

# TrapTrackerRT

## User Manual

### Version 0.1.1.0

## 1. Introduction

**TrapTrackerRT** is a desktop application that automatically processes wildlife camera-trap images using AI. It:

- Collects images sent by cameras via email
- Organises images by project and camera
- Detects animals (and other objects, depending on the model)
- Creates classified images with bounding boxes
- Sends alerts when selected species are detected
- Allows you to browse and review detections visually

TrapTrackerRT is designed for conservationists, ecologists, and monitoring projects that require **reliable, unattended image processing**.

## 2. System Requirements

- **Operating System:** Windows 10 or Windows 11
- **Internet connection:** Required for email ingestion and updates
- **Email account:** Gmail account with App Password enabled
- **Disk space:** Depends on image volume (processed images are stored locally)

## 3. Application Overview

TrapTrackerRT is organised around **Projects**.

Each project contains:

- One or more **Cameras**
- One **Detection Model**
- Email ingestion settings
- Species alert rules
- Alert recipient emails
- All associated images and detections

Main sections of the application:

- **New Project**
- **Edit Project**
- **Delete Project**

- **Run Project**
- **Detections Viewer**

#### 4. Creating a New Project

##### Open

**File → New Project**

##### Step 1: Project

- **Project Name**  
Enter a descriptive name (e.g. *Pauls Mammals, Curlew Study 2026*).
- **Detection Model**  
Choose the AI model to use:
  - UK Mammals
  - North American Mammals
  - Sub-Saharan African Mammals

⚠ This determines what species can be detected.

##### Step 2: Cameras

Add all cameras that belong to this project.

- Enter the **Camera Name (the camera name must have an = sign on either side, i.e. =PaulCam1=)**
- Enter the **Metadata** (Camera QR Code, Mobile Number etc).
- Click **Add**

You can remove cameras at any time.

##### Step 3: Gmail Ingestion Settings

This allows TrapTrackerRT to receive images automatically.

Required fields:

- **Email Address** – Gmail account receiving camera emails
- **App Password** – Gmail App Password (not your normal password)
- **IMAP Host** – imap.gmail.com
- **IMAP Port** – 993
- **Use SSL** – must be enabled

Click **Test Gmail Connection** to verify the settings.

##### Step 4: Species Alert List

This controls **which species trigger alerts**.

- Select a species from the dropdown
- Click **Add**
- Repeat for multiple species

Only selected species will generate alerts.

### **Step 5: Alert Recipient Emails**

Add one or more email addresses that should receive alerts.

- Enter email address
- Click **Add**

Alerts will be sent to **all recipients**.

### **Step 6: Create Project**

Click **Create Project** to finish.

TrapTrackerRT will:

- Create the project folder
- Store all settings
- Prepare inbound and processed directories


## **5. Editing a Project**

### **Open**

#### **File → Edit Project**

You can:

- Change the detection model
- Add or remove cameras and edit metadata
- Update email settings
- Modify species alerts
- Update alert recipients

 Project name cannot be changed.

Click **Save** to apply changes.

## **6. Deleting a Project**

### **Open**

#### **File → Delete Project**

Select a project and review the warning.

Deleting a project will permanently remove:

- All images (original and classified)
- All detections
- All alert rules and recipients
- All project folders on disk

This **cannot be undone**.

Click **Delete Project** to confirm.

## 7. Running a Project

### Open

#### File → Run Project

1. Select a project
2. Click **Start**

While running, TrapTrackerRT will:

- Poll the Gmail inbox at regular intervals
- Download new images
- Identify which camera sent each image
- Process images using the selected model
- Store originals and classified images
- Send alerts when rules are triggered

### Stop the Runner

Click **Stop** to safely stop processing.

## 8. Image Processing & Storage Structure

Images are organised automatically in your AppData directory (i.e. in C:\Users\PaulF\AppData\Local\TrapTrackerRT\Projects\PaulsMammals:

Projects/

└─ YourProject/

├─ Inbound/

| └─ CameraName/

| └─ raw images

└─ Processed/

├─ Original Images/

| └─ CameraName/

└─ Classified Images/

└─ CameraName/

- **Original Images:** untouched originals
- **Classified Images:** images with bounding boxes (only created when detections meet confidence threshold)

## 9. Detections Viewer

### Open

#### File → Detections Viewer

Features:

- Select a **Project**
- Filter by **Camera**
- View all processed images
- Preview original and classified images
- Review detection timestamps

This is your primary review and validation interface.

## 10. Alerts & Notifications

Alerts are triggered when:

- A selected species is detected
- Detection confidence meets the configured threshold (0.5)
- Cool-down rules allow a new alert (currently set to 0 – so disabled)

Alerts include:

- Detection details
- Original image
- Classified image (if available)

## 11. Updates

TrapTrackerRT can check for new versions automatically.

When an update is available:

- You will be notified
- You can download and install the latest version
- NOTE – when you install a new version your projects and associated data will be lost so ensure you back up data before install (we are looking for a future solution to this)

## 12. Troubleshooting

### **Images not processing**

- Check camera name matches email subject exactly
- Ensure image format is supported (JPG, JPEG, PNG)

### **No detections**

- Confirm correct detection model selected
- Verify species exists in model labels

### **Email not working**

- Ensure Gmail App Password is correct
- Confirm IMAP is enabled in Gmail
- Test connection in Project settings

### **13. Best Practices**

- Use **clear, consistent camera names**
- Create **separate projects** for different studies
- Regularly review detections in the viewer
- Monitor disk usage for long-running projects

### **14. Support**

For support, updates, and documentation:

- Visit: **traptracker.co.uk**
- Contact: paul.fergus@gmail.com