SOP 25: Pitfall trapping

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Preamble

This document describes the procedure used by staff at the Frost Entomological Museum to collect insects via pitfall traps.

1 Long-term pitfall trap

This section describes the set-up for traps that will be in the field for an extended period of time (i.e., >6 months). The protocol assumes that sample jars will be replaced weekly during the active season (late spring, early summer) and monthly during the colder months.

1.1 Materials

Our pitfall traps consist of six primary elements:

1. **Sleeve** - A piece of PVC pipe (Figure 1D) that protects the hole from caving in and inhibits the movement of dirt into the jar

2. **Jar** - A glass receptacle (Figure 1F) which houses the preservative and collects the arthropods

3. **Preservative** - We use a non-toxic, non-volatile liquid (Figure 1C) to kill and preserve insects caught in the trap. Splash RV/Marine Antifreeze (Freezing Point (F) -100; Mfr. Model # 919626-G35; Elliott Auto Supply Co., Inc. Eagan, MN USA) works well for this

4. **Funnel** - The funnel (Figure 1E) rests atop the jar, inside the sleeve. We use 12 ounce plastic cups, with the bottom cut out

5. **Guides** - Three sections of lumber (3 cm × 3 cm × 30–40cm; Figure 1B) arrayed around the opening of the funnel serve to guide arthropods into the trap and also to support the tile

6. **Tile** - a ceramic tile (Figure 1A) is supported over the trap opening to prevent rain and debris from filling up the jar
1.2 Setting up
To set a pitfall trap:

1. Set a transect or find an area where the pitfall traps will not be lost
2. Dig a hole wide enough for the PVC sleeve (Figure 1D) to sit in, with the top absolutely flush with the ground. You want an arthropod to walk into the trap without encountering any kind of lip
3. Fill the glass sample jar (Figure 1F) about half way with preservative (Figure 1C) and gently lower it into the sleeve
4. Insert the funnel (Figure 1E), and make sure it fits tightly into the glass jar
5. Arrange the guides like in Figure 2
6. Add label to preservative with the following data: start date, locality, habitat, collector or project name, and any other critical data
7. Place ceramic tile on top (Figure 3)

Figure 1: Materials for long-term pitfall trap. Photo (CC BY 2.0) by Andy Deans https://flic.kr/p/2jfQFgv

2 Short-term pitfall trap
This section describes the set-up for traps that will be in the field for less than a week.
2.1 Materials

1. **Cup** - A plastic receptacle, usually a 350 ml cup, that contains the preservative and collects the arthropods.

2. **Preservative** - We use a non-toxic, non-volatile liquid (Figure 1C) to kill and preserve insects caught in the trap. Splash RV/Marine Antifreeze (Freezing Point (F) -100; Mfr. Model # 919626-G35; Elliott Auto Supply Co., Inc. Eagan, MN USA) or similar propylene glycol formulation works well for this.

3. **Guides** - Three sections of lumber (3 cm × 3 cm × 30–40cm; Figure 1B) arrayed around the opening of the funnel (Figure 3) serve to guide arthropods into the trap and also to support the tile.

4. **Tile** - A ceramic tile (Figures 1A, 3) is supported over the trap opening to prevent rain and debris.
2.2 Setting up

To set a pitfall trap:

1. Set a transect or find an area where the pitfall traps will not be lost

2. Dig a hole wide enough for the cup to sit in, with the top absolutely flush with the ground. You want an arthropod to walk into the trap without encountering any kind of lip

3. Fill the cup about half way with preservative (Figure 1C)

4. Arrange the guides like in Figures 2, 3

5. Add label to preservative with the following data: start date, locality, habitat, collector or project name, and any other critical data

6. Place ceramic tile on top (Figure 3)