OBFS WILDLIFE MONITORING NETWORK

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PURPOSE

This handbook is designed **for field stations in the OBFS network** that want to join a **global wildlife monitoring initiative**. It provides both the background and the step-by-step guidance needed to set up standardized camera trap surveys and contribute data to a shared platform.

By participating, stations help build a coordinated network that spans ecosystems around the world. Standardized camera trap data allow researchers to study wildlife populations, habitat use, migration, and species interactions across sites, while also supporting conservation planning, education, and training.

JOINING THE PROJECT

Field stations provide a unique opportunity to document and share information about their ecosystems. Monitoring wildlife diversity helps expand knowledge of surrounding forests and habitats, support conservation decisions, and enrich education and outreach programs.

HIGH VALUE

Participating stations can use the data directly in their own projects, for example:

- **Science**: tracking changes in mammal populations over time.
- **Education**: giving students hands-on experience with ecological monitoring.
- **Community engagement**: sharing results with local partners or visitors.

At the same time, your data contributes to a larger, standardized network, allowing comparisons across ecosystems and regions.

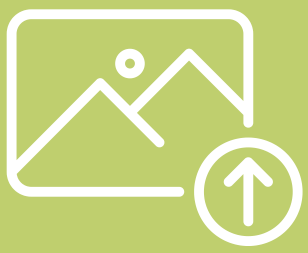
EASIER THAN YOU THINK

Setting up a camera trap project to document wildlife diversity is **extremely useful, and surprisingly simple!** We've designed a **straightforward and friendly protocol** that makes it easy to get started at your own station, even if you've never run a camera trap project before.

THE BASICS

Each station sets up **5 permanent camera traps**, each in a different ecosystem within your station.

Cameras **automatically collect photos** of wildlife over time.



Photos are **uploaded to Wildlife Insights**, a free online platform for storing, identifying, and sharing camera trap data with the world.

All stations data are **aggregated** into the OBFS Wildlife Monitoring Program, where you can **explore results**, compare with other stations, and access basic statistics.

IS THIS THE RIGHT FIT?

Before starting, consider the following points to see if this project matches your station's capacity and resources:

- **Time commitment:**
  - Initial setup and trial (first month): ~12-15 hours
  - Ongoing (after setup): ~6-8 hours per month

- **Team:**
  - One experienced staff member should oversee the project.
  - Tasks such as camera setup, charging batteries, uploading, and photo identification can easily be shared with other staff, interns, or students, even if they have little prior experience with wildlife monitoring.
  - You will want to have a few resources available for training your team properly (we will share a few examples for these types of resources here).

- **Initial financial investment:**
  - It is possible to start this project with a budget under USD 1,500 for cameras and accessories.

- **Internet connection:**
  - A reliable internet connection makes uploading and identifying photos in Wildlife Insights easier.
  - If internet access is limited, photos can be processed and uploaded to the platform outside of your station.

This project is designed to be **manageable for small teams with limited budgets**, while still producing high-quality, standardized data that can be used locally and shared globally.

CHOOSING THE LOCATIONS

For this project, each station sets up one camera in each of five habitat types to capture a representative sample of local wildlife:

Trail: A hiking, ATV, or other frequently used human trail. Trails often serve as animal travel corridors.

Stream: Near a stream, river, or creek where wildlife may drink or forage. Choose a stable, non-flooded area for the camera.

Open Forest: A clearing, edge, or open patch within the forest. Ideal for capturing species that prefer lighter cover.

Dense Forest: In the interior of the forest, away from edges, under a closed canopy. Look for animal tracks or signs of activity.

Wetland: Near a pond, marsh, or seasonally flooded area where wildlife may gather. Ensure cameras are placed on stable ground.

If your station does not have one of these habitat types, we can discuss equivalent habitats that provide similar ecological information. Flexibility ensures all stations can participate and contribute meaningful data.

