

Appendix X

Instructions for Building Above-Ground Bucket Traps for American Burying Beetles (*Nicrophorus americanus*)

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Above-ground Bucket Trap (excluding trap cover)

*Note: Photos and schematic drawings below.

Supply List:

1. Drill
2. ¼ & 1/8 inch drill bits
3. Razor knife
4. Measuring Tape
5. Permanent marker
6. Five gallon bucket
7. Lid for five gallon bucket
8. Funnel with 7 inch diameter
9. 2 ft. length of rebar (3/8 inch diameter)
10. Two eye bolts, washers, & nuts (eye large enough to slide over rebar)
11. Four plastic zip ties
12. 6 fl. oz. plastic cup
13. Wire (*e.g.* 17 gauge steel wire)
14. Sponge

(Refer to Figures 1 – 3, 5)

- STEP 1:** Drill numerous drain holes in the bottom of the bucket using the 1/8 inch drill bit (Fig. 1). ¼ inch drain holes are small enough to trap *Nicrophorus americanus*, but may allow smaller species, like *N. tomentosus*, to escape.
- STEP 2:** Drill about 10 ventilation holes (1/4 inch drill bit) in the overhanging rim near the top of the bucket (Fig. 5). More ventilation holes can be drilled lower on the bucket, but consider using the 1/8 inch drill bit for any holes near the bottom of the bucket where beetles could escape.
- STEP 3:** In the side of the bucket, drill two ¼ inch holes about 12 inches apart oriented one directly above the other (Fig. 5).
- STEP 4:** Install an eye bolt into each of the two holes from STEP 3 with the eye on the outside of the bucket and the washer and nut on the inside of the bucket (Fig. 5).

- STEP 5:** Place the large end of the funnel in the center of the bucket lid and trace its outline with the marker. Cut the circle out of the center of the lid using the razor knife, but stay at least ½ inch to the inside of the circle you traced with the so that you cut out a smaller circle than the one you drew (Fig. 3).
- STEP 6:** Using zip ties, attach the funnel to the underside of the bucket lid, beneath the large hole. Make small holes in the bucket lid and the funnel using the drill or razor knife. Then put zip ties through these holes to attach the funnel to the underside of the bucket lid (Fig. 3).
- STEP 7:** **(omit steps 7 – 9 if using wooden trap covers)** In the bucket lid, about an inch outside of the funnel, make four small holes using an 1/8 inch drill bit or the razor knife. Arrange the four small holes in a cross pattern so they are about equal distances from each other (Fig. 3).
- STEP 8:** Cut a 30 cm piece of wire and poke it through both sides of the 6 fl. oz. plastic cup near the lip of the cup. Place the ends of the wire (hanging from either side of the plastic cup) into two of the small holes from STEP 7 so that the bait cup is suspended above the funnel (Fig. 3).
- STEP 9:** Cut another 30 cm piece of wire and place its ends in the remaining two small holes from STEP 7 so that it goes over the top of the bait cup to steady it.
- STEP 10:** Put the sponge inside the bucket and place the lid/funnel/bait cup on the bucket.

Trap Cover (Welded wire type)

Supply List:

1. Wire cutter (to cut welded wire fence; *i.e.* diagonal cutter)
2. Razor knife
3. Drill
4. ¼ inch drill bit
5. 1 x 2 ft. piece of welded wire fence
6. 1 x 2 ft. piece of erosion control blanket (*i.e.* Curlex or Excelsior), artificial turf (*i.e.* SYNLawN), or similar material.
7. Large plastic bowl (abt. 10- 12 inch diameter)
8. Plastic zip ties

(Refer to Figures 1 – 3)

