**Telemetry Study on Andean Bears in the Cayambe Coca National Park**

The three-year Andean Bear Study, executed by Armando Castellanos, used radio telemetry to track the bears’ behavior and the interactions between bears and their environment. Conducted in the Papallacta River in the Cayambe Coca National Park, the study started with capturing the bears and then fitting them with radio collars. Biologist Castellanos notes the patience that one needs when capturing the animals because radio telemetry is very difficult to use in dense cloud forests and on rough terrains. Therefore, when Castellanos and his crew catch a bear, they know that they have obtained very valuable data. However, Castellanos needs to use two different methods in order to catch the bear. Created by Castellanos himself, ‘Iznachi’ traps are baited with cow feet along bear paths or in cornfields, where the bears find their food. On the other hand, radio collars with motion sensors are placed on top of a cage, and when the cage door closes, the motions sensors are triggered. The device emits a signal that tells Castellanos and his crew that they have caught an animal. “Bear watch” volunteers listen for these signals every hour. When the signal is triggered, Castellanos and his crew quickly hike to the cage to discover what they caught. However, Castellanos tries not to keep the bear in the cage for too long a time, because he does not want it to be too stressed out.

After Castellanos and his crew capture the bear, they tranquillize it, take measurements and genetic samples of it, and then they put a radio collar on it. Then, they move the bear away from the cage and let it wake up on its own timing. A veterinary doctor oversees the capture, immobilization and collection of samples, just in case if there is an emergency. After the bear has awakened, Castellanos and his crew keep a close eye on the animals by listening for signals from the bears’ collars with a radio. The bear’s location can be determined by using triangulation, the “technique for establishing the distance between any two points” (Dictionary.com). Using a GPS, Castellanos can easily track the locations of each bear by taking the bear’s position from designated stations. Thus, Castellanos can find out the home ranges of the bears and use satellite images to see their specific habitat. While tracking the bear, Castellanos examines the bear’s behavior, interactions between the bear and its environment, and how he can limit future human-bear conflicts.

During the study, three young bears, Chiquita, Tuta, and Paddington – between the ages of 2-3 months, were selected for examination. However, these bears were found living in terrible conditions in which people had kept them as pets. Thus, Castellanos immediately took the bears in for rehabilitation and created an “ideal wild forest” for them in which they could healthily grow and mature. On December 8, 1995, the bears were finally liberated into the wild. But, before the bears left their safe haven, Castellanos and his crew mounted radio collars on Chiquita and Paddington, but not on Tuta because she could easily take hers off. Over the next 8 months, Castellanos calculated that Chiquita’s territory was 4.1 km2, while Paddington’s was 61 km2. By listening to their activity, Castellanos learned that the bears were as active in the night as they were in the day. However, by being able to observe the bears for a total of 24 hours in 127 encounters between the distances of 5 and 30 meters, Castellanos says that he was really able to study the bears’ behaviors, especially their feeding behaviors. Consequently, he concluded that bears take an average of 70.2% of their time eating. Thus, only was Castellanos able to make this conclusion because of radio telemetry.

The box turtle study at Lovett easily relates to Castellanos’ study of Andean bears. By using radio telemetry, we are able to observe the behaviors, home ranges, and health of the animals. The radio telemetry techniques thatCastellanos used in his study could be beneficial to our Lovett box turtle experiment. One device that Castellanos used was a GPS/satellite tracking system in which a radio collar is put on the animal and then monitors the animal through different terrains and climates. I think that it would be very beneficial if we were able to use this same device – but, instead of using a collar, we could tape the GPS system onto the back of the turtle, and then we could monitor their movements and watch exactly where they are traveling and how long it takes them to travel a certain distance. Plus, we could easily find them with one device instead of needing four devices to find them (a transmitter, cable, antenna, and receiver). One other change that I would make to our box turtle study would be to reduce the size of the transmitter. According to [www.vogelwarte.com](http://www.vogelwarte.com), the smallest and lightest transmitter has recently been created, only weighing 0.2g and being ¼ the size of the tip of your pointer finger, while at the same time improving the battery life and reception range. I think that if we used this device, then there would be a very small chance of the transmitter falling off the turtle’s back and our turtle would not be handicapped or disturbed. However, radio telemetry is not that helpful if the transmitter falls off of the animal or if the animal keeps taking the transmitter off, then the researcher is not able to examine the movements and behavior of the animal, unless if they observe the animal in person. Therefore, radio telemetry is only helpful when the transmitter stays on the animal or if the animal allows the transmitter to stay on it.

In conclusion, radio telemetry allows humans to monitor the behavior, health, location, and human interaction of an animal within their environment. Techniques to initially capture the animal could be improved. More time efficient ways could include using sniffing dogs to locate the bears or using traps with bait for the turtles, but as Castellanos says, patience is what really matters when dealing with animals, so it would be better to learn how to be patient front on instead of possibly mistreating the animals in the middle of the experiment. However, altogether, both studies successfully used radio telemetry to experiment with an animal’s environment and how they interact with humans.

Websites:

[**http://www.andeanbear.org/**](http://www.andeanbear.org/)

[www.vogelwarte.com](http://www.vogelwarte.com)