Tip – When choosing a spot within each habitat, consider:

- **Camera stability and safety from flooding or theft**
- **Accessibility for maintenance and data retrieval**
- **Spots where there are features that you know wildlife like (claylicks, etc)**

CHOOSING THE RIGHT CAMERAS

MATCH YOUR CAMERA TO YOUR ENVIRONMENT

- **Rainforest or humid climates:** Prioritize waterproofing and resistance to mold or corrosion.
- **Cold winters:** Look for cameras that tolerate freezing temperatures.

CONSIDER YOUR VISIT FREQUENCY

If you can only visit infrequently (every few months):

- Choose cameras that support large SD cards (ideally 128 GB; some models cap at 32 GB).
- Consider models that allow solar panels to extend battery life.

PRACTICAL CONSIDERATIONS

- **Repairs and service:** Local suppliers are easier to work with for shipping, customer service, and repairs.
- **Data compatibility:** Small differences between models will not prevent data comparability across stations. See examples of cameras used in our stations on page 27.

CAMERA PERFORMANCE FEATURES

- **Detection range:** Aim for at least 15 m. Vegetation and weather will affect results in the field, but you want to maximize your chances of detecting species.
- **Shutter speed:** Faster is better (≤0.25 s). Reduces blurry photos.
- **Night detection:** Choose infrared (no flash) to minimize disturbance.
- **Photo quality:** At least 4 MP (higher quality helps with identification and outreach but fills cards faster; settings can be adjusted).
- **Consecutive photos:** Capacity to enable rapid multi-photo bursts per detection to capture behavior and group size.

ACCESSORIES TO GO WITH YOUR CAMERAS

To run your project smoothly, you will need a few essential accessories and may find some optional extras useful depending on your station's conditions.

ESSENTIAL ACCESSORIES

- **Batteries:** Each camera needs a full set
  - Use rechargeable lithium batteries (preferred for durability and sustainability).
  - Purchase extras so you can swap them during visits and keep cameras running.
  - Choose a system where batteries come with a charger, rather than individual rechargeables.
- **SD cards:** At least 5 cards (one per camera) are required to start.
  - We recommend 10 cards so you can replace full ones in the field and download photos later without interrupting camera operation.

Tip – Label SD cards by number to keep track of which camera they belong to.

OPTIONAL ACCESSORIES

- **Locks:** Useful in areas with high human traffic to reduce theft risk.
- **Additional battery chargers:** Essential if you use rechargeable batteries; having more than one speeds up the turnaround between visits.
- **Protection boxes:**
  - Can be purchased or made in-house
  - Examples: metal casings at Gault Nature Reserve to further protect from theft and damage (left), plastic covers made from reused materials at Finca las Piedras to protect against rain (right).

SETTING UP AND MAINTAINING THE CAMERA TRAPS

Protocol 1 – Initial set up and camera settings

- Step 1: Prepare your materials
- Step 2: Identify your locations
- Step 3: Set up your camera traps in the field for the first time
- Step 4: Run a trial period

Protocol 2 – Routine memory card, battery swap and maintenance

Step 1: Prepare your materials

Being organized before heading into the field saves time and prevents data loss.

- **Label everything:** Mark each camera, SD card, locks and keys (if using) with its location number using waterproof labels or permanent marker.

- **Have spares ready:**
  - **SD cards:** At least 2 per camera (so you can swap full cards for empty ones in the field).
  - **Batteries:** At least 2 full sets per camera. Charge all batteries before field visits.
  - **Other accessories:** Consider purchasing extras (mounting straps, locks, protection boxes) in case replacements are needed.

Tip – Prepare a small field kit for your team with:

- Spare SD cards
- Fully charged batteries
- Tools (e.g., screwdriver, lock grease)
- Notebook or data sheet to record camera status
- A GPS handheld device with the camera locations

This preparation ensures you can quickly swap cards, replace batteries, and fix any issues without a second trip.

Step 2: Identify your locations

1 – **Select habitats:**

- Choose one site for each of the five habitat types: trail, stream, open forest, dense forest, wetland.
- Mark potential spots on a map before heading into the field if possible.

2 – **At each location:**

- Choose a sturdy support (like a tree or post) for your camera.
- Avoid:
  - Steep slopes or uneven terrain (affects detection range).
  - Tall grass or shrubs directly in front of the camera (if possible) to avoid false triggers.

