2018 Mammals Methods - February 26, 2018

Wilson.BA, JoJo Azzara, Quintin J Lepold; (with prior help from: MeeMee Filan & Charu)

Introduction

The Mammals Team is a part of the Forman Rainforest Project, a program composed of high school students that has been conducting cutting-edge biological field research at two basecamps, El Plastico and Rara Avis, both located on the Caribbean side of pre-montane Costa Rican rainforest, since 1992. The research conducted by the Mammal Team focuses mainly on species of mammals in the Costa Rican rainforest living in decreasing habitats due to global warming and other environmental and human factors. The Mammal Team has returned annually to the same locations to study the same species and to observe long term patterns and changes in population, especially in relation to speciation. Speciation is the decrease of genetic diversity due to isolation of populations from shrinking habitats, and it is one of the biggest threats on the species the team is studying.

Most recently, in 2017, the Mammals Team has been asked by Panthera's Jaguar Initiative to create a census of the jaguar population and activity --- which has been threatened to near extinction by speciation --- in Costa Rica, where the Mammal's Team will be conducting research. The objective of this is to figure out where the jaguars are migrating to and from accurately, giving the Jaguar Initiative the data they need to more confidently propose a corridor stretching through Argentina to Mexico. This corridor would allow the Jaguars to migrate through the fragmented habitat they have left, as well as give the jaguar population the ability to reconnect with other jaguar populations who have developed different genes, helping reduce genetic defects and vulnerabilities caused by inbreeding of the isolated groups.

The goal of the Mammals team is to be a part in the protection of the various mammal species in the Costa Rican rainforest and on a much larger scale from the effects of global warming and other factors that threaten their species. Our research plays a part in making a change for the better in the lives of these incredible creatures in a fascinating part of our world.

Hard Traps

Used to track and trap the mammals of the rainforest, the method varies within the different branches of the animal with different types of equipment. Hard Traps: Havahart 2-Door Small Animal Cage Trap is for catching rats, weasels, chipmunks, flying squirrels and similar-size animals. It is constructed of high-tensile wire with steel reinforcement and has smoothed inside edges for protection of the animal.

How to Use Hard Traps

The most important step in the live animal trapping process is baiting the trap. Baiting any live animal trap serves two purposes: luring the animal into the trap, and encouraging it to engage the trigger. Positioning the bait towards the center of the trap, luring the animal directly to the trigger plate. Either place the bait directly onto the plate, hang it from the top of the trap directly above the plate, or place it in a hole in the ground directly underneath the plate. With door locks in the open position, check that the doors can be opened by gently pushing down on trigger rods. Notice that trigger rod with offset loop is above straight trigger rod, so pushing down loop rod opens both doors. Using live traps, where the animal is just captured, and not killed or hurt. The traps consist of an enclosure where the doors are held open by a trigger mechanism that is connected to a treadle on the floor of the trap. When an animal enters the trap, it steps on the treadle and the doors instantly close, trapping the animals inside. Mammals can be lured into these traps by baiting them, or the traps can be set along natural walkways. The traps can either have a door on one or both sides for the animal to enter.

Setting the Hard Traps

Traps should be set to take advantages of the nonrandom fashion in which mammals use the environment.

1. Turn the door locks to the open position.
2. Push down on the straight trigger rod to open door.
3. While holding door open, place bait on the bait pan. See back for bait suggestions. When finished, close door.
4. Push down on the offset loop on the looped trigger rod to open both doors
5. Position the flat end of the looped trigger

rod under the flat end of the bait pan trigger,

so that both doors are held open and the bait pan is level.

6. Turn door lock knobs so that both door locks rest on doors

Advanced Telemetry Systems Collars, Antennas, and Receiver:

Advanced Telemetry Systems (ATS) are used to track small mammals of the Costa Rican rainforest. The information gathered is used to develop more complete understandings of the

habits and habitats of the species in question. It is composed of two antennas, two receivers, two cables, and the transmitter collars.

