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# Foraging Behavior of the Odontomachus Ants on Dominica

## Introduction

The *Odontomachus* ants, of the subfamily Poneri~~ae~~nae cohabit with Nasutiform termites in their nests. For some reason, the termites vacate part of the nest, and the ants take up residence. Jeffery Doolittle noticed this phenomenon and hypothisized that there must be some sort of relationship between the ants and the termites. He thought that the *Odontomachus* helped defend the termites from common enemies. However, he found that the ants would actually kill the termites, and that the soldier termites would defend themselves from the ants by ejecting a noxious substance from a snout or nasuate on their heads. Therefore, he concluded that the question of a relationship between the *Odontomachus* and the Nasutiform termites was still open. With some direction from Dr. James Woolley, Ph D, I decided to overserve the *Odontomachus*, concentrating on their foraging behavior in order to better clarify whether or not a relationship exsisted between the termites and the ants at all.

*Hypothesis: Are the termites no more than a convient food source for the ants?*

## Materials and Methods

My materials were rather simple. I used plastic pill bottles to get samples from the *Odontomachus* that were returning to the nest, carrying food. I would use forceps to pick the ant up, placing it into a bottle. It would usually drop the item it was carrying and I would then let the ant go.

In order to observe the *Odontomachus* easier, I chose a nest jujst off the North Mango trail that runs up from the Bee House at the ATRC on the island of Dominica. Next, I cleared the leaf litter from the front of the nest, and ovserved the interactions going on there before me.

## Observations

For the first three days, I passively observed the interactions of the *Odontomachus* and the termites both on and off the nest. The first behavior that I noticed was that the *Odontomachus* does not march in columns along trails as do many other ants. They do set up trails, but instead of each trail leading to a food source, the trails seem to lead to a hunting area. The hunting party is usually composed of about four or five ants in an area of about a square half a meter. In this area, these ants hunt solitarily. Once one of the ants finds some food, it brings it to a safe location, such as under a leaf, and stores it there. When it has a few items it and the other members of its hunting party carry these up to the nest, each ant taking one item.

This storing behavior was especially evident when the *Odontomachus* would prey on the termite workers. The ants seemed to be very cautious of the termite soldiers, probably because of their defense mechanism; however, if a worker strayed too far away from the group, an ant would pounce on it. The termite would quickly be killed with one snap of the massive jaws of *Odontomachus*. Next, the termite would be brought to one of these safe locations and the ant would begin hunting again.

Although the *Odontomachus* was attacking the termites, the ants would avoid the termites on the nest. Even workers would be avoided, the ants circling widely around them. There were no instances of *Odontomachus* attacking the termites on the nest. All attacks took place at worksites off the nest.

Besides hunting around termite worksites, the *Odontomachus* also liked to hunt in the leaf litter about the nest. In fact, one ant was found about 1.5 meters from the nest, hunting. I also found them returning from the leaf litter with other insects besides termites. These insects included large hymenoptera, other ants, and small catepillars. The *Odontomachus* never brought any plant material back to the nest.

**Conclusions and Further Reasearch**

The *Odontomachus* seem to be solitary hunters, working together. They also seem to be completely insectivores. Their prey is usually worker termites that stray from the main column at the termite worksites off the nest. However, they also venture out into the surrounding leaf litter, hunting for other insects. From these distant places, they return with an amazing variety of food. Therefore, I conclude that the termites form a very easily accesible food source for the *Odontomachus* and probably make up about three fourths of their food supply. This may be the reason that the ants take up residence in the termite nests.

It would be interesting to conclusively study how much of the ants' total diet comes from the termites. It would also be worthwhile to investigate the dynamics between the *Odontomachus* and the termites within the nest. Discovering if there is an interior nest interaction would help solve the question of the exsistence of a relationship between the *Odontomachus* ants and the Nasutiform termites.