3 – **Record location data:**

- Take GPS coordinates for each site.
- Create a table or map for your team with camera names/IDs and locations.

Tip – Number your sites like this to facilitate upload to Wildlife Insights later on:

1. **Trail**
2. **Stream**
3. **Open forest**
4. **Dense forest**
5. **Wetland**

Step 3: Set up your camera traps in the field for the first time

Bring to the field:

- 5 camera traps
- Charged AA batteries (enough for all your cameras)
- 5 empty SD cards, numbered 1 to 5
- Coordinates map / table from Step 1
- GPS
- Key ring and locks (if using)
- Field notebook or data sheet for recording installations details (optional)

1 – **Prepare camera settings:**

Setting	Value recommended
Date	Current date
Time	Local time (summer time year-round)
Photos per trigger	Highest number possible
Quiet period	30 seconds

2 – **For each location:**

1. Navigate to the site using GPS/map.
2. Choose a sturdy support (like a tree or post) for your camera.
3. Mount the camera:
    - **Direction:** North-facing (minimize glare)
    - **Height:** 30-50 cm above ground (knee height).
    - **Angle:** Parallel to the ground.
4. Clear loose, dead branches directly in front of the camera if there are any.

PROTOCOL 1 – INITIAL SET UP AND CAMERA SETTINGS

Tips:

- The **height may have to be adjusted** if necessary due to snow, rising water levels, or other environmental conditions.
- Avoid steep slopes or grooved terrain, which can reduce detection range.
- Make sure the straps are tight and the camera is stable.

Step 4: Run a trial period

Before committing to permanent camera locations, run a 1-month trial to confirm that each site captures animal activity effectively.

How to run the trial:

1 – **Deploy cameras** in the 5 chosen locations (one per habitat type).

2 – **Collect data weekly** for 4 weeks:

- Visit each camera once per week
- Swap SD cards and review photos
- Record observations (e.g., vegetation blocking the lens or too many people in photos)

3 – **Evaluate performance:**

- If a camera's location is not showing the results you expect, consider **relocating it** within the same habitat type.
- Test the new spot for the remaining weeks of the trial period.

4 – **Finalize locations**

After 4 weeks, select the sites that yielded the most reliable detections as your permanent monitoring locations.

Why this matters

Running a trial period helps ensure you are monitoring the most productive sites, saving time and maximizing the value of your data for research and education.

PROTOCOL 2 – ROUTINE MEMORY CARD, BATTERY SWAP, AND MAINTENANCE

Bring to the field:

- Charged AA batteries (enough for all your cameras)
- 5 empty SD cards, numbered 1 to 5
- Coordinates map / table from Step 1
- GPS
- Key ring and locks (if using)
- Field notebook or data sheet for recording camera status

At each camera location:

1 – **Activate the camera:**

- Walk in front of it to trigger a test photo
- Note the camera orientation (take a photo with your phone if needed)
- Check your fixed north reference point, if installed

2 – **Open the housing:**

- Carefully open the camera to access the control panel
- Watch for insects, snakes, or other hazards

3 – **Check and replace batteries:**

- Look at the battery level on the screen
- Replace batteries if they are low (<30% recommended)

4 – **Take note of camera status**

PROTOCOL 2 – ROUTINE MEMORY CARD, BATTERY SWAP, AND MAINTENANCE

4 – **Verify camera settings:**

Setting	Value recommended
Date	Current date
Time	Local time (summer time year-round)
Photos per trigger	Highest number possible
Quiet period	30 seconds

5 – **Swap memory cards:**

- Remove the memory card and store safely.
- Insert the empty card **with the same number as the camera**.

6 – **Restart the camera:**

- Make sure it powers up correctly and activate it by walking in front of it.

7 – **Close and secure:**

- Close the camera and lock the case.
- Re-tighten the strap and ensure the camera is:
  - Facing north
  - Parallel to the ground
  - Mounted 30-50 cm above ground (adjust for snow, water level, etc.)

