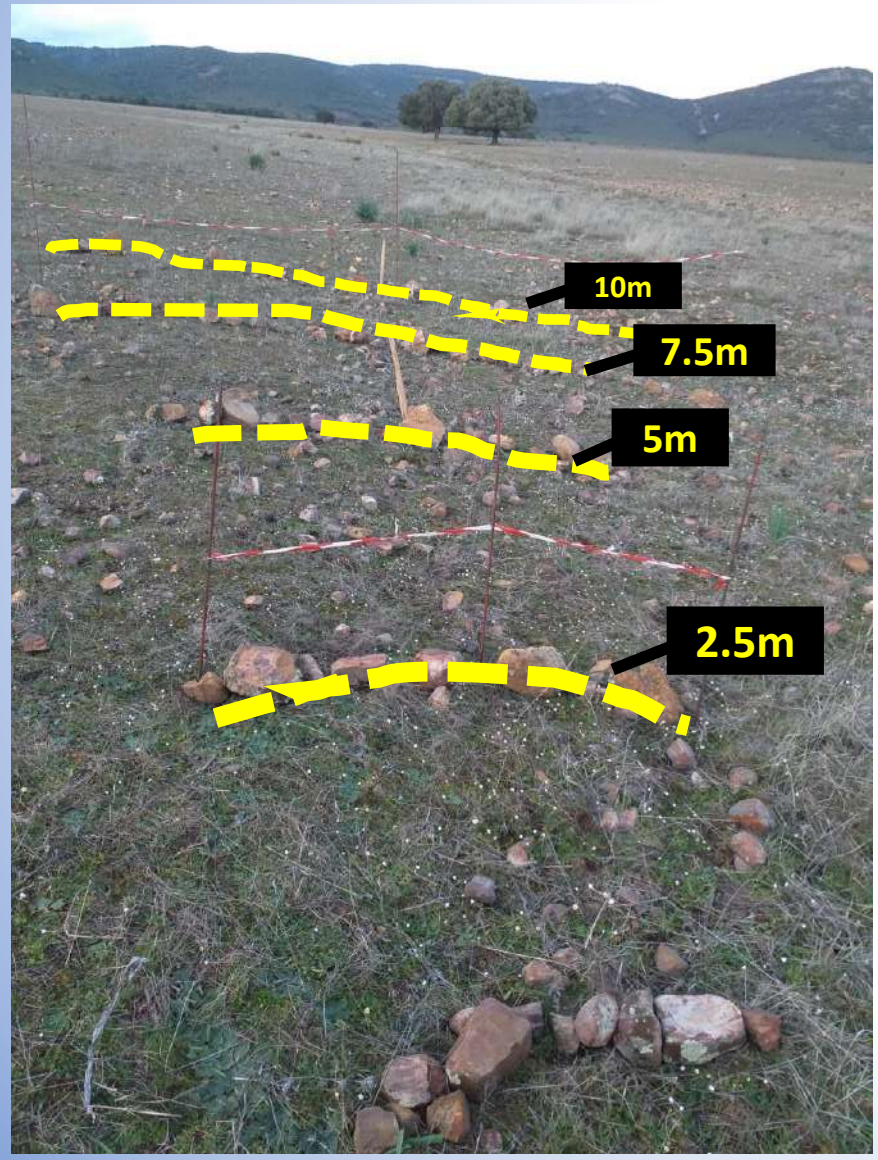


Calibrating field of view of cameras



Palencia *et al*., 2021 – J. Appl. Ecol.

