

Instructions for forensic entomology activity:

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Preparation

- 1) Plan to chalk out an appropriate number of bodies so that students can be in groups of 2-3 per body. This number should be based on the expected number of students coming through in a given round of the activity.
- 2) Assign the bodies to one of 3 times of death (there may be more than one body assigned with the same time of death depending on the number of bodies needed). Having this number makes it easier to track the proper responses. Assign each body a unique body number to keep track of the appropriate time of death for that particular body. Generally, it's good to pick times of death that have unique "insect communities." In the past, I've picked 1 d, 6 d, 10 d, or 13 d after death, as there is less of a chance that children will confuse the answer with another answer.
- 3) For whatever "insect community" (e.g. pipe cleaners) is needed for each body, cut out 5-6 of each pipe cleaner color required. However, decide ahead of time where each crime took place (consulting the geographic guide on the worksheet), and whatever species (color) is most common in that county, make twice as many of that pipe cleaner for a body as all the others present. For example, if you have a body that died 6 d ago, you would need to cut out 5-6 purple, green, and yellow pipe cleaners of sizes indicated in the forensic entomology worksheet table, and if you wanted the students to think it is from Webster County (for example), you would have twice as many green pipe cleaners as the other colors. The reason that 5-6 are needed becomes clear below, but mostly revolves around each pair/group needing to take 3 "maggots" (pipe cleaners) of each "species" (color) to measure (need to be able to create an average! science needs replication).
- 4) The "insect community" for a given body can be put into the same plastic bag and assigned a body number corresponding to the ones created above.
- 5) On the day of the event, once the bodies are chalked out, a body number should be assigned to each (and denoted with a folded over piece of paper with the number on it). Again, each body number should have an associated "answer" (time of death) and "insect community" (plastic bag with pipe cleaners). Pour the appropriate bag of pipe cleaners into the appropriate body number and spread out the "maggots" to make it look more natural.

Guiding the Activity

- 1) The premise that you tell the students is that they've been deputized to be crime scene investigators. There has been a rash of murders lately, and their goal is to find out when and where the crimes happened using insects as indicators. Ask them if they accept the challenge.
- 2) Split people up into pairs/groups (you can number off for this).
- 3) Pass out the equipment, and emphasize as you are passing out gloves that it is important to be "sanitary" and to "not contaminate the evidence", so be sure to keep the gloves on and to use

the forceps to get the maggots. In addition, tell the students that they should NOT step into the body, as this would also affect the evidence (reemphasize this when the kids are out with the bodies).

- 4) In each pair, have the students decide who will be the “recorder” to take down all the information (it’s good to make sure this is specifically assigned, or nothing gets recorded).
- 5) Tell the groups that each group needs to collect three maggots (pipe cleaners) of each species (color) that is present in the body, whatever those species happen to be. Not all species will be in all the bodies.
- 6) (It’s good to have a helper with this activity for passing things out, and making sure everyone is doing what they are supposed to).
- 7) Assign each group a body number (make sure the students write this down on their recording sheet), and once everyone has all their equipment, a body number, gloves on, etc. then take them to the bodies and let them “dig in”.
- 8) The bodies are typically roped off with caution tape to add to the “crime scene” vibe. They are allowed to go over the caution tape, but remind them not to step in the bodies.
- 9) The students need to complete two tasks at the bodies: 1) count the total numbers of each “species” of “maggot” in the body and record that on their worksheet (this will later give information about where the body came from), and 2) give students sufficient time to get three pipe cleaners of each species (this will tell students when the crime took place). When students are finished, tell them to line up to the side of the crime scene. Once everyone is done, you can “head back to the lab” to “crack these cases”.
- 10) When you get back to the lab and have everyone seated by their partner, before they open their bags, it’s good to communicate the main scientific points. There are two main points 1) the bigger the insect, the more time has passed because the development of insects depends on the temperature around them. Bigger insects = older body. 2) the insect community that colonizes a body will depend on where the body is located, because each area has a unique insect community. If we know what the insect community is like in specific areas, then we can trace where a body came from. By the end of the activity, the students should be able to identify when the crime happened, and where the crime happened (using the geographic guide in the worksheet).
- 11) Now, have students take out there maggots one at a time and measure them with the provided ruler in the correct units (this was rather hard in the past, and some times, depending on the age group, you would have to demonstrate how to use a ruler). Tell them to keep the maggots they’ve already measured in a separate pile from the ones they still need to measure, and as they measure each, record the measurement in the appropriate area of the worksheet.
- 12) Once they are done measuring all the maggots, demonstrate how to use the table, and tell them based on the sizes of their maggots and the colors presents, when they think their person died. This may require going around to different groups and helping them with this process (a helper is also good for this part of the activity).
- 13) After each group has found the time of death individually, have them try to figure out which county the crime was committed in. This will be based on which color is the most common that they counted when they were with the bodies originally (recorded on the right bottom of the

front page of the worksheet). Tell them to flip the worksheet over and give them information about which color is the most abundant in which county. Then, based on which color (species) was most common for their body, what county did they think their body was found in?

- 14) After everyone has these two bits of information, have each group go around and say which body number they had, when they thought their body died, and where they thought the crime happened. Congratulate them on solving the case!