

# Research on Population Inventory of Mammals in Sarapiquí

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## **Abstract:**

The Forman Rainforest project has been around for 24 years, and since last year, has brought back the mammals team. Learning hands on in the heart of Costa Rica's Rainforest about the mammals interaction with their diverse environment. This year, the main focus was on collecting information on mammals and their population of the animals that specifically lived in areas near the two base camps. The main purpose was to track and locate mammals on the CITES, IUCN, and Red lists. CITES was used as a base of information of the mammals of Costa Rica. CITES is The Convention on International Trade in Endangered Species of Wild Fauna and Flora between governments as an international agreement.

## **Introduction:**

The adaptation of survival of the rainforests exotic species is mainly due to the environmental forces. The main focus of the team this year is to focus on the mammals that live in the decreasing habitat due to global warming, which is pushing species further north due to temperature changes. Going back to the same location year after year to study the same species, forming patterns of speciation within species. When a species environment changes revolved around it, so the species changes the reproduction of organisms which then gets passed on to next generations, leading to speciation. Comparing the species that have been collected in the same locations would make comparing and finding any mutations or adaptations of species to the area. Coevolution of selective pressure will be strongest when there is a close ecological relationship of evolving in response to the other selective environment that is constantly changing.

The aim is to ensure that international trade in specimens all around the world of wild animals and plants does not threaten their survival. The CITES lists to find what level of danger the species found were in. The Appendix I list has about 1,200 species that are the most endangered among the CITES-listed animals and plants, making them most threatened with extinction. CITES prohibits international trade in specimens of Appendix species except when the purpose of importation is not for commercial use. The Appendix II list is over 21,000 species of those that are not necessarily threatened with extinction, but in which trade must be controlled and monitored for protection.

Cooperation of other countries to prevent unsustainable or illegal exploitation is needed to avoid in cooperation with the species survival. The Appendix III list includes around 170 species which individual countries have asked for assistance and protection for conservation of their plants and animals. Trade in the species is only allowed when a permit in the country of which the species are in is made with the government.

## **Methods:**

- **Hardtraps**

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**

Examine the cage carefully. One of the most important steps 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

- **Bat Nets**

The Triple High Mist Net System- The portable Forest Filter mist net system consists of poles and an associated hoist system capable of creating a huge mist net 24' (7.3m) tall. To remove a bat or bird from any net, a pulley system quickly and carefully collapses the net stack until the

animal can be reached. The nets can be set up, raised, lowered, and packed up by a single person. Each tier of every net can be individually adjusted and tensioned in seconds for any bag-overlap desired, and to prevent sag.

Bats struggle in nets and become severely entangled, it is best to check the nets at least once per hour. When a bat is found in a net, decide which side of the net the bat hit and should work from that side. Pull the large pieces of the net away from the bat to expose the belly with no fibers on it. Begin untangling the feet. At the wings, do one at a time, by moving the strings away from the forearms. Once the wings are past the forearms, they should easily slide off the rest of the wing. Always release an animal at the exact same spot captured. Do not run the mist nets in rain as captured bats can die from hypothermia. Begin to close nets as soon as it starts to rain.

- **Bushnell Trophy Camera:**

These cameras were set up in trails around the base camps to places that the big mammals cannot be trapped so these cameras were handy to keep a track on the population inventory around Costa Rica. The 8 cameras were set up in different locations around both of the basecamps. The best locations were at intersections of trails and openings of trails. Each camera was put on a different trail at the beginning of getting to both base camps.

The Bushnell Trophy Cam HD Essential is a digital scouting camera. It can be triggered by any movement of game in a location, detected by a highly sensitive passive Infrared (PIR) motion sensor, and then take high quality pictures (up to 12MP still photos) or video clips. Once motion in the monitored area is detected, the digital camera unit will be triggered at once (typically less than 0.3 second) and then automatically takes photos and videos according to the previously programmed settings.

Mount the Trophy Cam HD Essential on a sturdy tree about 16-17ft (5 meters) away from the ideal monitored location. Will not get the best results at night when the subject is within the ideal flash range, no further than 3-24 meters.

### **How to Use Camera:**

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 sensor's 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, let 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.

- **Plaster of Paris:**

The ratio should be 2 parts powder to 1 part water. If measured out 1 cup of water in Step 1, then need 2 cups Plaster of Paris Powder. Start adding the Plaster of Paris powder to the water in a mixing container by sprinkling or sifting the powder over the water. Don't want to get air bubbles into the plaster mix. They take away some of the detail of the track. Don't whip the mix. Just stir it gently until it is evenly mixed and has no lumps.

