

# AGOUTIS ON THE ALERT!

# Abstract

The expression of anti-predation behavior can be the difference between life and death. The signs of anti-predation behavior can be expressed by auditory, vision, tactile, and olfactory cues. Agoutis (*Dasyprocta punctata*) for an example are mammals that use auditory cues to avoid predation. These mammals are a key component to the Neotropical forest as seed dispersals, seed predators, and prey for several species. They spend the day defending their territory from invading agoutis, searching for food, looking for potential mates, and watching for predators. The objective of the research was to study the alert behavior of agoutis in two different habitats at the Las Cruces Biological Station located in Las Cruces, Costa Rica. A group of agoutis from the Wilson botanical garden and the secondary forest was studied to see which group would express more signs of anti-predation behavior. One group has grown accustomed to the presence of humans and hearing disturbances while the other group lives in a less disturbed area where there is a less influence with people. To test how alert the agoutis can be in the presence of a predator test calls from an ocelot. The calls started at a distance far away and will advance the longer it takes the agoutis to respond. Observation notes will be taken after every test call to note the agoutis' reaction. With one group having fewer interactions versus another group that is used to everyday disturbances, the expected conclusion will be for the agoutis in the secondary forest to be more alerted than the agoutis in the garden.

# Introduction

Anti-predation behavior is an important aspect of an organism's life. An organism's fitness can be directly affected by predation. Organisms are able to detect predators in different ways such as olfactory, auditory, visual, and tactile cues (Feldhamer et al. 2007). Mammals are able to use auditory cues in order to detect predators rather than using chemicals (Feldhamer et al. 2007). Agoutis (*Dasyprocta punctata*) for an example are mammals that use auditory cues to avoid predation. Agoutis are a key component to the Neotropical forest as seed dispersals, seed predators, and prey for several species. They are medium sized mammals that are found throughout the forests usually in areas with heavy brush, and near streams, rivers, and ponds (Smythe 1978). The nature of the agouti is to be on alert of its surrounding at all times. They are preyed upon by larger predators throughout the forest such as jaguars, ocelots, and even sometimes people (Smythe 1978, Aliaga-Rossel et al. 2006). Agoutis are territorial

# Methods

## **Sampling design section**

When studying the agouti's behavior, I focused the research to be in two different habitats at the biological station. The first area was at the botanical garden where disturbances from people and machinery such as power tools are common. There are also several species of trees from around the world. The second area was at the secondary forest where there is less density of agoutis due to the area being surrounded by trees, bushes, and shrubs making it easier for the agoutis to hide from disturbances or potential danger. Before I was able to study the agouti's reactions to the test calls I had to observe their typical behavior to see how they normally responded to disturbances. I went out to the garden and secondary forest between the hours of 7:00am-6:00pm to observe their behavior patterns as noted in the figure below. During the time of observation I took observational notes every five minutes on the hour.

## **Playback time**

Agoutis are routine animals meaning they patrol their territory around the same time on a daily basis (Smythe 1978). Once their daily routines and behavior was learned, I played predator calls from an ocelot and jaguar . In order to test their alert behavior; the calls were first used at a faraway distance (~fifteen meters). Observation notes of the agoutis were taken after each call noting their response such as the way their body freezes and their ears shift. If the agoutis were unaware of the calls then another call would be played at a much closer distance.

# Method details: Behavior Description

**Walking** When the agouti was moving from one area to another.

**Sleeping** When the agouti was lying down on the centrum, usually with forelegs folded

**Social** Social was when there was more than one agouti together in the same area <15 m apart.

**Alert** When the agouti's body was frozen, ears fixed upwards, rump fur brushing up, eyes focused, and eyes closed

**Sitting/laying** When the agouti was sitting on its hind legs. Lying was when the agouti was laying on all fours.

**Eating** The agouti putting fruits and seeds into its mouth, eating, and chewing or gnawing

Unknown When the agouti was hidden from view behind trees, bushes, etc

# Results

In the total 372.5 hours I spent observing behavior. The garden agoutis were noted as having a higher count of walking, sleeping, sitting, laying, and eating activity while the agoutis in the secondary forest had a higher count of social and unknown activity ( $\chi^2=115.992$ ,  $p<0.001$ ; graph 1 and table 1). The observed alertness for both groups was not significantly different however in regards to direct observation the secondary forest agoutis showed significant signs of alertness compared to the garden agoutis when presented with predator calls ( $\chi^2=25.32$ ,  $p=0.027$ ; graph 2).

