How-to: Capturing Wildlife on Camera
Step-by-step guide for educators to collect data with wildlife cameras

Wildlife cameras are used by researchers to document animal presence, movement, populations, habitat changes, and more. Trail cameras, often called "camera traps" by biologists, provide important data that can be used by researchers to better understand ecology in a geographic area.

Why camera traps?
- **Ease of use**: setup, confirm field of view, and check back at an interval that works for your schedule.
- **Student Engagement in Inquiry:** Predictions, surprises, building and testing hypotheses, analyzing data, connection to animals, birds, and insects. Asking questions that do not have answers.
- **Place-based learning**: What animals live nearby? What animals are on my school campus when students are gone? What can we do to support the animals that live nearby?

Why collect data from a camera trap?
- Data collection in your neighborhood or schoolyard makes data personally meaningful.
- Collection of meaningful information can provide greater motivation for data analysis, interpretation, question generation and learning about their community.
- Data collection can surprise students and build meaningful inquiry.
- Numerous science standards require the ability to collect, analyze and interpret data.

Step 1: Supplies needed to setup wildlife camera

1. **Wildlife/trail camera: $60 to $150**
   - Low glow setup with still and video recording recommended
   - Less expensive without Wi-Fi or cell data enabled
   - Brands to consider: Bushnell, Brownings, Reconyx, GardenPro
   - Places to purchase: Amazon, B&H Photo, eBay, Trailcampro.com

2. **Security box that holds camera: $35 to $50**
   - Purchase a metal case to hold the camera to prevent theft
   - Once you choose a camera model, search "Manufacturer plus Model Security Box"
   - Tree straps usually come with cameras or security box to secure the camera to a tree.

3. **Locking Cable $10 to $18**
   - Cable lock to thread through lock box to lock trail camera to object (pole, tree, post)
   - Master Lock Python lock cable comes with cable, key and lock

4. **SD cards (2) to record data from camera $10 to $20**
   - One in camera at all times, one to trade out when you change cards
   - SanDisk SD cards tend to be most reliable

5. **SD Card reader (optional, depends on computer) $5 to $20**
   - Flash drive card readers are available (cheapest) or multi-function adapters

6. **Batteries (rechargeable if possible)**
   - Purchase enough batteries for your camera. Most require 8 AA batteries.

Step 2: Choose the location of your camera
- Request permission from school administrators if on campus. In public areas you may need other permission.
- Choose a location where you have seen evidence of wildlife or expect to see them.
- Choose a location where you won't be collecting images of students or community members.

Step 3: Attach camera to object and check field of view
- Using locking cable, securely attach camera to tree, fence, or other stationary object.
- Make sure your camera is stationary.
- Check the field of vision of the camera with a cell phone. Line up a cell phone camera with trail camera lens and snap a photo.
- Generally cameras are best 1 or 2 feet off the ground but experiment with different heights.
- Make sure camera is turned on, and date/time is set correctly.

Step 4: Return to trade out SD cards
- After installing your camera it is important to go back in *one week*, check the SD card for animals. If you don't have any images after a week, consider changing the camera location
- Once you know your camera is working, you can return weekly, monthly or at an interval that works for your schedule. Remember to always review images and video *before* sharing with students

Troubleshooting:
- **No Images**: Test the camera in a known environment. Double check to make sure it is on and it is set to either capture images by movement or time. Trade out SD cards. Double check the field view.
- **Too many images are duplicates**: Adjust the setting for how often a picture is taken.

Step 5: Image and Data Management
- **Multiple free software available. Review this document (this website).**

Step 6: What to do with the data you have collected
- Set up an excel spreadsheet or a google doc to record your data results. Create columns of data based on your choosing. For example: camera name, date, time, day/night, type of animal seen.

Resources:
[Data Analysis for Wildlife Cameras (link within this site)](#)

Additional External Resources:
https://wildlabs.net/article/camera-trapping-incredibly-useful-resources-list

https://greenteacher.com/camera-trapping/

Arizona State Standards

MS and HS Science and Engineering Practices (analysis of camera data)
- Ask Questions and Define Problems
- Develop and Use Models
- Plan and Carry Out Investigations
- Analyze and Interpret Data
- Use Mathematics and Computational Thinking
- Construct Explanations and Design Solutions
- Engage in Argument from Evidence
- Obtain, Evaluate, and Communicate Information

Arizona High School Standards
- HS.L2U3.18 Obtain, evaluate, and communicate about the positive and negative ethical, social, economic, and political implications of human activity on the biodiversity of an ecosystem.
- HS.L2U1.19 Develop and use models that show how changes in the transfer of matter and energy within an ecosystem and interactions between species may affect organisms and their environment.
- HS.L1U1.20 Ask questions and/or make predictions based on observations and evidence to demonstrate how cellular organization, structure, and function allow organisms to maintain homeostasis.