8 – **Move to next camera** and repeat

DATA MANAGEMENT

INITIAL SETUP: CREATING YOUR WILDLIFE INSIGHTS ACCOUNT

To participate in the OBFS Wildlife Monitoring Program, each station needs its own Wildlife Insights account. This allows you to upload photos, review AI identifications, and access your data.

Step 1 – Create your account

The first step is to create your account.

1. Go to app.wildlifeinsights.org/join to sign up
2. Submit an account approval form

For more info on getting started: bit.ly/4mkiJnc

Step 2 – Notify the coordinator

Once your account is approved by Wildlife Insights, send your email address to the program coordinator. We will:

- Create a **station subproject** under the OBFS Wildlife Monitoring Project
- Add you as a **project member**

Step 3 – Log in and get familiar

1. Open the **OBFS Wildlife Monitoring Network** project in Wildlife Insights (it will appear after we add you)
2. Get familiar with the interface
3. Optional: watch these short Wildlife Insights tutorials: bit.ly/4nrgZcz

Once your station is added to the project by the coordinator, you may begin uploading photos. Protocol 3 outlines the standardized procedure for preparing and uploading camera trap images.

PROTOCOL 3 – UPLOADING PHOTOS TO WILDLIFE INSIGHTS

Section 1 – Preparation (before upload)

File Organization

- Organize photos into folders by **camera site** and **deployment period**
    - Each folder must contain images from one camera location only
    - Do **not** mix sites or deployments within a folder
- Upload **original image files only** (no resizing, cropping, or edits)
- If the camera creates multiple subfolders (e.g., batches of 500 images):
    - Batch rename files so all image names are unique, **or**
    - Upload subfolders individually (see Section 2)

Required Information

Have the following information ready for **each folder**:

- Camera site name
- Deployment start and end dates
- Camera status (functioned for full deployment or failed early)

Section 2 – Launching the upload

1 – Log in to Wildlife Insights

2 – Click **Upload** button

3 – Select the folder to upload

4 – From the project dropdown, select **OBFS Wildlife Monitoring Network**

5 – Duplicate image setting:

- If uploading a single folder with no subfolders, keep "**Don't upload duplicate images**" checked
- If uploading subfolders, upload them one at a time **or** uncheck this option

6 – Create a **deployment** matching the camera site and deployment dates.

- If uploading in batches, create the deployment during the first upload and select it for subsequent batches.

7 – Click **Create a deployment** and complete the deployment fields as follows:

- **Rotate images:** Select if required.
- **Location:** Select the existing location from the dropdown.
  - Do not create a new location.
  - If the camera was moved, contact the project coordinator.
- **Start date:** Date the camera was activated (verify using initial staff photos).
- **End date:** Date the camera was retrieved (verify using staff photos near retrieval).
- **Camera deployment name:**

Unique station code_OBFS_Camera number_YYYY-MM-DD (end-of-deployment date)

Example: CA-OBFS-01_2026-01-31

PROTOCOL 3 – UPLOADING PHOTOS TO WILDLIFE INSIGHTS

- **Feature types:**
  - Location 01 → Trail hiking
  - Location 02 → Water source
  - Location 03 → None
  - Location 04 → None
  - Location 05 → Water source
- **Feature type methodology:**
  - Location 02 → Stream
  - Location 05 → Wetland
- **Camera:** Select the correct camera number.
  - Do not create a new camera.
  - If a different camera was used, contact the project coordinator.
- **Camera functioning or failed?** Select the appropriate option.
- **Camera height:** Knee height
- **Camera angle:** Parallel
- **Subproject:** Select the correct station subproject.
- **Quiet period setting:** 60 seconds
- **Detection distance:**
  - Enter only if measured at the end of deployment
  - Do not use manufacturer specifications
- **Remarks:** Add relevant notes (e.g., camera failure, interruptions, unusual conditions).

8 – Verify that all information entered is correct then **click the Upload button**.

9 – Keep the browser window open until a success message appears.

Section 3 – Post-upload verification

1 – Confirm that all photos uploaded successfully:

- The number of photos in Wildlife Insights matches the number in the folder on your computer).