**Acknoledgements**

Great thanks are in order to Dr. Woolley for his invaluable direction and his assistance in identifying the insect pieces taken from the ants.

**Works Cited**

Jeffery A. Doolittle; "Interactions between Ponerine Ants and Nasutiform Termites on the Island of Dominica". Student Abstracts from Dominica, 1996

# Rock Climbing to Study the Rain Forest Canopy

We had an idea to study the hymenoptera that live in the figs of the *ficus insipida* in the rain forest around the Archibold Tropical Research Center. There was also another project to study some of the bromiliads and other epyphytes in the trees. In order to do this, we needed to get up into the trees. I believed that my rock climbing experience could be leveraged to help us get up there.

**Background**

There are two styles of rock climbing -- sport and traditional climbing. In sport climbing, metal bolts have been placed into the rock for the climber to use as protection. In traditional climbing, the climber must place his own protection, and climbing the trees was much more akin to the later, so traditional climbing will be discussed here.

In all these forms of climbing, the basic idea is the same. There is a person who remains on the ground, known as the belayer, and the leader, who is the climber that goes up the climb first (leads). The leader begins with no protection whatsoever, and climbs up to the first place that he can place some sort of protection, which is usually a tool that he can wedge into a crack in the rock, and then clip his rope to. Now, he is protected, and should he fall, he will fall beneath that peice of protection, but his belayer can catch him there (Figure 1). The leader proceeds on up the climb, placing protection as he goes. When he arrives at the top of the climb, he may set up a "top rope" setup (Figure 2). This setup allows others to climb the climb without having to worry about placing protection or falling down beneath the last peice of protection. Instead, if they fall, they will be caught by the belayer instantly and fall a few feet at most.

This is what I intended to do on the trees, to get us up into the canopy levels of the branches.

**Problems**

However, there were several problems that I encountered while attempting to "rock climb" the trees. Perhaps the most difficult problem is that there are usually very few branches near the forest floor. This made getting into most trees exceedingly difficult. This was the most unsafe part because since there were no branches, there was also no protection until the first good branch. For, there is no place to put constriction oriented rock climbing gear in a tree for protection. And even if you could, a bad fall would just tear it out of the tree, since the tree is so much softer than the rock that the gear was made to be used on. So, in order to protect myself, I had to sling webbing (wide nylon cord that looks like a small seat belt) around branches and clip the rope to carabiners hanging from the webbing (Figure 3).

Yet, there were problems with this. Many of the branches on these old trees are very thick, and I had problems getting the webbing to reach around them, and in reaching around them to clip the webbing together. Occaisonally I could protect the climb by running webbing beneath strong vines running along the branches, but I would not trust these with a very hard fall.

The next problem I encountered is one that is not very much of an issue on rock. All trees have branches emmanating from their trunk after a certain point, and if you wanted to look at anything interesting, you would need to be out on one of those branches. Therefore, this adds a third dimension to the climbing where the climber actually climbs back out toward the belayer, which does not usually happen rock climbing. In a tree, this third dimension allows the rope to get stuck behind various limbs, pulling the climber away from the tree. It can also get tangled in vines, causing rope drag, or worse even, slack between the climber and the protection (Figure 4). It is well to note that these scenarios can happen in both leading and top roping the climb.

Finally, the last problem stems as a result from the whole process. Much of the interesting plants and animals will most likely be destroyed or frightened away by the lead climber as he struggles his way up to the "top" of the climb. The second problem with the process is that it only protects a certain route well. If the climber wanted to investigate an epyphyte on a branch outside of the established route, he would not be well protected, and runs the risk of taking a swinging fall into another tree, or worse, getting the rope wrapped about some obtrusion and accumulating slack in it. That opens the possibility for a long (potentially ground) fall (Figure 4).

**Conclusion**

Although an interesting experience, using rock climbing methodology to study the canopy levels of the rain forest trees is inherently difficult, and exceedingly difficult to do safely. Overall, I believe the costs far outweigh the possible benefits. Still the canopy lures us, wondering what is up there. Building on experiences such as these, we will find a productive, safe way to study those important portions of the rain forests.

