WILD WISE: COEXISTING WITH CARNIVORES

Camera Trapping and eMammal Teacher Guide

Background on Camera Trapping and eMammal

Through the *Wild Wise: Coexisting with Carnivores* program, we are excited to support teachers and their students in using camera traps and eMammal to contribute to the field of wildlife conservation research. Woodland Park Zoo education staff who have experience with wildlife camera trapping are ready to assist you with preparing to use camera traps. Please email wild.wise@zoo.org to request a consultation on camera trapping (WPZ staff will work with the teacher directly; teachers will guide students in use of camera traps.)

Camera trap photo from an Issaquah Middle School student's backyard

Why do we use remote camera traps? Remote camera traps are cameras that can be set up to automatically take photographs when they sense motion and/or heat, and are often used for monitoring wildlife. Wildlife researchers use remote camera traps as a non-invasive method to collect data to answer research questions about wildlife. Camera trap data can be used to answer research questions on the distribution and spatial patterns of species, as well as questions about animal behavior, such as daily activity, foraging and social activity patterns.

What is eMammal? eMammal (https://emammal.si.edu/about) is a software and web-based tool used by researchers across the globe for organizing and archiving wildlife camera trap data. This platform enables researchers to share their findings with each other and the public. These data help address important questions related to wildlife conservation.

Preparation for Installing Camera Traps

Camera Kits: Each school has up to four kits, provided by the district, with one kit per teacher. Each kit includes the following items:

- 5 remote camera traps
- 40 AA batteries (8 batteries per camera)
- 10 16GB SD/SDHC memory cards (2 cards per camera)
- 5 python cable locks
- 5 small locks for camera case
- 3 field guides

☐ **Check that each camera, memory card, camera lock/key and cable lock/key are marked with a code** using either of the formats below. Because each camera has 2 memory cards, you will add an "a" or "b" to the label on the memory cards.

> **School (initials) – Teacher (first and last initial) – C (camera) + camera number (1 through 5, one digit)**

> **OR**

> **School (initials) – K (kit) + kit number (1 through 4, two digits) – C (camera) + camera number (1 through 5, one digit)**

School Initials:
- Beaver Lake = BLMS
- Issaquah MS = IMS
- Maywood MS = MMS
- Pacific Cascade = PCMS
- Pine Lake MS = PLMS

Examples:
Camera: **IMS-MD-C1**
Cards: **IMS-MD-C1a** and **IMS-MD-C1b**
OR
Camera: **IMS-KO1-C1**
Cards: **IMS-K01-C1a** and **IMS-KO1b**

☐ Review the following videos and **take notes** that will help you in the field:
1. **Getting to know your camera trap:**
   https://www.youtube.com/watch?v=dRDyMm5eJe4&feature=youtu.be

2. **How to use a Bushnell camera:**
   https://www.youtube.com/watch?v=Wym81bsy5Bc
   - Your exact model might differ, but the basic functions will be similar – consult your camera manual as you follow along with this video.
   - See recommended Bushnell camera settings on page 4 of this guide.

3. **Camera setup by eMammal:**
   https://www.youtube.com/watch?v=aW3XGjq3l7A

☐ Make several copies of the **WW CWC eMammal Camera Trap Datasheet** to record data in the field (available from the WW:CWC teacher website at www.zoo.org/wwcwc).

Camera Trap Installation (Deployment)

(Note – each camera installed at a unique latitude and longitude is called a "deployment" and will have a unique ID code in the eMammal system.)

CHOOSE A SITE

1. Choose site(s) that fit within any experimental parameters of your study.
2. Try to find a level site. If camera must be mounted on an incline, aim it parallel with the slope.
3. Search for a straight, live tree, at least 8 to 10 inches in diameter with an unobstructed view in one direction (you may need to remove a small amount of vegetation).
4. Avoid aiming camera toward an area with heavy human/vehicle use to reduce false triggers.
5. Avoid a site facing fields or other leafy areas where vegetation blowing in the wind will produce excessive false triggers.

INSTALL CAMERA TRAP

Follow the steps below for a successful camera trap deployment. The standard deployment interval for eMammal research is **three weeks**, but the period can be adjusted as needed for your projects**.**

1. Record camera ID and deployment site information on data sheet.
2. Make sure memory card is cleared and insert memory card into camera.
3. Orient camera to face a clearing, parallel to the ground.
4. Position camera at about adult knee height.
5. Secure the camera to the mounting site (usually a tree) with the cable and lock the cable lock. If necessary, use sticks behind camera as "shims" to adjust its position.
6. After mounting and securing camera:
   - ❒ Turn on camera – push button up to "ON" and then down to "SETUP".
   - ❒ Tab through the setup menu and ensure settings are all on the recommended setting (see box on page 4).
   - ❒ Verify that date and time are set accurately.
   - ❒ Verify that battery charge is above 60 percent (or two bars for Bushnell cameras).
   - ❒ Set camera to ON, close camera and perform walk test (as seen in the eMammal Camera Setup video). If camera does not perform well during walk test, adjust camera placement or choose a new site. You should be able to detect motion at least 10 meters away. Record detection distance to your target on the data sheet.
   - ❒ Arm camera (button in ON position), close and lock camera housing. Stand or move in front of camera for a minute or two to get photos of you setting it up. This adds verification of set-up date.
7. Fill in the rest of the data sheet.