2 – Review any system warnings or errors and correct them if needed.

Note: Do not delete local copies of photos until upload and verification are complete. We recommend storing them on external hard drives or in secure cloud storage once the upload is complete.

Why this matters

Following this standardized procedure ensures data consistency and integrity across the OBFS Wildlife Monitoring Network, allowing datasets to be combined and used reliably by scientists.

Core principles of identification

- Only identify images **from your station.** To do so, filter using the *Subprojects* dropdown menu in the *Identify* tab of Wildlife Insights.
- Identify conservatively. **Prioritize accuracy over precision:**
    - Use the lowest taxonomic level you are confident in.
    - When uncertain, consult a team member and/or select a higher taxonomic level.
- Identify **all visible species** in the sequence.
- Look at the entire sequence before confirming the identification.
- Mark sequences without animals as *Blank*.
- Do **not** delete images.

Tip – Be wary of the AI identifications!

Treat the AI-generated identifications as suggestions only. AI performance varies widely by region and image quality. For example, we found accuracy can be high in Canadian temperate forests, but much lower in more biodiverse regions such as the Peruvian Amazon.

All identifications must be confirmed by a human reviewer.

PROJECT APPLICATIONS

WITHIN THE FIELD STATION

Participating in this project can be highly beneficial for your station. While the primary outcome is the generation of long-term, reliable data on local wildlife, there are several additional applications that you and your team can take advantage of:

- **Identifying unique behaviors:** While processing camera trap photos, you may become aware of wildlife behaviors that might otherwise go unnoticed. Recording this relevant information can be useful for other team members interested in specific species, or may prompt station managers to explore further research opportunities on the topic.

- **Use of long-term data:** The opportunities to use long-term data are diverse. Data generated through this project can be directly incorporated into your station's educational, outreach, and advocacy efforts. Project participants may also assist in developing these initiatives, particularly if you include citizen science components linked to the project.

WITH EXTERNAL AUDIENCES

Although the data collected for this project are publicly available through Wildlife Insights and may be used by external individuals under the permissions established by the project, there is also strong potential to build new collaborations. Researchers and professionals from diverse fields may wish to apply this project to:

- Expand the geographical scope of existing research on the wildlife documented at your station.

- Advance understanding of wildlife diversity, population dynamics, and behavior at your site.

RECOMMENDATIONS FOR CREDITS AND AUTHORSHIP

You should acknowledge that this project is supported by the **Organization of Biological Field Stations** (OBFS), and that the data collection protocols have been developed for use by all participating stations.

Authorship should follow general best-practice guidelines, assigning credit to individuals who have made meaningful contributions to a given publication. If you collaborate with members of other stations participating in the project—whether by using data from their sites or receiving assistance with a specific research topic—be sure to evaluate contributions carefully and assign authorship appropriately.

A FEW RESOURCES

IN ENGLISH

Wildlife Insights Learning Center by Wildlife Insights

Camera trapping in ecology: A new section for wildlife research by JT Fisher

A review of factors to consider when using camera traps to study animal behavior to inform wildlife ecology and conservation by Caravaggi et al.

Best practices for managing and publishing camera trap data by Reyserhove et al. (Global Biodiversity Information Facility)

Directory of camera trap publications by WildCams

EN ESPAÑOL

Guía práctica de monitoreo con cámaras trampa par GreenRiver

Protocolos para la instalación y revisión de cámaras trampa para monitoreo participativo de biodiversidad par S Molina

Manual de fototrampeo para estudio de fauna silvestre. El jaguar en México como estudio de caso. par Chávez et al. (Alianza WWF-Telcel)

Índice de abundancia relativa y tasa de encuentro con trampas cámara par S Mandujano

Trampas cámara como herramienta para estudiar mamíferos silvestres par DJ Lizcano

EN FRANÇAIS

Gestion des pièges photographiques pour la faune sauvage : méthodes, logiciels et bonnes pratiques par Natural Solutions EU.