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Figure 1

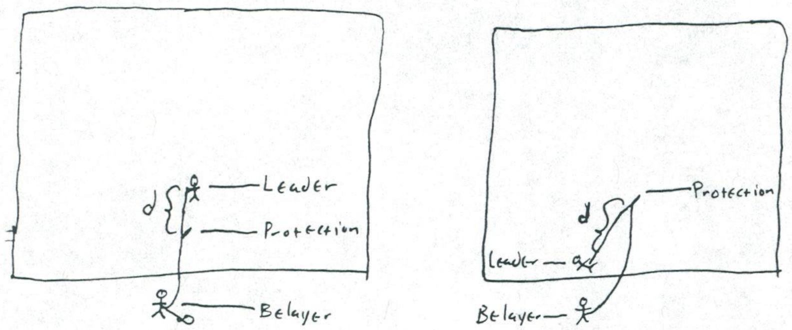


Figure 1: Leader takes a lead fall of distance d before ~~Bt~~ Belayer can help at all. So, he should place protection frequently in order to prevent a bad fall.

Figure 2

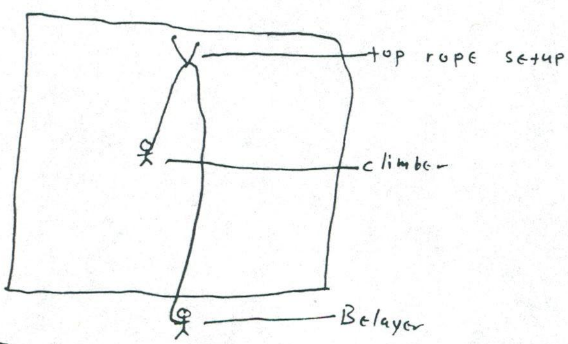


Figure 2 When top roping, the climber is always beneath the protection. And the belayer can catch the climber instantly.

Figure 3

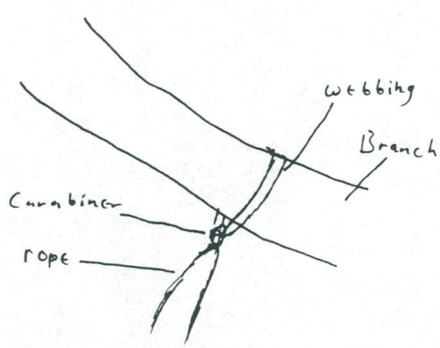


Figure 3

Typical setup of protection on the tree. Webbing loop wrapped around branch, clipped together with carabiners, and the rope clipped into the carabiners.

Figure 4

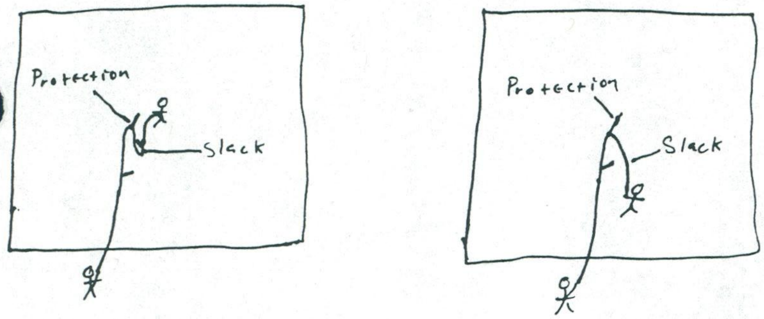


Figure 4 If slack accumulates between the climber and his protection points then although the climber may think he is safe from a large fall, he would actually fall the slack distance. This is a problem climbing trees since there are so many ~~other~~ branches and vines that the rope can get stuck behind, causing slack without the climber knowing. Below, the same thing can happen ~~on~~ when top-roping.