

# ***A COMPARATIVE STUDY OF DUNG BEETLES IN THE PRIMARY AND SECONDARY FOREST OF PERU.***

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## **INTRODUCTION**

The beetles that were studied in the Peruvian Amazon were *Coleoptera Scarabaeidae* sp., also known as dung beetles. *Scarabaeidae* are an important life form in the forest ecosystem. They use the dung from other animals as food and process it to recycle nutrients and vital chemicals back into the environment (Pearson, 2001). Finding dung is the most important aspect of the beetle's life. The adults use it for food and store it for the young as they emerge from the eggs planted in the dung (Pearson, 2001). Beetles locate the dung by smell with their feather-shaped antennae that act as sniffers (Pearson, 2001).

One of the goals of the research at the Los Amigos Research station, located at the mouth of the Rio Los Amigos and Rio Madre de Dios and next to the Manu National Park in Peru, is to find whether there is a higher diversity of dung beetles in the primary or secondary forest. The primary forest should have a higher diversity of mammals, which would cause a higher diversity of dung available for the *Scarabaeidae* beetles. However the secondary forest has a more covered understory, allowing for the beetles to hide from any predators.

## **MATERIALS AND METHODS**

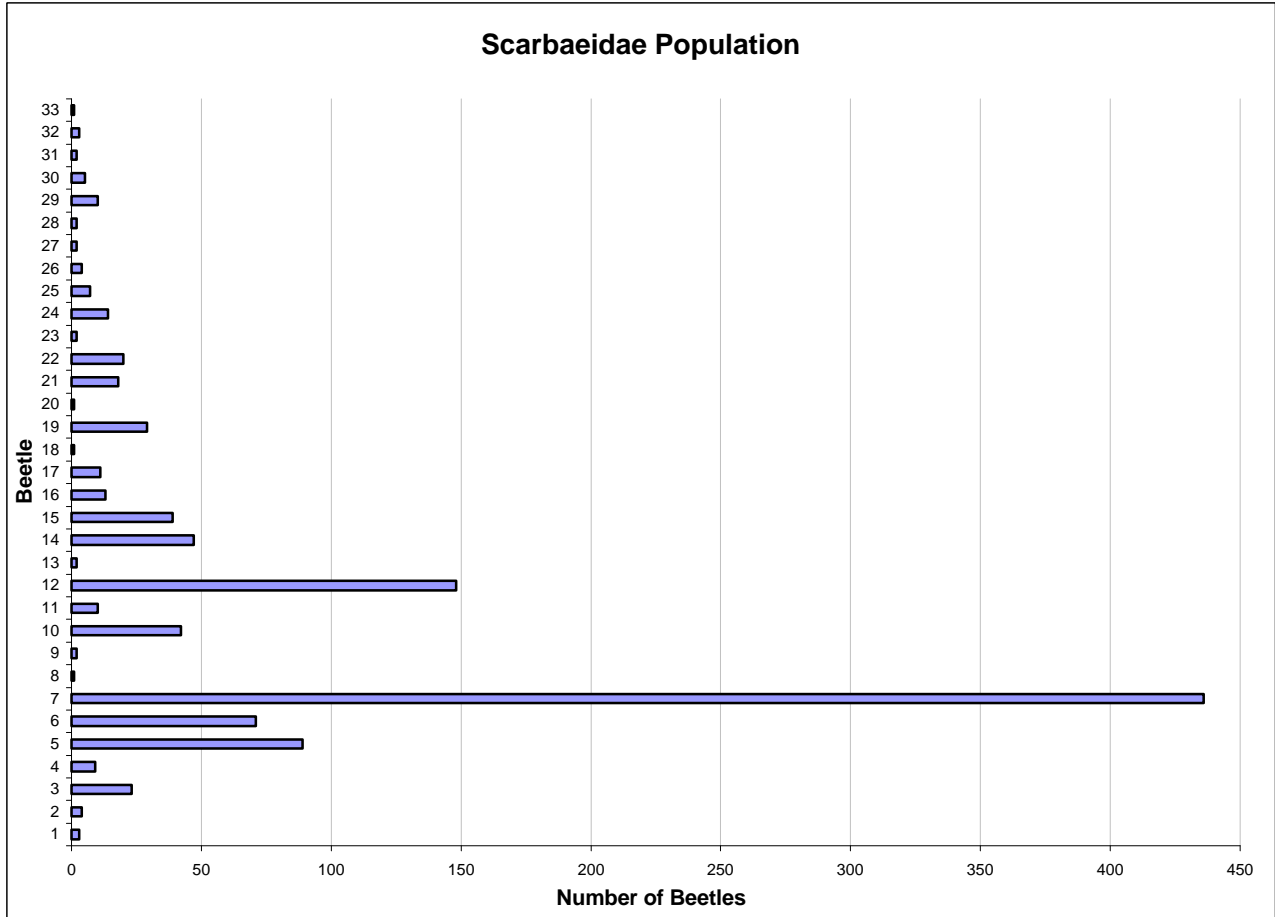
Pitfall traps were set up on January 11, 2003 and they were taken down on January 14, 2003. The traps were collected once a day starting on January 12, 2003 with each trap collected separately. Ten traps were set in the Secondary forest on the Trocha Aerodromo and in the Primary forest on the Trocha Huangana. The traps were spaced 10 meters apart from each other. The traps were set with human feces, snake (*Leptodeira annulata*), or chicken carrion. The first traps (traps 1-10) in the Secondary forest were alternately baited with feces and snake. The traps in the Primary forest (traps 11-20) were set the same way. Traps in the Secondary forest were re-baited with fresh bait on the second day while traps in the Primary forest were re-baited on the third day. Chicken replaced the snake samples when the traps were re-baited. The lip of the cup to the trap was just above the ground. The traps contained soapy water filled up to the bait-dish (fig 1). The beetles were preserved in 70% Ethanol.