TYPES OF CAMERAS USED IN OUR STATIONS

Specifications	Finca las Piedras	Gault Nature Reserve	Field Research Centre University Hasselt
Camera model	Browning Strike Force pro X 1080	Spypoint Force pro	Reconyx HC600 Hyperfire
Detection range (m)	24	34	30
Detection angle (degrees)	55	40	Unspecified
Shutter speed (s)	0.22	0.2	0.2
Quality of photo (mp)	24	16	3.1
File type	JPG	JPG	JPG
Max SD card size (gb)	32	32	64
Battery type	Rechargeable lithium	Rechargeable lithium	Rechargeable lithium

OBFS MATCHING PROGRAM

COLLABORATION ACROSS INTERNATIONAL BOUNDARIES

In 2021, the OBFS launched their Matching Program, which is an opportunity to pair stations to collaborate on topics of their choosing. Our stations, the Field Research Centre (Hasselt University, Belgium), Finca las Piedras Field Station (Alliance for a Sustainable Amazon, Peru), and Gault Nature Reserve (McGill University, Canada), participated in this program.

This international collaboration provided a wealth of benefits for our stations, which include:

- **Exchange of ideas and experiences**, allowing you to tap into the collective knowledge of partner stations.
- **Expanded reach and impact**, as you can collectively address global challenges.
- **Strengthened relationships with partner institutions**, fostering a sense of camaraderie and common purpose.

One of the outcomes of this collaboration is the **OBFS Wildlife Monitoring Network**.

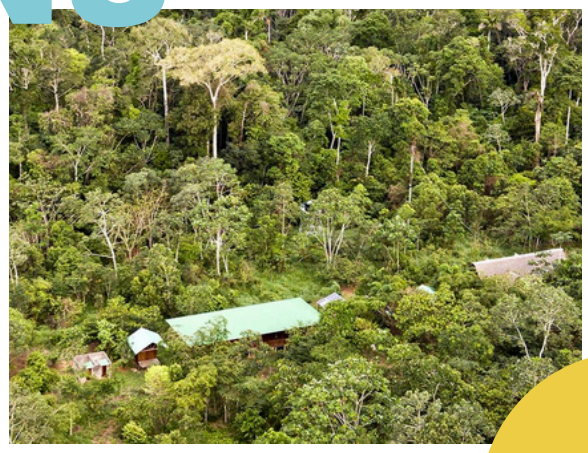
MEET THE STATIONS

FIELD RESEARCH CENTRE

University of Hasselt, Belgium

The Field Research Centre (FRC) is located on Terhills, the main gate to Belgium's Hoge Kempen National Park, the country's only TEEB region. Hasselt University leads biodiversity research at the FRC, working with volunteers, park rangers, and students. The centre hosts research infrastructure, such as the Ecotron, ecosystem measuring towers and camera trap network within a European framework to enable the long term study the effects of human disturbances on ecosystems.

Learn more: bit.ly/3BwxbGM



FINCA LAS PIEDRAS

Alliance for a Sustainable Amazon, Peru

Finca Las Piedras is the Alliance for a Sustainable Amazon's research and education center in Peru's Madre de Dios region. The site offers access to diverse Amazonian ecosystems, including upland rainforests and aquatic habitats.

We focus on research, conservation, and environmental education, empowering local communities and students to protect the Amazon and reverse deforestation.

Learn more: bit.ly/4eFUVXw

GAULT NATURE RESERVE

McGill University, Canada

The Gault Nature Reserve, located on Mont Saint-Hilaire (414 m) in southern Quebec, protects nearly 1,000 hectares of natural environment, including some of the region's last old-growth forests.

Affiliated with McGill's Faculty of Science, Gault supports research and field courses from numerous universities. It also offers 25 km of trails for public use. Its proximity to Montreal makes it an ideal site for these activities.

Learn more: bit.ly/3TJ9PEc

We are proud members of the Organization of Biological Field Stations, a global consortium of field stations and organizations that manage them for research, education, and outreach. This collaboration was made possible by their Matching Program. To support the work of OBFS and benefit from programs like this one, consider becoming a member.

obfs.org
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