



## Naturalism Outreach Activity-termites and pheromones

Because it would be hard to realistically depict biocontrol by using model insects, I believe that adapting the termite and Bic pen activity will give observers a sense of how biocontrol agents identify prey and role of specificity.

### Relation to Biocontrol:

Many of the problems that pesticides and herbicides cause is due to the breadth of their activity. They can kill much more than their intended target. Biocontrol is much more specific in its mechanism of action because it is based in nature's specific prey-predator interactions. Pheromones reflect how insects can distinguish one chemical signal from all others to find food and communicate with each other. In this activity, the termites only follow the pen, illustrating their specificity.

### Materials Needed:

- Termites (subdivided into small containers with moisture)
- Trays
- White paper
- Writing Instruments: (Blue Bic, sharpie, pencil, washable marker)
- Soft Paint brushes

### Steps:

1. Center the tray in front of yourself and place the white paper on top of the tray to provide a bright background.
2. Empty the contents of the termite container onto the piece of paper and use your paintbrush to make sure that all termites are on the white piece of paper.
3. Observe the movement of the termites after they have had a minute to adjust. What kind of environment do they seem to prefer? Are they interacting with each other?
4. Begin making marks with the writing instruments on the paper.
5. How do they termites react to these marks? What does it mean? Do they prefer the marks of some writing instruments over others?

### Conclusion:

The termites prefer the ink in Bic brand pens because they contain something known as 2-phenoxyethanol. The termites naturally use this, a pheromone, to communicate by smell using their antennae. The termites smell it on the paper and follow the ink trail because they think another termite made it for them to follow. A lot of other insects use their senses of smell too. For example, the insects we just talked about that we use for biocontrol use pheromones to find prey. Ladybugs smell the aphids that they eat in the garden just like the termites smell the ink trails.