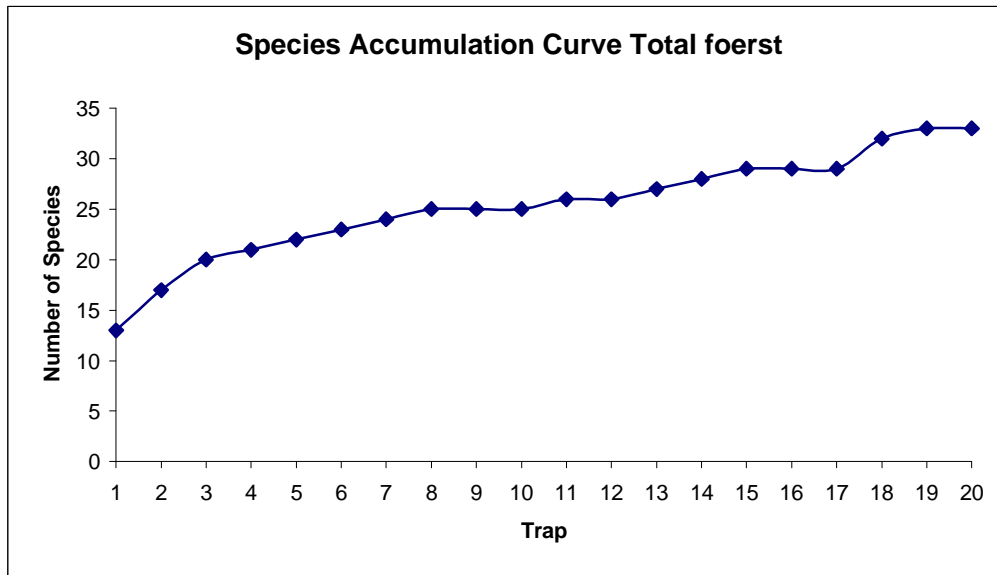
**Figure 1.** (A) Snake baited pitfall traps. (B) Feces baited pitfall traps. (C) Full pitfall trap

## RESULTS

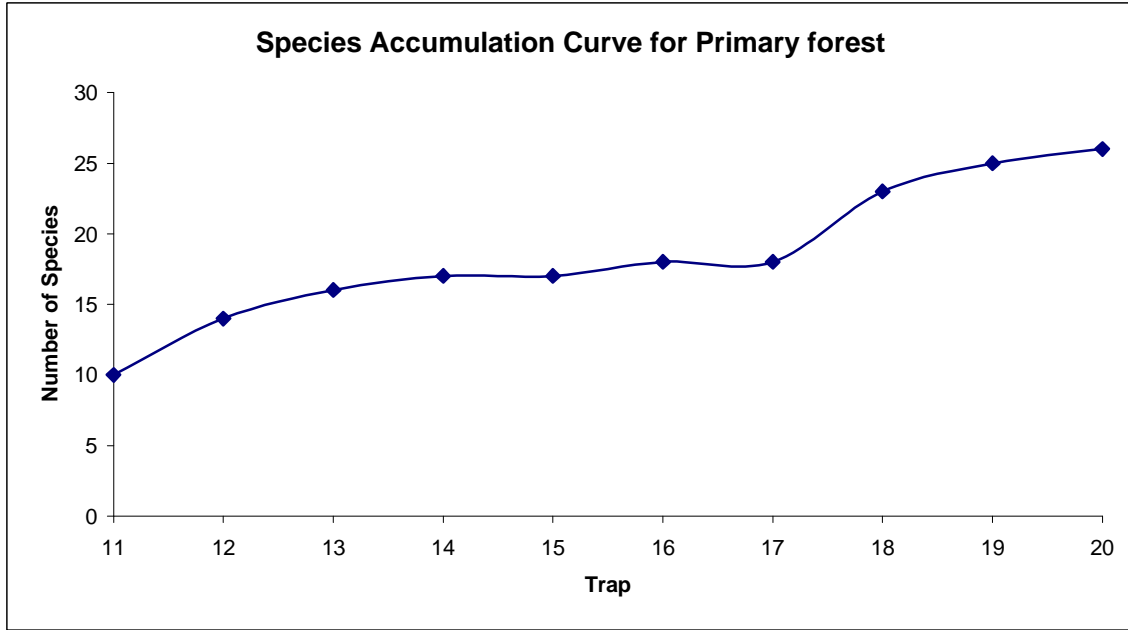
After the pitfall traps were collected the beetles were sorted through and counted. It was possible to identify 33 different species of beetles from the beetles collected. A population graph of the beetles was made (fig 2) to identify the major species found in the forest. There were a total of 26 species found in the Primary forest with species 26,27,28,29, and 31 unique to this area. The Secondary forest contained 28 species with species 1, 2,8,9,18,20, and 33 unique to this area.