The plaster should be mixed in a plastic bag with water quickly before it hardens in the bag. Close the seal and shake. Move leaves and sticks, not any that are within the print. Pour the plaster into the print and cover with the plastic bag, might need to rip open the bag if the print is larger.

## Results:

- **Traps**

When	Where	
Dusky rice rat ( <i>Melanomys caliginosus</i> )	5 March 2017, at 5:30 am male found in the kitchen (tail 195mm, body spread out 104mm, ears 5mm, foot 30mm, legs 29mm, width 35mm)	Base camp one, El plastico
	5 March 2017, at 10:49 pm male in kitchen 650 grams (7 cm head, 24cm head body, 4.5 cm hind foot, 26 cm tail,  6 March 2017, at 8:20 pm a mother	
Grey four eyed opossum ( <i>Philander opossum</i> )	7 March 2017 8:30 pm baby months old? (hind foot 35mm, tail 135mm, head body 150mm, weight 20 grams)  9 March 2017 baby weeks old? (hind foot 21mm, tail 131mm, ear 15mm, head body 122mm, head 49mm)	Base camp two, Rara Avis
Vesper rat ( <i>Nyctomys sumichrasti</i> )	9 March 2017, at 7:54am (length 65mm, no tail, 40mm height, 40mm width, 90g weight)	Base camp two, Rara Avis

- **Bat Mist Nets**

When	Where	
Common Long tongued bat ( <i>Glossophaga soricina</i> )	1 March 2017, at 7:15 pm	In mist nets at El plastico
Chestnut long tongued bat ( <i>Lionycteris spurrelli</i> )	1 March, at 7:15 pm	In mist nets at El plastico
Seba's short tailed bat ( <i>Corollia perspicillata</i> )	3 March 2017, at 6:30 pm and another at 9:30 pm	In mist nets at El plastico
Common Mustached bat ( <i>Pteronotus parnellii</i> )	3 March 2017, at 9:30 pm	In mist nets at El plastico
Orange nectar bat ( <i>Lonchophylla robusta</i> )	7 March 2017, at 8:00 pm	In mist nets at Rara Avis

- **Cameras**

When	Where	
Brown throated three toed sloth ( <i>Bradypus variegatus</i> )	1 March 2017, between 9:34 am to 10:54 am	Frog Heaven-Horquetas de Sarapiquí. Puerto Viejo Sarapiquí, Costa Rica

Hoffmann's two-toed sloth ( <i>Choloepus hoffmanni</i> )	1 March 2017, between 9:34 am to 10:54 am	Frog Heaven-Horquetas de Sarapiquí. Puerto Viejo Sarapiquí, Costa Rica
Forest spiny pocket mouse ( <i>Heteromys desmarestianus</i> )	4 March 2017, at 5:09 am and 4:4 am and 4:26 am	Seen on camera 7 picture 54
Central america spider monkey ( <i>Ateles geoffroyi</i> ( <i>panamensis</i> ))	8 March 2017, at 2 pm	Seen when returning from hike with Twan to the waterfall
Ocelots ( <i>Leopardus pardalis</i> )	7 and 8 March 2017, at 1:30 am	Seen on camera 2 pictures and videos
Rice rats (undefinable)	5 March 2017, at 12:57 am and 2:07 am	Seen on cameras
Paca ( <i>Agouti paca</i> )	4 March 2017, at 1:14 am	Seen on camera 7 picture 5 from Levi trail
Red tailed squirrel ( <i>Sciurus</i> <i>granatensis</i> )	4 March 2017, at 10:30 am	Seen on camera 2 on video 16 Seen on camera 7 photo 45

- **Plaster Prints**

When	Where
Jaguar (Panthera onca)	Back to El plastico hike from Rara Avis
Puma (Puma concolor)	Fresh footprint seen 11:19 am, 2.3 inches length and 2.4 inches width Back to El plastico hike from Rara Avis
Tapir (Baird's tapir)	Left El Plastico base camp at 2:40 to set up plaster prints, came back with 6 the next day El Plastico hike in the hills on Prisoners trail
Anteater (undefinable)	Left El Plastico base camp at 2:40 to set up plaster prints, came back with 6 the next day El Plastico hike in the hills on Prisoners trail