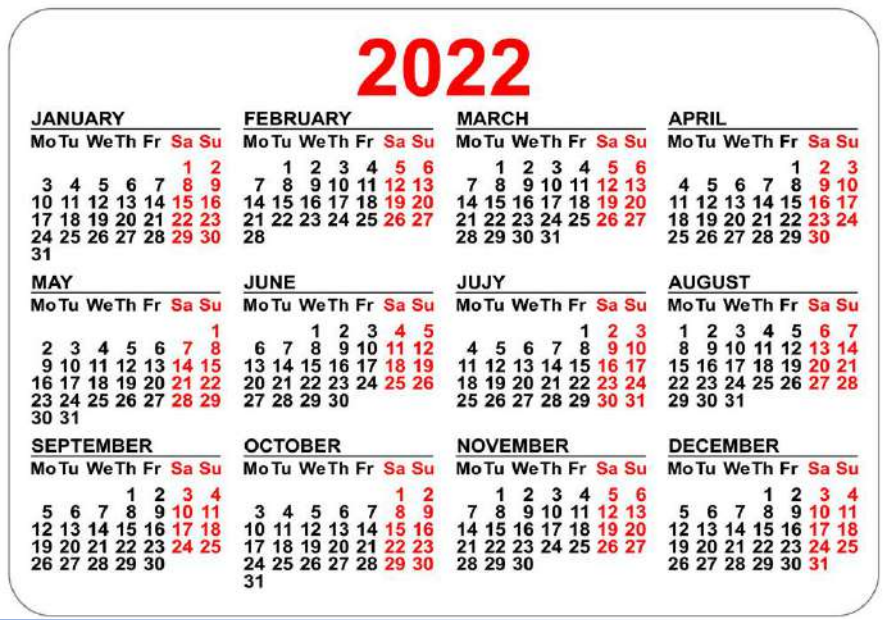
Calibrating field of view of cameras



Calibrating field of view of cameras

Calibrating field of view of cameras

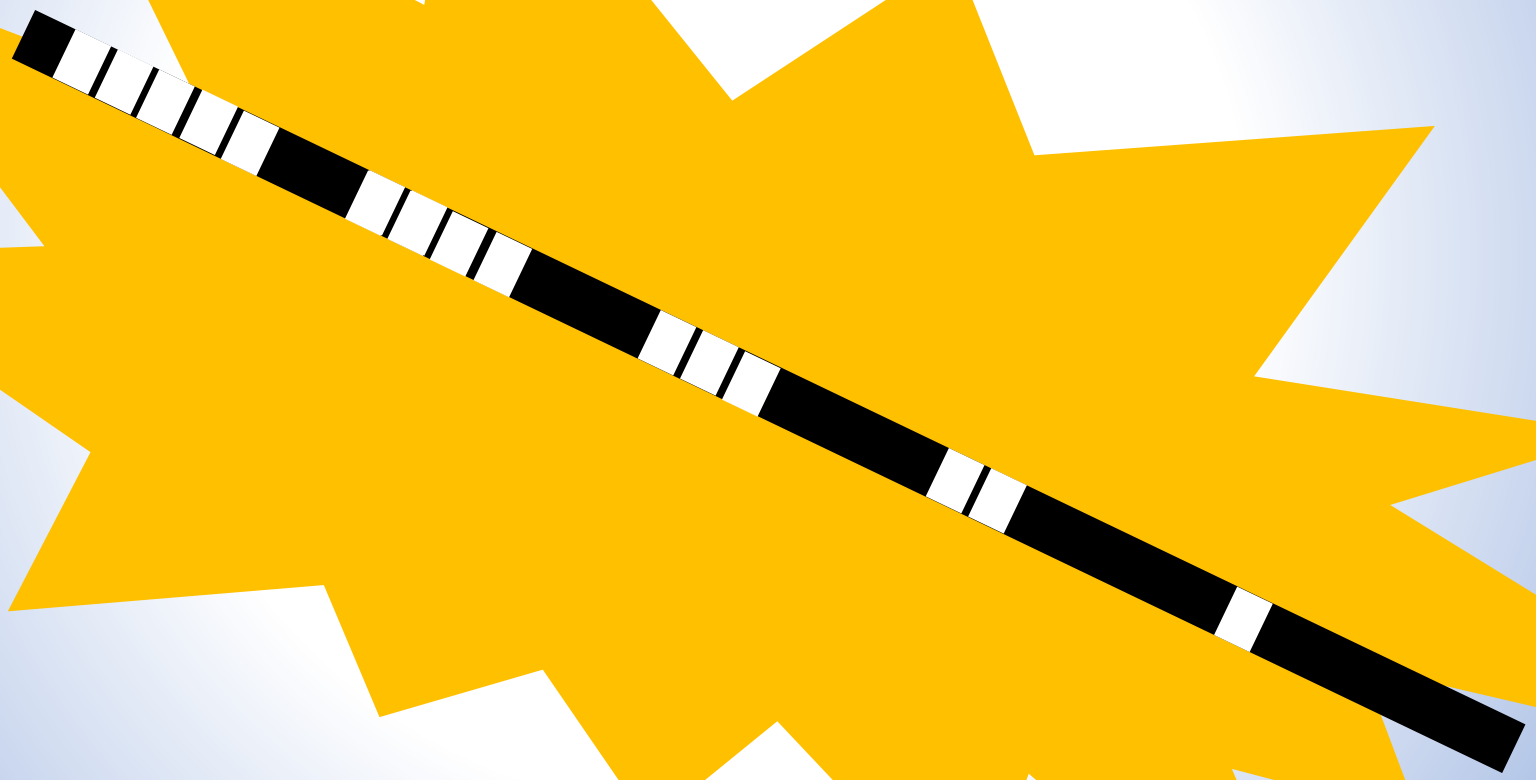
Present



Future

Calibrating field of view of cameras

Magic wand



How to do “the magic wand”?