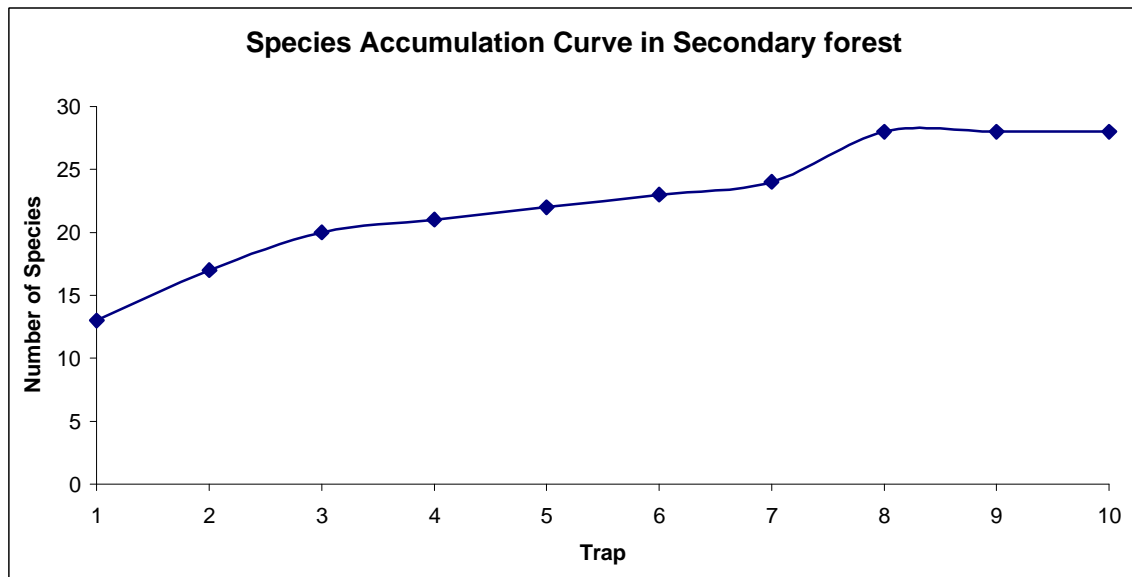
**Figure 2.** The number of beetles collected of each species.



**Figure 3.** The number of new species found in each trap.



**Figure 4.** The number of new species found in the Primary forest.



**Figure 5.** The number of new species in each trap in the Secondary forest.

## DISCUSSION

From the three collection days there were 33 species of *Scarbaeidae* found in the forest. The dominant species collected was Beetle 7 with Beetles 5, 6, and 12 being the next group of dominant species. There were five species of *Scarbaeidae* that were only found in the Primary forest and seven species of *Scarbaeidae* that were only found in the Secondary forest, indicating that each forest contains unique environments that only support these beetles.

The species accumulation curve for the total forest (fig 3) appears to be leveling out. This is an indication that in three days we were able to collect most of the species found in the forest. However, the species accumulation curve for the Primary forest (fig. 4) appears to be increasing. More time for collecting in this area would have been beneficial. The accumulation curve for the Secondary forest (fig 5) appears to be leveling out, indicating that we have collected all the species from that area. It is likely that we collected more than 33 species of beetles, but with the equipment that was available in the field it is difficult to identify all the different beetles.

## **CONCLUSION**

From the data collected, we can conclude that the Secondary forest is more diverse than the Primary forest. This is indicating that the denser understory of the Secondary forest contains more species of *Scarbaeidae*. The beetles living in this area could also be less picky about the dung they choose to eat, which could be why a higher diversity of beetles were collected in the traps.

## **WORKS CITED**

Pearson, David C., Beletsky, Les. Perú: Ecotraveller's wildlife Guide. Alademic Press, p 238-240, 2001.