> **Recommended Camera Settings:**
> **Mode:** Camera
> **Image size:** 8M Pixel
> **Image format:** Full Screen
> **Capture number:** 3 photos
> **LED Control:** Medium
> **Camera name:** skip
> **Video Size:** skip
> **Video Length:** skip
> **Interval:** 3S (seconds)
> **Sensor Level:** normal
> **NV Shutter:** Low
> **Camera Mode:** 24hrs
> **Time stamp:** on
> **Set Clock:** current time (24hr-format) and current date (Y/M/D)
> **Field Scan:** Off
> **Coordinate Input**: off (may input latitude and longitude, see manual)
> **Video sound:** On
> **Default Set:** Cancel

CHECK YOUR CAMERA AND COLLECT DATA

1. Run your camera for a few days and then check photos to confirm that the location is suitable.
2. Ensure date and time are correct and deploy camera for three weeks (this is the standard deployment period for eMammal, but you can adjust this time period as needed for your project).
3. Monitor camera trap throughout deployment for damage, vandalism and theft.

RETRIEVE THE CAMERA TRAP (END DEPLOYMENT)

1. Stand or move in front of camera (to capture photos of end of deployment), unlock cable lock and small camera lock, open camera and turn off camera.
2. Remove camera from where it was secured.
3. Confirm camera is in working order, still able to take pictures.
4. Assess condition of camera and deployment site and record any observations on data sheet.
5. Verify information on data sheet.

Managing Your Photos and Data

COPYING PHOTOS TO YOUR COMPUTER

1. Insert or otherwise connect the memory card with your computer.
2. Make a folder to store photos (from that deployment only) in a safe place on your computer or network drive
3. Name each folder with the following information using the format below:
    - **a. Year (last two digits)**
    - **b. School (letter code)**
    - **c. Teacher (First and Last Initial)**
    - **d. Period (single digit)**
    - **e. Camera Number (C and single digit)**
    - f. **Site Designation (one letter) –** this will be "A" unless one camera was used to collect data at two or more different locations; second location would be "B", third would be "C", etc.
    - Example: **18-IMS-MD-6-C5-A** would indicate: 2018, Issaquah Middle School, Michaela Donahoe, 6th period, Camera #5, Site A
4. Copy the photos into the folder
5. Enter data from your field datasheet into your **WW CWC eMammal METADATA spreadsheet** (available from the WW:CWC teacher website at www.zoo.org/wwcwc).
    - a. Note – Explanations for the two headings shaded in gray can be found in the second and third tabs of the spreadsheet

UPLOADING DATA TO eMammal

Note: You can complete this step or have Woodland Park Zoo staff complete this step for you (please email wild.wise@zoo.org to request assistance). Please include the following info so we can set up a Deployment for you:
- o **Year-School-Teacher-Period-Camera#-SiteDesignation**
- o Latitude and longitude of the camera location (from your Datasheet)

If you wish to complete this step, you will need 1) an eMammal account and 2) the eMammal Desktop App. You can consult the general eMammal Volunteer Manual for assistance: https://emammal.si.edu/system/files/emammal_manual_volunteer.pdf

1) eMammal account: https://emammal.si.edu/user/login
- From the login page, select the blue link that says CREATE AN ACCOUNT to sign up.
- **Training site:** enter "Woodland Park Zoo".
- **Training date:** enter the date you last talked/met with WPZ staff about camera trapping.
- **Projects interested:** enter "Coexisting With Carnivores." This field has autofill and as you type in the name of the project it will autocomplete.

2) **eMammal Desktop App:**

- Once you have an eMammal login, when you login, you will be able to download the Desktop App.
- Once you are logged in, you will find your deployment, upload and tag your photos.
  - **Project:** Coexisting with Carnivores
  - **Subproject:** select the Subproject that best fits the question your students are investigating, such as Trail, Trash, Fence, Water, etc. If your students' research question does not fit well into one of the Subproject types available, please email wild.wise@zoo.org to request a new Subproject.
  - **Deployment:** select the Deployment name that matches your Year-School-Teacher-Period-Camera #-SiteDesignation (e.g. 18-IMS-MD-3-C4-A)
- Use the following videos to learn how to find your deployment, upload and tag your photos: https://www.youtube.com/watch?v=3x4JwHEMtFg
- Use the following videos to learn how to identify animals with the desktop app: https://www.youtube.com/watch?v=uC743kBwEIg
- After you have uploaded and tagged your photos with animal IDs, Woodland Park Zoo staff will verify that your students' identifications are correct, and your students' data will contribute to the body of knowledge about animals gleaned by using camera traps around the US and the world!

Further resources for teaching with eMammal:
https://emammal.si.edu/content/emammal-academy-teach