Materials:

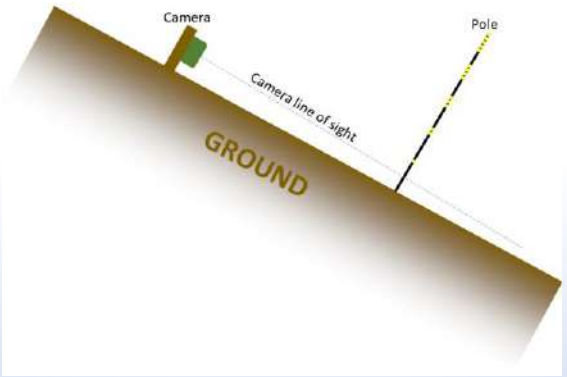
- **A pole** (min. 1 m length). 1m to 1.5m is perfect! (Plastic, metal, wood… as you prefer!; round, square… as you prefer!)
- **Scotch tape** (black and/or white recommended, but in general, a different color than the color of the pole)
- **Measuring tape**
- **A marker**
- **Scissors**

Calibrating field of view of cameras

Methods:

Calibrating field of view of cameras

1. **Set up the camera firmly** to minimize risk of subsequent movement, and in position ready to capture wildlife images. **Switch it on** ready to trigger photos.
2. Starting about 1m directly in front of the camera, **hold the pole with its based on the ground** so that it is clearly visible to the camera. Take care to ensure that the **pole is held perpendicular to the camera's line of sight** . On level ground with camera line of sight roughly parallel to the ground surface, the pole should be roughly vertical, but if the camera is angled to observe a slope the pole may need to be tilted accordingly.

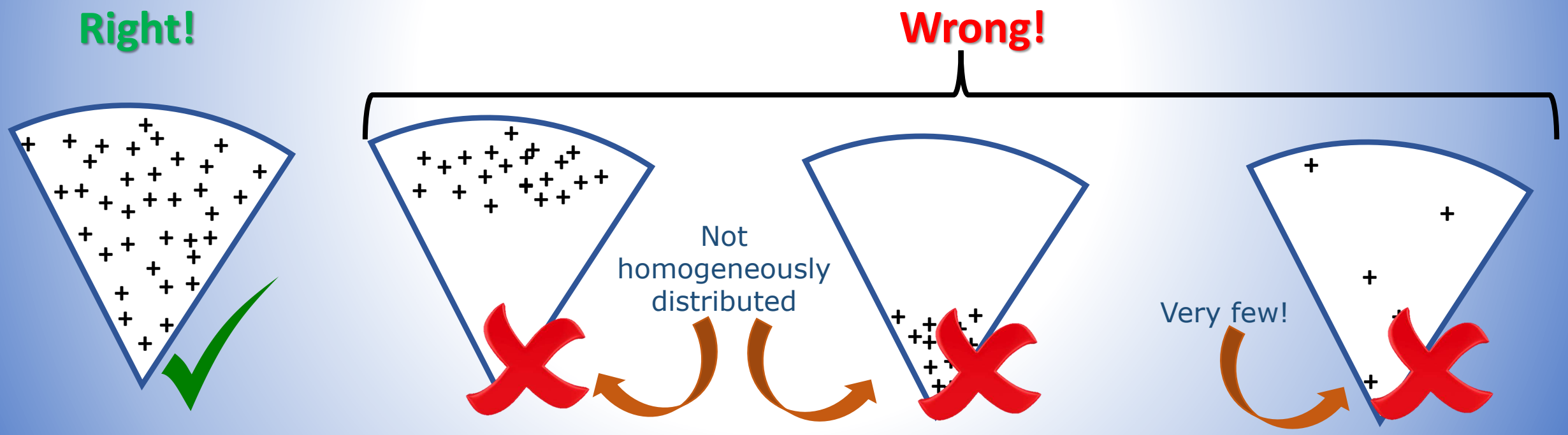


3. **Hold the pole** still long enough to ensure a clear image (5-10 seconds). In order to **indicate when the pole is resting on the ground**, give a distinctive hand gesture when this is the case. For example, **thumbs up**!