To attach Transmitter collars to animals:

- Thread zip-tie through tubing, to protect animal, then thread wire of transmitter through tubing and have it exit the tubing halfway through a slit, and glue transmitter to zip-tie and tubing on one end.
- Use zip-tie to attach collar around animal's neck or leg

To set up antenna:

- Remove antenna from bag, and stretch out bars of antenna, with top first. Once each side of each bar is touching in the middle, tighten the nuts to secure them in place.
- Attach one end of the cable to the port on the antenna
- Attach the other other end to the receiver.

To operate receiver:

- Plug cable into ANT port on receiver.
- Set channel knob to number corresponding with key on side of receiver. It needs to match with the number on the transmitter.
- Set FINE TUNE to 1.
- Turn both switches on.
- Adjust FINE TUNE slowly, until appropriate sound is reached. (Make sure volume is set to an audible level.)

To track transmitters:

- Point antenna in cardinal directions and follow the sound of the receiver as it increases in frequency and volume.

Camera Traps

Camera traps are used to collect videos and pictures of animals we wouldn't normally see. This is done to confirm the existence of species in the ecosystem. They can also be used to find the number of individual animals in a area.

1. Trophy Cam, see that the Trophy Cam has eight battery slots. Inserting the SD Card The Trophy Cams have 32MB internal memory, hold only about 20 photos (@ 5MP resolution).
2. The OFF, ON, and SETUP MODES The Trophy Cam has three basic operational modes: • OFF mode: Power switch in the OFF position. • ON mode: Power switch in the ON position (LCD screen is off.) • SETUP mode: Power switch at SET UP position (LCD screen is on).

3. OFF Mode The OFF mode is the “safe” mode when any actions must be taken, e.g., replacing the SD card or batteries, or transporting the device. Use OFF mode if connect the camera to a computer’s USB port later. Be sure the camera’s power is switched OFF before inserting or removing SD cards or batteries. 10 to download photos/videos. And of course, when storing or not using the camera, switch to OFF.
4. ON Mode Anytime after the batteries and SD card have been inserted, switch on the camera. When the power switch is moved to the top position, the camera will enter into the ON (Live) mode. The motion indicator LED will blink red for about 10 seconds. This interval allows time to close the Trophy Cam’s front cover, lock it, and leave the monitored area. Once in the ON mode, no manual controls are needed or possible. The Trophy Cam will take photos or videos automatically when triggered by the “PIR sensors” detection of activity in the area it covers
5. SETUP Mode in the SETUP mode, check and change the settings with the help of its built-in LCD. In the SETUP Menu, the photo or video resolution, interval between photos, switch the time imprint on, etc.
6. SETUP Mode Shortcut Keys/Functions four of the keys below the LCD have secondary, “shortcut” functions when the camera is switched to SETUP mode • Press the UP key to quickly set the camera to shoot video clips. • Press the DOWN key to quickly set the camera to take still photos. • RIGHT key to manually trigger the shutter. This is useful for testing the camera-make sure in SETUP mode, press the RIGHT key, and a few seconds later a photo or video will be saved to the SD card.
7. Setting the camera trap.
8. When setting trap in the field slide strap through the back of the carma trap then wrap strap around tree or stick and buckle the strap making sure the strap is tight so it it won't move. Make sure camera is facing desired direction.
9. Find the GPS location of where camera trap is being sent and write it down as well as which camera trap it is at that location.

Plaster of Paris:

Plaster of Paris is used to preserve the prints and tracks left by animals in the rainforest; by using plaster, one can abide by international law by not taking any mud or animal parts and successfully export the plaster of the prints back into another country.

Plaster of Paris recipe

Preparation

- Put one part of water into a mixing container or ziplock bag.
- Slowly, add the powder into the water by sifting it.
- Stir the mixture slowly with a stirring device, or shake it up gently if it is in a ziplock bag; be careful to make sure there are no air bubbles.

Applying the plaster to print

- Carefully, pour the mixture into the print.
- Wait for the liquid plaster to settle into the print (*This may take a minute or two*).
- Carefully, dig the earth around the plastered print to remove it. (*Be gentle as the print may be brittle!*)

Materials

- One part water
- Two part Plaster of Paris
- Container *or* Ziplock bag

Optional Stirring Device