- STEP 1:** Use the wire cutter to cut a 1 x 2 ft. piece of welded wire fence (Figs. 1 & 2).
- STEP 2:** Cut a hole out of the center of the wire fence that is slightly larger than the funnel opening, but smaller than the bucket lid (Figs. 1 & 3).
- STEP 3:** Using a razor knife, cut a 3 in. x 1 in. notch out of each side of the bowl along the lip of the bowl (Fig. 2).
- STEP 4:** Drill four ¼ inch ventilation holes equally spaced along the side of the bowl (Fig. 2).
- STEP 5:** Drill four (or more) 1/8 inch holes along the lip of the bowl. Place the inverted bowl on the center of the wire fencing and use zip ties through the holes along the lip of the bowl to attach it to the fencing (Figs 1 & 3).
- STEP 6:** Place the wire fence/bowl on the top of the bucket trap with the bowl centered above the funnel. Cut four 8 in. lengths of wire and use them to attach the trap cover to the bucket. Attach one end of the wires securely to the wire fence/bowl, and attach the other end to the vent holes near the top of the bucket. Attach the wires so they can easily be loosened from the bucket to remove the trap cover.
- STEP 7:** Cover the wire fencing with a layer of erosion control matting (or similar material) using zip ties (Figs 1-3).

Trap Cover (Wooden type)

Supply List:

1. Jig saw
2. Circular saw (optional)
3. Screw driver
4. Drill
5. 1/8 inch & 1/4 inch drill bits
6. 2 ft. x 4 ft. sheet of 1/4 inch thick plywood
7. 2" x 2" board, two feet in length
8. Wood screws
9. Two bolts with nuts and washers (bolts abt. 3/4 inch long, abt. 1/8 inch diameter)
10. Plastic Tupperware container with screw-on lid (e.g. Ziplock Twist n' Lock container with abt. 4" diameter and abt. 5" height)

(Refer to Figs 4 – 8)

STEP 1: Cut a 24 x 16 inch piece of plywood (this is the 'landing pad').

STEP 2: Cut a 12 x 12 inch piece of plywood (this is the 'rain cover').

STEP 3: Cut two 11.5 x 3 inch pieces of plywood.

STEP 4: Cut two 12.5 x 3 inch pieces of plywood

STEP 5: Cut four - 4 inch lengths of 2"x2" board.

STEP 6: Cut a circular hole, 7 inches in diameter, out of the center of the landing pad (Figs. 7 & 8).

STEP 7: Using wood screws, attach the four - 4 inch lengths of 2"x2" board to the rain cover, like legs. One leg goes on each corner positioned 1/4 inch in from the edges of the rain cover (Figs. 4 & 6).

STEP 8: Using wood screws, attach the legs of the rain cover to the landing pad, centered over the large hole (Figs 4 & 6).

STEP 9: Using wood screws, attach the rectangular pieces of plywood (11.5 x 3" and 12.5 x 3") across the fronts of the legs. Push the rectangular pieces of plywood up flush with the rain cover, leaving a 1 inch gap along the bottom of the legs (Figs 4 & 6).

STEP 10: Using bolts, nuts, and washers, attach the lid of the Tupperware container to the underside of the rain cover so that the container can be screwed into the lid. This will require drilling a couple of 1/8" holes in the rain cover and the Tupperware lid to put the bolts through (Fig. 8).

STEP 11: Drill numerous vent holes along the top half of the Tupperware container (Fig. 8).

STEP 12: Drill two (or more) ¼ inch holes in the landing pad to serve as attachment points for connecting the trap cover to the bucket trap. It is a good idea to drill one hole in the right spot on the landing pad that is big enough to allow the rebar stake of the trap to go through the landing pad. This will prevent you from having to drive the stake down below the level of the landing pad (Figs. 6 – 8).

Fig. 1. Schematic drawing of above-ground bucket trap with welded wire trap cover.