not perpendicular

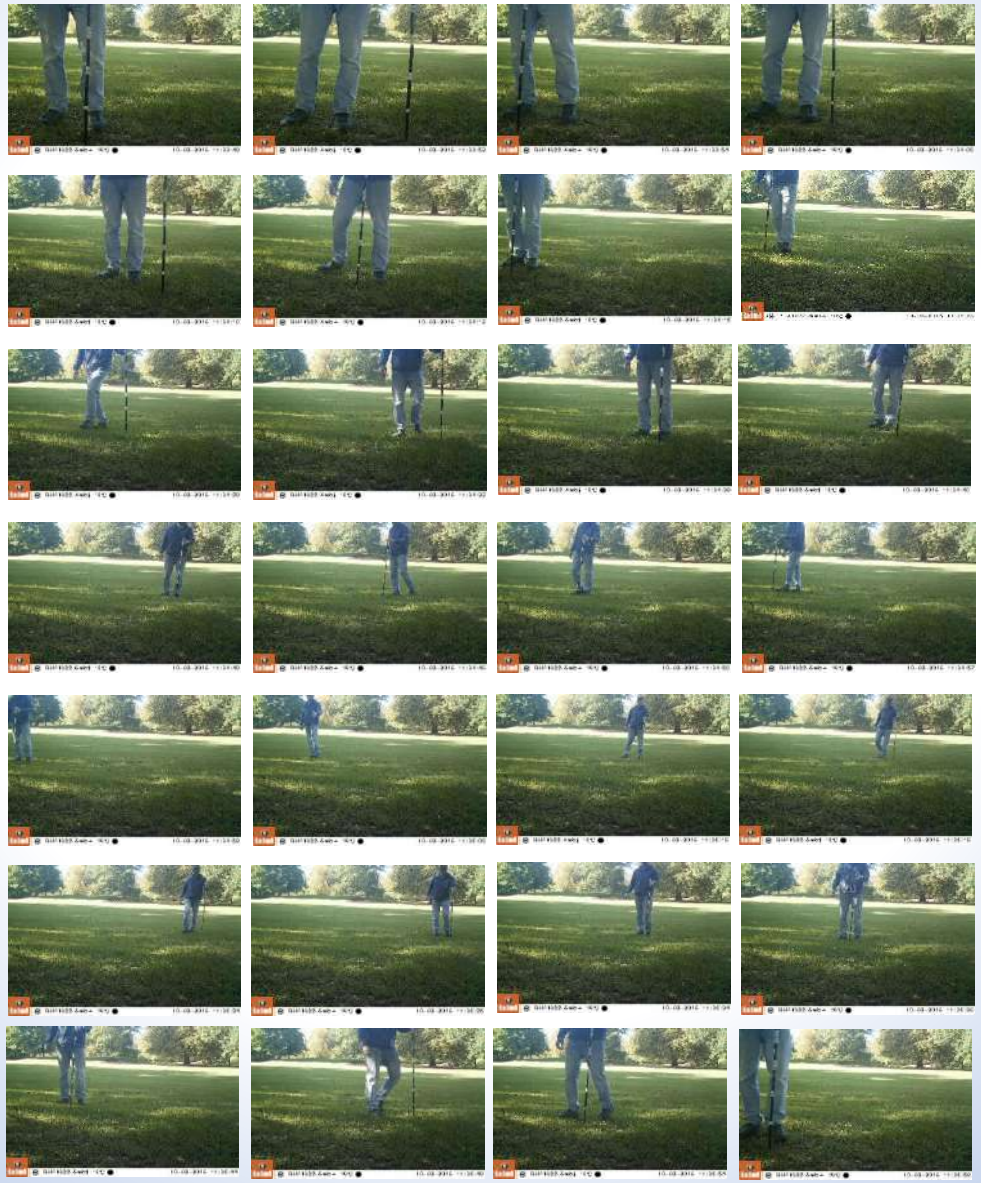
not on the ground

4. Repeat it **20-25 times** covering homogeneously **all the field of view** of the camera. From very close to at least as far as the furthest distance you expect to record animals.



Calibrating field of view of cameras

Example of a good set of calibration pole images for a deployment



Not only once!!

Note that **if the camera** position **is moved, even slightly** (for example when checking batteries), the **calibration process should be repeated** for that deployment. If possible it should also be repeated when removing the camera, as well as when setting and checking it

Calibrating field of view of cameras

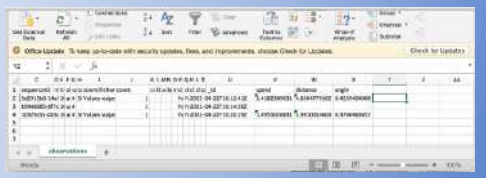
Deployment calibration + **Camera calibration** + **Artificial intelligence tools** = **Animal locations!!**

You!

EOW manager team

(And instructions available on the web site soon)

Agouti



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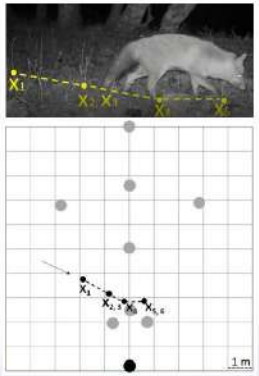

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Questions??

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