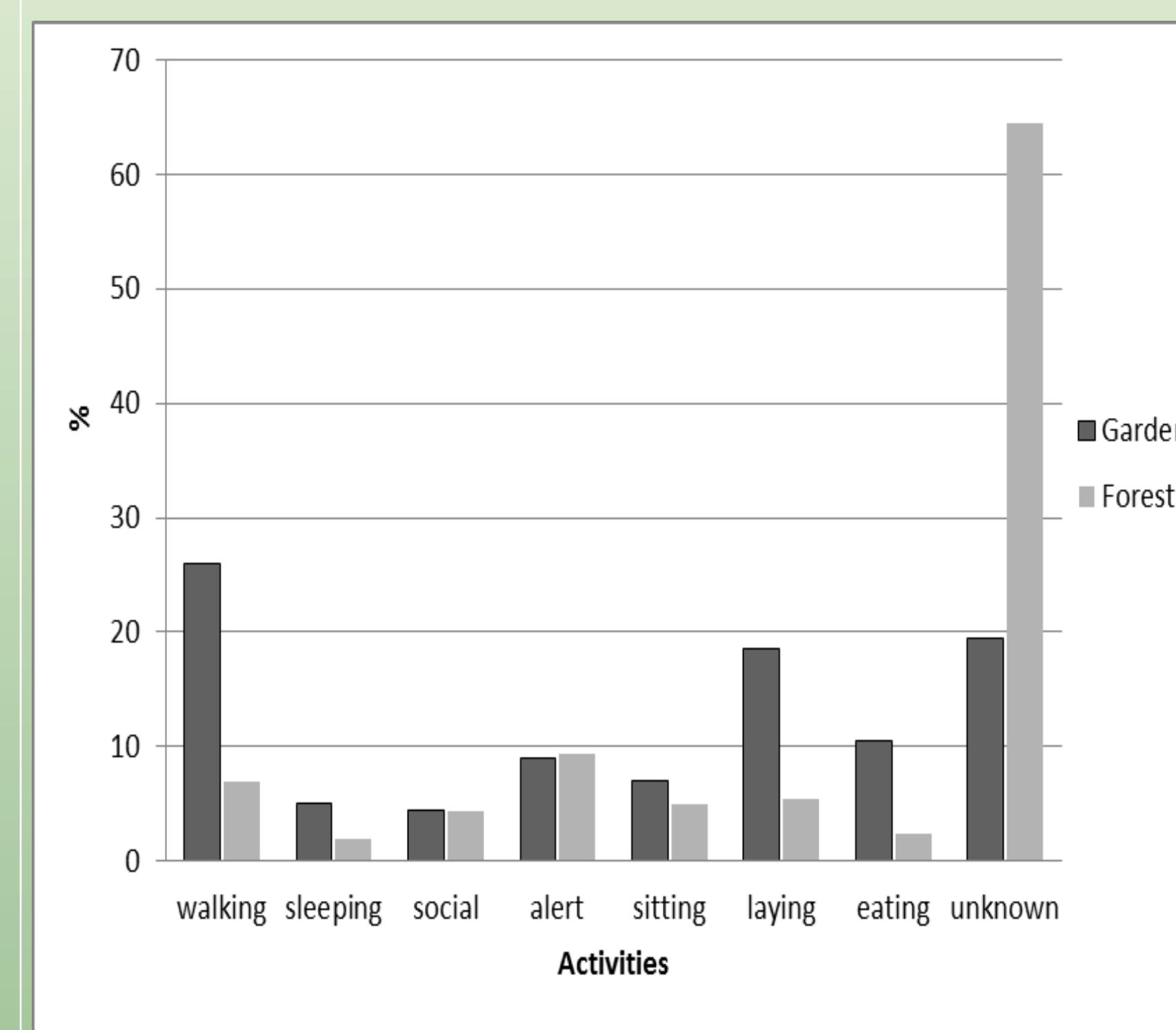
# Conclusions

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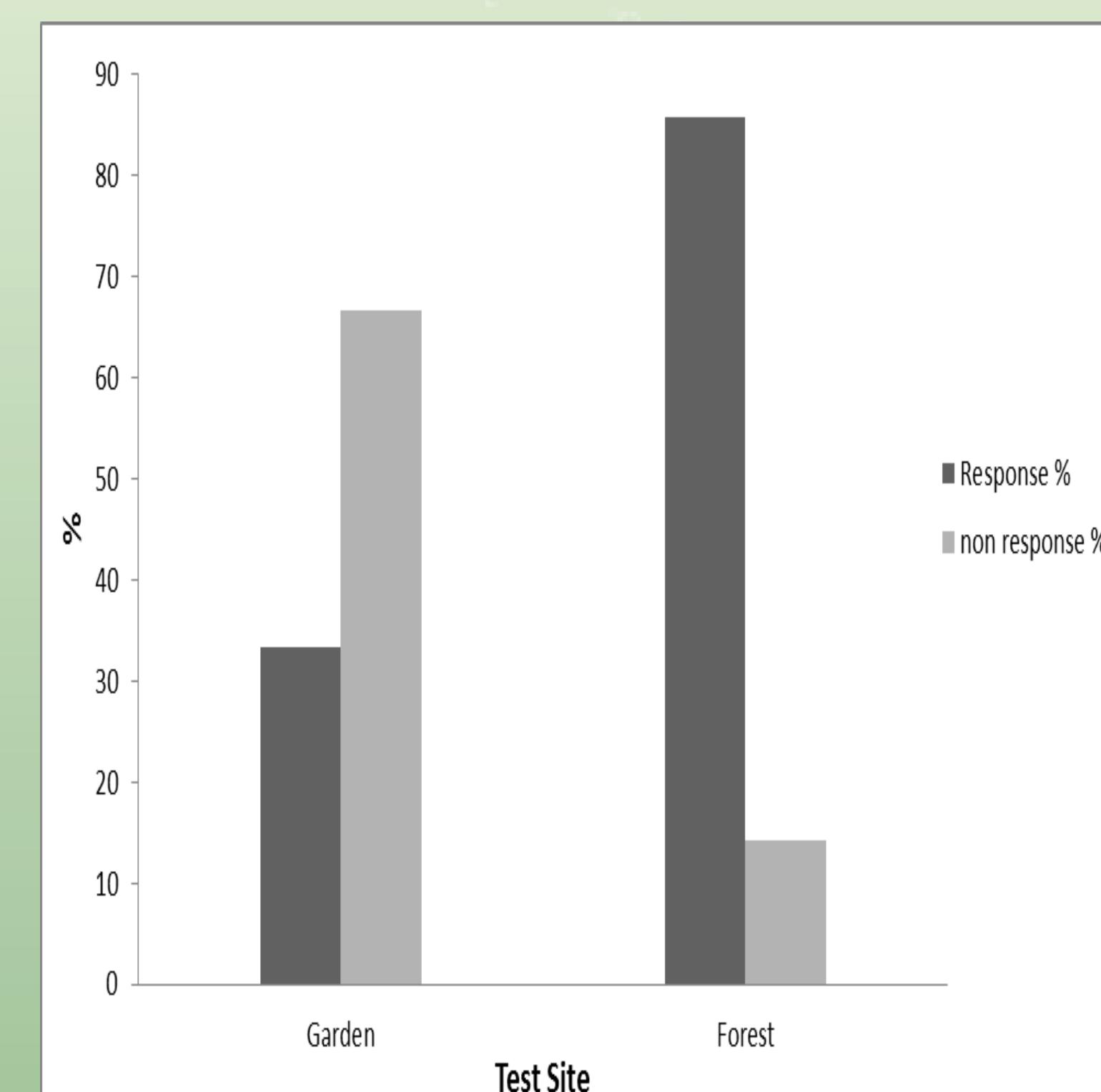
**Behavior**  
During the behavior observation the secondary forest agoutis were shy and cautious. In most cases during my observations the agoutis would keep me within their eye sight. In his research Smythe (1978) notes agouti shyness, highlighting how difficult it can be to approach wild agoutis in the forest without affecting their behavior and recommends that the best way to observe them is to sit still and wait for them to come into view. When observing in the garden I would see multiply agoutis foraging together in one large area. They will generally forage alone and are territorial Smythe (1978) but I would suspect with the abundance of food in the area they will come to tolerate one another under certain circumstances.

**Predator test-calls**  
The agoutis in the secondary forest expressed more signs of alertness not only when the test calls were played but also when tourists were passing by the area. When the test calls were played the agoutis would become alert and focused in order to determine the location of the calls and like manner also when hearing the voices of tourists. When the test calls were played for the garden agoutis, they were not moved by them as much as the secondary forest agoutis. I've noticed the agoutis in this area would only retreat a few steps instead of running into the safety of the bushes. When the test calls were played or when they saw tourists passing by they would stop what they was doing for an instance but since they did not see an ocelot or because the tourists were not too close to them the agoutis were not bothered enough to run away.

# Graphs:



# Graph one



# Graph two

# Sources Cited:

- Sources cited:

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  - 2) Smythe, Nicholas. The Natural History of the Central American Agouti (*Dasyprocta Punctata*). Smithsonian Institution Press. City of Washington. 1978. Print.
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