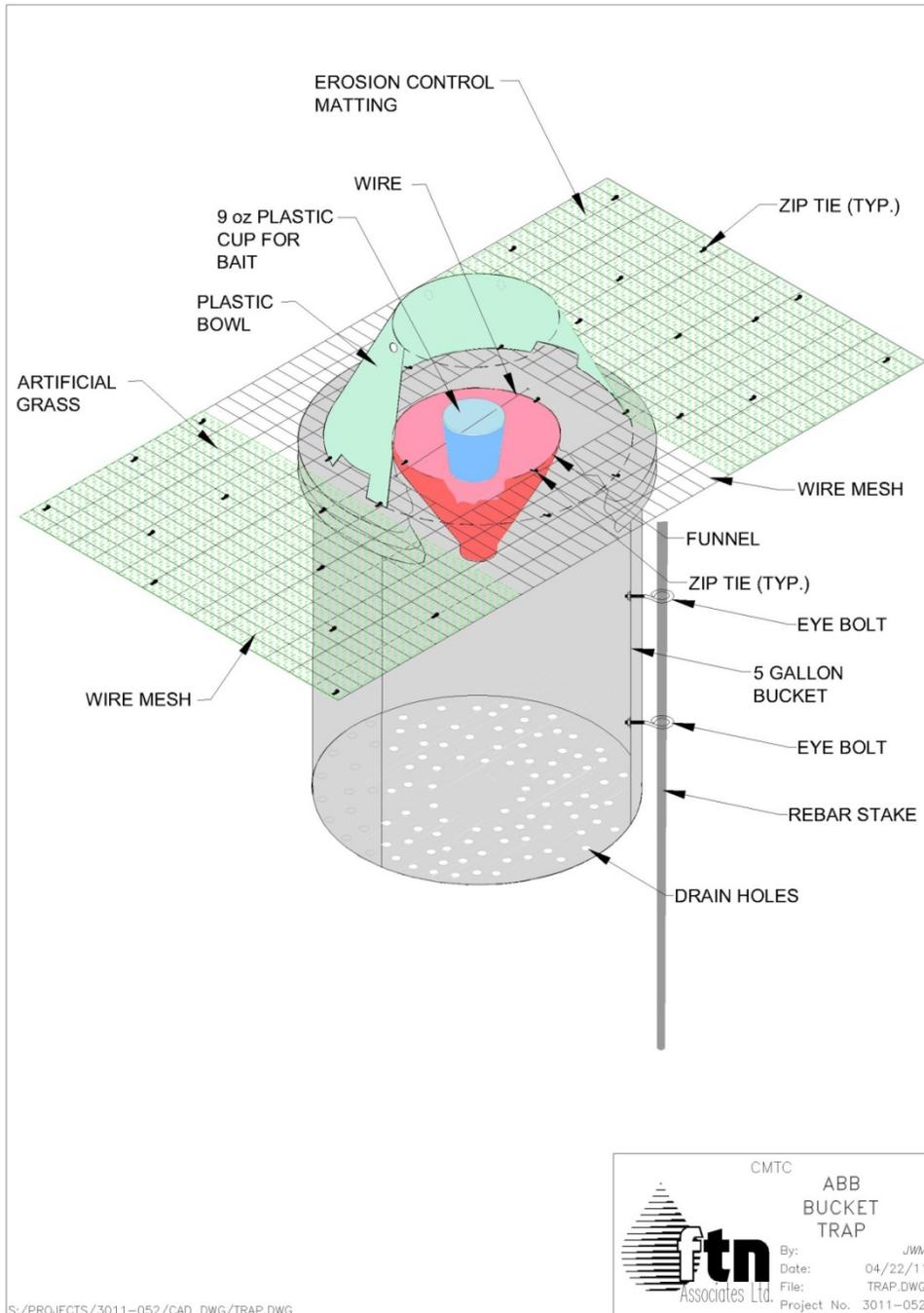


Fig. 2. Complete above-ground bucket trap with welded wire cover.



Fig. 3. Aerial view of above-ground bucket trap with welded wire cover, showing the bait cup and funnel.



Fig. 4. Schematic drawing of above-ground bucket trap with wooden trap cover.

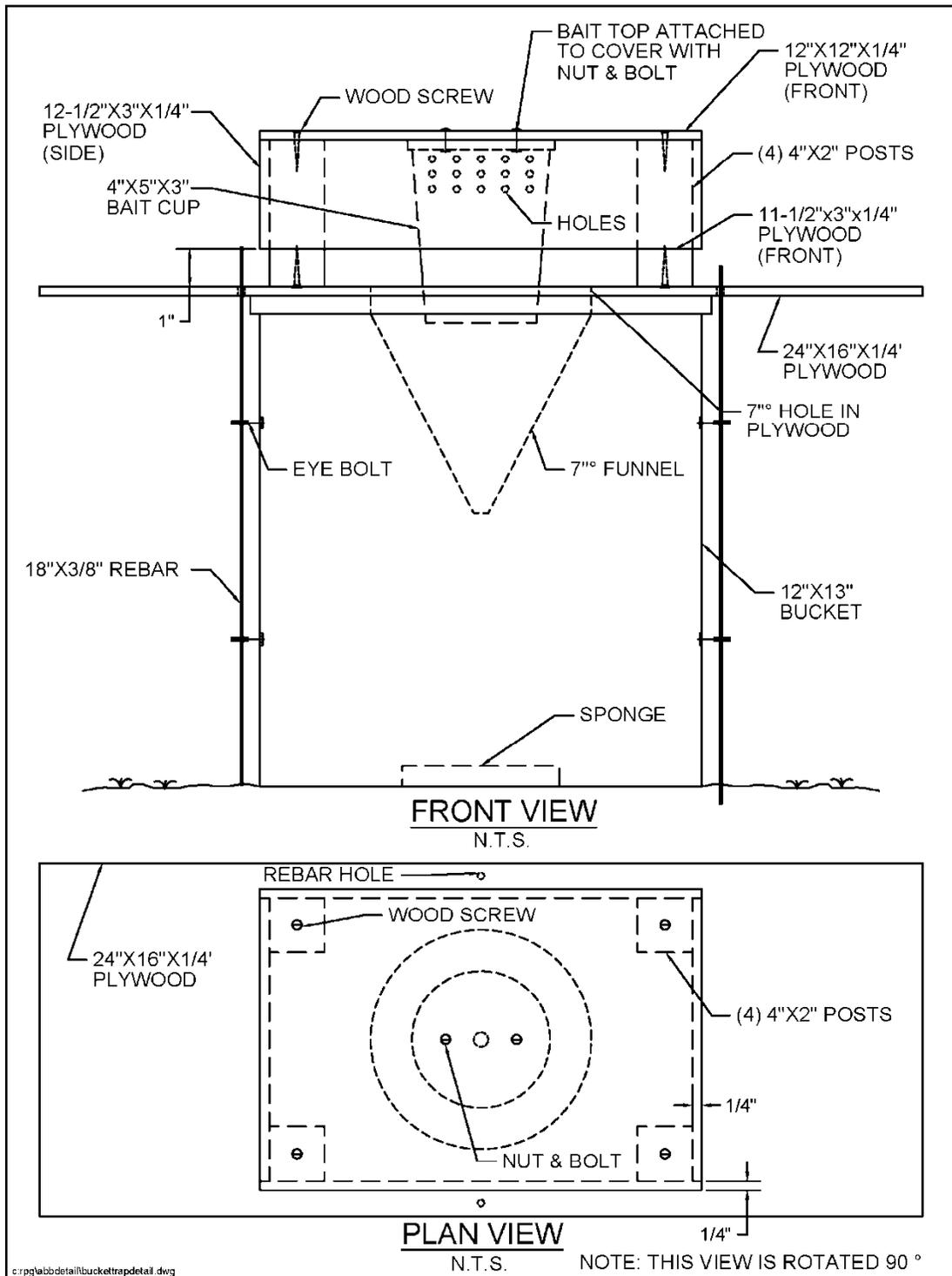


Fig. 5. Above-ground bucket trap showing rebar stake and eye-bolt attachment points. Wooden trap cover in background.



Fig. 6. Complete above-ground bucket trap with wood trap cover.



Fig. 7. Underside of wood trap cover showing attached bait cup.



Fig. 8. Underside of wood trap cover showing bait cup after unscrewed from the lid. The lid remains attached to the underside of the trap cover.

